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**WDW-3
PERMITS,
RENEWALS,
& MODS**

2012 - Present

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



DECEMBER 10, 2015

CERTIFIED MAIL
RETURN RECEIPT NO: 3771 5909

Scott M. Denton
Environmental Manager
The HollyFrontier Companies
P.O. Box 159
Artesia, NM 88211-0159

**RE: Modification of Underground Injection Control (UIC) Class I (non-hazardous)
Disposal Well Discharge Permits (WDW-1: UICI-008-1; WDW-2: UICI-008-2; and WDW-3: UICI-008-3) to
Require Annual Fall-Off Testing per EPA Regulation §40 CFR146.13(d)(1)**

Dear Mr. Denton:

The New Mexico Oil Conservation Division (OCD) in cooperation with the U.S. Environmental Protection Agency (EPA) Region 6 Office on Tuesday, October 6, 2015, determined that OCD shall increase the frequency of Fall-Off Testing (FOT) for all Underground Injection Control (UIC) Class I (non-hazardous) Injection Well Operators to at least annually per § 40CFR 146.13(d) (1) (see federal regulation below).

§ 146.13 Operating, monitoring and reporting requirements.

(d) Ambient monitoring. (1) Based on a site-specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect such movement, the Director shall require the owner or operator to develop a monitoring program. At a minimum, the Director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shut-down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.

Therefore, effective immediately, OCD revises Section 3.E. Fall-Off Test of the discharge permit issued to Navajo Refining Company, LLC on February 19, 2014, to require annual FOTs. FOTs shall be completed before September 30th of each year from now on. Well operators shall schedule FOTs with OCD at least 30 days prior to testing to allow OCD to witness key aspects of the FOT, i.e., bottom hole pressure gauge installation, and just prior to injection well pump shut-off and initiation of FOT monitoring.

If you have any questions, please contact Carl Chavez of my staff at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us. Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jim Griswold".

Jim Griswold
Environmental Bureau Chief

JG/cjc

cc: OCD Artesia District Office

Lisa Pham, EPA Region 6

DISCHARGE PERMIT UICI-008-3 (WDW-3)

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department issues Discharge Permit UICI-008-3 (Discharge Permit) to Navajo Refining Company (Permittee) to operate its Underground Injection Control (UIC) Class I non-hazardous waste injection well (Waste Disposal Well No. 3 - API No. 30-015-26575, WDW-3) located 790 FSL and 2250 FWL, Unit Letter N, Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico at its Disposal Well Facility (Facility). The Facility is located approximately 10.5 miles southeast of the intersection of U.S. 285 and U.S. 82 in Artesia, New Mexico.

The Permittee is permitted to dispose of only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids into its Class I non-hazardous waste injection well (WDW-3). The Permittee may dispose of a maximum of 500 gallons per minute (gpm) of oil field waste fluids. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 50 – 100 feet below ground surface and has a total dissolved solids (TDS) concentration of approximately 1,000 – 2,200 mg/l.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class I non-hazardous waste injection wells (see Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (see 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class I non-hazardous waste injection well (WDW-3) is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil field waste, other than non-hazardous oil field waste fluids into its Class I non-hazardous waste injection well (WDW-3), including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, and washdown water. The Permittee may not dispose of any industrial waste fluid that is not oil field waste that is generated at its refinery. The Ground Water Quality Bureau of the New Mexico Environment Department permits the management of all industrial fluids that are not generated in the oil field.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.

2. The injection of fluids into a large capacity cesspool is prohibited.
3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.
4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.
5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified in 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class I non-hazardous waste injection wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified in 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous waste fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (see Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required \$100.00 filing fee. The Permittee shall submit the final \$4,500.00 permit fee for a Class I non-hazardous waste injection well to OCD with a check made payable to “Water Quality Management Fund” thirty days after the date that this permit is issued.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **June 1, 2017**. The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (see Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and the OCD’s Environmental Bureau of any Facility expansion, any injection increase above the approved pressure limit or volume limit specified in Permit Condition 3.B.2, or process modification that would result in any significant modification in the discharge of water contaminants (see 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class I non-hazardous waste injection well (WDW-3) that was approved pursuant to the requirements of this 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

a. Noncompliance by Permittee with any condition of this Discharge Permit;
or,

b. The Permittee’s failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee’s misrepresentation of any relevant facts at any time; or,

c. A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge

permit modification or termination (see Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and, 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

a. Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

b. Violation of any applicable state or federal effluent regulations or limitations; or

c. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (see Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS I NON-HAZARDOUS WASTE INJECTION WELL (WDW-3) DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class I non-hazardous waste injection well (WDW-3) discharge permit if:

a. The OCD Director receives written notice 30 days prior to the transfer date; and,

b. The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2.a shall:

a. Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgment that the succeeding Permittee shall be responsible for compliance with the Class I non-hazardous waste injection well discharge permit upon taking possession of the facility;

b. Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

c. Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10A.2 NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL (WDW-3): Pursuant to 20.6.2.5207B NMAC, the Permittee shall provide analysis of the injected fluids at least quarterly to yield data representative of their characteristics and to demonstrate pursuant to 20.6.2.5204A(3) NMAC that the injected fluids are not characteristically hazardous as determined by EPA SW-846 Method 1311 and the analytical methods specified in the Quarterly Monitoring List.

The Permittee shall analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- General ground water quality parameters (general chemistry/cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, total dissolved solids, cation/anion balance, pH, and bromide using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (Methods 1010/1020 and ASTM standards), Corrosivity (Method 1110), and Reactivity (process knowledge);

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(c)).:

QUARTERLY MONITORING LIST			
EPA HW No.	Contaminant	SW-846 Methods	Regulatory Level (mg/L)
D004	Arsenic	6010C	5.0
D005	Barium	6010C	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	6020A	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	6020A	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	6020A 7421	5.0
D009	Mercury	7470A 7471B	0.2
D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0
D010	Selenium	7741A	1.0

D011	Silver	6010C	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.

If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the Class I non-hazardous waste injection well (WDW-3). The Permittee shall plug and abandon its Class I non-hazardous waste injection well (WDW-3) pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. Pre-Closure Notification: Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class I non-hazardous waste injection well (WDW-3). Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);
- Address of Permittee (and owner or operator, if appropriate);
- Contact person;
- Phone number;
- Number and type of well(s);
- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.*, sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well,

- install permanent plug, conversion to other type of well, ground water and vadose zone investigation, *etc.*);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.D. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class I non-hazardous waste injection well (WDW-3), it shall submit to OCD a plugging and abandonment plan that meets the requirements of 20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.E. RECORD KEEPING: The Permittee shall maintain records of all inspections required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.F. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified in 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,
- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing

items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.G. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any effluent before or after discharge; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. Advance Notice: The Permittee shall provide OCD's Environmental Bureau and Artesia District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class I non-hazardous waste injection well (WDW-3).

3. Environmental Monitoring: The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, and laboratory Quality Assurance/Quality Control (QA/QC).

2.H. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class I non-hazardous waste injection well (WDW-3), surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted

by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required herein above.

2.I. REPORTING:

1. Quarterly Reports: The Permittee shall submit quarterly reports pursuant to 20.6.2.5208A NMAC to OCD's Environmental Bureau no later than 45 days following the end of each calendar quarter. The quarterly reports shall include the following:

- a. The physical, chemical and other relevant characteristics of injection fluids;
- b. Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and
- c. The results of monitoring prescribed under Section 20.6.2.5207B NMAC.
- d. Weekly expansion tank volume fluid readings and the fluid volume additions or removals from the expansion tank.

2. Annual Report: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1st** of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well (WDW-3), Name of Permittee, Discharge Permit Number, API number of well, date of report, and person submitting report;
- Summary of Class I non-hazardous waste injection well (WDW-3) operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103(s);
- Monthly injection/disposal volume, including the cumulative total should be carried over to each year;
- Maximum and average injection pressures;
- A copy of the quarterly chemical analyses shall be included with data summary and all QA/QC information;
- Copy of any mechanical integrity test chart(s), including the type of test, *i.e.*, duration, gauge pressure, *etc.*;
- Copy of fall-of test charts;
- Summary tables listing environmental analytical laboratory data for quarterly waste fluid samples. Any 20.6.2.3103 NMAC constituent(s) found to exceed a water quality standard shall be highlighted and noted in the annual report. The Permittee shall include copies of the most recent year's environmental analytical laboratory data

- sheets with QA/QC summary sheet information in conformance with the National Environmental Laboratory Accreditation Conference (NELAC) and EPA Standards;
- Brief explanation describing deviations from the normal injection operations;
 - Results of any leaks and spill reports (include any C-141 reports);
 - An Area of Review (AOR) annual update summary;
 - A summary with interpretation of MITs, Fall-Off Tests, *etc.*, with conclusion(s) and recommendation(s);
 - Records of the expansion tank monitoring pressure, fluid removals and/or additions indicating the well MIT condition;
 - A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
 - A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,
 - The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS I NON-HAZARDOUS WASTE INJECTION WELL (WDW-3) OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206B NMAC to ensure that:

1. The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC and during well stimulation.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class I non-hazardous waste injection well (WDW-3) is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall cease operations until proper repairs are made, notify the OCD's Environmental Bureau and Artesia District office within 24 hours, and shall not resume injection until the permittee has received approval from the OCD.

3. The annulus between the tubing and the long string of casing shall be filled with a fluid approved by the OCD Director and a pressure, also approved by the OCD Director shall be maintained on the annulus.

3.B. INJECTION OPERATIONS:

1. Injection Formation, Interval, and Waste Fluids: The Permittee shall inject only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluid into the Lower Wolfcamp, Cisco, and Canyon Formations from 7,660 feet to 8,620 feet in its Class I non-hazardous waste injection well (WDW-3). The surface casing is set at 400 feet; the first intermediate casing is set at 2,604 feet; the second intermediate casing or production casing

is set at 9,450 feet; the injection tubing is set at approximately 7,568 feet; and the packer is set at 7,575 feet. A cement plug is set at 9,022 feet within the production casing, which isolates the Class I non-hazardous injection well (WDW-3) from a deeper, completed production liner set at 10,119 feet. The Permittee shall ensure that the injected waste fluid enters perforations only within the above specified injection interval and is not permitted to escape to other formations or onto the surface.

2. Well Injection Pressure Limits and Injection Flow Rate: The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class I non-hazardous waste injection well (WDW-3) shall not exceed 1,530 psig and that the injection flow rate shall not exceed 500 gpm.

3. Pressure Limiting Device: The Permittee shall equip and operate its Class I non-hazardous waste injection well (WDW-3) or system with a pressure limiting device, or equivalent (*i.e.*, Murphy switch), in working condition which shall at all times limit surface injection pressure to the maximum allowable pressure for its Class I non-hazardous waste injection well (WDW-3).

The Permittee shall inspect and monitor the pressure-limiting device daily and shall report any pressure exceedances within 24 hours of detection to OCD's Environmental Bureau and Artesia District Office. The Permittee shall take all steps necessary to ensure that the injected waste fluids enter only the proposed injection interval and are not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

OCD may authorize an increase in surface injection pressure if the Permittee performs a valid Step-Rate Test (SRT), which demonstrates that the proposed maximum surface injection pressure is less than the injection zone fracture pressure with an acceptable safety factor. If approvable, the Permittee must apply for a modification to this Discharge Permit pursuant to 20.6.2.3109 NMAC.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the second intermediate casing.

3.D. MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall conduct a mechanical integrity test (MIT) for its Class I non-hazardous waste injection well (WDW-3) at least once every five years or more frequently as the OCD Director may require for good cause during the

life of the well. The Permittee shall also demonstrate mechanical integrity for its Class I non-hazardous waste injection well (WDW-3) by running a MIT every time it performs a well workover, including when it pulls the tubing or reseats the packer. The Permittee shall request MIT approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office. The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

The Permittee shall conduct a casing-tubing annulus MIT from the surface to the approved injection depth to assess casing and tubing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface. The Permittee shall follow OCD's 2004 *New Mexico Oil Conservation Division Underground Injection Control Program Manual* guidance when conducting a MIT. The Permittee shall submit the results of its MIT to OCD's Environmental Bureau and Artesia District Office within 30 days of completion. If any remedial work or any other workover operations are necessary, the Permittee shall comply with Permit Condition 3.F.

2. A Class I non-hazardous waste injection well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which OCD considers to be significant at maximum operating temperature and pressure, and no detectable conduit for fluid movement out of the injection zone through the well bore, or vertical channels adjacent to the well bore which the OCD considers to be significant. The following criteria will determine if the Class I non-hazardous waste injection well (WDW-3) has passed the MIT:

- a.** The MIT passes if there is zero bleed-off during the test;
- b.** The MIT passes if there is a less than a $\pm 10\%$ change in the final test pressure compared to the starting pressure, if approved by OCD;
- c.** The MIT fails if there is more than 10% reduction in the final test pressure compared to the starting pressure or that the pressure does not stabilize within 10% of the starting pressure before the end of the MIT. The Permittee shall shut-in the well and investigate for leaks in accordance with Permit Condition 3.F. The Permittee shall not resume injection operations until approved by OCD.
- d.** When the MIT is not witnessed by OCD and fails, the Permittee shall shut-in the well and notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry.

When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

5. The Permittee shall conduct a Bradenhead test at least annually and each time that it conducts a MIT.

3.E. FALL-OFF TEST: The Permittee shall conduct a Fall-Off Test (FOT) to monitor the injection zone formation characteristics and pressure buildup over time in the injection zone at least every three years. The Permittee shall request FOT approval using form C-103 (Sundry Notices and Reports on Wells) sent to OCD's Environmental Bureau and Artesia District Office.

The Permittee shall follow OCD's 2007 *New Mexico Oil Conservation Division UIC Class I Well Fall-Off Test Guidance* or other OCD-approved FOT when conducting a FOT and shall shut down the well for a time sufficient to conduct a valid observation of the pressure fall-off curve. The Permittee shall submit the results of its FOT to OCD's Environmental Bureau and Artesia District Office within 30 days of completion, including color copies of the original charts.

3.F. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's Environmental Bureau prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office. After completing remedial work, pressure tests, or any other workover operations, the Permittee shall run a MIT in accordance with Permit Condition 3.D to verify that the remedial work has successfully repaired any problems.

3. G. EXTERNAL EXPANSION TANK: The Permittee shall equip its Class I non-hazardous waste injection well (WDW-3) with an external expansion tank system under constant 100 psig pressure connected to the casing-annulus. The Permittee shall fill the external expansion tank half-full with an OCD-approved liquid to establish an equilibrium volume and liquid level. The Permittee shall monitor the liquid levels in the external expansion tank at least weekly and shall record all additions or removals of liquids into or out of the external expansion tank. The Permittee shall record any loss or gain of fluids in the external expansion tank, and shall verbally notify OCD's Environmental Bureau within 5 days of any loss or gain of fluid greater than 5 barrels per month and shall comply with Permit Condition 3.F.

The Permittee shall provide the weekly expansion tank volume fluid volumes readings and the fluid volume additions or removals from the expansion tank on a quarterly basis and in the annual report.

3.H. INJECTION RECORD VOLUMES AND PRESSURES: The Permittee shall submit quarterly reports of its injection operations and well workovers. The Permittee shall record the minimum, maximum, and average flow waste injection volumes (including total volumes) and annular pressures of the injected waste fluids on a monthly basis, and shall submit the data to

OCD on a quarterly basis and in the annual report. The Permittee shall fill the casing-tubing annulus with an OCD-approved liquid and install a Murphy pressure switch or equivalent, as described in the Permittee's permit renewal application, in order to detect leakage in the casing, tubing, or packer.

3.I. AREA OF REVIEW (AOR): The Permittee shall orally report to OCD's Environmental Bureau within 72 hours of discovery of any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class I non-hazardous waste injection well (WDW-3).

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. QUARTERLY AND ANNUAL REPORTS: The Permittee shall submit its quarterly and annual reports to OCD as specified in Permit Condition 2.I.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class I non-hazardous waste injection well (WDW-3), conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (see 20.6.2.5210B(17) NMAC). The Permittee's cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, June 27, 2013 10:43 AM
To: Holder, Mike (Mike.Holder@hollyfrontier.com); Jerry Taylor (jtaylor@subsurfacegroup.com)
Cc: Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject: FW: Minor Modification Letter to NM OCD for Booster Pumps (UICI-8)
Attachments: Well 1 P&ID Model.pdf; Well 2 P&ID Model.pdf; Well 3 P&ID Model.pdf; OCD Modification Letter 6-26-2013 CJC.pdf

Mike, et al.:

Good morning. Please find attached an electronic copy of the OCD letter responding to your "modification letter" dated June 20, 2013. The hard copy has been placed in the US Mail today.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

From: Jerry Taylor [mailto:jtaylor@subsurfacegroup.com]
Sent: Thursday, June 27, 2013 9:43 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike (Mike.Holder@hollyfrontier.com); T Walter Cook; Timothy Jones; Larry McDonald; Wayne Landon
Subject: FW: Minor Modification Letter to NM OCD for Booster Pumps

Carl,

Please see updated Figures 1 through 3 attached. We have removed the PSV as previously stated. We were able to do that by specifying that the block valve in the bypass line be "car sealed closed. With the check valve in that line (see drawing), and with the block valve "car sealed closed", we have two layers of protection preventing the discharge pressure from being applied at the 600 # ANSI equipment (on the suction side of the new pumps).

Protection for the 600 #ANSI equipment (filters and valving up to the pumps) will be provided by PSH (pressure switch high) which will alarm and PSHH (pressure switch high high) which will cause shutdown and block in from the pipeline. Some of that instrumentation already exists and is protecting the existing equipment.

The new pumps will be installed with the PSH (Pressure switch high) on the pump discharge line and set to alarm some safe amount below the MASIP and the PSHH (also on the pump discharge

line) set to shut in the well just below the MASIP for each installation. **These measures will ensure that the permitted MASIP will never be exceeded at the wellhead of any of the three injection wells.**

Please let us know if you have any questions or require any additional information.

Regards,

Jerry W. Taylor, PG
Subsurface Technology, Inc.

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Wednesday, June 26, 2013 12:09 PM
To: Holder, Mike
Subject: RE: Minor Modification Letter to NM OCD for Booster Pumps

Mike:

Good afternoon. I have a couple of questions based on the review of the booster pump drawings and P&ID Codes.

I notice while the booster pump drawings display the PSV (Pressure Safety Valve) set at 1480 for each WDW, I notice that the P&ID Codes for the "PSV" description indicate that the PSV "is not valid for this application and has been removed from the attached updated P&IDs."

Is there an automated PSV located on the disposal well to shut-down disposal at or near the MSIP for each well? If there is no PSV at or near the well head, is the PSH upstream from the well head the switch that will automatically prevent the injection pressure from exceeding the WDW permitted MSIP?

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]
Sent: Friday, June 21, 2013 4:08 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Minor Modification Letter to NM OCD for Booster Pumps

Carl – fyi – this went out and you should receive next week. As always, please don't hesitate to call w/questions. Thanks and have a great weekend! Mike

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



June 26, 2013

Mr. Mike Holder
Environmental Manager
Navajo Refining Company, LLC
P.O. Box 159
Artesia, New Mexico 88211-0159

Re: Navajo Refining Company, LLC Modification Request Letter (June 20, 2013) to Install a Booster Pump at WDW-1 (UICI-008), WDW-2 (UICI-008-1) & WDW-3 (UICI-008-0) Disposal Well Locations, Eddy County, New Mexico

Dear Mr. Holder:

The New Mexico Oil Conservation Division (OCD) is in receipt of Navajo Refining Company, LLC's (NRC) Letter dated June 20, 2013 (letter).

In the letter, NRC is requesting a "modification" to the discharge permit (permit) conditions at each of its WDW 1, 2 & 3 disposal wells to install a REDA HPS™ 300-hp pump with secondary containment (waste minimization) near each of the wells to increase the efficiency and injection potential under its disposal well permits.

OCD hereby approves the "modification" request.

If you have any questions, please do not hesitate to contact me by phone at (505) 476-3490, mail or email at CarlJ.Chavez@state.nm.us. Thank you.

Sincerely,

A handwritten signature in blue ink that reads "Carl J. Chávez".

Carl J. Chávez
Environmental Engineer

Note: Please be advised that OCD approval of this modification request does not relieve NRC of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve NRC of responsibility for compliance with any other federal, state, or local laws and/or regulations

CJC/cjc

cc: OCD Artesia Office

Chavez, Carl J, EMNRD

From: Jerry Taylor <jtaylor@subsurfacegroup.com>
Sent: Thursday, June 27, 2013 9:43 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike (Mike.Holder@hollyfrontier.com); T Walter Cook; Timothy Jones; Larry McDonald; Wayne Landon
Subject: FW: Minor Modification Letter to NM OCD for Booster Pumps
Attachments: Well 1 P&ID Model.pdf; Well 2 P&ID Model.pdf; Well 3 P&ID Model.pdf

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Regards,

Jerry W. Taylor, PG
Subsurface Technology, Inc.

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Wednesday, June 26, 2013 12:09 PM
To: Holder, Mike
Subject: RE: Minor Modification Letter to NM OCD for Booster Pumps

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Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

Website: <http://www.emnrd.state.nm.us/ocd/>

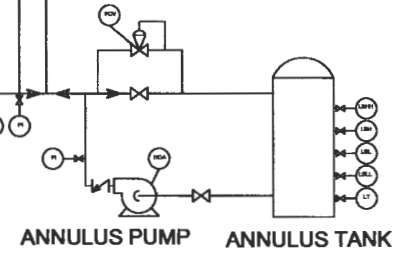
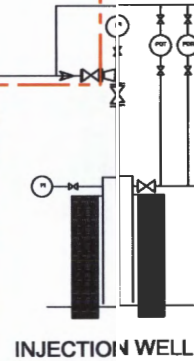
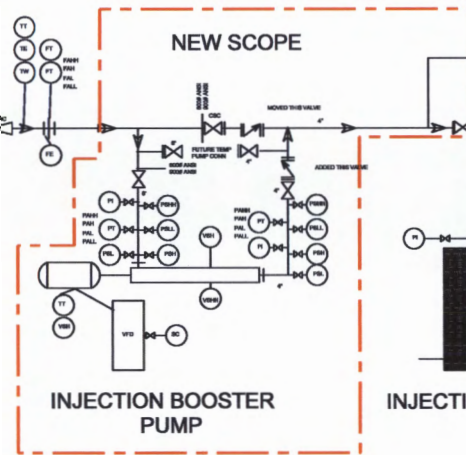
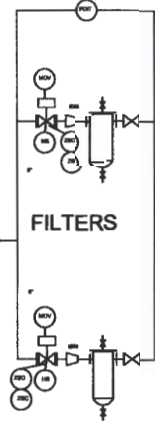
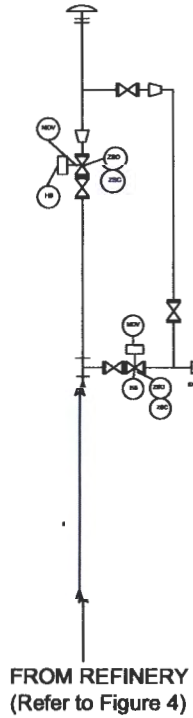
“Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?” To see how, please go to: “Pollution Prevention & Waste Minimization” at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

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Sent: Friday, June 21, 2013 4:08 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Minor Modification Letter to NM OCD for Booster Pumps

Carl – fy – this went out and you should receive next week. As always, please don't hesitate to call w/questions. Thanks and have a great weekend! Mike

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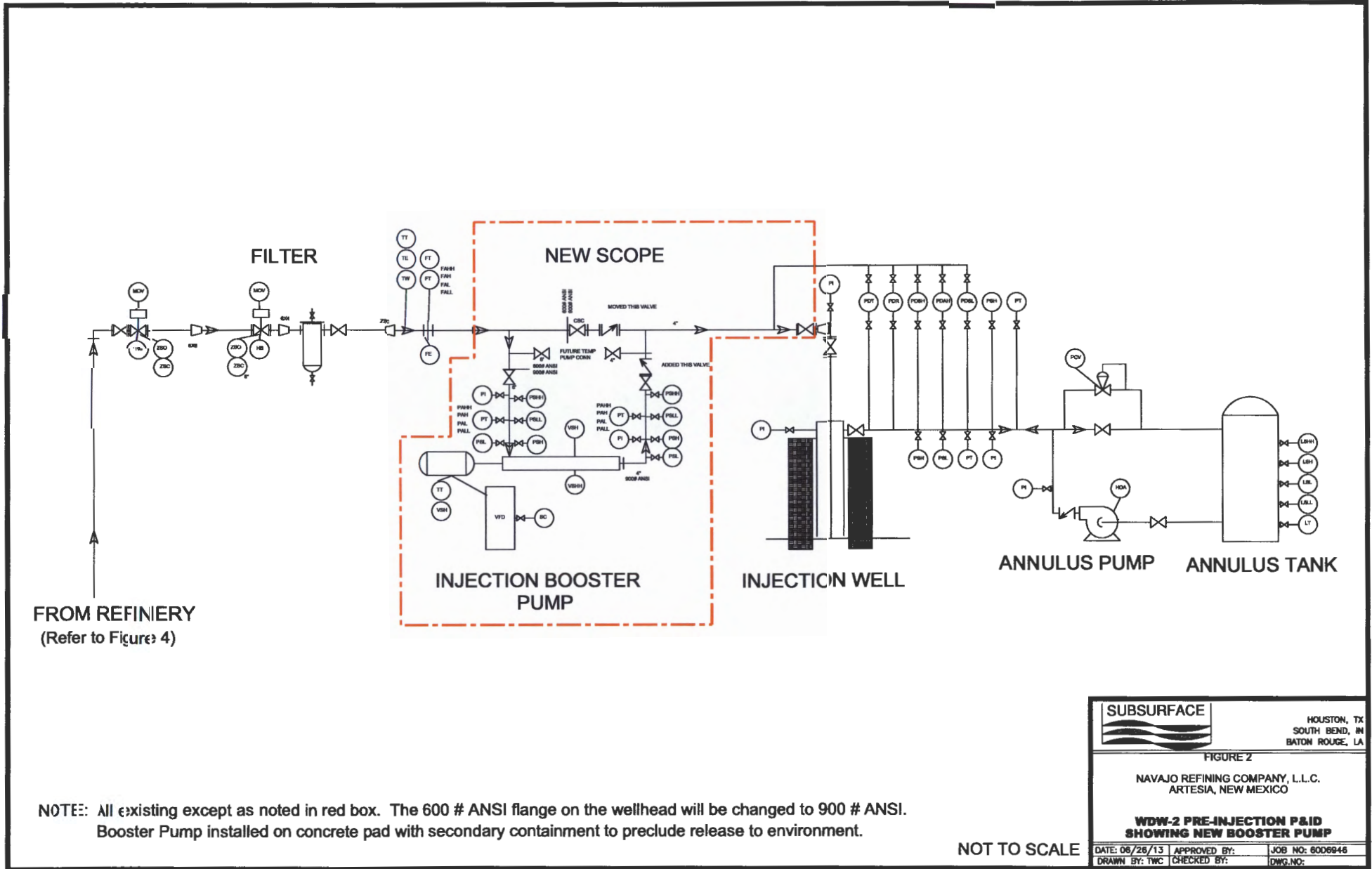
PIG RECEIVER

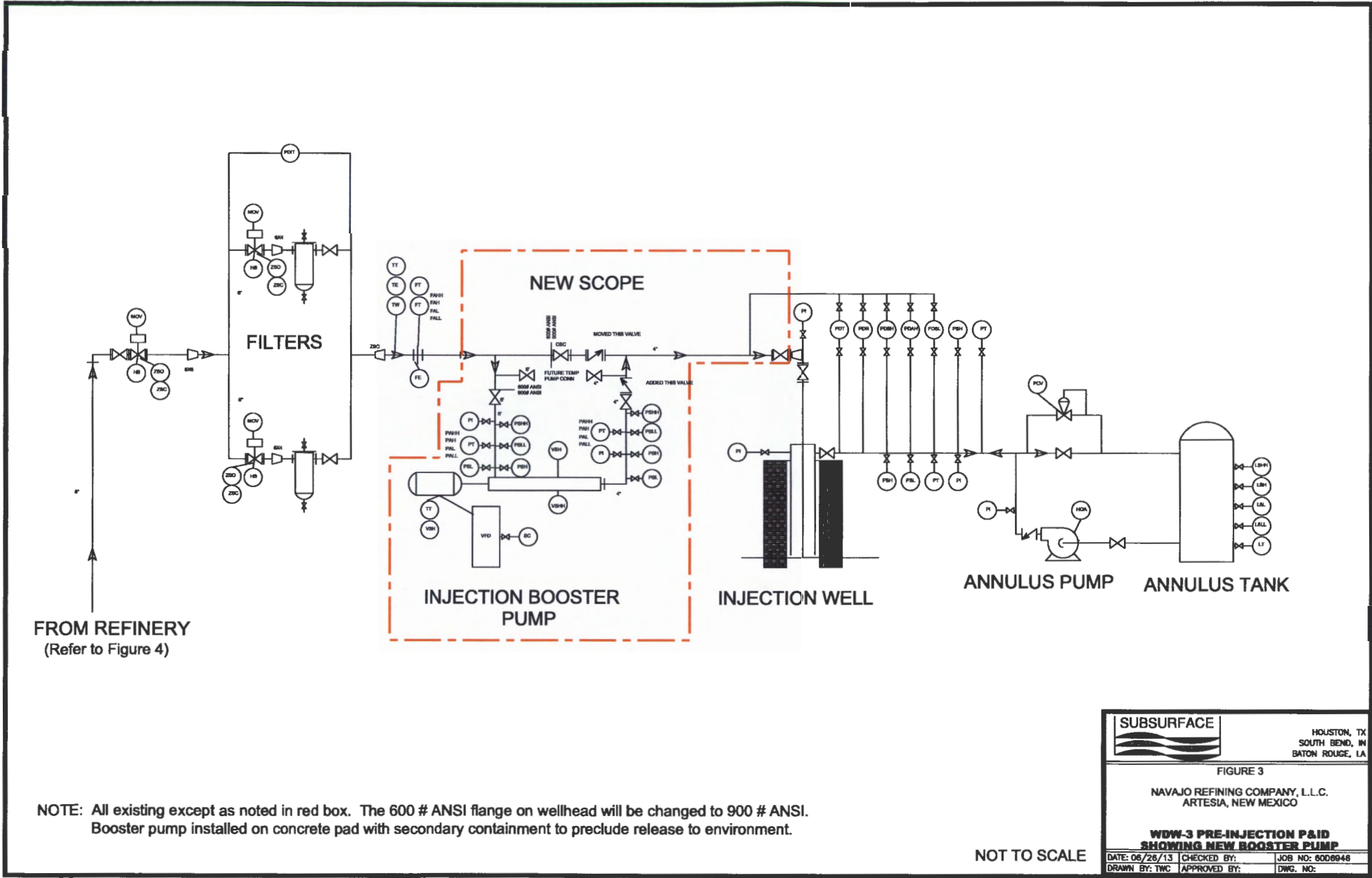


NOTE: All existing except as noted in red box. The 600 # ANSI flange on wellhead will be changed to 900 # ANSI.
 Booster pump installed on concrete pad with secondary containment to preclude release to environment.

NOT TO SCALE

	HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
	FIGURE 1
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO	
WDW-1 PRE-INJECTION P&ID SHOWING NEW BOOSTER PUMP	
DATE: 06/27/13	CHECKED BY:
DRAWN BY: TWC	APPROVED BY:
JOB NO: 6006646	DWG. NO:





SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA	
FIGURE 3			
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO			
WDW-3 PRE-INJECTION P&ID SHOWING NEW BOOSTER PUMP			
DATE: 06/26/13	CHECKED BY:	JOB NO: 6008948	
DRAWN BY: TWC	APPROVED BY:	DWG. NO:	



RECEIVED OCD

2013 JUN 21 A 10: 25

June 20, 2013

Mr. Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Minor Modification for Navajo Refining Company L.L.C.
Discharge Permit UICI-008
WDW-1 (API 30-015-27592)
WDW-2 (API 30-015-20894)
WDW-3 (API 30-015-26575)

Dear Mr. Chavez:

As discussed with you and other agency personnel during a meeting in your Santa Fe offices on Wednesday, May 1, 2013; Navajo Refining Company, L.L.C. would like to install booster pumps into the pre-injection system for each of the three referenced injection wells. These wells are used to permanently dispose of certain nonhazardous liquid wastes associated with our refinery operation in Artesia, New Mexico.

It is Navajo's understanding from the May 1st meeting that the addition of the booster pumps is considered a minor modification to the existing Discharge Permits and can be handled administratively.

Per our discussion at that meeting, Navajo is pleased to provide the agency with information about the booster pumps. P&ID drawings that have been prepared for each injection well that depict the existing pre-injection system for that particular well and the planned booster pump to be installed at each well site are provided in Attachment A. Information about the booster pumps is included in Attachment B.

The booster pump installed at each well site will allow surface injection pressures to be increased but not exceed the regulatory established maximum surface injection pressure as specified for each well in the existing Discharge Permit for that well. The existing pumps, located at the Refinery, have only been able to attain surface injection pressures of 700 psi to 900 psi at the wellhead, substantially less than the permitted maximum surface injection pressures.

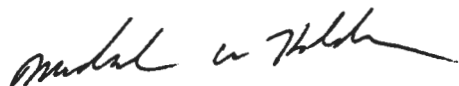
Each booster pump will be installed on a concrete pad with secondary containment (curb) and collection sump to preclude any potential release to the environment should there ever be a leak during service or maintenance. A drawing of the concrete pad is provided in Attachment C.

Each pump will be equipped with high pressure alarms and shutdowns to prevent the pump's discharge pressures from reaching the permitted maximum surface injection pressures. The pumps will also have seal failure alarms to detect and alert personnel in the unlikely event of seal failure which could cause a discharge inside the containment.

It is our plan to provide a pump installation designed to the most modern and safe standards.

Navajo appreciates the continued cooperation of the NM OCD. Should you have any questions or require any additional information regarding the addition of the booster pumps, please contact me via e-mail at mike.holder@hollyfrontier.com or via telephone at (575) 746- 5487.

Regards,

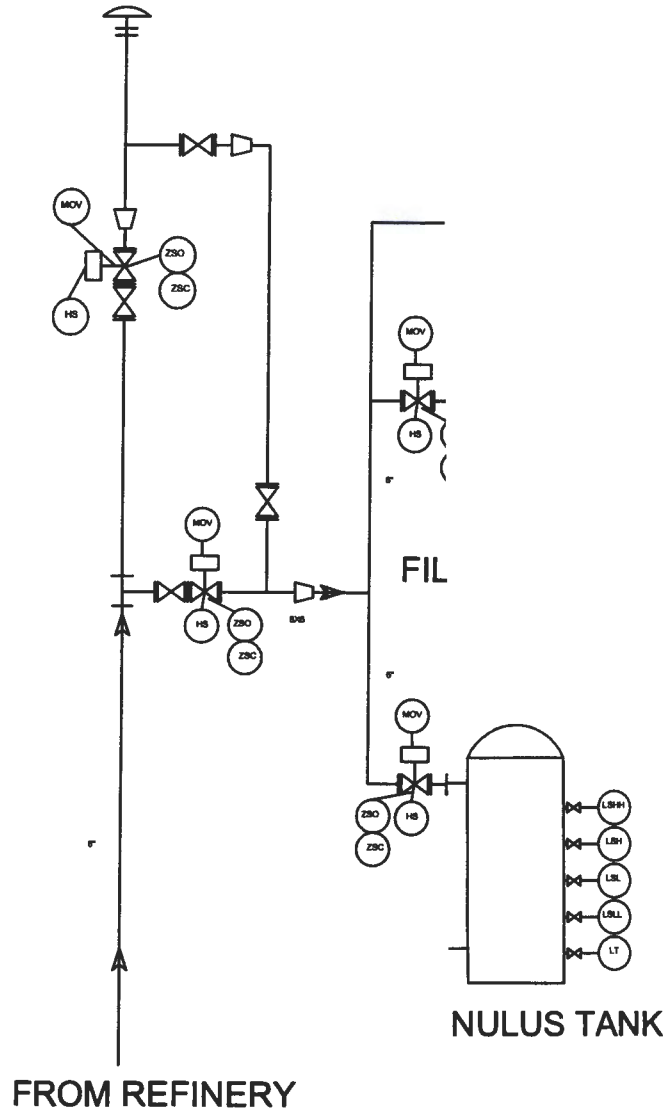


Mike Holder
Navajo Refining Company, L.L.C.

Attachments

cc: Gary Davis, Navajo Refining Company, L.L.C.
Tim Jones, Subsurface Technology, Inc.
Walt Cook, Subsurface Technology, Inc.
Jerry W. Taylor, Subsurface Technology, Inc.

PIG RECEIVER



FROM REFINERY

NULUS TANK

NOTE: All existing except as noted in red by
 Booster pump installed on concrete

LE

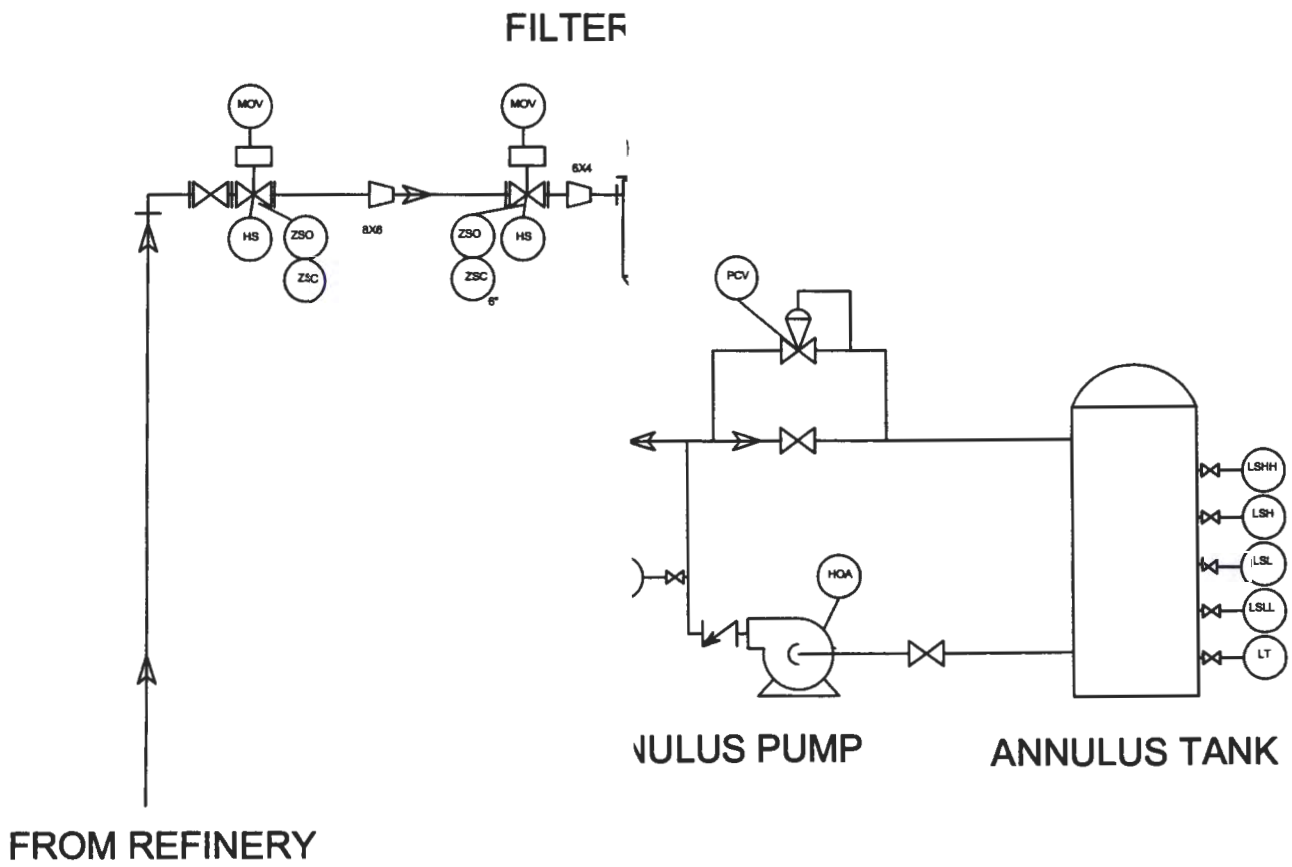
SUBSURFACE

HOUSTON, TX
 SOUTH BEND, IN
 BATON ROUGE, LA

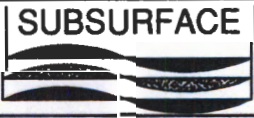
NAVAJO REFINING COMPANY, L.L.C.
 ARTESIA, NEW MEXICO

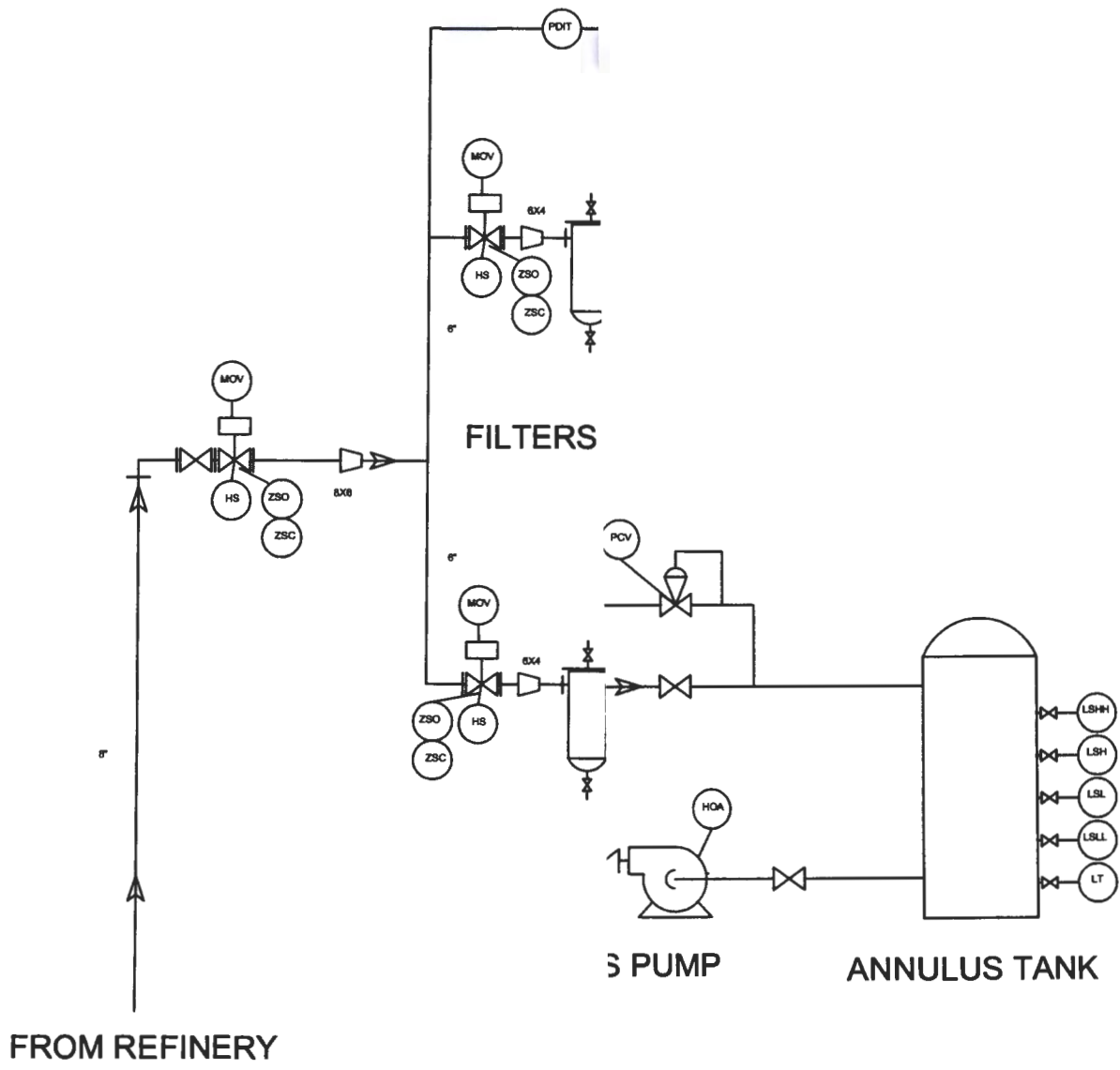
**WDW-1 PRE-INJECTION P&ID
 SHOWING NEW BOOSTER PUMP**

DATE: 6/13/13	CHECKED BY:	JOB NO: 60D6910
DRAWN BY: TWC	APPROVED BY:	DWG. NO:



NOTE: All existing except as noted in
 Booster Pump installed on con.

	HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO	
WDW-2 PRE-INJECTION P&ID SHOWING NEW BOOSTER PUMP	
DATE: 06/13/13	APPROVED BY:
DRAWN BY: TWC	CHECKED BY:
SCALE	DWG. NO. 4328112
SCALE	DWG. NO.



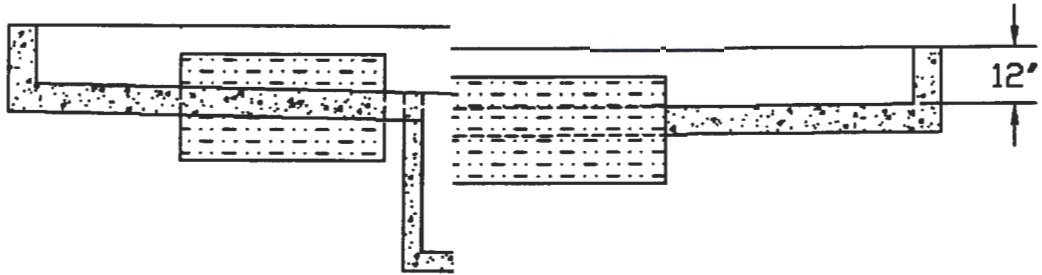
FROM REFINERY

NOTE: All existing except as noted in red b
Booster pump installed on concrete

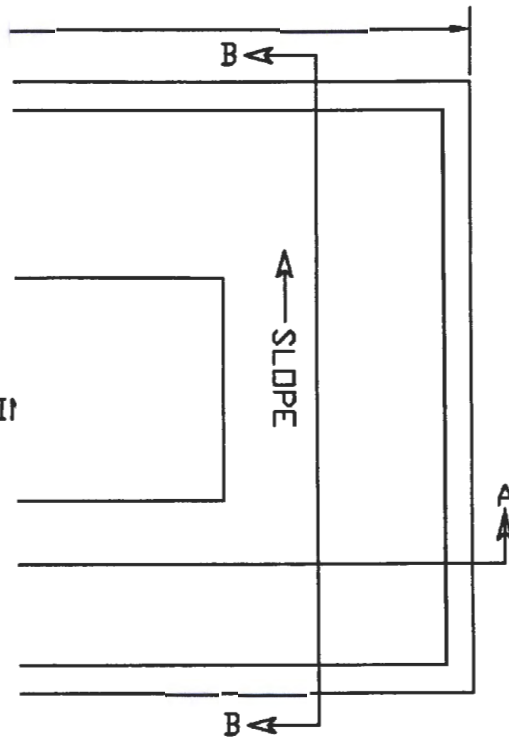
SCALE

SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO		
WDW-3 PRE-INJECTION P&ID SHOWING NEW BOOSTER PUMP		
DATE: 06/13/13	CHECKED BY:	JOB NO: 60D6910
DRAWN BY: TWC	APPROVED BY:	DWG. NO:

PUMP SKID
MOUNTING BLOCK



NOTE:
PUMP SKID MOUNTING BLOCK
DIMENSIONS NOT YET DETERMINED



SUBSURFACE



HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

**BOOSTER PUMP PAD WITH
SECONDARY CONTAINMENT**

DATE: 06/20/13 CHECKED BY:
DRAWN BY: WDD APPROVED BY:

JOB NO: 6006910
DWG. NO.

Company: SubSurface Group
Engineer: Jay Wallace

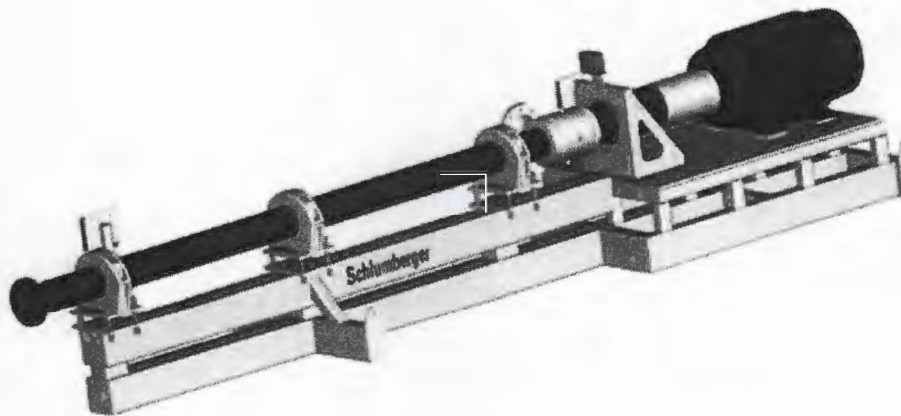
Project: HPS Design
Date: 5/2/2013

REDA HPS
HORIZONTAL PUMPING SYSTEM
TECHNICAL DESIGN

Customer: SubSurface Group
Project: HPS Design

Flow: 250 GPM
Boost Pressure: 773.43 psi
Discharge Pressure: 1473.4 psig

Pump: J252N 23 stages
Motor: SIEMENS, 300 hp, 460 Volts, 60 Hz



Date: 5/2/2013

Company: SubSurface Group	Project: HPS Design
Engineer: Jay Wallace	Date: 5/2/2013

Input Values

Process Input Data		System Input Data	
Liquid Type	Water	Input Voltage	
Specific Gravity	1.01	Area Classification	Class I Div II
Design Flow Rate	250 GPM	Ambient Temperature	80 °F
Design Suction Pressure	700 psig	Liquid Temperature	99 °F
Design Discharge Pressure	1500 psig	Input Frequency	60
Design Boost Pressure	800 psi	NOTES :	
NOTES :			

Results Summary

Pump Summary

Operating Frequency	60 Hz	Pump Type	J252N
Speed	3575 RPM	Stages	23
Power Required (@ Duty)	153.2 hp	Shaft Type	MONEL
Run out Power	158.4 hp	Pressure Rating	2833psig
Pump Efficiency	73.63 %	Shut in Pressure	1827.8 psig
Boost Generated	773.43 psi	TDH	1766.36 ft

Component Details

Motor		Thrust Chamber	
Classification	Class I Div II	TC Rating	5000 lbf
Voltage	460 Volts	Peak Downthrust	2578.86 lbf
Shaft Power	300 hp	Operating Downthrust	2432.88 lbf
Altitude Adjusted HP	300 hp	NOTES :	
Enclosure	TEFC		
Frame	449TS		
Bearing Type	BALL		
NOTES :			

Schlumberger Private

Seal		Skid Type	
Seal Type	351	Model	LD
Cartridge Seal	NC	Overall Unit Length	22.69 ft
Seal Flush Type		NOTES :	
NOTES :			

Intake Flange		Discharge Flange	
Size	6 in	Size	4 in
Flange Class	600	Flange Class	1500
Configuration	RF	Configuration	RF
Material	316L SS	Material	316L SS
Intake Orientation	0 deg. (Standard)		

Company: SubSurface Group	Project: HPS Design
Engineer: Jay Wallace	Date: 5/2/2013

Limits Summary

Process Input Data

Frequency	60 Hz	Controller kW	233.91
Voltage	460 Volts	Controller kVA	257.04
Motor Amps	323 Amps	PF at Controller	0.91
Motor Rating	300 hp		
Pump Power Draw	153.2 hp		
Motor Load Factor	51.05 %		

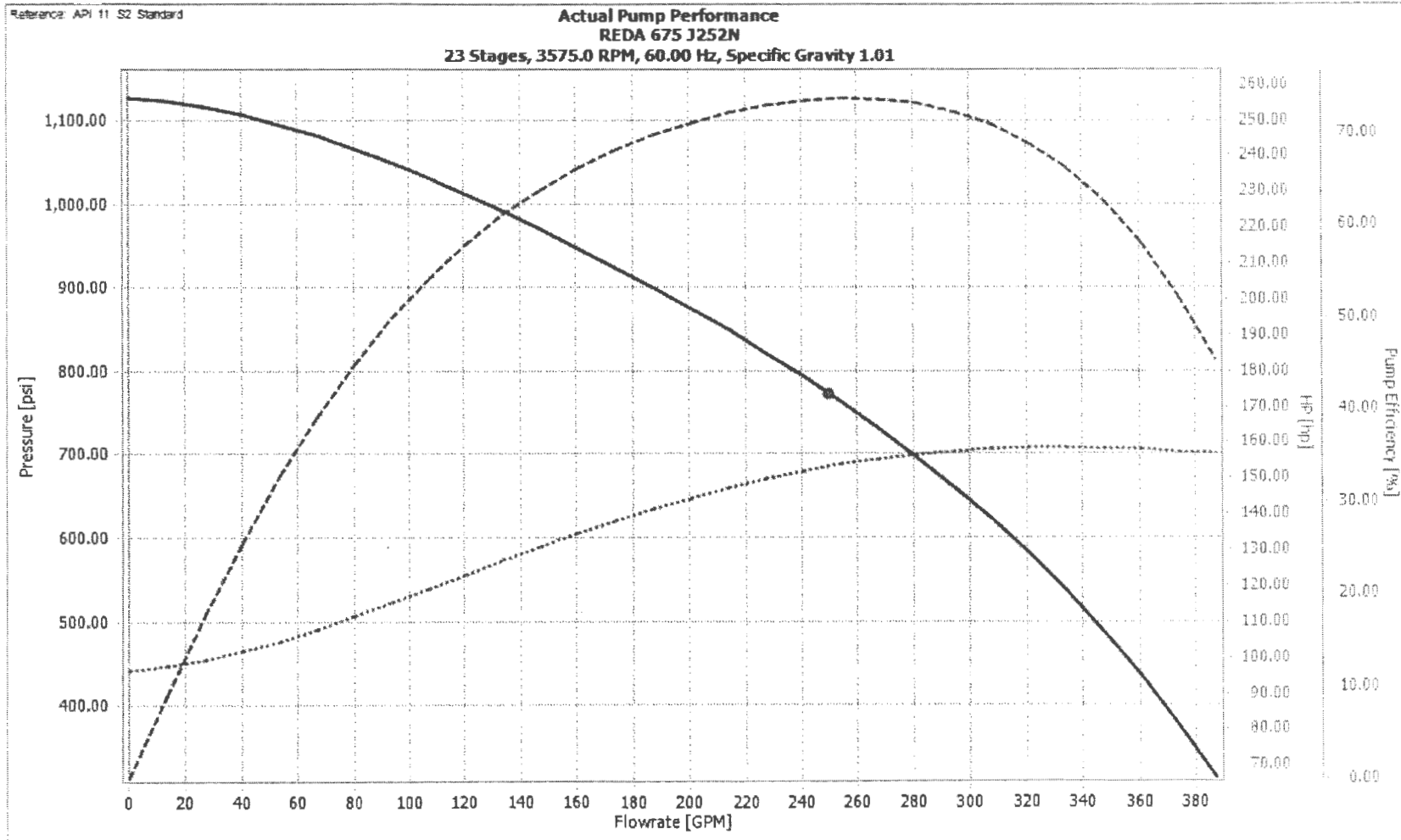
System Summary at Design Point		System Summary at Maximum Condition	
Pump		Pump	
MAWP Rating	2833 psig	MAWP Rating	2833 psig
Discharge Pressure	1473.4 psig	Shutoff Pressure	1827.8 psig
Pressure Load Factor	52.01 %	Pressure Load Factor	64.52 %
Shaft Rating	650.6 hp	Shaft Rating	650.6 hp
Required Power	153.2 hp	Peak Required Power	158.4 hp
Shaft Load Factor	23.54 %	Shaft Load Factor	24.34 %
NPSHr	19.63 ft	NPSHr	19.63 ft
Thrust Chamber		Thrust Chamber	
TC Rating	5000 lbf	TC Rating	5000 lbf
TC Load Factor	48.66 %	TC Load Factor	51.58 %
Flanges		Flanges	
Intake Rating	1200 psig	Intake Rating	1200 psig
Load Factor	58.33 %	Load Factor	58.33 %
Discharge Rating	3000 psig	Discharge Rating	3000 psig
Discharge Load Factor	49.11 %	Discharge Load Factor	60.93 %

Schlumberger Private

Company: SubSurface Group
Engineer: Jay Wallace

Project: HPS Design
Date: 5/2/2013

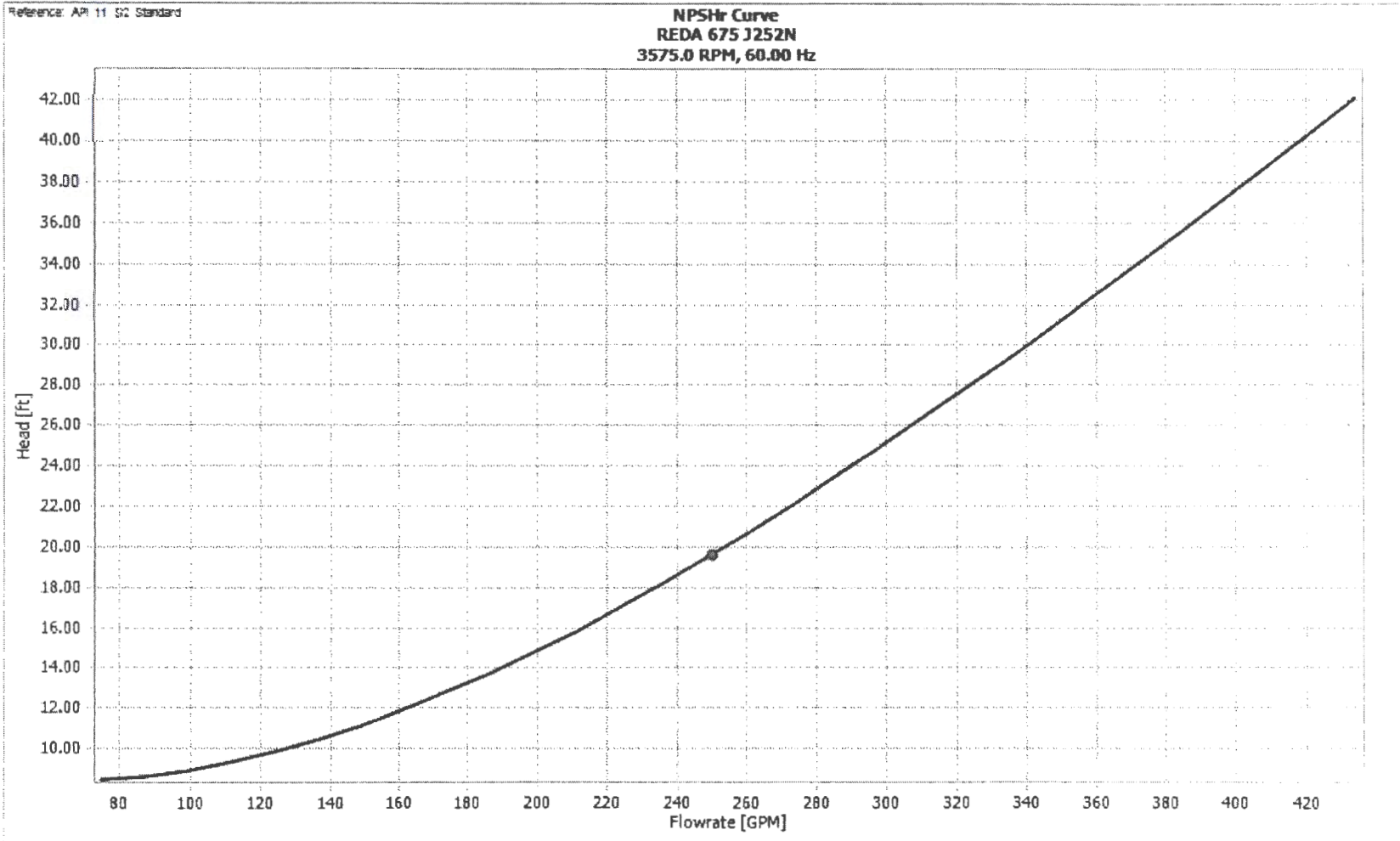
Actual Pump Curve



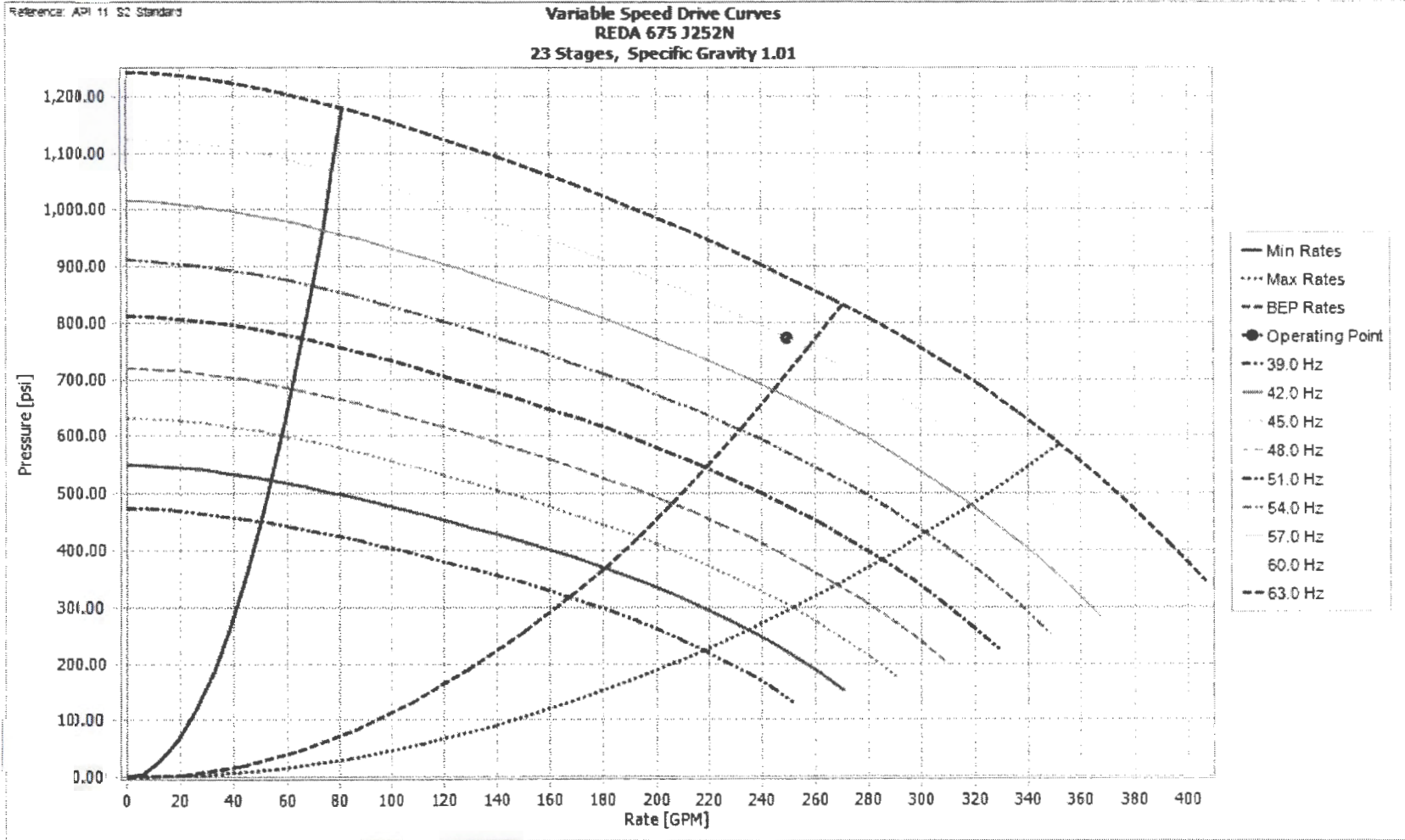
Company: SubSurface Group
Engineer: Jay Wallace

Project: HPS Design
Date: 5/2/2013

NPSHr Actual Pump Curve



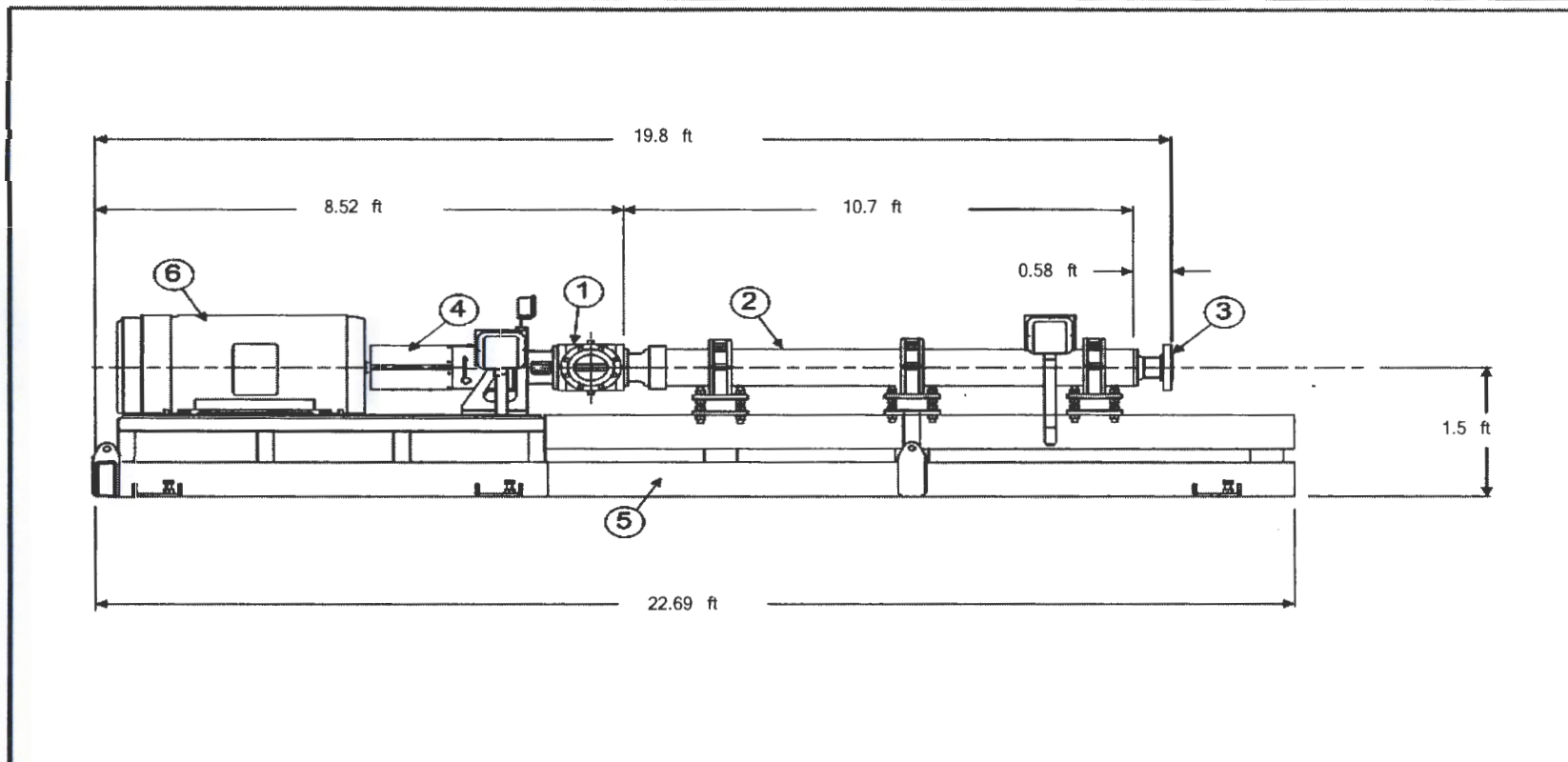
VSD Curves Plot



Company: SubSurface Group
 Engineer: Jay Wallace

Project: HPS Design
 Date: 5/2/2013

Skid Diagram



Parts List				For quotation purposes only. this drawing contains estimated dimensions and weights. Drawing not to scale. DO NOT CERTIFY	Confidential and trade secret. Do not disclose or reproduce without prior written approval from Manufacturer	SubSurface Group	
Item	Description					HPS Design	
1	Intake Flange:	6 in	ANSI	600	Design Data		
2	Pump:	Stage 23	J252N		Designed By:	Jay Wallace	Length: 19.8 ft
3	Discharge Flange:	4 in	ANSI	1500	Approved By:		Width: 3.25 ft
4	Thrust Camber:	Bearing 2	5000 lbf		Date:	5/2/2013	Weight: 0 lbf
5	Skid Assembly:	LD	Clamps 3		Rede-HPS		
6	Motor:	300 hp	TEFC	460 Volts			

Chavez, Carl J, EMNRD

From: Holder, Mike <Mike.Holder@hollyfrontier.com>
Sent: Tuesday, June 25, 2013 10:57 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike; 'Jerry Taylor'
Subject: FW: Minor Modification Letter to NM OCD for Booster Pumps
Attachments: Navajo Figures_20130624150452.pdf; PID Codes for Navajo Booster Pump Figures.docx

Carl – please see below & attached and let us know if this meets your needs or if you need more info. Thanks, Mike

Could you send a diagram of the existing pumps back at the refinery interconnected with the booster pumps?

Figure 4 has been prepared to present the existing pumps at the refinery interconnected with the booster pumps to be installed at each of the three injection wells.

Also, the code definitions for the booster pump diagrams would be appreciated to understand the codes in the diagrams, i.e., FT, FE, ZSC, VFD, VSH, TT, PT, PSL, PSV, VSHH, etc.

Figures 1 through 3 have been updated to remove the PSV notation which is not applicable for this application. A listing of the codes presented on Figures 1 through 5 is provided.

Any concerns about the pump discharge pressure and fiberglass inlet lines or will the lines be carbon steel at the outlet of the booster pumps into the well?

The underground fiberglass piping connects the existing pumps at the refinery to each of the three well sites. The piping changes to steel when it rises above ground level at each well site. This steel piping will be attached to the new booster pump. The piping from the booster pump to the wellhead will also be steel piping.

----- Original message -----

Subject:RE: Minor Modification Letter to NM OCD for Booster Pumps
From:"Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
To:"Holder, Mike" <Mike.Holder@hollyfrontier.com>
Cc:

Mike:

Hi. Could you send a diagram of the existing pumps back at the refinery interconnected with the booster pumps. Also, the code definitions for the booster pump diagrams would be appreciated to understand the codes in the diagrams, i.e., FT, FE, ZSC, VFD, VSH, TT, PT, PSL, PSV, VSHH, etc.

Any concerns about the pump discharge pressure and fiberglass inlet lines or will the lines be carbon steel at the outlet of the booster pumps into the well?

Thanks and have a great weekend!

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>

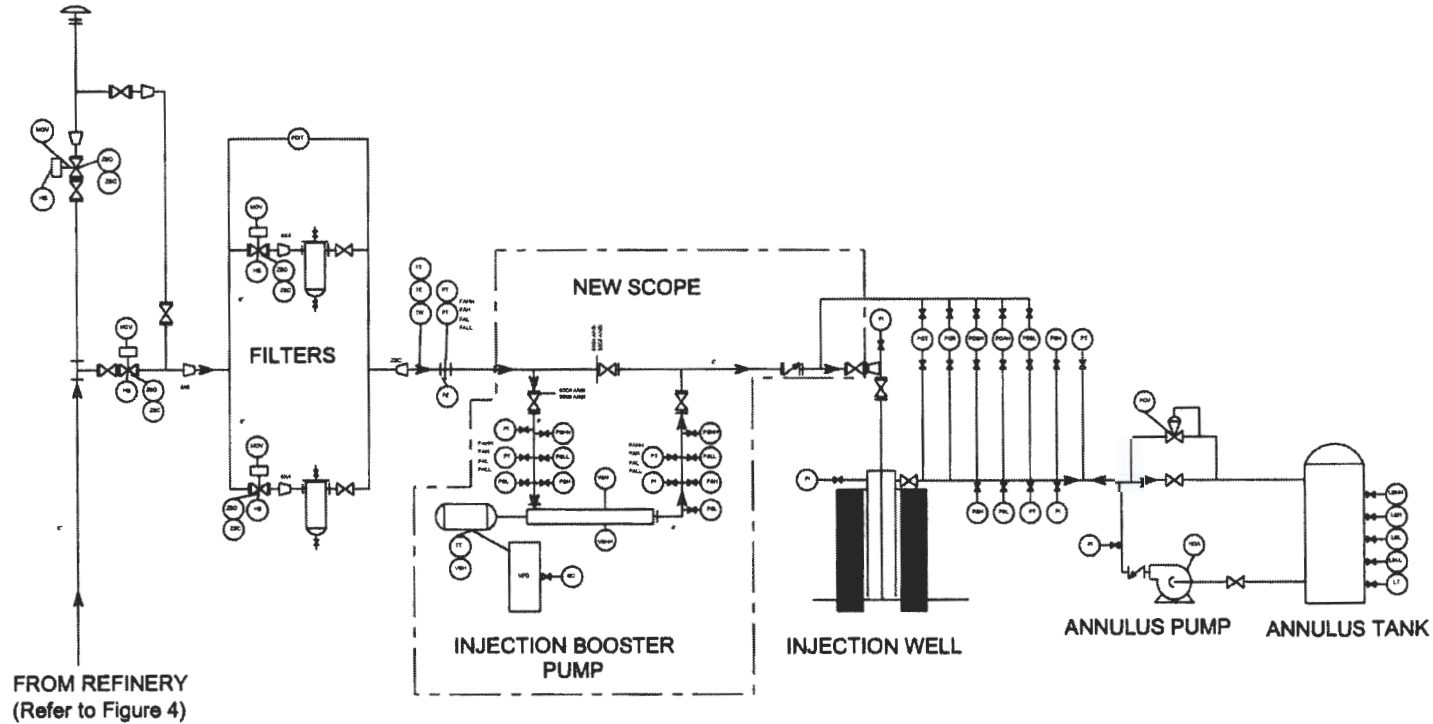
“Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?” To see how, please go to: “Pollution Prevention & Waste Minimization” at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]
Sent: Friday, June 21, 2013 4:08 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: Minor Modification Letter to NM OCD for Booster Pumps

Carl – fyi – this went out and you should receive next week. As always, please don't hesitate to call w/questions. Thanks and have a great weekend! Mike

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

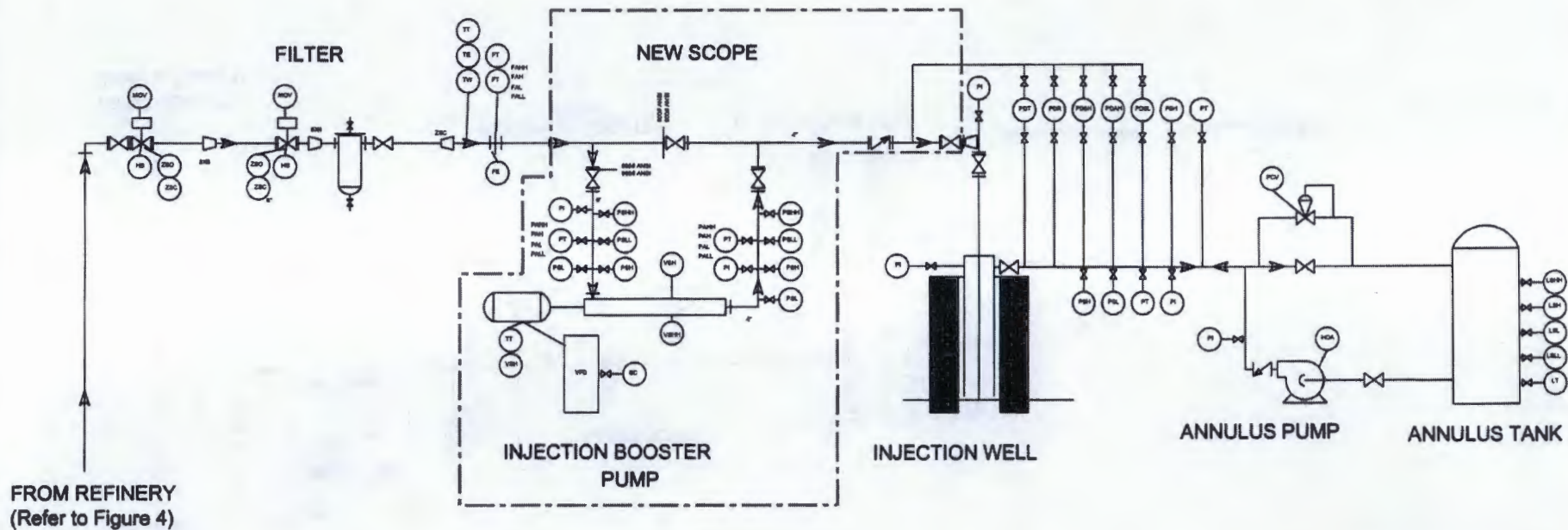
PIG RECEIVER



NOTE: All existing except as noted in red box. The 600 # ANSI flange on wellhead will be changed to 900 # ANSI.
 Booster pump installed on concrete pad with secondary containment to preclude release to environment.


NOT TO SCALE

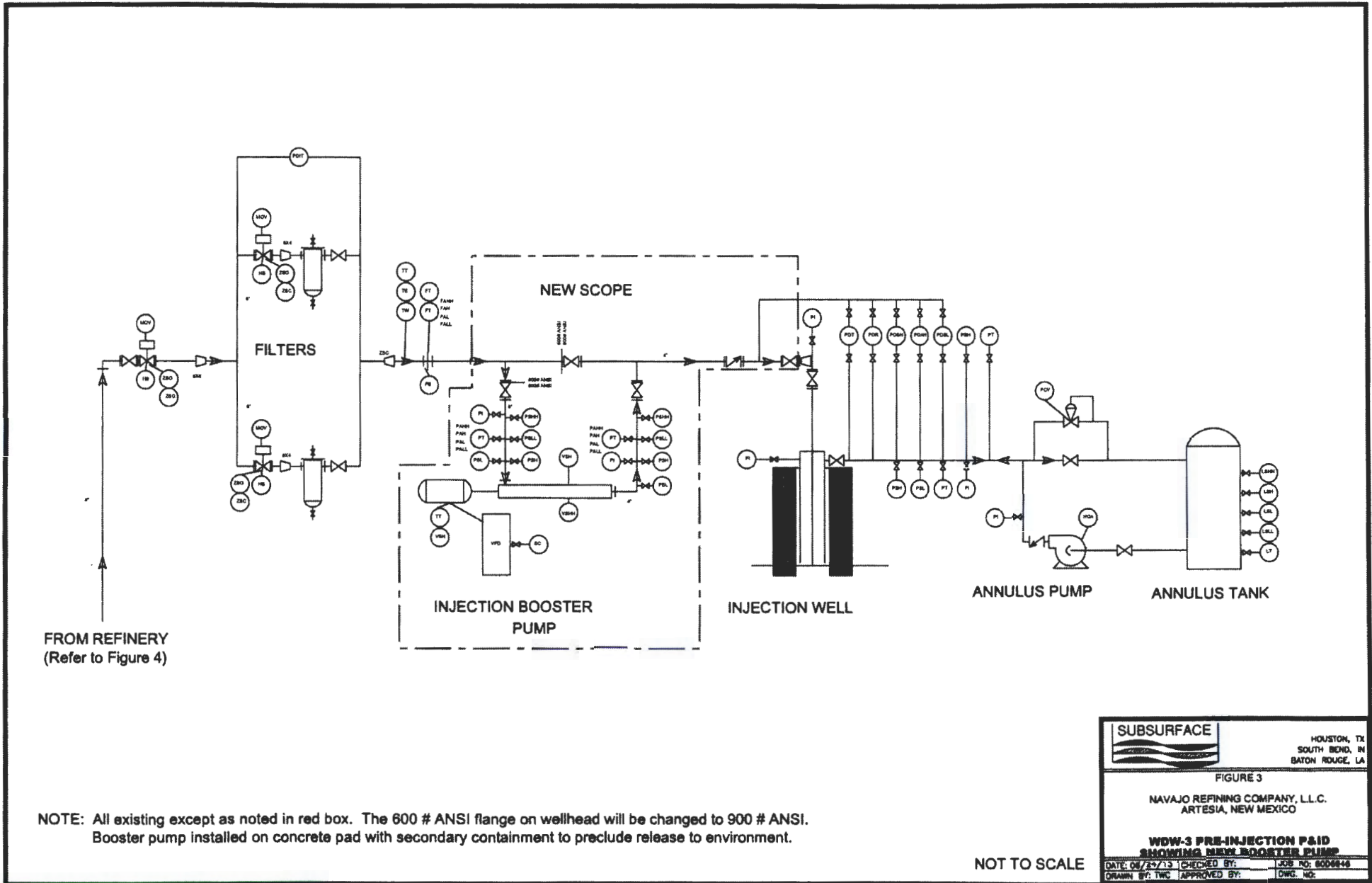
	HOUSTON, TX
	SOUTH BEND, IN
	BATON ROUGE, LA
FIGURE 1	
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO	
WDW-1 PRE-INJECTION P&ID SHOWING NEW BOOSTER PUMP	
DATE: 06/24/13	CHECKED BY:
DRAWN BY: TWC	APPROVED BY:
JOB NO: 5006946	DWG. NO:



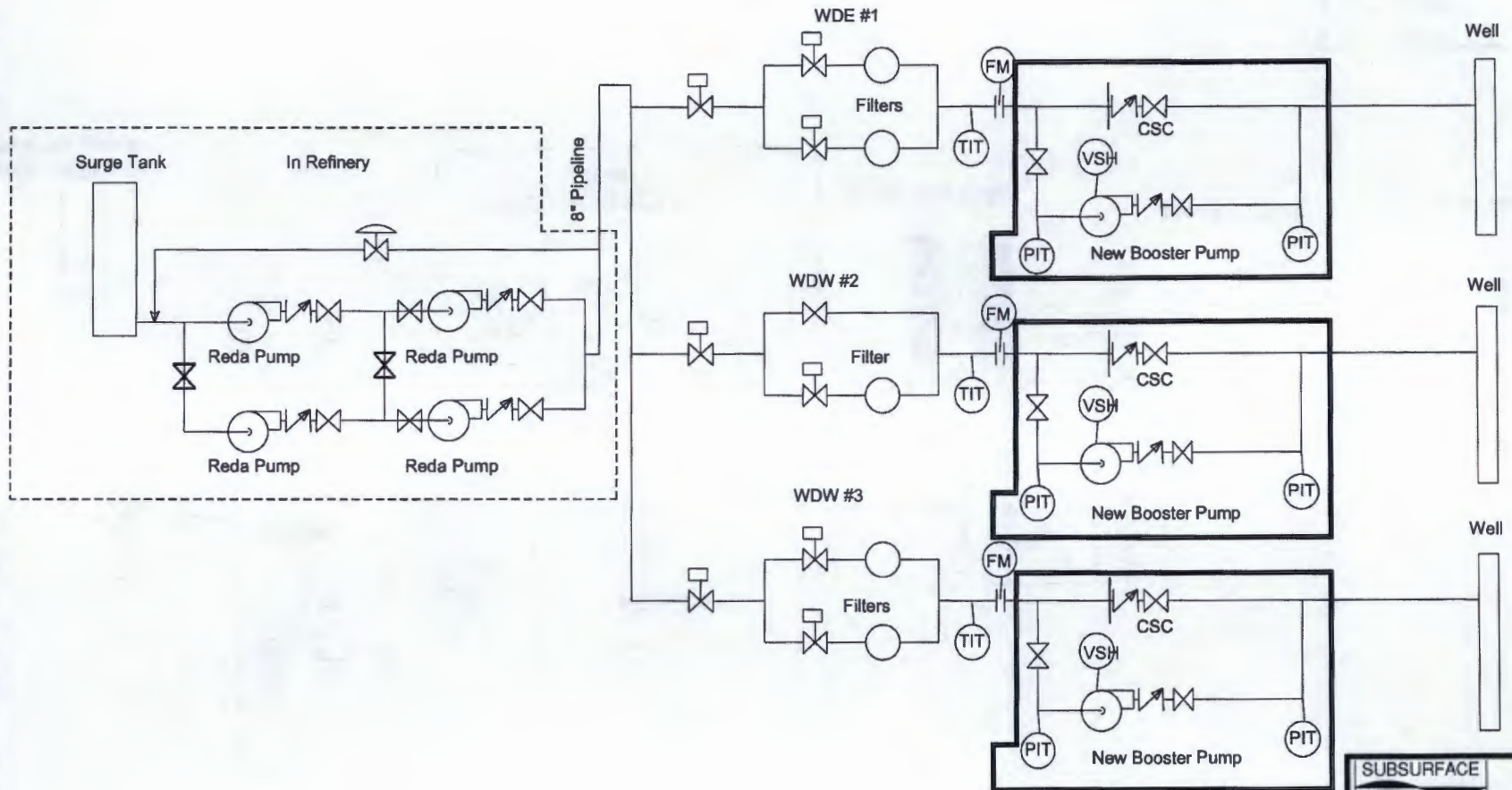
NOTE: All existing except as noted in red box. The 600 # ANSI flange on the wellhead will be changed to 900 # ANSI.
Booster Pump installed on concrete pad with secondary containment to preclude release to environment.

NOT TO SCALE

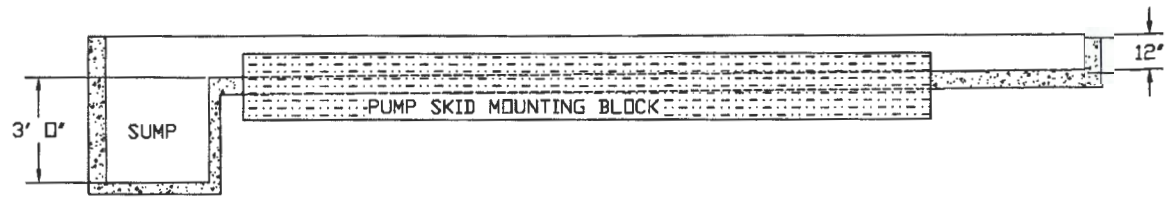
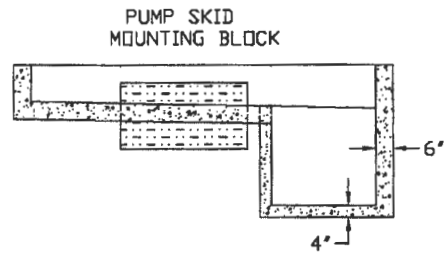
		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
FIGURE 2		
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO		
WDW-2 PRE-INJECTION P&ID SHOWING NEW BOOSTER PUMP		
DATE: 08/24/13	APPROVED BY:	JOB NO: 8008945
DRAWN BY: TWC	CHECKED BY:	DWG NO:



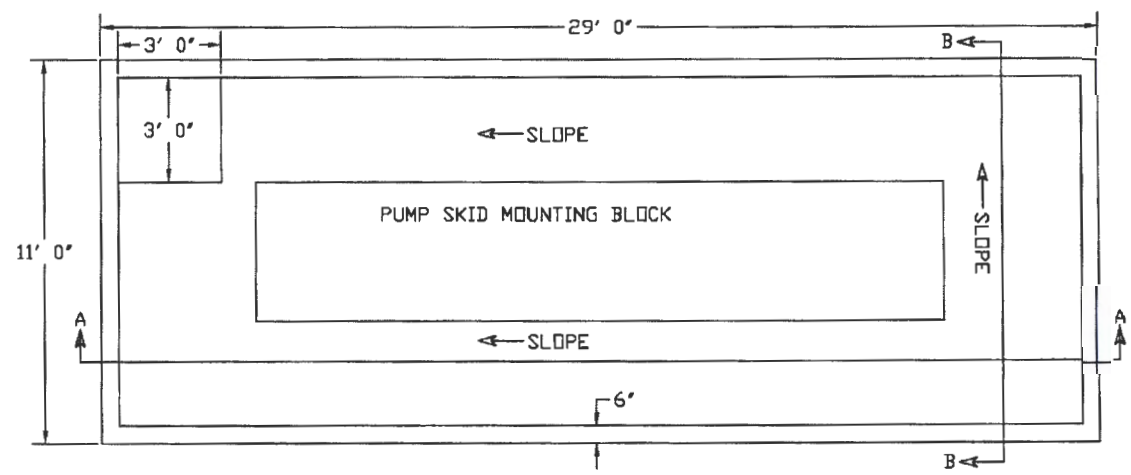
	HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA	
	FIGURE 3	
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO		
WDW-3 PRE-INJECTION P&ID SHOWING NEW BOOSTER PUMP		
DATE: 04/29/13	CHECKED BY:	JOB NO: 8008846
DRAWN BY: TWC	APPROVED BY:	DWG. NO:



SUBSURFACE		HOUSTON, TX
		SOUTH BEND, IN
		BATON ROUGE, LA
FIGURE 4		
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO		
P&ID OF PUMPS AT REFINERY AND NEW BOOSTER PUMPS		
DATE: 05/25/13	CHECKED BY:	JOB NO: 6006946
DRAWN BY: WC	APPROVED BY:	DWG. NO:



NOTE:
PUMP SKID MOUNTING BLOCK
DIMENSIONS NOT YET DETERMINED



SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
FIGURE 5		
NAVAJO REFINING COMPANY, L.L.C. ARTESA, NEW MEXICO		
BOOSTER PUMP PAD WITH SECONDARY CONTAINMENT		
DATE: 06/24/13	CHECKED BY:	JOB NO: 6006946
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

P&ID CODES

- PCV Pressure Control Valve
- PI Pressure Indicator (pressure gauge)
- PIT Pressure Indicating Transmitter
- PSH Pressure Switch High
- PSHH Pressure Switch High High (Shutdown)
- PSL Pressure Switch Low
- PSLL Pressure Switch Low Low (Shutdown)
- PDT Pressure Differential Transmitter
- PDR Pressure Differential Recorder
- PDSH Pressure Differential Switch High
- PDAH Pressure Differential Alarm High
- PDSL Pressure Differential Switch Low
- PSH Pressure Switch High
- PSHH Pressure Switch High High (Shutdown)
- PSLL Pressure Switch Low Low (Shutdown)
- PT Pressure Transmitter
- PSV Pressure Safety Valve is not valid for this application and has been removed from the attached updated P&IDs
- SC Speed Control
- TE Temperature Element
- TIT Temperature Indicating Transmitter

P&ID CODES

- FAH Flow Alarm High
- FAHH Flow Alarm High High (Shutdown)
- FAL Flow Alarm Low
- FALL Flow Alarm Low Low (Shutdown)
- FE Flow Element (in this case, an orifice plate)
- FM Flow Meter
- FT Flow Transmitter
- HOA Hand-Off-Automatic (Switch)
- HS Hand Switch
- LSHH Level Switch High High (Shutdown)
- LSH Level Switch High
- LSL Level Switch Low
- LSL Level Switch Low Low (Shutdown)
- LT Level Transmitter
- MOV Motor Operated Valve
- PAH Pressure Alarm High
- PAHH Pressure Alarm High High (Shutdown)
- PAL Pressure Alarm Low
- PALL Pressure Alarm Low Low (Shutdown)

P&ID CODES

- TT Temperature Transmitter
- TW Thermowell
- VFD Variable Frequency Drive
- VFD Variable Frequency Drive
- VSD Variable Speed Drive
- VSH Vibration Switch High
- VSHH Vibration Switch High High (Shutdown)
- ZSC Limit Switch Closed Indication
- ZSO Limit Switch Open Indication

Note: HH and LL designation means shutdown instead of alarm devices which are designated as H and L

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, November 06, 2012 7:12 AM
To: Schultz, Michele (Michele.Schultz@hollyfrontier.com)
Cc: VonGonten, Glenn, EMNRD
Subject: Affidavit of Publication for WDW-3 Permit Renewal (UICI-008-0)

Micki:

The New Mexico Oil Conservation Division is in receipt of the above subject Affidavit.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>

“Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?” To see how, please go to: “Pollution Prevention & Waste Minimization” at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>



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2012 NOV -2 P 1

October 31, 2012

Mr. Carl J. Chavez
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Certified Mail/Return Receipt
7011 3500 0001 4786 3422

RE: Affidavit of Publication for WDW-3 Permit renewal
Navajo Refining Co. LLC

Dear Mr. Chavez:

In accordance with Section D of 20.6.2.3108 NMAC Public Notice and Participation, Navajo Refining Company is submitting the Affidavit of Publication for the public notice requirements indicated in Section C for our Class 1 Injection Well Discharge Permit WDW-3. The Notice was published on October 5, 2012.

If you have questions regarding this submittal, please contact me by email at micki.schultz@hollyfrontier.com, or by phone at 575-746-5281.

Cordially,


Micki Schultz, P.E., CHMM
Environmental Specialist

Attachments

Env. File: WDW-3 UIC Permit Renewal (REF.ART.12-4.A.02.D)

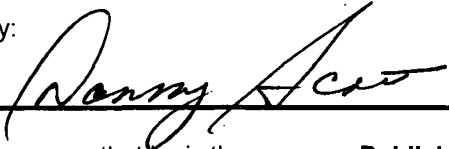
Affidavit of Publication

NO. _____

STATE OF NEW MEXICO

County of Eddy:

Danny Scott



being duly sworn, says that he is the Publisher

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

Display Ad

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for 1 Consecutive weeks/days on the same day as follows:

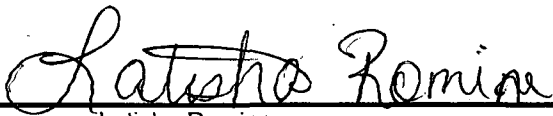
First Publication	<u>October 5, 2102</u>
Second Publication	_____
Third Publication	_____
Fourth Publication	_____
Fifth Publication	_____

Subscribed and sworn to before me this
29th day of October 2012



OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2015



Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

PUBLIC NOTICE
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to renew the New Mexico Oil Conservation Division (OCD) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant into a Class I (nonhazardous) injection well WDW-3 (API# 30-015-26575). The WDW-3 is located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The WDW-3 is located approximately 14 miles E-SE of the intersection of I-285 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225. The Artesia Refinery is located at 501 E. Main Street, Artesia, New Mexico.

Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery.

Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations within the injection interval from 7,660 to 8,620 feet (log depth). The injection rate into WDW-3 will not exceed 500 gpm and the maximum allowable surface injection pressure of 1530 psig. The injected refinery waste water quality is approximately 3,400 mg/L total dissolved solids (TDS). Formation fluids within the permitted injection interval exceed 10,000 mg/L TDS. Groundwater is first encountered in the area of WDW-3 at a depth range of approximately 50 to 150 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the New Mexico Oil Conservation Division. Comments and inquiries on regulations should be directed to:

Director
 New Mexico Oil Conservation Division
 1220 South St. Francis Drive
 Santa Fe, New Mexico 87505
 Telephone: (505) 476-3440

When corresponding, please reference the name of the applicant and the well name.

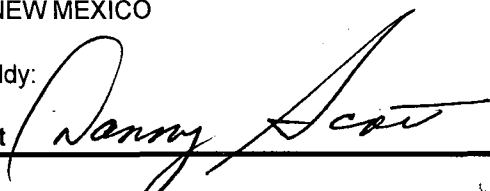
Affidavit of Publication

NO. _____

STATE OF NEW MEXICO

County of Eddy:

Danny Scott



being duly sworn, says that he is the Publisher

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

Display Ad

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for 1 Consecutive weeks/days on the same

day as follows:

First Publication	October 5, 2102
Second Publication	
Third Publication	
Fourth Publication	
Fifth Publication	

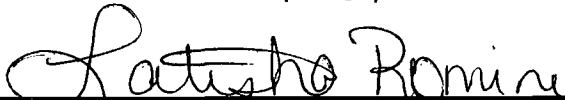
Subscribed and sworn to before me this

29th day of October 2012



OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2015



Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

AVISO PUBLICO
ESTADO DE NUEVO MEXICO
DEPARTAMENTO DE ENERGIA, MINERALES Y RECURSOS NATURALES
DIVISION DE CONSERVACION DE PETROLEO

Por medio de la presente, Navajo Company anuncia que de conformidad con los requisitos de las regulaciones de la Comisión de Control de Calidad del Agua de Nuevo México 20.6.2.3108.F NMAC, a la División de Conservación del Petróleo de Nuevo México (NMOCD), Departamento del Medio Ambiente, un permiso de descarga para la inyección aguas residuales de la planta Artesia de Navajo Refining Company, en el pozo de inyección de denominación WDW-3 (API#30-015-26575). El pozo WDW-3 está localizado en SE/4, SW/4 de Sección 1, Municipio 18 sur, Condado Eddy, Nuevo México. El WDW-3 está localizado aproximadamente a 14 millas E-SE de la intersección de I-285 y Hwy 82 (Refinería Artesia), o aproximadamente 2.75 millas S de Hwy. 82 y CR-225. La Refinería Artesia se encuentra ubicada en 501 E. Main Street, Artesia, Nuevo México.

La generación de aguas residuales de la Refinería Artesia es el resultado del agua que se encuentran en el abastecimiento de crudo, el agua que se usa para el enfriamiento y calentamiento, el agua que se usa para retirar las sales del abastecimiento de crudo, y para purgar la caldera.

Las aguas residuales de WDW-3 se inyectarán hacia las formaciones de Lower Wolfcamp, Cisco Y Canyon, ubicadas entre 7,660 y 8,620 pies (profundidad de registro). La tasa de inyección de WDW-3 no excederá los 500 gpm a una presión de inyección que no excederá los 1530 psig. Estas aguas residuales tendrán un contenido de total de sólidos disueltos (TDS) de 3,400 partes por millón. En el área en donde se encuentra el pozo (WDW-3), el agua subterránea se encuentra a una profundidad de 50 a 150 pies con un TDS de 1,500 a 2,200 partes por millón.

Personas interesadas en obtener mayores informes, presentar sus comentarios o solicitar que se les incluya en las listas de direcciones de una planta en especial para futuros avisos pueden ponerse en contacto con el Jefe del Departamento del Medio Ambiente de la División de Conservación de Petróleo de Nuevo México.

Por favor enviar comentarios y preguntas a:
Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Teléfono: (505) 476-3440

Por favor incluir como referencia el nombre del aplicante y denominación del pozo.

RECEIVED OGD
OCT 19 P 12:39

THE SANTA FE
NEW MEXICAN
Founded 1849

NM EMNRD OIL CONSERV
1220 S ST FRANCIS DR
Leonard Lowe
SANTA FE NM 87505

ALTERNATE ACCOUNT: 56689
AD NUMBER: 00380430 ACCOUNT: 00002212
LEGAL NO: P.O. #:
193 LINES 1 TIME(S) 199.00
AFFIDAVIT: 0.00
TAX: 16.29
TOTAL: 215.29

all to pay
and [signature]
10/19/2012

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO
COUNTY OF SANTA FE

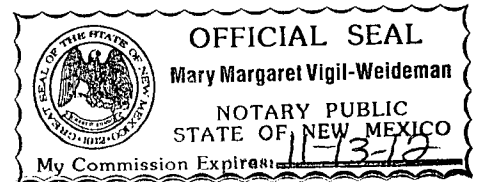
I, V. Wright, being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily newspaper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication # a copy of which is hereto attached was published in said newspaper 1 day(s) between 10/17/2012 and 10/17/2012 and that the notice was published in the newspaper proper and not in any supplement; the first date of publication being on the 17th day of October, 2012 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

/s/ *V. Wright*
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 17th day of October, 2012

Notary *Mary Margaret Vigil Weideman*

Commission Expires: *11-13-2012*



NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES

DEPARTMENT OF OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to Water Quality Control Commission Regulations (20.6.2.3106 NMAC) the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division (OCD), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, and Telephone (505) 476-3440: (UICI-008-0) Navajo Refining Company, L.L.C. Michael G. McKee, Vice President and Refinery Manager, 501 East Main Street, P.O. Box Drawer 159, Artesia New Mexico 88211-0159, has submitted an application for a Class I (non-hazardous) Injection Well Discharge Permit for injection well WDW-3 (API# 30-015-26575) located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The injection well is located approximately 10.5 miles S-SE of the intersection of I-285 and Hwy 82 or, approximately 2.75 miles S of Hwy 82 and CR-225. Oil field exempt and non-exempt non-hazardous industrial waste, will be transported about 12 miles underground from the Navajo-Artesia Refinery located at 501 E. Main Street, Artesia, NM via a 6 inch dia. pipeline to WDW-3 for disposal into the Lower Wolfcamp, Cisco, and Canyon Formations in the injection interval from 7660 to 8620 feet (log depth). The injection rate will not exceed 500 gpm at a maximum surface injection pressure of 1530 psig. The injected waste fluid contains approximately 3,400 mg/L total dissolved solids (TDS). Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth range of between 50 to 150 feet below the ground surface, with a concentration range of between 1500 to 2200 mg/L TDS. The discharge permit addresses well construction, operation, monitoring of the well, associated surface facilities, and

provides a contingency plan in the event of accidental spills, leaks, and other accidental discharges in order to protect fresh water. Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site <http://www.emnrd.state.nm.us/ocd/>. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed

permit based on available information, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the application along with information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energía, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Dorothy Phillips, 505-476-3461). DONE at Santa Fe, New Mexico, on this 11th day of October 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

PUB: 10-17-12
LEGAL: 94073

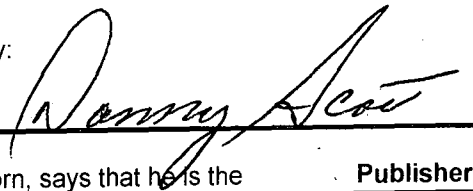
Affidavit of Publication

NO. 22336

STATE OF NEW MEXICO

County of Eddy:

Danny Scott



being duly sworn, says that he is the Publisher

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

Legal Notice

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/days on the same

day as follows:

First Publication October 12, 2102

Second Publication _____

Third Publication _____

Fourth Publication _____

Fifth Publication _____

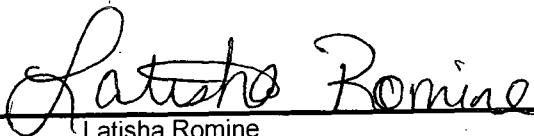
Subscribed and sworn to before me this

12th day of October 2012



OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2015



Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

LEGAL NOTICE

NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

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Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site <http://www.emnrd.state.nm.us/ocd/>. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice; during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

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Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips; 505-476-3461).

DONE at Santa Fe, New Mexico, on this 11th day of October 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

Published in the Artesia Daily Press, Artesia, N.M., Oct. 12, 2012. Legal No 22336.

Handwritten signature and date: 10/18/12

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, October 18, 2012 7:56 AM
To: 'Schultz, Michele'
Subject: RE: WDW-3 Public Notice 10/5

Micki:

Good morning. Let me know if you receive any public comments before COB 11/5.

OCD will issue a final approval within 15 days of 11/5 or by 11/20.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>

“Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?” To see how, please go to: “Pollution Prevention & Waste Minimization” at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

From: Schultz, Michele [<mailto:Michele.Schultz@hollyfrontier.com>]
Sent: Wednesday, October 17, 2012 7:30 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD
Subject: RE: WDW-3 Public Notice 10/5

Carl – I already sent you a certified letter with the affidavit of mailing, the list of a single property owner (BLM), and a proof sheet from the newspaper. Under Section C as agreed in the application, we are not required to post. It is my understanding that this completes our requirements for public and OCD notification.

Micki Schultz, P.E., CHMM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)
micki.schultz@hollyfrontier.com

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Tuesday, October 16, 2012 4:32 PM
To: Schultz, Michele
Cc: VonGonten, Glenn, EMNRD
Subject: WDW-3 Public Notice 10/5

Micki:

Good afternoon. OCD has received the public notice from the Artesia Newspaper today.

Since it posted 10/5, Navajo Refining Company LLC's (NRC) 30-day public comment period ends around COB on Monday 11/5. OCD's public notice posted on its website on 10/1 and Artesia Newspaper on 10/12. The 30-day public comment period will end around COB Monday 11/12.

Within 15-days of the end of NRC's public comment period, it must submit proof of notice (affidavit of mailings and list of property owners, proof of publication, an affidavit of posting) to the OCD for final approval.

If there are no public comments or requests for hearing, the OCD may issue a final discharge permit.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department

Oil Conservation Division, Environmental Bureau

1220 South St. Francis Drive, Santa Fe, New Mexico 87505

Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

Website: <http://www.emnrd.state.nm.us/ocd/>

"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at

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CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.



HOLLYFRONTIER
THE HOLLYFRONTIER COMPANIES

RECEIVED OCD

2012 OCT 15 P 12:43

October 10, 2012

Mr. Carl J. Chavez
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Certified Mail/Return Receipt

7011 3500 0001 4786 3378

RE: Notice of completion of Public Notice requirements for WDW-3 Permit renewal
Navajo Refining Co. LLC

Dear Mr. Chavez:

In accordance with Section D of 20.6.2.3108 NMAC Public Notice and Participation, Navajo Refining Company is submitting proof of notice for the public notice requirements indicated in Section C for our Class 1 Injection Well Discharge Permit WDW-3. Enclosed are copies of the Certified Mail returned receipt for the notice mailed to the Bureau of Land Management, and the notices in English and Spanish on page 10 of the Artesia Daily Press of October 5, 2012. The Bureau of Land Management is the owner of the property that well WDW-3 is located on, as well as landowner of the surrounding property.

If you have questions regarding this submittal, please contact me by email at micki.schultz@hollyfrontier.com, or by phone at 575-746-5281.

Cordially,

Micki Schultz, P.E., CHMM
Environmental Specialist

Attachments

Env. File: WDW-3 UIC Permit Renewal (REF.ART.12-4.A.02.D)

Obituary



Charlene Haynie in Post, Texas. She married Bobby Lee Beard on Jan. 6, 1964.

She worked in the medical field for 45-plus years for Dr. Carl Page and, later, Covenant Hospital prior to her retirement.

Survivors include her daughter, Shani Thomas, of Artesia; son Kannon Beard of Lubbock; mother Charlene Haynie of Lubbock; two grandsons that knew her as Grammy, Jerad Thomas of Lubbock and Jordan Thomas of Houston, Texas; sister Lana Young of Los Angeles, Calif.; two nephews, Wade Donon Young of Los Angeles and Brandon Young and wife Elizabeth of Levelland, Texas; and five special friends, John, Sarah, Mokley, Marley and Maddux Bigalow, all of Lubbock.

Janene Beard
A memorial service is scheduled for 2 p.m. Monday, Oct. 8, at South Plains Church of Christ in Lubbock, Texas, for Janene Beard of Lubbock.

She was preceded in death by the love of her life for 45 years, Bob, and her father.

Arrangements are under the direction of Resthaven Funeral Home of Lubbock. Condolences may be expressed online at www.resthavenfuneralhome.com.

Convicted killer from 2008 escape is arrested in Mexico

CLOVIS (AP) — Federal authorities say a convicted killer who escaped from a New Mexico prison in 2008 has been arrested in Mexico. The U.S. Marshals Service says Edward Salas was taken into custody Thursday in Chihuahua City, Chihuahua. They are now seeking his extradition to New Mexico.

Salas was born on the list of the Marshals Service's 15 most wanted fugitives since last December.

Authorities say he escaped from the Curry County Detention Center in Clovis in August 2008. He was later spotted in Texas, but had been on the run ever since.

At the time of his escape, Salas was serving a life sentence plus 56 years for his role in the murder of Carlos Perez on Sept. 5, 2005.

Third

(Continued from Page 9)
A Baptist with a Southern drawl who held Virginia political office for more than three decades, Goode presents himself as "a real difference between Romney and Obama."

Elsewhere, Johnson is the one to watch, though he could pose difficulties for both major party contenders.

The handyman-turned-politician proudly brags of setting vet records to block spending during two terms as governor. Occasionally donning a peace-sign shirt under his blazer, Johnson has Mittized college campuses with a message aimed at the anti-war, pro-drug legalization crowd that Texas Rep. Ron Paul cultivated in his GOP presidential run. Paul took a respectable share of the vote in Colorado, Iowa, New Hampshire and Nevada.

Paul has yet to endorse anyone in the race, and may not. Meanwhile, Romney has tried to heal fractures between Paul

loyalists and the Republican old guard by deploying his former rival's son, Sen. Rand Paul of Kentucky, to campaign events.

New Hampshire state Sen. Andy Sanborn, an adviser to the elder Paul, said Johnson could score with voters at Romney's expense.

"That type of a libertarian candidate will always do well here. I'm hoping frankly that the race isn't close enough that Mr. Johnson will have a material impact in it," said Sanborn, who said he planned to vote for Romney.

Johnson considers himself a headache for both Obama and Romney.

"I'm more conservative than Romney on dollars and cents. I'm more liberal than Obama when it comes to social issues," he said in an interview with The Associated Press.

Johnson's support for gay marriage, eased immigration and a scaling back of government search powers authorized

Public Record

ARTESIA POLICE DEPARTMENT
Oct. 5
ALARM

3:16 a.m. — Officer dispatched to 201 E. Hermosa Drive in reference to a burglar alarm.

PUBLIC ASSIST
4:59 a.m. — Officer dispatched to the 700 block of North 13th Street in reference to a public assist.

DOMESTIC
5:19 a.m. — Officer dispatched to the 500 block of South 20th Street in reference to a domestic dispute.

ARREST
11:00 a.m. — Larry Troublefield Jr., 44, of Lakewood, arrested on a district warrant.

ALARM
7:22 a.m. — Officer dispatched to 1102 W. Quay Ave. in reference to an audible alarm.

VANDALISM
8:08 a.m. — Officer dispatched to 1010 W. Missouri Ave. in reference to vandalism. A report was taken.

VANDALISM
8:11 a.m. — Officer dispatched to 1016 W. Chisum Ave. in reference to vandalism. A report was taken.

LARCENY
8:21 a.m. — Officer dispatched to 117 N. Osborn Ave. in reference to larceny. A report was taken.

VANDALISM
8:34 a.m. — Officer dispatched to 1301 S. Eighth St. in reference to vandalism. A report was taken.

ALARM
8:37 a.m. — Officer dispatched to 510 E. Richey Ave. in reference to a panic alarm.

No report was taken.
RECKLESS DRIVING
8:34 a.m. — Officer dispatched to Seven Rivers Highway in reference to reckless careless driving, racing.

WANTED SUBJECT
10:51 a.m. — Officer dispatched to 3300 W. Main St. in reference to a wanted subject. An arrest was made.

VANDALISM
10:58 a.m. — Officer dispatched to 801 W. Washington Ave. in reference to vandalism. A report was taken.

LARCENY
11:01 a.m. — Officer dispatched to 1001 N. 15th St. in reference to larceny. A report was taken.

VANDALISM
11:26 a.m. — Officer dispatched to 806 W. Camper Drive in reference to vandalism. A report was taken.

ALARM
2:47 p.m. — Officer dispatched to 1311 W. Main St. in reference to a burglar alarm. No report was taken.

WANTED SUBJECT
4:59 p.m. — Officer dispatched to 3300 W. Main St. in reference to a wanted subject.

RECKLESS DRIVING
7:33 p.m. — Officer dispatched to South 28th Street and West Missouri Avenue in reference to reckless driving, racing. No report was taken.

LOST ITEM
7:55 p.m. — Officer dispatched to The Wellbuck Restaurant and Brewpub in reference to a lost item.

LARCENY
10:11 p.m. — Officer dispatched to 2601 W. Main St. in reference to larceny.

Service Notice

Mary Louise Grbac
Services are scheduled for 9:30 a.m. Tuesday, Oct. 9, at St. Anthony's Catholic Church for Mary Louise Grbac of 1104 S. Sears Ave., Artesia.

Grbac, 87, passed away Wednesday, Oct. 3, 2012, at her home. Fr. Brian Guerrini, S.S.C.C., will officiate at the services, with interment to follow at Woodbine Cemetery.

Visitation will begin at 5 p.m. Monday at St. Anthony's. A rosary will be recited at 6:30 p.m. Monday at the church. Arrangements are under the direction of Terpening & San Murrary. A full obituary will be published in Sunday's edition of the Daily Press.

Stay in the loop online!
[www.facebook.com/ArtesiaNews & ArtesiaBulldogSports](http://www.facebook.com/ArtesiaNews&ArtesiaBulldogSports)

PUBLIC NOTICE
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
In accordance with 20.6.2.310B.F.NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to permit the New Mexico Oil (NMO) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant into a Class I (non-hazardous) injection well WDW-3 (APR# 30-015-26575). The WDW-3 is located in the SE4, SW4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The WDW-3 is located approximately 14 miles E-SE of the intersection of I-25 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225. The Artesia Refinery is located at 501 E. Main Street, Artesia, New Mexico. Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery. Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations within the injection interval from 7,880 to 8,820 feet (top depth). The injection rate into WDW-3 will not exceed 500 gpm and the maximum allowable surface injection pressure is 1530 psig. The injected refinery waste water quality is approximately 3,400 mg/l total dissolved solids (TDS). Formation fluids within the permitted injection interval exceed 10,000 mg/l TDS. Groundwater is not encountered in the area of WDW-3 at a depth range of approximately 50 to 150 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/l TDS. Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Enforcement Bureau Chief of the New Mexico Oil Conservation Division. Comments and requests on regulations should be directed to: Director, New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505. Telephone: (505) 476-3440. Where corresponding, please reference the name of the applicant and the well name.

AVISO PUBLICO
ESTADO DE NUEVO MEXICO
DEPARTAMENTO DE ENERGIA, MINERALES Y RECURSOS NATURALES
DIVISION DE CONSERVACION DE PETROLEO
Por medio de la presente, Navajo Refining Company anuncia que de conformidad con los requisitos de las regulaciones de la Comisión de Control de Calidad del Agua de Nuevo Mexico, 20.6.2.310B.F.NMAC, a la Division de Conservacion del Petroleo de Nuevo Mexico (NMOCD), Departamento del Medio Ambiente, se permite el descargo para la inyección de aguas residuales de la planta Artesia Navajo Refining Company en el pozo de inyección de clasificación WDW-3 (APR#30-015-26575). El pozo WDW-3 está localizado en SE4, SW4 de Sección 1, Municipio 18 sur, Condado de Eddy, Nuevo Mexico. El WDW-3 está localizado aproximadamente a 14 millas E-SE de la intersección de I-25 y Hwy 82 (Refinería Artesia), o aproximadamente 2.75 millas S de Hwy 82 y CR-225. La Refinería Artesia se encuentra ubicada en 501 E. Main Street, Artesia, Nuevo Mexico. La generación de aguas residuales de la Refinería Artesia es el resultado del procesamiento de petróleo, incluyendo la eliminación de agua que se usa para el refinamiento y calentamiento, el agua que se usa para retirar las sales del ablandamiento de crudo, y para purgar la caldera. Las aguas residuales de WDW-3 se inyectan hacia las formaciones de Lower Wolfcamp, Cisco y Canyon, ubicadas entre 7,880 y 8,820 pies (profundidad de inyección). La tasa de inyección de WDW-3 no excederá los 500 gpm y una presión de inyección que no exceda los 1530 psig. Estas aguas residuales tendrán un contenido de total de sólidos disueltos (TDS) de 3,400 partes por millón. En el área en donde se encuentra el pozo (WDW-3), el agua subterránea se encuentra a una profundidad de 50 a 150 pies con un TDS de 1,500 a 2,200 partes por millón. Personas interesadas en obtener mayores informes, presentar sus comentarios o solicitar que se les incluya en las listas de direcciones de una planta en específico para futuras avisos pueden ponerse en contacto con el Jefe del Departamento del Medio Ambiente de la División de Conservación de Petróleo de Nuevo México. Por favor enviar comentarios y preguntas a: Director, New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505. Teléfono: (505) 476-3440. Por favor incluir como referencia el nombre del aplicante y el nombre del pozo.

Gregg's Foods
Tu Tienda
Richey and North First 746-3401
Mon. thru Sat. 8:00 a.m. to 6:00 p.m. • Sun. 9:00 a.m. to 8:00 p.m.
Master Card • Visa • WIC • Food Stamps • AFDC

Cokes All Flavors 12 pk Can	Asst. Crush Sodas 12 pk Can	Whole Fryers	Shursaving Corn, Peas or Green Beans
79¢ lb	3 for \$12	79¢ lb	59¢
Top Round London Broil	Sirloin End Chops	Bottom Round Steak Family Pack	Boneless New York Strips
\$2.99 lb	99¢ lb	\$2.79 lb	\$6.99
Bone-In Ribeye Steaks			
\$6.99 lb			

WEEKEND SPECIALS
Prices Good Friday, Saturday and Sunday
October 5th, 6th, and 7th

Bud & Bud light Select 18 pk 11.5 oz Cans	Natural Light 18 pk Cans	Shursaving Flour 25 lb bag	Shursaving Tomato Sauce 4 oz can
\$14.49	\$12.49	\$7.99	3 for \$1
Coors, Coors Light, Miller Lite 12 pk cans	Corona, Corona Light 12 pk btls	Shurfin Ketchup 24 oz jar	Large Gala Apples 2 lbs \$3
\$10.99	\$13.99	89¢	10 for \$1
Jim Beam 1.75 Lt	Lord Calvert 1.75 Lt	Sweet Potatoes 2 lbs \$1	Limes 10 for \$1
\$23.99	\$15.99	\$1.19	89¢ each
Black Velvet 1.75 Lt	Jose Cuervo 750 ml	Green Pears	Lettuce
\$15.99	\$19.99	\$1.19	89¢ each
Canadian Mist 1.75 Lt	Jagermeister 750 ml	Potatoes 10 lb bag	
\$24.99	\$24.99	2 for \$5	

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(Domestic Mail Only; No Insurance Coverage Provided)

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OFFICIAL USE

Postage	\$
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Restricted Delivery Fee (Endorsement Required)	

Total

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2012

Sent To Bureau of Land Management
Street, or PO Box 620 E. Greene St.
City, St. Carlsbad, NM 88220

ENU

7011 3500 0001 4786 3361
1933 9814 1000 005E 1101

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, October 11, 2012 8:58 AM
To: 'tod.stevenson@state.nm.us'; Wunder, Matthew, DGF; Allison, Arthur, DIA; Gonzales, Miley; Linda_Rundell@nm.blm.gov; 'psisneros@nmag.gov'; 'r@rthicksconsult.com'; 'sric.chris@earthlink.net'; 'nmparks@state.nm.us'; 'john.dantonio@state.nm.us'; 'peggy@gis.nmt.ed'; 'marieg@nmoga.org'; Fetner, William, NMENV; 'lazarus@glorietageo.com'; Winchester, Jim, NMENV; 'ron.dutton@xcelenergy.com'; 'cgarcia@fs.fed.us'; Kieling, John, NMENV; 'bsg@garbhall.com'; Schoeppner, Jerry, NMENV; 'claudette.horn@pnm.com'; 'ekendrick@montand.com'; 'staff@ipanm.org'; Gonzales, Elidio L, EMNRD; Leking, Geoffrey R, EMNRD; Dade, Randy, EMNRD; Bratcher, Mike, EMNRD; Perrin, Charlie, EMNRD; Kelly, Jonathan, EMNRD; Powell, Brandon, EMNRD; Martin, Ed, EMNRD; 'Seligman@nmoga.org'
Subject: Navajo Refining Company- Underground Injection Control (UIC) Class I (Non-Hazardous) Injection Well (UICI-8-0) Discharge Permit (UICI-8-0) Renewal (Eddy County)

Ladies and Gentlemen:

The New Mexico Oil Conservation Division (OCD) recently posted a draft discharge permit, public notice and administrative completeness letter on its website (click [here](#)) for the above subject facility.

For more information about this facility, please click [here](#).

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>

“Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?” To see how, please go to: “Pollution Prevention & Waste Minimization” at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



SEPTEMBER 25, 2012

Mr. Michael G. McKee
Vice President and Refinery Manager
Navajo Refining Company, L.L.C.
501 East Main
Artesia, New Mexico 88210

**Re: Discharge Permit Renewal Application for Class I non-hazardous waste injection well
(Waste Disposal Well No. 3 (WDW-3) - API No. 30-015-26575) located 790 FSL and
2250 FWL UL: N Section 1, T 18 S, R 27 E, Eddy County, New Mexico**

Dear Mr. McKee:

The Oil Conservation Division (OCD) is in receipt of Navajo Refining Company, L.L.C.'s (NRC) discharge permit renewal application for its UIC Class I non-hazardous waste injection well. After review, OCD has determined that your application is "*administratively complete*" pursuant to New Mexico Water Quality Control Commission regulations (20.6.2.3108 NMAC).

NRC must now provide public notice and demonstrate that it has done so to OCD in a timely manner. OCD will also provide notice to various governmental groups. Depending upon the level of public interest, a hearing may be scheduled on this matter. Regardless, OCD will continue our review of the application and may request additional information.

If you have any questions, please do not hesitate to contact me by phone at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us. On behalf of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review process.

Sincerely,

A handwritten signature in black ink, appearing to read "Carl J. Chavez".

Carl J. Chávez
Environmental Engineer

CJC/cjc

cc: OCD Artesia Office

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to Water Quality Control Commission Regulations (20.6.2.3106 NMAC) the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division (OCD), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, and Telephone (505) 476-3440:

(UICI-008-0) Navajo Refining Company, L.L.C. Michael G. McKee, Vice President and Refinery Manager, 501 East Main Street, P.O. Box Drawer 159, Artesia New Mexico 88211-0159, has submitted an application for a Class I (non-hazardous) Injection Well Discharge Permit for injection well WDW-3 (API# 30-015-26575) located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The injection well is located approximately 10.5 miles S-SE of the intersection of I-285 and Hwy 82 or approximately 2.75 miles S of Hwy 82 and CR-225. Oil field exempt and non-exempt non-hazardous industrial waste, will be transported about 12 miles underground from the Navajo-Artesia Refinery located at 501 E. Main Street, Artesia, NM via a 6 inch dia. pipeline to WDW-3 for disposal into the Lower Wolfcamp, Cisco, and Canyon Formations in the injection interval from 7660 to 8620 feet (log depth). The injection rate will not exceed 500 gpm at a maximum surface injection pressure of 1530 psig. The injected waste fluid contains approximately 3,400 mg/L total dissolved solids (TDS). Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth range of between 50 to 150 feet below the ground surface, with a concentration range of between 1500 to 2200 mg/L TDS. The discharge permit addresses well construction, operation, monitoring of the well, associated surface facilities, and provides a contingency plan in the event of accidental spills, leaks, and other accidental discharges in order to protect fresh water.

Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site <http://www.emnrd.state.nm.us/oed/>. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on available information, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the application along with information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461).

DONE at Santa Fe, New Mexico, on this 25th day of September 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

DISCHARGE PERMIT UICI-008-0 (WDW-3)

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department issues Discharge Permit UICI-008-0 (Discharge Permit) to Navajo Refining Company (Permittee) to operate its Underground Injection Control (UIC) Class I non-hazardous waste injection well (Waste Disposal Well NO. 3 - API No. 30-015-26575) located 790 FSL and 2250 FWL UL: N Section 1, T 18 S, R 27 E, Eddy County, New Mexico at its Disposal Well Facility (Facility). The Facility is located approximately 10.5 miles S-SE of the intersection of I - 285 and Hwy. - 82 or approximately 2.75 miles S of the intersection of Hwy. - 82 and CR-225.

The Permittee is permitted to dispose of only non-hazardous (CRA exempt and RCRA non-hazardous, non-exempt) oil-field waste fluids into its Class I non-hazardous waste injection well. The Permittee may dispose of a maximum of 500 gpm of oil-field waste fluids. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 50 - 10 feet below ground surface and has a total dissolved solids (TDS) concentration of approximately 1,00 - 2,200 mg/L.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class I non-hazardous waste injection wells (See Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (See 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class I non-hazardous waste injection well is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil-field waste, other than non-hazardous oil-field waste fluids into its Class I non-hazardous waste injection well, including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, washdown water, and cooling tower blowdown water. The Permittee may not dispose of any industrial waste fluid that is not generated in the oil-field. The Ground Water Quality Bureau of the New Mexico Environment Department permits the management of all field industrial fluids that are not generated in the oil-field.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.

2. The injection of fluids into a large capacity cesspool is prohibited.
3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.
4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.
5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified in 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class I non-hazardous waste injection wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified at 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous waste fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (See Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required \$100.00 filing fee. The final \$4,500.00 Class I non-hazardous waste injection well signed permit with check made payable to the "Water Quality Management Fund" shall be submitted to the OC on or before the stipulated time period.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **August 3, 2017**. The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (See Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and the OCD's Environmental Bureau of any Facility expansion, any injection increase above the approved pressure limit or volume limit specified in Permit Condition 3.B.2, or process modification that would result in any significant modification in the discharge of water contaminants (See 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class I non-hazardous waste injection well that was approved pursuant to the requirements of this 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

- (a) Noncompliance by Permittee with any condition of this Discharge Permit;
- or,
- (b) The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,
 - (c) A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge

permit modification or termination (See Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

- (a) Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;
- (b) Violation of any applicable state or federal effluent regulations or limitations; or
- (c) Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge. (See Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS I NON-HAZARDOUS WASTE INJECTION WELL DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class I non-hazardous waste injection well discharge permit if:

(a) The OCD Director receives written notice 30 days prior to the transfer date; and,

(b) The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2a shall:

(a) Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgement that the succeeding Permittee shall be responsible for compliance with the Class I non-hazardous waste injection well discharge permit upon taking possession of the facility; and

(b) Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

(c) Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance

immediately or within a specified time period, or assess a civil penalty, or both (See Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (See Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (See Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL: Pursuant to 20.6.2.5207B, the Permittee shall provide analysis of the injected fluids in the annual report to yield data representative of fluid characteristics.

That permit authorizes the Permittee to accept only oil-field wastes that are exempt from RCRA Subtitle C regulations and that do not contain Naturally Occurring Radioactive Material regulated pursuant to 20.3.1.1403 (NORM) and non-hazardous, non-exempt oil-field wastes that do not contain NORM. The Permittee is authorized to accept non-hazardous, non-exempt oil-field wastes on a case-by-case basis only after a hazardous waste determination is made by the generator. The Permittee is authorized to accept non-hazardous, non-exempt oil-field wastes only if those wastes are accompanied by an approved form C-138 (Request for Approval to Accept Solid Waste) and a "Generator Certificate of Waste Status," signed by the generator. The OCD Permit requires the Permittee to determine by analyzing the non-hazardous, non-exempt fluids that the waste fluids are non-hazardous before disposal or injection of the waste fluid into its Class I non-hazardous waste injection well.

The Permittee shall analyze the injected fluids quarterly for the following characteristics:

- pH;
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature; and,
- General ground water quality parameters (general chemistry/cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, total dissolved solids, cation/anion balance, pH, and bromide using the methods specified in 40 CFR 136.3.
- Aromatic and halogenated volatile hydrocarbon scan by EPA Method 8260C GC/MS. Semi-volatile Organics GC/MS EPA Method 8270B including 1 and 2-methylnaphthalene.

- Heavy metals using the ICP scan (EPA Method 6010) and Arsenic and Mercury using atomic absorption (EPA Methods 7060 and 7470).
- EPA RCRA Characteristics for Ignitability, Corrosivity and Reactivity (40 CFR part 261 Subpart C Sections 261.21 – 261.23, July 1, 1992).

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the disposal well. The Permittee shall plug and abandon its Class I non-hazardous waste injection well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. Pre-Closure Notification: Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class I non-hazardous waste injection well. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee;
- Address of Permittee;
- Contact person;
- Phone number;
- Number and type of well(s);
- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.*, sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation; other);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.D. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class I non-hazardous waste injection well, it shall submit to OCD a plugging and abandonment plan that meets the requirements of

20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.E. RECORD KEEPING: The Permittee shall maintain records of all inspections required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.F. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified at 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,
- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use a form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.G. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any effluent before or after discharge; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. Advance Notice: The Permittee shall provide OCD's Environmental Bureau and Artesia District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class I non-hazardous waste injection well.

3. Environmental Monitoring: The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, laboratory Quality Assurance/Quality Control (QA/QC), and Data Quality Objectives (DQOs).

2.H. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class I non-hazardous waste injection well, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required herein above.

2.I. ANNUAL REPORT: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1st** of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well , Name of Permittee, Discharge Permit Number, API number of well, date of report, and person submitting report;
- Summary of Class I non-hazardous waste injection well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103(s);
- Monthly injection/disposal volume, including the cumulative total should be carried over to each year;
- Maximum and average injection pressures;
- A copy of the quarterly chemical analyses shall be included with data summary with all QA/QC and DQO information;
- Copy of any mechanical integrity test chart(s), including the type of test, *i.e.*, duration, gauge pressure, *etc.*;
- Copy falloff test charts;
- Summary tables listing environmental analytical laboratory data for quarterly waste fluid samples. Any 20.6.2.3103 NMAC constituent(s) found to exceed a water quality standard shall be highlighted and noted in the annual report. The Permittee shall include copies of the most recent year's environmental analytical laboratory data sheets with QA/QC summary sheet information in conformance with the National Environmental Laboratory Accreditation Conference (NELAC) and EPA Standards;
- Brief explanation describing deviations from the normal injection operations;
- Results of any leaks and spill reports (include any C-141 reports);
- An Area of Review (AOR) annual update summary;
- A summary with interpretation of MITs, Falloff Tests, *etc.*, with conclusion(s) and recommendation(s);
- Records of the expansion tank monitoring pressure, fluid removals and/or additions indicating the well MIT condition.
- A summary of all major facility activities or events, which occurred during the year with any conclusions and recommendations;
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken;
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and
- The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS I NON-HAZARDOUS WASTE INJECTION WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206B NMAC to ensure that:

1. The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water containing 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class I non-hazardous waste injection well is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall within 24 hours notify OCD's Environmental Bureau and Artesia District Office of the circumstances and action(s) taken. The Permittee shall cease operations until proper repairs are made and it has received approval from OCD to re-start injection operations.

3. Except during well stimulation, the maximum injection pressure shall not initiate new fractures or propagate existing fractures in the injection zone;

4. The annulus between the tubing and the long string of casing shall be filled with a fluid approved by the OCD Director and a pressure, also approved by the OCD Director shall be maintained on the annulus.

3.B. INJECTION OPERATIONS:

1. **Injection Formation, Interval, and Wastewater:** The Permittee shall inject only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil-field waste fluid into the Lower Wolfcamp, Cisco and Canyon Formations from 7,660 feet to 8,620 feet in its Class I non-hazardous waste injection well. The surface casing is set at 400 feet; first intermediate casing is set at 2,604 feet; second intermediate casing or production casing is set at 9,450 feet; tubing is set at approximately 7,568 feet; and packer is set at 7,575 feet. A cement plug is set at 9,022 feet within the production casing, which isolates the injection well from a previous deeper completed production liner set at 10,119 feet. The Permittee shall ensure that the injected waste fluid enters perforations only within the above specified injection interval and is no permitted to escape through the cement plug and/or to other formations or onto the surface.

2. **Well Injection Pressure Limits and Injection Flow Rate:** The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class I non-hazardous waste injection well shall not exceed 1,530 psig and that the injection flow rate shall not exceed 500 gpm.

3. **Pressure Limiting Device:** The Permittee shall equip and operate its Class I non-hazardous waste injection well or system with a pressure limiting device, or equivalent (i.e., Murphy switch), in working condition, which shall, at all times, limit surface injection pressure to the maximum allowable pressure for its Class I non-hazardous waste injection well.

The Permittee shall monitor the pressure-limiting device daily and shall report all pressure exceedances within 24 hours of detecting an exceedance to OCD's Environmental Bureau. The Permittee shall take all steps necessary to ensure that the injected waste fluids enter only the

proposed injection interval and is not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

OCD may authorize a proposed increase in surface injection pressure if the Permittee performs a valid Step-Rate Test (SRT), which demonstrates that the proposed injection pressure is below the injection zone fracture pressure with an acceptable factor of safety. If approvable, the Permittee must obtain a modification to this Discharge Permit pursuant to 20.6.2.3109 NMAC.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

3.D. MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall conduct a mechanical integrity test (MIT) for its Class I non-hazardous waste injection well at least once every five years or more frequently as the OCD Director may require for good cause during the life of the well. The Permittee shall submit an OCD C-103 form for signature approval of specified MIT by the OCD Environmental Bureau with copy to the OCD Artesia Office; and after any well repairs are made, submit 30-days of corrective action(s) follow-up sundry form documentation of corrective action(s). The Permittee may seek MIT guidance from the OCD in advance of Sundry form submittals to facilitate approval of MIT field method(s). The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

An MIT shall also be conducted after well workovers, i.e., when tubing is pulled and/or after packer reseating. The Permittee shall conduct a casing-tubing annulus MIT from the surface to the approved injection depth to assess casing and tubing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface.

A Class I non-hazardous waste injection well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which exceeds OCD Underground Injection Control Program Mechanical Integrity Test (MIT) "Pass/Fail" criteria.

2. The following criteria will determine if the Class I non-hazardous waste injection well has passed the MIT:

- a. **Passes** if zero bleed-off during the test;
- b. **Passes** if recorded well pressure fall-off curve shows end point stabilization or equilibrium within $\pm 10\%$ of the start pressure before end of test, when approved by an OCD inspector;
- c. **Fails** if any final test pressure is greater than $\pm 10\%$ of starting pressure fall-off curve does not stabilize or equilibrate within $\pm 10\%$ of start pressure before the end of test. The

Permittee shall investigate for leaks and demonstrate the mechanical integrity of the well by ensuring that there are no leaks in the tubing, casing or packer, and injected or produced fluids are confined within the well piping and injection zone(s). The Permittee shall not resume injection operations until approved by OCD.

d. When the MIT is not witnessed by OCD and fails, the Permittee shall notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use by the Permittee of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

5. The Permittee shall conduct a Bradenhead test at least annually and each time that it conducts a MIT.

3.E. FALLOFF TEST: The Permittee shall conduct a Falloff Test (FOT) to monitor the injection zone formation characteristics and pressure buildup over time in the injection zone at least every three years. The Permittee shall request FOT approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office.

The Permittee shall run a FOT to determine what changes have occurred in the injection zone over time. The Permittee shall submit the results of its Fall-Off Test to OCD's Environmental Bureau and Artesia District Office within 30 days of completion. The Permittee shall implement its OCD approved FOT Plan when conducting a FOT.

3.F. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's Environmental Bureau prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office.

3.G. EXTERNAL EXPANSION TANK: The Permittee shall equip its Class I non-hazardous waste injection well with an external expansion tank (tank) system under constant 100 psig pressure connected to the casing-annulus. The Permittee shall fill the external expansion tank half-full (250 gallon expansion tank) with an OCD-approved liquid to establish an equilibrium volume and liquid level. The Permittee shall monitor the liquid levels in the external expansion tank at least weekly and shall record all additions or removals of liquids into or out of the external expansion tank. The Permittee shall record any loss or gain of fluids in the external

expansion tank, and if significant, report the loss or gain to OCD's Environmental Bureau. The Permittee shall record the weekly expansion tank volume fluid volumes readings and the fluid volume additions or removals from the expansion tank on a quarterly basis or in the annual report. Any natural loss of fluid above 5 bbl. per month requires notification to the OCD within 5 days after having knowledge of loss. Any gain of packer fluid requires notification similar to previous sentence above. Any notifications with agency verbal approvals must be followed by submittal of OCD C-103 form with notice of intent for signature approval of specified corrective action(s) by the OCD; and after any well repairs are made, submit 30-days of corrective action(s) follow-up Sundry Form documentation of corrective action(s) to the OCD Environmental Bureau.

3.H. INJECTION RECORD VOLUMES AND PRESSURES: The Permittee shall submit quarterly reports of its injection operations and well workovers. The Permittee shall record the minimum, maximum, average flow waste injection volumes (including total volumes) and annular pressures of the injected waste fluids on a monthly basis, and shall submit the data to OCD on a quarterly basis or in the annual report. The Permittee shall fill the casing-tubing annulus with an OCD-approved liquid and install a Murphy pressure switch or equivalent, as described in the Permittee's permit renewal application, in order to detect leakage in the casing, tubing, or packer.

3.I. AREA OF REVIEW (AOR): The Permittee shall report within 72 hours of discovery any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class I non-hazardous waste injection well.

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. ANNUAL REPORT: The Permittee shall submit its annual report to OCD by June 1st of each year.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class I non-hazardous waste injection well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC).

The Permittee's cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

DRAFT

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, August 08, 2012 8:05 AM
To: 'Schultz, Michele'; Holder, Mike
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Micki:

The documents in English and Spanish look good.

Yes, when OCD deems your application to be “administratively complete”, this marks the start of the public notice process for Navajo Refining Company and the OCD.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

Website: <http://www.emnrd.state.nm.us/ocd/>

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From: Schultz, Michele [mailto:Michele.Schultz@hollyfrontier.com]
Sent: Wednesday, August 08, 2012 7:56 AM
To: Holder, Mike; Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – I have attached the final version of the Public Notice as agreed upon previously, plus its Spanish translation, to complete our application submittal. I understand that I should wait for a written notice from your department that our application is administratively complete before beginning the actual public notice process. I will begin once I receive your notice.

Thanks!

Micki Schultz, P.E., CHMM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)
micki.schultz@hollyfrontier.com

From: Holder, Mike
Sent: Tuesday, August 07, 2012 7:03 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Holder, Mike; Schultz, Michele
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Thanks Carl – we have the flow chart and I have Subsurface preparing the translation so we can get everything to you.

Thanks!
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Tuesday, August 07, 2012 7:00 AM
To: Holder, Mike
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Good morning. I have submitted the draft permit to Glenn von Gonten (Acting Bureau Chief) who is coordinating with Sonny Swazo (Asst. to Gen. Counsel) who are responsible for the recent major changes to the Discharge Permits for the OCD.

Once they have completed their review and modifications to my draft permit, they will direct me to initiate the “Administrative Complete” process. Let me know if you need the flow-charts for the public notice process (20.6.2.3108 NMAC), once the OCD officially deems your application to be administratively complete.

Please contact me if you have questions. Thank you for your cooperation.

Carl J. Chavez, CHMM
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From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]
Sent: Monday, August 06, 2012 7:12 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – we’ve accepted all the changes and are having the translation done. Once complete we’ll resubmit. Thanks for all your help.

Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Thursday, August 02, 2012 9:03 AM
To: Holder, Mike
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Please find my final comments for your consideration.

Let me know if you accept, and submit the final draft (English and Spanish) to me for the OCD "Admin. Complete" review records.

This may mark the start of the start of the "Admin. Complete" review process. I have submitted a draft permit and associated documents to Glenn in preparation of the "Admin. Complete" process.

Please contact me if you have questions. Thank you.

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From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]
Sent: Wednesday, July 25, 2012 5:05 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – see attached for revisions. I added a single sentence paragraph to provide additional detail on wastewater treatment plant influents and revised the attached figure to show that both process water & storm water flow to the WWTP. I double checked and the storm water (rain) that falls on the process units is captured in the process sewers and routed to the WWTP for treatment. We do have the 2nd RO unit installed and it is parallel to the first unit. They use the same discharge point (i.e., no new discharge point). Thanks for your help and look forward to hearing from you Tuesday.

Thanks,
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Wednesday, July 25, 2012 2:09 PM
To: Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Please find attached suggested language in Navajo Refining Company's (NRC) Public Notice.

I am also attaching NRC's 2007 Public Notice because it reads well; however, NRC's most current draft does not conform very much to it. So, I have added some language. I struggled with inserting the 20.6.2.3108(F)(3) NMAC provision into the text.

Please contact me to discuss. Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department

Oil Conservation Division, Environmental Bureau

1220 South St. Francis Drive, Santa Fe, New Mexico 87505

Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

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<http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]

Sent: Wednesday, July 25, 2012 12:51 PM

To: Chavez, Carl J, EMNRD

Cc: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – let me know if this clears it up. I revised to make consistent w/OCD's and previous PN's.

Thanks,
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]

Sent: Wednesday, July 25, 2012 9:50 AM

To: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Please find attached my final draft public notice.

Navajo's draft is a little confusing on the depth interval of injection. Consequently, I have attached Navajo's 2007 public notice to see if Navajo would like to stick with this type of format, text, language and the interval depth, etc. that is consistent with the OCD and the application well construction diagram?

Please contact me if you have questions.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department

Oil Conservation Division, Environmental Bureau

1220 South St. Francis Drive, Santa Fe, New Mexico 87505

Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

Website: <http://www.emnrd.state.nm.us/ocd/>

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From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]

Sent: Wednesday, July 25, 2012 6:51 AM

To: Chavez, Carl J, EMNRD

Cc: Holder, Mike; Jerry Taylor; Schultz, Michele

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – please see attached revised public notice per our discussion and let us know if you have any additional thoughts. Once we have your concurrence we'll provide the Spanish version. I've also attached the backup for the TDS levels presented in the notice (from the 2003 application).

Thanks for your help,
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]

Sent: Tuesday, July 24, 2012 8:18 AM

To: Schultz, Michele

Cc: Holder, Mike; Lackey, Johnny; VonGonten, Glenn, EMNRD

Subject: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Micki:

Good morning.

The OCD completed its preliminary review for “Administrative Completeness” of the above subject application last week.

The OCD is focused on the Appendix “O” Public Notice (PN) in the application. The public notice does not appear to satisfy all of the applicable conditions of 20.6.2.3108 NMAC (see attachments) and new information changes appear to be needed from past PNs based on more comprehensive information submitted in the application.

Please find attached the OCD flow charts for PN Renewal Applications and the OCD’s draft PN with information on water quality, depth to the ground water, etc. that appears to be missing and/or not reflected in the public notice. Also, the Spanish version is absent. New information has changed (i.e., the injection interval, depth to GW, water quality updated info., etc.) as reflected in the OCD’s draft PN.

Please contact me to discuss on or before 5 working days and resubmit your draft public notice to the OCD for approval or comment to ensure the information is accurate when disseminated to the public. This will need to be satisfied before OCD may deem the application to be administratively complete.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

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PUBLIC NOTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to renew the New Mexico Oil Conservation Division (OCD) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant into a Class I (nonhazardous) injection well WDW-3 (API# 30-015-26575). The WDW-3 is located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The WDW-3 is located approximately 14 miles E-SE of the intersection of I-285 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225. The Artesia Refinery is located at 501 E. Main Street, Artesia, New Mexico.

Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery.

Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations within the injection interval from 7,660 to 8,620 feet (log depth). The injection rate into WDW-3 will not exceed 500 gpm and the maximum allowable surface injection pressure of 1530 psig. The injected refinery waste water quality is approximately 3,400 mg/L total dissolved solids (TDS). Formation fluids within the permitted injection interval exceed 10,000 mg/L TDS. Groundwater is first encountered in the area of WDW-3 at a depth range of approximately 50 to 150 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the New Mexico Oil Conservation Division.

Comments and inquiries on regulations should be directed to:

Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Telephone: (505) 476-3440

When corresponding, please reference the name of the applicant and the well name.

AVISO PUBLICO
ESTADO DE NUEVO MEXICO
DEPARTAMENTO DE ENERGIA, MINERALES Y RECURSOS NATURALES
DIVISION DE CONSERVACION DE PETROLEO

Por medio de la presente, Navajo Company anuncia que de conformidad con los requisitos de las regulaciones de la Comisión de Control de Calidad del Agua de Nuevo México 20.6.2.3108.F NMAC, a la División de Conservación del Petróleo de Nuevo México (NMOCD) . Departamento del Medio Ambiente, un permiso de descarga para la inyección aguas residuales de la planta Artesia de Navajo Refining Company, en el pozo de inyección de denominación WDW-3 (API#30-015-26575). El pozo WDW-3 esta localizado en SE/4, SW/4 de Sección 1, Municipio 18 sur, Condado Eddy , Nuevo México. El WDW-3 está localizado aproximadamente a 14 millas E-SE de la intersección de I-285 y Hwy 82 (Refinería Artesia), o aproximadamente 2.75 millas S de Hwy. 82 y CR-225. La Refinería Artesia se encuentra ubicada en 501 E. Main Street, Artesia, Nuevo México.

La generación de aguas residuales de la Refinería Artesia es el resultado del agua que se encuentran en al abastecimiento de crudo, el agua que se usa para el enfriamiento y calentamiento, el agua que se usa para retirar las sales del abastecimiento de crudo, y para purgar la caldera.

Las aguas residuales de WDW-3 se inyectarán hacia las formaciones de Lower Wolfcamp, Cisco Y Canyon, ubicadas entre 7,660 y 8,620 pies (profundidad de registro). La tasa de inyección de WDW-3 no excederá los 500 gpm a una presión de inyección que no excederá los 1530 psig. Estas aguas residuales tendrán un contenido de total de sólidos disueltos (TDS) de 3,400 partes por millón. En el área en donde se encuentra el pozo (WDW-3), el agua subterránea se encuentra a una profundidad de 50 a 150 pies con un TDS de 1,500 a 2,200 partes por millón.

Personas interesadas en obtener mayores informes, presentar sus comentarios o solicitar que se les incluya en las listas de direcciones de una planta en especial para futuros avisos pueden ponerse en contacto con el Jefe del Departamento del Medio Ambiente de la División de Conservación de Petróleo de Nuevo México.

Por favor enviar comentarios y preguntas a:

Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Teléfono: (505) 476-3440

Por favor incluir como referencia el nombre del aplicante y denominación del pozo.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 07, 2012 7:00 AM
To: 'Holder, Mike'
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Good morning. I have submitted the draft permit to Glenn von Gonten (Acting Bureau Chief) who is coordinating with Sonny Swazo (Asst. to Gen. Counsel) who are responsible for the recent major changes to the Discharge Permits for the OCD.

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Please contact me if you have questions. Thank you for your cooperation.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
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Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]
Sent: Monday, August 06, 2012 7:12 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – we've accepted all the changes and are having the translation done. Once complete we'll resubmit. Thanks for all your help.

Mike

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Sent: Thursday, August 02, 2012 9:03 AM
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Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

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Website: <http://www.emnrd.state.nm.us/ocd/>

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<http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]

Sent: Wednesday, July 25, 2012 5:05 PM

To: Chavez, Carl J, EMNRD

Cc: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – see attached for revisions. I added a single sentence paragraph to provide additional detail on wastewater treatment plant influents and revised the attached figure to show that both process water & storm water flow to the WWTP. I double checked and the storm water (rain) that falls on the process units is captured in the process sewers and routed to the WWTP for treatment. We do have the 2nd RO unit installed and it is parallel to the first unit. They use the same discharge point (i.e., no new discharge point). Thanks for your help and look forward to hearing from you Tuesday.

Thanks,
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]

Sent: Wednesday, July 25, 2012 2:09 PM

To: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Please find attached suggested language in Navajo Refining Company's (NRC) Public Notice.

I am also attaching NRC's 2007 Public Notice because it reads well; however, NRC's most current draft does not conform very much to it. So, I have added some language. I struggled with inserting the 20.6.2.3108(F)(3) NMAC provision into the text.

Please contact me to discuss. Thank you.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, August 02, 2012 9:03 AM
To: 'Holder, Mike'
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)
Attachments: UICI-8-0 Navajo PN CJC 8-2-2012.doc

Mike:

Please find my final comments for your consideration.

Let me know if you accept, and submit the final draft (English and Spanish) to me for the OCD "Admin. Complete" review records.

This may mark the start of the start of the "Admin. Complete" review process. I have submitted a draft permit and associated documents to Glenn in preparation of the "Admin. Complete" process.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department

Oil Conservation Division, Environmental Bureau

1220 South St. Francis Drive, Santa Fe, New Mexico 87505

Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

Website: <http://www.emnrd.state.nm.us/ocd/>

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Sent: Wednesday, July 25, 2012 5:05 PM

To: Chavez, Carl J, EMNRD

Cc: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

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Thanks,
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]

Sent: Wednesday, July 25, 2012 2:09 PM

To: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

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I am also attaching NRC's 2007 Public Notice because it reads well; however, NRC's most current draft does not conform very much to it. So, I have added some language. I struggled with inserting the 20.6.2.3108(F)(3) NMAC provision into the text.

Please contact me to discuss. Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department

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1220 South St. Francis Drive, Santa Fe, New Mexico 87505

Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

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<http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>

From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]

Sent: Wednesday, July 25, 2012 12:51 PM

To: Chavez, Carl J, EMNRD

Cc: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – let me know if this clears it up. I revised to make consistent w/OCD's and previous PNs.

Thanks,
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]

Sent: Wednesday, July 25, 2012 9:50 AM

To: Holder, Mike

Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Please find attached my final draft public notice.

Navajo's draft is a little confusing on the depth interval of injection. Consequently, I have attached Navajo's 2007 public notice to see if Navajo would like to stick with this type of format, text, language and the interval depth, etc. that is consistent with the OCD and the application well construction diagram?

Please contact me if you have questions.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>

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From: Holder, Mike [<mailto:Mike.Holder@hollyfrontier.com>]
Sent: Wednesday, July 25, 2012 6:51 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike; Jerry Taylor; Schultz, Michele
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – please see attached revised public notice per our discussion and let us know if you have any additional thoughts. Once we have your concurrence we'll provide the Spanish version. I've also attached the backup for the TDS levels presented in the notice (from the 2003 application).

Thanks for your help,
Mike

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Tuesday, July 24, 2012 8:18 AM
To: Schultz, Michele
Cc: Holder, Mike; Lackey, Johnny; VonGonten, Glenn, EMNRD
Subject: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Micki:

Good morning.

The OCD completed its preliminary review for “Administrative Completeness” of the above subject application last week.

The OCD is focused on the Appendix “O” Public Notice (PN) in the application. The public notice does not appear to satisfy all of the applicable conditions of 20.6.2.3108 NMAC (see attachments) and new information changes appear to be needed from past PNs based on more comprehensive information submitted in the application.

Please find attached the OCD flow charts for PN Renewal Applications and the OCD's draft PN with information on water quality, depth to the ground water, etc. that appears to be missing and/or not reflected in the public notice. Also, the Spanish version is absent. New information has changed (i.e., the injection interval, depth to GW, water quality updated info., etc.) as reflected in the OCD's draft PN.

Please contact me to discuss on or before 5 working days and resubmit your draft public notice to the OCD for approval or comment to ensure the information is accurate when disseminated to the public. This will need to be satisfied before OCD may deem the application to be administratively complete.

Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: <http://www.emnrd.state.nm.us/ocd/>

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CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

PUBLIC NOTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to renew ~~a~~ the New Mexico Oil Conservation Division (OCD) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant refinery oilfield waste water from the Artesia Refinery reverse osmosis unit, boiler feed, and process units (Per 20.6.2.3108(F)(3)) ground water discharge permit for into a Class I (nonhazardous) injection well WDW-3 (API# 30-015-26575). The well WDW-3 is located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The well WDW-3 location ~~is located~~ approximately 10.514 miles SE-SE of the intersection of I-285 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225 or approximately 14 miles southeast of the Navajo Refining Company, LLC petroleum refining facility. The discharge results from the operation of Navajo's Artesia Refinery ~~is located~~ at 501 E. Main Street, Artesia, New Mexico.

Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery.

Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations ~~at~~ within the injection interval from ~~of~~ 7,660 to 8,620 feet (log depth). The injection rate into WDW-3 will not exceed 500 gpm ~~at~~ and a ~~the~~ maximum allowable surface injection pressure of 1530 psig.

The injected fluid ~~refinery oil field waste water quality is contains~~ approximately 3,400 mg/L total dissolved solids (TDS). ~~The TDS concentration of the naturally occurring formation~~ Formation fluids within the permitted injection interval exceeds 10,000 milligrams per liter ~~mg/L TDS.~~ Groundwater is first encountered in the area of WDW-3 at a depth range of approximately 75-50 to 150 feet below land surface. The groundwater quality exhibits a TDS concentration ranges of from about 1,500 to 2,200 mg/L TDS.

~~The Oil Conservation Division will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices. Interested parties may obtain information, submit comments, and request to be placed on a facility-specific mailing list by contacting the OCD at the following address:~~

Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the New Mexico Oil Conservation Division.

Comments and inquiries on regulations should be directed to:

~~State of New Mexico~~Director
~~Energy, Minerals and Natural Resources Department~~
~~Oil Conservation Division~~New Mexico Oil Conservation Division
~~Environmental Bureau~~
1220 South St. Francis Drive
Santa Fe, ~~New~~Mexico 87505
Telephone: (505) 476-3440

When corresponding, please reference the name of the applicant and the well name.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, July 24, 2012 8:19 AM
To: Schultz, Michele (Michele.Schultz@hollyfrontier.com)
Cc: Holder, Mike (Mike.Holder@hollyfrontier.com); Lackey, Johnny (Johnny.Lackey@hollyfrontier.com); VonGonten, Glenn, EMNRD
Subject: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)
Attachments: UICI-8-0 WDW-3 DRAFT PN 8-3-2012.doc; Renewal WQCC Notice Regs.pdf; PN Flow Chart.20.6.2renewal.pdf

Micki:

Good morning.

The OCD completed its preliminary review for “Administrative Completeness” of the above subject application last week.

The OCD is focused on the Appendix “O” Public Notice (PN) in the application. The public notice does not appear to satisfy all of the applicable conditions of 20.6.2.3108 NMAC (see attachments) and new information changes appear to be needed from past PNs based on more comprehensive information submitted in the application.

Please find attached the OCD flow charts for PN Renewal Applications and the OCD’s draft PN with information on water quality, depth to the ground water, etc. that appears to be missing and/or not reflected in the public notice. Also, the Spanish version is absent. New information has changed (i.e., the injection interval, depth to GW, water quality updated info., etc.) as reflected in the OCD’s draft PN.

Please contact me to discuss on or before 5 working days and resubmit your draft public notice to the OCD for approval or comment to ensure the information is accurate when disseminated to the public. This will need to be satisfied before OCD may deem the application to be administratively complete.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to Water Quality Control Commission Regulations (20.6.2.3106 NMAC) the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division (OCD), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, and Telephone (505) 476-3440:

(UICI-008-0) Navajo Refining Company, L.L.C. Michael G. McKee, Vice President and Refinery Manager, 501 East Main Street, P.O. Box Drawer 159, Artesia New Mexico 88211-0159, has submitted an application for a Class I Injection Well Discharge Permit for injection well WDW-3 (API# 30-015-26575) located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The Facility is located approximately 10.5 miles S-SE of the intersection of I-285 and Hwy. - 82 or approximately 2.75 miles S of Hwy. -82 and CR-225.

Oil field exempt and non-exempt, non-hazardous industrial waste, will be transported about 12 miles underground from the Navajo-Artesia Refinery located at 501 E. Main Street, Artesia, NM via a 6 inch dia. pipeline to WDW-3 for disposal into the Lower Wolfcamp, Cisco, and Canyon Formations in the injection interval from 7660 to 8620 feet (log depth). The injection rate will not exceed 500 gpm at a maximum injection pressure of 1530 psig. The injection fluid contains approximately 3,400 ppm TDS. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 50 to 150 feet below the ground surface, with a total dissolved solids concentration of about 1500 to 2200 mg/L. The discharge plan addresses well construction, operation, monitoring of the well, associated surface facilities, and provides a contingency plan in the event of accidental spills, leaks, and other accidental discharges in order to protect fresh water.

Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site <http://www.emnrd.state.nm.us/ocd/>. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on available information, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the application along with information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461).

DONE at Santa Fe, New Mexico, on this 3rd day of August 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

Notice Requirements For Discharge Permit Renewals

20.6.2.3108 PUBLIC NOTICE AND PARTICIPATION:

A. Within 15 days of receipt of an application for a discharge permit, modification or renewal, the department shall review the application for administrative completeness. To be deemed administratively complete, an application shall provide all of the information required by Paragraphs (1) through (5) of Subsection F of 20.6.2.3108 NMAC and shall indicate, for department approval, the proposed locations and newspaper for providing notice required by Paragraphs (1) and (4) of Subsection B or Paragraph (2) of Subsection C of 20.6.2.3108 NMAC. The department shall notify the applicant in writing when the application is deemed administratively complete. If the department determines that the application is not administratively complete, the department shall notify the applicant of the deficiencies in writing within 15 days of receipt of the application and state what additional information is necessary.

B. Within 30 days of the department deeming an application for discharge permit or discharge permit modification administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) for each 640 contiguous acres or less of a discharge site, prominently posting a synopsis of the public notice at least 2 feet by 3 feet in size, in English and in Spanish, at a place conspicuous to the public, approved by the department, at or near the proposed facility for 30 days; one additional notice, in a form approved by and may be provided by the department, shall be posted at a place located off the discharge site, at a place conspicuous to the public and approved by the department; the department may require a second posting location for more than 640 contiguous acres or when the discharge site is not located on contiguous properties;

(2) providing written notice of the discharge by mail, to owners of record of all properties within a 1/3 mile distance from the boundary of the property where the discharge site is located; if there are no properties other than properties owned by the discharger within a 1/3 mile distance from the boundary of property where the discharge site is located, the applicant shall provide notice to owners of record of the next nearest adjacent properties not owned by the discharger;

(3) providing notice by certified mail, return receipt requested, to the owner of the discharge site if the applicant is not the owner; and

(4) publishing a synopsis of the notice in English and in Spanish, in a display ad at least three inches by four inches not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the proposed discharge.

C. Within 30 days of the department deeming an application for discharge permit renewal administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) providing notice by certified mail to the owner of the discharge site if the applicant is not the owner; and

(2) publishing a synopsis of the notice, in English and in Spanish, in a display ad at least two inches by three inches, not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the discharge.

D. Within 15 days of completion of the public notice requirements in Subsections B or C of 20.6.2.3108 NMAC, the applicant shall submit to the department proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.

E. Within 30 days of determining an application for a discharge permit, modification or renewal is administratively complete, the department shall post a notice on its website and shall mail notice to any affected local, state, federal, tribal or pueblo governmental agency, political subdivisions, ditch associations and land grants, as identified by the department. The department shall also mail or e-mail notice to those persons on a general and facility-specific list maintained by the department who have requested notice of discharge permit applications. The notice shall include the information listed in Subsection F of 20.6.2.3108 NMAC.

F. The notice provided under Subsection B, C and E of 20.6.2.3108 NMAC shall include:

(1) the name and address of the proposed discharger;

(2) the location of the discharge, including a street address, if available, and sufficient information to locate the facility with respect to surrounding landmarks;

(3) a brief description of the activities that produce the discharge described in the application;

- (4) a brief description of the expected quality and volume of the discharge;
- (5) the depth to and total dissolved solids concentration of the ground water most likely to be affected by the discharge;
- (6) the address and phone number within the department by which interested persons may obtain information, submit comments, and request to be placed on a facility-specific mailing list for future notices; and
- (7) a statement that the department will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices.

G. All persons who submit comments or statements of interest to the department or previously participated in a public hearing and who provide a mail or e-mail address shall be placed on a facility-specific mailing list and the department shall send those persons the public notice issued pursuant to Subsection H of 20.6.2.3108 NMAC, and notice of any public meeting or hearing scheduled on the application. All persons who contact the department to inquire about a specific facility shall be informed of the opportunity to be placed on the facility-specific mailing list.

H. Within 60 days after the department makes its administrative completeness determination and all required technical information is available, the department shall make available a proposed approval or disapproval of the application for a discharge permit, modification or renewal, including conditions for approval proposed by the department or the reasons for disapproval. The department shall mail by certified mail a copy of the proposed approval or disapproval to the applicant, and shall provide notice of the proposed approval or disapproval of the application for a discharge permit, modification or renewal by:

- (1) posting on the department's website;
- (2) publishing notice in a newspaper of general circulation in this state and a newspaper of general circulation in the location of the facility;
- (3) mailing or e-mailing to those persons on a facility-specific mailing list;
- (4) mailing to any affected local, state, or federal governmental agency, ditch associations and land grants, as identified by the department; and
- (5) mailing to the governor, chairperson, or president of each Indian tribe, pueblo or nation within the state of New Mexico, as identified by the department.

I. The public notice issued under Subsection H shall include the information in Subsection F of 20.6.2.3108 NMAC and the following information:

- (1) a brief description of the procedures to be followed by the secretary in making a final determination;
- (2) a statement of the comment period and description of the procedures for a person to request a hearing on the application; and
- (3) the address and telephone number at which interested persons may obtain a copy of the proposed approval or disapproval of an application for a discharge permit, modification or renewal.

J. In the event that the proposed approval or disapproval of an application for a discharge permit, modification or renewal is available for review within 30 days of deeming the application administratively complete, the department may combine the public notice procedures of Subsections E and H of 20.6.2.3108 NMAC.

K. Following the public notice of the proposed approval or disapproval of an application for a discharge permit, modification or renewal, and prior to a final decision by the secretary, there shall be a period of at least 30 days during which written comments may be submitted to the department and/or a public hearing may be requested in writing. The 30-day comment period shall begin on the date of publication of notice in the newspaper. All comments will be considered by the department. Requests for a hearing shall be in writing and shall set forth the reasons why a hearing should be held. A public hearing shall be held if the secretary determines there is substantial public interest. The department shall notify the applicant and any person requesting a hearing of the decision whether to hold a hearing and the reasons therefore in writing.

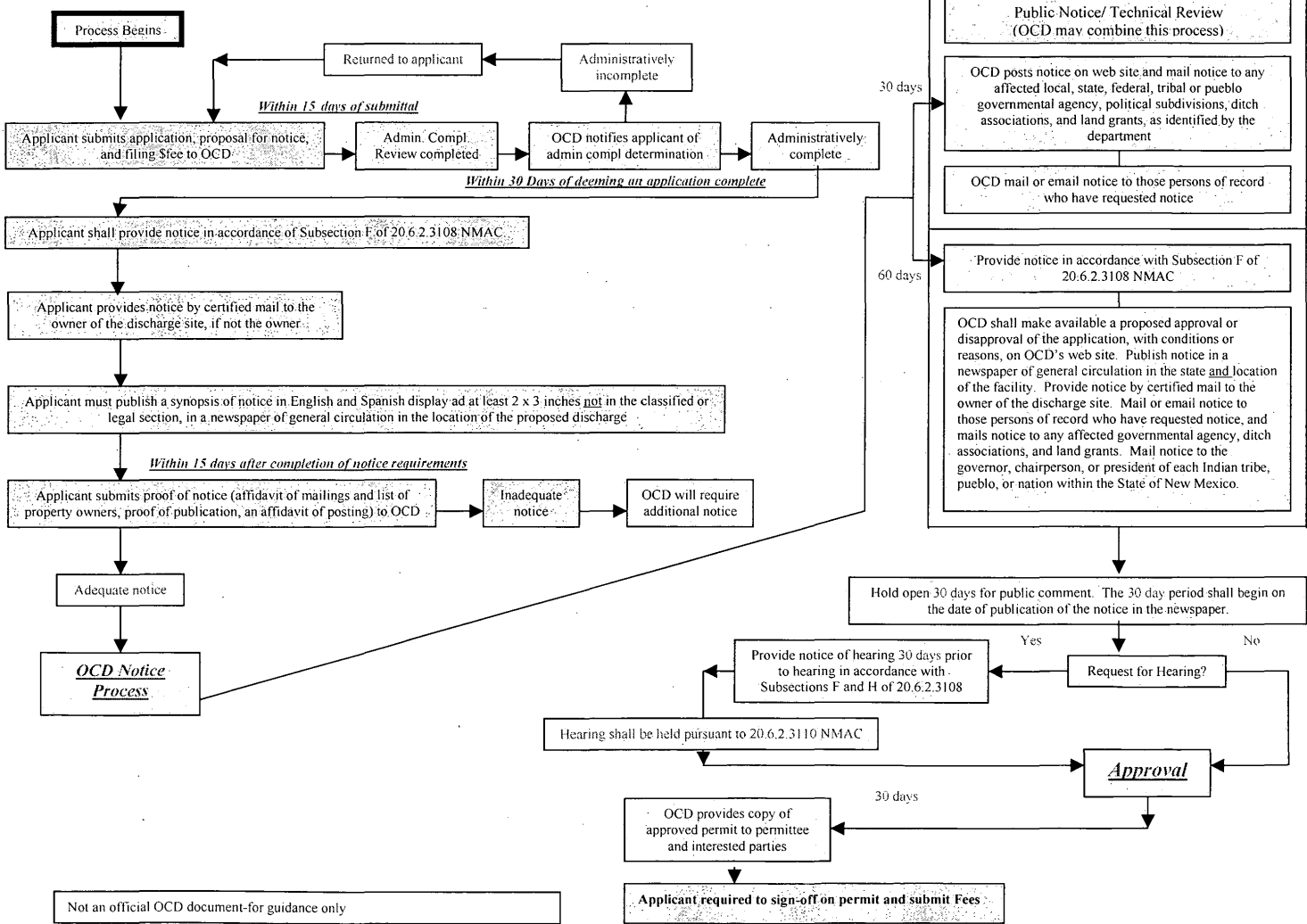
L. If a hearing is held, pursuant to Subsection K of 20.6.2.3108 NMAC, notice of the hearing shall be given by the department at least 30 days prior to the hearing in accordance with Subsection H of 20.6.2.3108 NMAC. The notice shall include the information identified in Subsection F of 20.6.2.3108 NMAC in addition to the time and place of the hearing and a brief description of the hearing procedures. The hearing shall be held pursuant to 20.6.2.3110 NMAC.

20.6.2 NMAC 17

[2-18-77, 12-24-87, 12-1-95, 11-15-96; 20.6.2.3108 NMAC - Rn, 20 NMAC 6.2.III.3108, 1-15-01; A, 12-1-01; A, 9-15-02; A, 7-16-06]

WQCC PUBLIC NOTICE AND PERMITTING FLOWCHART:

20.6.2.3108 – Applications for discharge permits renewals



Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, July 20, 2012 9:37 AM
To: Chavez, Carl J, EMNRD
Subject: UICI-008-0 WDW-3 Navajo Refining Company, L.L.C., Discharge Permit Credits Note to File

This note is written to document the credits for the overall changes to the newly issued discharge permit and associated documents. The changes were made by Glenn von Gonten (Acting Environmental Bureau Chief) and Sonny Swazo (Assistant to the General Counsel).

***** END *****

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US

Website: <http://www.emnrd.state.nm.us/ocd/>

“Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?” To see how, please go to: “Pollution Prevention & Waste Minimization” at <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>



HOLLYFRONTIER
The HollyFrontier Companies

June 29, 2012

Mr. Carl Chavez
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Discharge Permit Renewal Application for WDW-3, Class I Non-Hazardous
Injection Well

Dear Mr. Chavez:

Navajo Refining Co. is submitting the attached discharge permit renewal application for its WDW-3, a Class 1 Non-Hazardous Wastewater Injection Well. The well, located approximately 14 miles east of the Navajo Refinery in Artesia, NM, is currently in service.

If you have questions regarding this renewal application, please contact Micki Schultz at (575) 746-5281, or by email at micki.schultz@hollyfrontier.com.

Cordially,

Micki Schultz, P.E., CHMM, REM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)

Attachments

ACKNOWLEDGEMENT OF RECEIPT
OF CHECK/CASH

I hereby acknowledge receipt of check No. 1000180601 dated 6/25/12

or cash received on _____ in the amount of \$ 100⁰⁰

from MACTO Refining Co.

for VICI 8-0

Submitted by: LAURENCE KIMERIC Date: 7/18/12

Submitted to ASD by: [Signature] Date: 7/18/12

Received in ASD by: _____ Date: _____

Filing Fee _____ New Facility _____ Renewal

Modification _____ Other _____

Organization Code 521.07 Applicable FY _____

To be deposited in the Water Quality Management Fund.

Full Payment _____ or Annual Increment _____



HOLLYFRONTIER
The HollyFrontier Companies

June 29, 2012

Mr. Carl Chavez
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Discharge Permit Renewal Application for WDW-3, Class I Non-Hazardous Injection Well

Dear Mr. Chavez:

Navajo Refining Co. is submitting the attached discharge permit renewal application for its WDW-3, a Class 1 Non-Hazardous Wastewater Injection Well. The well, located approximately 14 miles east of the Navajo Refinery in Artesia, NM, is currently in service.

If you have questions regarding this renewal application, please contact Micki Schultz at (575) 746-5281, or by email at micki.schultz@hollyfrontier.com.

Cordially,

Micki Schultz, P.E., CHMM, REM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)

Attachments

TABLE OF CONTENTS

INTRODUCTION

DISCHARGE PERMIT APPLICATION FORM

1.0	Underground Well Control Well Class	1
2.0	Operator	1
3.0	Location	1
4.0	Landowner(s).....	1
5.0	Facility Description	2
6.0	Proposed Discharge Plan (see 20.6.2.3106C NMAC).....	2
7.0	Information for Class I Nonhazardous Waste Injection Well and Class III Brine Wells (20.6.2.5210 NMAC).....	3
7 (a)	Area of Review.....	3
7 (b)	Data Tabulation.....	4
7 (c)	Corrective Action.....	4
7 (d)	Maps and Cross-Sections	4
7 (e)	Geology.....	5
7 (f)	Proposed Operating Parameters.....	8
7 (g)	Formation Testing Program.....	9
7 (h)	Fluids and Pressure	9
7 (i)	Stimulation Program.....	16
7 (j)	Injection Procedure	16
7 (k)	Drawings	17
7 (l)	Construction.....	17
7 (m)	Contingency Plans	25
7 (n)	MIT Monitoring Plans (20.6.2.5207 NMAC).....	26
7 (o)	Additional Monitoring Plans for Class I Non-Hazardous Waste Injection Wells (20.6.2.5207B NMAC)	26
7 (p)	Additional Monitoring Plans for Class III Wells (20.6.2.5207C NMAC).....	27
7 (q)	Financial Assurance.....	27
7 (r)	Logging and Testing Data	27

TABLE OF CONTENTS (CONT'D)

7 (s) Mechanical Integrity Data (20.6.2.5204 NMAC).....	28
7 (t) Maximum Pressure and Flow Rate	28
7 (u) Formation Testing Program Data	28
7 (v) Compatibility.....	28
7 (w) Area of Review Corrective Actions.....	28
8.0 Modification(s).....	29
9.0 Inspection/Maintenance and Reporting	29
10.0 Contingency Plans.....	29
11.0 Other Information.....	30
12.0 Filing Fee.....	30
13.0 Draft Public Notice.....	30
14.0 Certification.....	31

TABLES

TABLE 1A:	NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW
TABLE 1B:	NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW PENETRATING TOP OF INJECTION ZONE
TABLE 2:	INJECTION FLUID CHARACTERIZATION DATA

FIGURES

FIGURE 1:	SITE LOCATION MAP
FIGURE 2:	SITE MAP
FIGURE 3:	GENERALIZED HYDROGEOLOGIC CROSS-SECTION
FIGURE 4:	GENERALIZED DIRECTION OF MOVEMENT OF GROUNDWATER IN EDDY COUNTY, NEW MEXICO
FIGURE 5:	PERMIAN BASIN MAP
FIGURE 6:	STRATIGRAPHIC COLUMN
FIGURE 7:	REGIONAL GEOLOGIC FEATURES
FIGURE 8:	PUBLISHED STRUCTURE MAP (TOP OF SAN ANDRES FORMATION)
FIGURE 9:	SEISMIC RISK MAP
FIGURE 10:	SURFACE GEOLOGIC MAP



TABLE OF CONTENTS (CONT'D)

FIGURES (CONT'D)

- FIGURE 11: PRE-INJECTION SURFACE FACILITIES
- FIGURE 12: BELOW GROUND WELL SCHEMATIC
- FIGURE 13: WELLHEAD SCHEMATIC

DRAWINGS

- DRAWING 1: FACILITY MAP
- DRAWING 2: AREA OF REVIEW MAP
- DRAWING 3: FRESHWATER WELLS IN AREA OF REVIEW
- DRAWING 4: GEOLOGIC CROSS-SECTION INDEX MAP
- DRAWING 5: NW-SE DIP GEOLOGIC CROSS-SECTION A-A'
- DRAWING 6: SW-NE STRIKE GEOLOGIC CROSS-SECTION B-B'
- DRAWING 7: NW-SE DIP GEOLOGIC CROSS-SECTION C-C'
- DRAWING 8: STRUCTURE CONTOUR MAP, TOP OF INJECTION ZONE
- DRAWING 9: ISOPACH MAP OF INJECTION ZONE
- DRAWING 10: STRUCTURE CONTOUR MAP, TOP OF UPPER CONFINING ZONE
- DRAWING 11: ISOPACH MAP OF UPPER CONFINING ZONE
- DRAWING 12: CURRENT PRESSURE INCREASE IN INJECTION ZONE
- DRAWING 13: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTION INTO WDW-1 AND WDW-2 ONLY)
- DRAWING 14: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTION INTO WDW-1 AND WDW-3 ONLY)
- DRAWING 15: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTION INTO WDW-2 AND WDW-3 ONLY)
- DRAWING 16: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTION INTO WDW-1, WDW-2 AND WDW-3)



TABLE OF CONTENTS (CONT'D)

APPENDICES

APPENDIX A:	SURROUNDING LAND OWNERSHIP INFORMATION
APPENDIX B:	AREA OF REVIEW WELL FILES AND SCHEMATICS
APPENDIX C:	USGS EARTHQUAKE DATA
APPENDIX D:	INJECTION FLUID ANALYTICAL DATA
APPENDIX E:	FLUIDS AND PRESSURE CALCULATIONS
APPENDIX F:	FORMATION FLUID ANALYTICAL DATA
APPENDIX G:	PRESSURE FALL-OFF TEST RESULTS
APPENDIX H:	WDW-3 CONSTRUCTION INFORMATION
APPENDIX I:	INJECTION ZONE PERMEABILITY DATA
APPENDIX J:	INJECTED FLUID MONITORING PLAN
APPENDIX K:	INJECTION WELL CLOSURE PLAN
APPENDIX L:	FINANCIAL ASSURANCE DOCUMENTATION
APPENDIX M:	WDW-3 OPEN-HOLE LOG
APPENDIX N:	WDW-3 CASED-HOLE LOGS
APPENDIX O:	DRAFT PUBLIC NOTICE



INTRODUCTION

Navajo Refining Company, L.L.C. (Navajo), located in Artesia, New Mexico, is applying to repermit Class I Nonhazardous Waste Disposal Well No. 3 (WDW-3) which is located approximately 14 miles to the east of the facility. WDW-3 was initially permitted by the New Mexico Oil Conservation Division (OCD) in 2003 and has been operating under OCD issued Permit UIC-CLI-008-1.

The Navajo refinery is located at 501 East Main Street in Artesia, Eddy County, New Mexico. WDW-3 is one of three Class I nonhazardous waste injection wells operated by the Navajo refinery. The three injection wells are designated WDW-1, WDW-2 and WDW-3. All three wells are permitted to inject nonhazardous waste water into a subsurface Injection Zone consisting of the lower portion of the Wolfcamp Formation and the underlying Cisco and Canyon Formations. The depth and thickness of the Injection Zone at the three Navajo refinery injection wells are as follows:

- WDW-1: 7,450 to 9,016 ft KB
- WDW-2: 7,270 to 8,894 ft KB
- WDW-3: 7,303 to 8,894 ft KB

Please note that the three Navajo injection wells are permitted separately coinciding with the 10-year permit limit for each well. This permit renewal application is for WDW-3 only. Permit renewal applications for WDW-1 and WDW-2 are to be submitted in July 2013 and October 2014, respectively. Given the fact that all three Navajo wells are injecting into the same Injection Zone, modeling projections of pressure front and plume movement account for injection into the same zone by all three wells. This same modeling approach will be utilized when the permit application renewal documents are submitted for WDW-2 and WDW-3.

Information concerning the locations of oil and gas wells and freshwater wells within the regulatory 1-mile radius area of review (AOR) surrounding WDW-3 were obtained from New Mexico Oil Conservation Division (OCD) and New Mexico Water Rights Reporting System, respectively. No corrective action is needed for any of the artificial penetrations within the 1-mile radius AOR.



The regional and local geology have been evaluated, and no problems have been identified that will cause adverse effects as a result of the ongoing injection operations.

Reservoir characteristics of the Injection Zone indicate the reservoir has sufficient properties to accommodate the historical and planned future injection rate, volume and pressure from the three Navajo injection wells. Based on information gathered from the Navajo refinery injection well system, there are no adverse reactions identified with the waste stream and the well components of construction and the Injection Zone matrix and formation fluid.

WDW-3 meets the construction and operating standards set forth in 20.6.2.2505 NMAC. A procedure to permanently plug and abandon the well has been included per the requirements of 20.6.2.5209 NMAC.



District I
1625 N. French Dr., Hobbs, NM 88240
(575) 393-6161
District II
811 S. 1st St., Artesia, NM 88210
(575) 748-1283
District III
Rio Brazos Road, Aztec, NM 87410
(505) 334-6178
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
(505) 476-3470

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505
(505) 476-3440

Revised January 10, 2012

Submit Original
Plus 1 Copy
to Environmental
Bureau
1 Copy to Appropriate
District Office

**DISCHARGE PERMIT APPLICATION FOR
UNDERGROUND INJECTION CONTROL (UIC) CLASS I (NON-HAZARDOUS),
CLASS III SOLUTION MINING, AND CLASS V WELLS**

(Refer to WQCC Regulations (20.6.2.5000 through 20.6.2.5299 NMAC)
for assistance in completing this application)

New Renewal Modification

The information in items 1 through 6 and items 8 through 14 is required for all Class I, Class III, and Class V Underground Injection Control Wells. The additional information in item 9 is required for Class I and Class III Underground Injection Control Wells (see 20.6.2.5006 and 20.6.2.5101 NMAC).

1. **Underground Injection Control Well Class:**

Class I (NH) Class III - Brine Well
 Class V - Geothermal Class V - Ground Water Management Class V - Other

2. **Operator:** Navajo Refining Company, L.L.C.

Address: 501 East Main
Artesia, NM 88210

Contact Person: Micki Schultz Phone: 575-746-5281 E-mail: Micki.Schultz@hollyfrontier.com

3. **Location:** SE /4 SW /4 Section 1 Township 18S Range 27E
Latitude: 32.7716 Longitude: -104.23327 NAD: 1927 1983
Submit 7.5 Minute U.S.G.S. Quadrangle Topographic Map showing exact location of the facility.

4. **Landowner(s):** Attach the name, address, and telephone number of the landowner of the facility site.

Surface Owner: Federal State Private Tribal Trust or Indian Allotment

5. **Facility Description:** Attach a description of the facility with a diagram depicting pertinent features, *i.e.*, facility/property boundaries, buildings, roads, fences; process areas, areas of discharge, aboveground piping, underground piping, wells (all types), pits, ponds, dikes, sumps, above and below-grade tanks, landfarms, landfills, surface and/or ground water contamination abatement devices, *etc.*

6. **Proposed discharge plan (see 20.6.2.3106C NMAC):** Specify the methods or techniques that the owner/operator will use to ensure compliance with the regulations. At a minimum include the following information::

- (a) Quantity, quality and flow characteristics of the discharge;
- (b) Location of the discharge and of any bodies of water, watercourses and ground water discharge sites within one mile of the outside perimeter of the discharge site, and existing or proposed wells to be used for monitoring;
- (c) Depth to and TDS concentration of the ground water most likely to be affected by the discharge;
- (d) Flooding potential of the site;
- (e) Location and design of site(s) and method(s) to be available for sampling, and for measurement or calculation of flow;
- (f) Depth to and lithological description of rock at base of alluvium below the discharge site if such information is available; and,
- (g) Any additional information that may be necessary to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at

any place of withdrawal of water for present or reasonably foreseeable future use. OCD may require additional detailed information on site geologic and hydrologic conditions.

7. **INFORMATION FOR CLASS I NONHAZARDOUS WASTE INJECTION WELLS AND CLASS III BRINE WELLS (20.6.2.5210 NMAC):** For Class I and III injection wells, attach the information required in Subsection B of Section 20.6.2.5210 NMAC. Include sources and an appropriate analysis of injection fluid and compatibility with the receiving formation produced water and if injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- (a) **Area of Review:** A map showing the Class I non-hazardous waste injection well, or Class III well or well fields and the applicable area of review. Within the AOR, the map must show the number, name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads;
 - (b) **Data Tabulation:** A tabulation of data on all wells within the AOR which may penetrate into the proposed injection zone. Such data shall include a description of each well's type, the distance and direction to the injection well or well field, construction, date drilled, location, depth, record of plugging and/or completion information;
 - (c) **Corrective Action:** For wells within the area of review which penetrate the injection zone, but are not properly completed or plugged, the corrective action proposed to be taken under Section 20.6.2.5203 NMAC;
 - (d) **Maps and Cross-Sections:** Maps and cross-sections indicating the general vertical and lateral limits of all ground water having 10,000 mg/l or less TDS within the AOR, the position of such ground water within the AOR relative to the injection formation, and the direction of water movement in each zone of ground water which may be affected by the proposed injection;
 - (e) **Geology:** Maps and cross-sections detailing the geology and geologic structure of the local area, including faults and the regional geologic setting;
 - (f) **Proposed Operating Data:** including;
 - Average and maximum daily flow rate and volume of the fluid to be injected;
 - Average and maximum injection pressure;
 - Source of injection fluids and an analysis or description of their chemical, physical, radiological and biological characteristics;
 - (g) **Formation Testing Program:** Results of the formation testing program to obtain an analysis or description of the chemical, physical, and radiological characteristics of the receiving formation;
 - (h) **Fluids and Pressure:** Expected pressure changes, native fluid displacement, and direction of movement of the injected fluid;
 - (i) **Stimulation Program:** Proposed stimulation program;
 - (j) **Injection Procedure:** Proposed or actual injection procedure;
 - (k) **Drawings:** Schematic or other appropriate drawings of the surface and subsurface construction details of the well;
 - (l) **Construction:** Pursuant to 20.6.2.5205 NMAC, the owner/operator must demonstrate that the construction and operation of Class I non-hazardous waste injection wells and Class III brine wells will not cause or allow movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC. The owner/operator must provide the following information:
 - Depth to the injection zone;
 - Injection pressure, external pressure, annular pressure, axial loading, and other stresses that may cause well failure;
 - Hole size;
 - Size and grade of all casing strings, including wall thickness, diameter, nominal weight, length, joint specification, and construction material;
 - Type and grade of cement;
 - Rate, temperature, and volume of injected fluid;
 - Chemical and physical characteristics of the injected fluid, including corrosiveness, density, and temperature;
 - Chemical and physical characteristics of the formation fluids including pressure and temperature;
 - Chemical and physical characteristics of the receiving formation and confining zones including lithology and stratigraphy, and fracture pressure; and
 - Depth, thickness and chemical characteristics of penetrated formations which may contain ground water.

Include a cementing and casing program (provide details on liners, tubing, packers, size, setting depth, sacks of cement used, hole size, top of cement, and how top was determined, etc.), logging procedures, deviation checks, and a drilling, testing, and coring program for new wells.

Include the name of the injection formation and, if applicable, the field or pool name; the injection interval and whether it is perforated or open-hole; state if the well was drilled for injection or, if not, the original purpose of the well; give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations; and give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

(m) **Contingency plans:** Contingency plans to cope with all shut-ins or well failures so as to prevent movement of fluids into ground water having 10,000 mg/l or less TDS;

(n) **MIT Monitoring Plans:** MIT Monitoring Plans, including maps, for meeting the monitoring requirements of Section 20.6.2.5207 NMAC; and

(o) **Additional Fluid Monitoring Plans For Class I Non-Hazardous Waste Injection Wells:** Provide a fluid monitoring plan for the analysis of the injected fluids for Class I Wells at least quarterly to determine their characteristics. (See 20.6.2.5207B NMAC).

(p) **Additional Fluid Monitoring Plans For Class III Wells:** Provide a quarterly fluid monitoring plan for Class III wells that meets 20.6.2.5207C NMAC.

(q) **Financial Assurance:** Provide an instrument that documents the ability of the owner/operator to undertake measures necessary to prevent contamination of ground water after the cessation of operation, including the proper closing, plugging and abandonment of a well, ground water restoration if applicable, and any post-operational monitoring as may be needed. The Owner/Operator shall submit one of the following:

- A surety bond;
- A trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary;
- A non-renewable letter of credit made out to the State of New Mexico;
- Liability insurance specifically covering the contingencies listed in this paragraph; or
- A performance bond, generally in conjunction with another type of financial assurance.

(r) **Logging and testing data:** Provide all available logging and testing program data on the well (if well logs have been filed with the Division, they need not be resubmitted).;

(s) **Mechanical Integrity Data:** Provide mechanical integrity data (see 20.6.2.5204 NMAC);

(t) **Maximum Pressure and Flow Rate:** Specify the anticipated maximum pressure and flow rates;

(u) **Formation Testing Program Data:** Provide the results of the formation testing program;

(v) **Compatibility:** Discuss the physical, chemical, and biological interactions between the injected fluids and fluids in the injection zone, and minerals in both the injection zone and the confining zone; and


(w) **Area of review corrective actions:** Discuss the status of corrective action(s) on defective wells in the area of review.

8. **Modification(s):** Attach a description of proposed modifications to existing discharge processes.

9. **Inspection/Maintenance and Reporting:** Attach a routine inspection, operation, and maintenance plan to ensure permit compliance.

10. **Contingency plans:** Attach a contingency plan for reporting and taking corrective action(s) to address any spills and/or releases.

11. **Other information:** Attach any additional information that may be necessary to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use.

 **Filing Fee:** Attach application filing fee of \$100.00. The check or money order must be made payable to Water Quality Management Fund. The permit fee will be required prior to permit issuance.

13. **Draft Public Notice:** Attach a draft of your public notice as specified in Subsection F of 20.6.2.3108 NMAC. All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the

owner of the surface of the land on which the injection well is to be located and to each leasehold operator within one-third mile of the well location. Proof of public notice must be submitted in accordance with 20.6.2.3108 NMAC for new and renewal applications for discharge permits.

CERTIFICATION:

I hereby certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Name: Michael G. McKee

Title: VP + Ref. Manager

Signature: Michael G. McKee

Date: 26 June 2012

E-mail Address: Michael.McKee@Hullyfrontier.com

Disclaimer: Note that some of the above information may include non-WQCC or OCD Regulated items, i.e., pits, ponds, below-grade tanks, sumps, etc. that may require a separate application and/or permit process than WQCC regulated items through the OCD.

1.0 Underground Well Control Well Class

The Navajo refinery Waste Disposal Well No. 3 (WDW-3) is classified as a Class I Nonhazardous Waste Injection Well.

2.0 Operator

The operator information for WDW-3 is provided below:

Facility Address

Navajo Refining Company, L.L.C.
501 East Main
Artesia, New Mexico 88210
(575) 748-3310

Contact Person

Micki Schultz, Environmental Specialist
(575) 746-5281
Micki.Schultz@hollyfrontier.com

3.0 Location

WDW-3 is located in the SE/4, SW/4, Section 1, Township 18 South, Range 27 East (790 feet from the south line and 2,250 feet from the west line of Section 1).

A topographic map showing the location of the Navajo refinery and WDW-3 is provided as Figure 1. An enlarged version of the topographic map showing the location of WDW-3 is provided as Figure 2.

4.0 Landowner(s)

The parcel of land where WDW-3 is located is owned by the following:



U.S. Department of the Interior
Bureau of Land Management
620 Greene Street
Carlsbad, New Mexico 88220
(575) 887-6544

The parcel of land where WDW-3 is located is surrounded by additional land owned by the Bureau of Land Management as shown in Appendix A.

5.0 Facility Description

The Class I non-hazardous UIC #3 is located approximately 14 miles east of the Navajo refinery, the largest refinery in New Mexico. Drawing 1 presents an aerial photograph of the refinery's location with respect to the wellhead facility, identifying pertinent features between the two sites. The wellhead facility is located within a fenced area that encloses the well, injection pumps, filters and piping, wellhead annulus measurement system (WAMS) on a contained concrete pad, and a power panel. The pumps and filters are located on a separate, contained concrete pad. There are no buildings or tanks, other than the 250 gallon glycol tank, associated with the WAMS unit.

6.0 Proposed Discharge Plan (see 20.6.2.3106C NMAC)

This permit renewal application is for an existing Class I nonhazardous waste injection well. Those portions of 20.6.2.3106C that are relevant to underground injection, especially 20.6.2.3103C (8), are addressed within Section 7.0 of this document.

6(a) is addressed in 7(f)

6(f) is addressed in 7(e)

6(b) is addressed in 7(a)

6(g) is addressed in 7(e)

6(c) is addressed in 7(d)

6(d) is addressed in 7(e)

6(e) measurement of flow is a flow meter at the wellhead with information transmitted electronically to the refinery control room.



7.0 Information for Class I Nonhazardous Waste Injection Well and Class III Brine Wells (20.6.2.5210 NMAC)

The following sections present the information required in Subsection B of Section 20.6.2.5210 NMAC.

7 (a) Area of Review

The WDW-3 Area of Review (AOR) consists of the area within a 1-mile radius surrounding the well as shown on Drawing 2. All potential sources of information relevant to the location of non-freshwater and freshwater wells within the AOR were reviewed.

Non-Freshwater Wells in Area of Review

The locations of non-freshwater artificial penetrations (oil and gas wells, exploratory tests, disposal wells, etc.) within the 1-mile radius AOR are identified in Drawing 2. A total of 123 non-freshwater artificial penetrations are present in the 1-mile radius AOR as shown on the map. Each artificial penetration is identified by a Map ID number. Table 1A presents a tabulation of the 125 non-freshwater artificial penetrations in the AOR.

Of the 125 non-freshwater artificial penetrations identified within the AOR, a total of 8 were advanced to a depth to penetrate the top of the Injection Zone.

Table 1B lists these wells. Appendix B contains records and schematics for these 125 non-freshwater artificial penetrations.

Freshwater Wells in Area of Review

Based upon information obtained from records maintained by the New Mexico Water Rights Reporting System, there are no freshwater wells within the 1-mile radius AOR.

Drawing 3 presents a topographic map depicting the 1-mile radius AOR. The map contains all surface bodies of water, mines (surface and subsurface), quarries, springs, and other surface features, including roads and residences.



There are no subsurface faults in the AOR known to have surface expression; therefore, no surface fault traces have been included on this map.

7 (b) Data Tabulation

Tables 1A and 1B present tabulations of the 123 non-freshwater artificial penetrations in the 1-mile radius AOR. Appendix B contains records for the 8 non-freshwater artificial penetrations that penetrate into the Injection Zone.

7 (c) Corrective Action

The available records for each artificial penetration that penetrates the top of the Injection Zone within the 1-mile radius AOR were evaluated to determine if corrective action would be required to prevent movement of fluids into or between USDWs which could be caused by pressures in the Injection Zone. These records are contained in Appendix B.

No corrective actions are warranted because all artificial penetrations have been properly constructed, plugged and/or abandoned, or are still operating.

7 (d) Maps and Cross-Sections

The base of the Underground Source of Drinking Water (USDW), groundwater with total dissolved solids concentration with less than 10,000 milligrams per liter (mg/L), occurs at a depth of approximately 3,150 feet above mean sea level. Figure 3 presents a generalized hydrogeologic cross-section for the local area. Figure 4 presents a published map indicating the direction of shallow groundwater movement in the local area.

The top of the WDW-3 Injection Zone is separated from the base of the USDW by several thousand feet of low permeability carbonates, siltstones and shale as depicted on the geologic cross-sections presented on Drawings 5, 6 and 7. Drawing 4 is a cross-section index map.



7 (e) Geology

The Navajo refinery is located in Eddy County, New Mexico on the Northwestern Shelf of the larger Permian Basin as shown on Figure 5. Figure 6 is stratigraphic column presenting the geologic formations relevant to the underground injection operations at WDW-3. The refinery is located on the southern flank of the Artesia-Vacuum anticline (also referred to as the Vacuum Arch), which trends east to west across the study area as shown Figure 7. Figure 8 is a published regional structural map of the San Andres Formation.

As depicted on the three geologic cross-sections presented on Drawings 5, 6, and 7, the subsurface geology in the area of the Navajo refinery is rather simplistic. Structural dip of all geologic formations is about 100 feet/mile to the southeast away from the Vacuum Arch depicted on Figure 7.

Injection Zone

The Injection Zone into which all three injection wells at the Navajo refinery are injecting is composed of the lower portion of the Wolfcamp Formation and the underlying Cisco and Canyon Formations. These formations occur in WDW-1, WDW-2 and WDW-3 at the depths shown in the table below.

Injection Zone Formations	WDW-1 (KB = 3,693 ft MSL)		WDW-2 (KB = 3,623 ft MSL)		WDW-3 (KB = 3,625 ft MSL)	
	MD below KB (ft)	Subsea Depth (ft)	MD below KB (ft)	Subsea Depth (ft)	MD below KB (ft)	Subsea Depth (ft)
Lower Wolfcamp	7,450	-3,757	7,270	-3,647	7,303	-3,678
Cisco	7,816	-4,123	7,645	-4,022	7,650	-4,025
Canyon	8,475	-4,782	8,390	-4,767	8,390	-4,765
Base of Injection Zone (base of Canyon)	9,016	-5,323	8,894	-5,271	8,894	-5,269

The following are brief descriptions of the three geologic formations that form the Injection Zone.

Lower Portion of Wolfcamp Formation (Permian Age)

The lower portion of the Wolfcamp Formation is a light brown to tan, fine to medium grained, fossiliferous limestone with shale interbeds.

Cisco Formation (Pennsylvanian Age)

The Cisco Formation is a uniform, light-colored, chalky, fossiliferous limestone with shale interbeds.

Canyon Formation (Pennsylvanian Age)

The Canyon Formation is a white to tan to light brown fine grained, chalky, fossiliferous limestone with shale interbeds.

Drawing 8 presents a structure contour map of the Injection Zone and Drawing 9 presents an isopach map of the Injection Zone.

Confining Zone

The Confining Zone overlying the Injection Zone, in descending order, is composed of the Yeso Formation, Abo formation, and the upper portion of the Wolfcamp Formation. The following are brief descriptions of the three geologic formations that form the Confining Zone.

Yeso Formation (Permian Age)

The Yeso Formation consists of orange shale, light gray to white dolostone and bedded anhydrite.

Abo Formation (Permian Age)

The Abo Formation is a non-marine to marginal marine red shale and fine-grained sandstone interbedded sequence.

Upper Portion of Wolfcamp Formation (Permian Age)

The upper portion of the Wolfcamp Formation is a light brown to tan, fine to medium grained, fossiliferous limestone with shale interbeds.

Drawing 10 presents a structure contour map of the Confining Zone and Drawing 11 presents an isopach map of the Confining Zone.

Faulting

No evidence has been found of any subsurface faulting within and immediately surrounding the 1-mile radius AOR that would provide hydraulic connection between the Injection Zone and the shallow USDW. The nearest documented subsurface fault is the "K-M" fault located approximately 17 miles to the northwest, well outside the geologic study area for the Navajo refinery.

Seismicity

The southeastern portion of New Mexico is historically an area of low seismicity with naturally occurring earthquakes being rare and of low magnitude. The Navajo refinery is located in one of the areas recognized as having the lowest level of seismic risk in the continental United States (Figure 9).

The potential for earthquakes to occur in the vicinity of the Navajo site are minimal. Appendix C presents a listing of all recorded seismic events within 200 miles of the Navajo refinery for the period from 1973 to late 2011.

The injection operations at the Navajo refinery do not have the potential to cause any seismic activity which could alter the confining capability of the subsurface Injection Zone and overlying Confining Zone.

Surface Geology and Flooding Potential

The surface geology of the local area is shown on Figure 10. The Pecos River, located about three miles east of Artesia is the only surface water body in the area of the Navajo refinery. Local annual rainfall is approximately 13.5 inches. As indicated on the topographic map on Figure 1, the land surface elevation at the refinery is higher than that near the river, therefore the potential for flooding at the Navajo refinery is minimal.



7 (f) Proposed Operating Parameters

Source and Description of Injection Fluid

The fluid injected into the Navajo injection wells is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers, boilers, streams from water purification units, desalting units, recovered and treated ground water, and general waste waters will be blended to form the fluid to be injected into the injection wells. Table 2 and Appendix D present data characterizing the injection fluid.

Average and Maximum Daily Flow Rate and Volume

The maximum permitted composite injection rate into all three Navajo injection wells is 800 gpm. This rate of injection is equal to 1,152,000 gallons per day or 420,480,000 gallons per year or 4,204,800,000 gallons into the Injection Zone over the 10-year permit life of WDW-3.

However, the actual average composite injection rate for the three injection wells, based on historical data summarized in Appendix E, is approximately 400 gpm.

Average and Maximum Surface Injection Pressure

The average wellhead injection pressure is 752 psig and an estimated bottom-hole pressure of 3,858 psia. Appendix E includes a tabulation of historical injection rates and associated surface injection pressure and bottom-hole pressure calculations.

The maximum operating injection wellhead pressure will not exceed 1,530 psi or 0.2 psi per foot of depth to the top of the Injection Zone at 7,650 feet, as required by the OCD Proposed Rule 21.B(7), dated October 6, 1997. The predicted pressures were determined using a program called PredictW and the equations used in the program can be found in Appendix E. The PredictW model was calibrated with historical injection volumes and measured bottom-hole pressures.

Maximum Allowable Surface Injection Pressure (MASIP) Calculation

Depth to top of Injection Zone in WDW-3 = 7,303 feet

7,303 feet x 0.2 psi/ft = 1,460 psi

7 (g) Formation Testing Program

Formation testing was conducted during the initial construction of the Navajo refinery injection wells to obtain site-specific data relating to the chemical, physical and radiological characteristics of the Injection Zone. Table 4 summarizes the results of the testing program.

The analysis of formation fluids can be found in Appendix F. All of the wells were converted oil and gas wells and no coring was completed in any of the wells. Correlations were done from offset wells.

7 (h) Fluids and Pressure

The following are descriptions of the changes in reservoir conditions that have been observed to-date and the predicted changes over the 10-year permit time frame for WDW-3. This information is based on the known historical rates and volumes that have been injected into the wells and future 10-year emplacement of a conservative rate and volume of injected fluids.

The interface between injected waste and the formation brine (the waste front) expands radially from the WDW-3 wellbore. As fluid is injected, the Injection Zone will continue to pressurize due to the resistance of fluid movement and the compression of the fluid and rock matrix.

Current Cone of Influence and Waste Plume Front

The maximum lateral spread of the waste front and pressurization during the operational life of WDW-3 to-date were initially calculated.



Calculated Cone of Influence (Current)

The current pressure cone of influence within the Injection Zone is presented on Drawing 12. This Cone of Influence is based on injection operations to-date.

Calculated Plume Front Migration (Current)

The radius of the current dispersed plume for the wells is as follows:

WDW-3: 1,494 feet

WDW-1: 2,898 feet (WDW-1 is approximately 7,900 feet from WDW-3)

WDW-2: 2,266 feet (WDW-2 is approximately 3,100 feet from WDW-3)

Future Cone of Influence and Waste Plume Front

The maximum lateral spread of the waste front and pressurization during the 10-year permit time frame for WDW-3 were calculated.

Calculated Cone of Influence (10 Years)

The predicted pressures were determined using a program called PredictW and the equations used in the program can be found in Appendix E. The predicted pressure cone of influence can be found on Drawings 13 through 16. The following four analyses were performed for the cone of influence calculations:

1. Injection into WDW-1 and WDW-2 with no injection into WDW- 3
2. Injection into WDW-1 and WDW-3 with no injection into WDW-2
3. Injection into WDW-2 and WDW-3 with no injection into WDW-1
4. Injection into all three wells; WDW-1, WDW-2 and WDW-3

The cone of influence is defined here as the area within which increased Injection Zone pressures caused by injection of wastes would be sufficient to cause vertical fluid movement through any well or other conduit into a USDW. This demonstration shows that the extremely conservative worst-case cone of influence of the injection operations is smaller than the regulatory 1-mile radius AOR in which artificial penetrations were investigated.



In the worst case, an undocumented abandoned well is imagined to be open to both the Injection Zone and the base of the USDW. In addition, the well is imagined to be filled to within 100 feet of the ground surface with formation brine from the Injection Zone and fresh water from the base of the USDW. The cone of influence can be calculated by comparing the hydraulic heads of the Injection Zone and the lowermost USDW. It is only where the Injection Zone head is above the USDW head that fluid movement from the Injection Zone into the USDW could occur. This worst-case model of the potential effect of injection upon the USDW is extremely conservative, because no wells within the 1-mile radius AOR surrounding WDW-3 are open to both the Injection Zone and the USDW and are filled with brine.

The Injection Zone has a native pressure such that the resulting hydraulic head is lower than the head of the lowermost USDW. The pre-injection pressure of the injection interval was measured on July 30, 1998, in WDW-1 to be 2,928 psia at 7,911 feet below ground level (feet).

A sample of formation fluid was retrieved from formation fluid swabbed on July 25, 1998 from the perforations of the deeper Cisco interval, from 8,220 feet to 8,476 feet in WDW-1. The total dissolved solids (TDS) concentration of the sample was 33,000 mg/l, and the specific gravity of the sample at room temperature was 1.034. Formation fluid was swabbed on July 29, 1998, from the perforations of the shallower Cisco interval from 7,924 feet to 8,188 feet in WDW-1. The analysis of a sample of this fluid indicated that the TDS concentration of the sample was 18,000 mg/l, and the specific gravity at room temperature was 1.018. The chemical analysis of the formation fluid samples is included as Appendix F. These values compare favorably with information from the analysis of fluid retrieved during drill-stem test (DST) No. 5, which was conducted on August 26, 1993 in WDW-1 (Appendix F). The salinity of the formation fluid retrieved during DST No. 5 was reported as a chlorides concentration of 25,000 mg/L. The formation fluid is therefore assumed to have a sodium chloride concentration of 25,000 mg/L. The specific gravity of such a fluid is approximately 1.02.

The pre-injection pressure, P_i , at the top of the Injection Zone in WDW-3 at 7,660 feet RKB is 2,817 psia, as calculated below, based on a formation fluid specific gravity of 1.018. Using the lightest specific gravity in this calculation yields a high P_i , which is conservative.

$$\begin{aligned} P_i(7,660 \text{ feet}) &= P_i(7,911 \text{ feet}) - (7,911 \text{ feet} - 7,660 \text{ feet}) (0.433 \text{ psi/ft}) (1.018) \\ &= 2,928 \text{ psia} - 111 \text{ psi} \\ &= 2,817 \text{ psia} \end{aligned}$$

The hydraulic head of the lowermost USDW is estimated to be 100 feet BGL. This estimate is reasonably conservative, as it is based on a static water level measurement of 81 feet.

The critical pressure, P_c , at 7,660 feet BGL that would be necessary to raise the hydrostatic head of the injection interval to the head of the lowermost USDW at 100 feet BGL is 3,329 psia, as calculated below:

$$\begin{aligned} P_c &= (\text{Top of Injection Zone} - \text{Base of USDW}) (0.433 \text{ psi/ft})(1.018) \\ &\quad + (\text{Base of USDW} - \text{Head of USDW}) (0.433 \text{ psi/ft}) \\ &= (7,660 \text{ feet} - 473 \text{ feet}) (0.433 \text{ psi/ft}) (1.018) \\ &\quad + (473 \text{ feet} - 100 \text{ feet}) (0.433 \text{ psi/ft}) \\ &= 3,329 \text{ psia} \end{aligned}$$

The critical increase in reservoir pressure, ΔP_c , above the native pressure that is necessary to raise the hydrostatic head of the Injection Zone to the head of the lowermost USDW is, therefore, 512 psi, as calculated below:

$$\begin{aligned} \Delta P_c &= P_c - P_i \\ &= 3,329 \text{ psia} - 2,817 \text{ psia} \\ &= 512 \text{ psi} \end{aligned}$$

An increase in reservoir pressure greater than 512 psi would be sufficient to raise the head of the Injection Zone above the head of the lowermost USDW. The cone of influence is the area around the injection wells within which the increase in reservoir pressure caused by injection is greater than 512 psi.

PredictW was used to calculate the pressure increase throughout the Injection Zone at the end of the upcoming 10 years of injection into the three wells. Contour plots of the predicted pressure increase in the injection zone (Drawings 13 through 16) were generated using historical injection rates and volumes and the maximum injection rates permitted for WDW-1, WDW-2 and WDW-3. The gridded pressure increases created by PredictW are contoured using Surfer, a commercial contouring software package.

Conservative values for reservoir thickness and permeability were used to overestimate the predicted increase in reservoir pressure. The reservoir was assumed to have a thickness of 85 feet. The permeability of the reservoir was assumed to be 251 md based on previous falloff testing. The modeled kh, 21,335 md-ft (= 251 md x 85 feet), is 20 percent of the kh, 104,477 md-ft, that was determined from the pressure falloff test conducted in WDW-3 on January 27, 2012 (Appendix G). Using a low kh will yield a predicted pressure increase that is much greater than expected and a cone of influence that is much larger than expected. The porosity was assumed to be 10 percent.

The viscosity of the formation fluid with TDS concentration of 25,000 ppm at 130°F is 0.53 cp (Appendix D). The compressibility of the pore volume of the formation is c_r , is $5.5 \times 10^{-6} \text{ psi}^{-1}$. The compressibility of the formation fluid is c_w , is $2.9 \times 10^{-6} \text{ psi}^{-1}$. The total compressibility ($c_t = c_r + c_w$) is $8.4 \times 10^{-6} \text{ psi}^{-1}$.

Historical injection data for WDW-1, WDW-2 and WDW-3 were used for the injection period from September 23, 1999 (initial injection at the site) through February 29, 2012. WDW-1, WDW-2 and WDW-3 are then modeled as injecting from February 29, 2012 through February 28, 2022, at a continuous rate of 800 gallons per minute (gpm) distributed among the three wells. The maximum modeled per-well injection rate for any one well is 400 gpm.

The 512-psi pressure-increase contour, which defines the outline of the worst-case cone of influence, is located less than one mile from WDW-1, WDW-2, and WDW-3, as shown on Drawing 16. An improperly abandoned wellbore or other conduit filled with formation fluid that is located farther than one mile from the proposed

wells would not transmit sufficient pressure from the Injection Zone to move fluids into the USDW. Navajo researched public and private sources of information about wells within the 1-mile radius AOR. Information was presented in Section 7 (b) that demonstrates that each of the injection zone penetrations is properly constructed to prevent migration of fluids into the USDW.

Modeled Plume Front Migration (10 Years in Future)

The lithologic character of the Injection Zone, with the resulting hydrodynamic characteristics, is expected to be horizontally uniform. Given the anticipated homogeneity of the Injection Zone, plume geometry during the active injection phase is expected to be cylindrical.

More than 175 feet of formation is anticipated to exist in the Injection Zone at the locations of the three Navajo injection wells. Each well is completed in the same interval with 100 to 200 feet of perforations per well. For a conservative estimate of the injection plume size, the plume radius is calculated on the basis of all flow emplaced in an 85-foot thick interval. Assuming a continuous injection rate of 400 gpm into WDW-3 and an injection period of 10 years, the radius of the concentrated plume from WDW-3 will be 2,788 feet. This is determined by:

$$r_c = \left[\frac{(0.1337 vt)}{(0.8 \pi \phi h)} \right]^{1/2}$$

where:

- 0.1337 = factor to convert gallons to cubic feet
- r_c = radius of the concentrated plume
- v = annual injected volume in gallons
- 0.8 = factor to compensate for immovable connate water
- ϕ = formation porosity
- h = thickness of the injection reservoir
- t = years of injection = 10 years

$$r_c = \left[\frac{(0.1337 \times 88,668,260 \times 10)}{(0.8 \times 3.1416 \times 0.1 \times 85)} \right]^{1/2}$$

$$= 2788 \text{ feet}$$

The radius of the dispersed plume from WDW-3 after 10 years of continuous injection at 400 gpm is calculated to be 2,792 feet, as determined by:

$$r_d = 2.3 (C_d r_c)^{1/2} + r_c$$

where:

2.3 = constant

r_d = radius of the dispersed plume

C_d = coefficient of dispersion; for sandstone = 3, for limestone = 65

r_c = concentrated plume radius

$$r_d = 2.3 (65 \times 2,788)^{1/2} + 2788$$

$$= 2,792 \text{ feet}$$

WDW-3

The radius of the current dispersed plume versus 10 years of continuous injection at 400 gpm in the future for WDW-3 is as follows:

- Current plume radius: 1,494 feet
- Projected 10-year plume radius: 2,792 feet

By similar calculations, the radius of the current dispersed plume versus 10 years of continuous injection at 400 gpm in the future for WDW-1 and WDW-2 are as follows:

WDW-1

- Current plume radius: 2,898 feet
- Projected 10-year plume radius: 4,058 feet
-

WDW-1 is approximately 7,900 feet from WDW-3.

WDW-2

- Current plume radius: 2,266 feet
- Projected 10-year plume radius: 3,086 feet

WDW-2 is approximately 3,100 feet from the WDW-3.

7 (i) Stimulation Program

Historical Information

The only stimulation performed on the well has consisted of acid treatments of which the majority was performed through coil tubing pumped across the existing perforation. No fracturing of the injection interval has been performed.

Future Stimulation Programs and Procedures

Currently no changes are planned in the way the well is stimulated. Navajo reserves the right to fracture the injection interval with approval from OCD. Approximately once every two years an acid stimulation is performed on the wells. The stimulation procedure will consist of pumping 4,000 gallons to 8,000 gallons of 15 percent NEFE Hydrochloric acid through coil tubing at 1 bpm to 2 bpm across the perforations. The acid will be displaced into the formation down the tubing at highest possible rate.

7 (j) Injection Procedure

Injection into all three Navajo injection wells is on a continuous basis. The injection fluid is routed from the refinery process areas via pipeline to each injection well. Figure 11 presents the pre-injection facilities for WDW-3.

Historical Injection Rates and Volumes

The historical rates and volumes can be found in Appendix E.

Predicted Injection Rates and Volumes

The maximum permitted composite injection rate into all three Navajo injection wells is 800 gpm. This rate of injection is equal to 1,152,000 gallons per day or

420,480,000 gallons per year or 4,204,800,000 gallons into the Injection Zone over the upcoming 10 year permit life of WDW-3.

However, the actual average composite injection rate for the three injection wells, based on historical data summarized in Appendix E, is approximately 400 gpm.

7 (k) Drawings

Figure 11 presents a schematic of the pre-injection surface facilities. Figure 12 presents an as-built diagram of the below-grade portions of WDW-3. Figure 13 presents an as-built diagram of the WDW-3 wellhead.

7 (l) Construction

WDW-3 was converted from the following oil and gas well originally drilled to a depth of 9,450 feet in 1991:

Mewbourne Oil Company
Navajo Chalk Bluff Federal No. 1
Section 1, Township 18 South, Range 27 East
(API No. 30-015-26575)

The oil and gas well was converted to an injection well (WDW-3) in 2006. Appendix H includes excerpts from a report documenting the well conversion that provides relevant information about how the well was originally constructed and how it was converted to an injection well. Figure 12 presents an as-built diagram of the below-grade portions of WDW-3. Figure 13 presents an as-built diagram of the WDW-3 wellhead.

General Description of the Well

Size, Type, and Depth of Injection Tubing: The information for the tubing string was obtained from OCD records on file with the state and geophysical logs.

- **Tubing:** 4-1/2-inch, 11.6 pound per foot, steel construction, API grade J-55, with long thread connections (LTC).



- **Packer:** Arrow X-1, 7-inch by 2-7/8-inch set in tension (37,000 pounds) at 7,575 feet.
- **Tubing Length:** 7,568 feet with a 0.54-foot, 4-1/2-inch by 2-7/8-inch crossover in the top of the packer. There are no profile nipples in the tubing or the packer as this was not a requirement of the permit.

Size, Type, and Depth of Casing: There are four casing strings in the well and one below the injection interval. The information for these casing strings was obtained from OCD records on file with the state and geophysical logs.

- **13-3/8-inch**, 54.5 pound per foot, steel construction, API grade J-55, with short thread connections (STC), set at a depth of 400 feet. The casing was cemented to the surface with 425 sacks of cement. The casing was set in an open hole with a diameter of 17.5 inches. This information was obtained from OCD records.
- **9-5/8-inch**, 36 pound per foot, steel construction, API grade J-55, STC, set at a depth of 2,604 feet. The casing was cemented to the surface with 1,025 sacks of cement. The casing was set in an open hole with a diameter of 12.25 inches. This information was obtained from OCD records.
- **7-inch**, 26 pound per foot steel construction, API grade N-80 and P-110, STC, set at a depth of 9,450 feet. The casing was cemented with 1,350 sacks of cement to 900 feet from the surface. The casing was set in an open hole with a diameter of 8.75 inches. The top of cement and weight of the pipe was verified with a CBL and caliper log run on October 13, 2006. The remainder of the information was obtained from OCD records.

Below the cement plug at 9,022 feet is the top of a 4-1/2-inch liner. The liner is a string of 4-1/2-inch casing installed to a depth of 10,119 feet. There is a cast iron bridge plug set in the liner at 9,800 feet, which is above the original perforations between 9,861 feet and 9,967 feet. The current injection interval is above the



plug at 9,022 feet. The cement plug also isolates the lower section of the original wellbore. This information was obtained from OCD records.

The top of cement was determined from a CBL that was run in the 7-inch casing string on October 13, 2006. The top of cement in the 7-inch casing was found at 900 feet below the surface. The top of cement in the 9-5/8-inch and 13-3/8-inch casing strings was verified through OCD records and volume calculations.

The 7-inch casing was perforated on October 14 and 15, 2006. The casing was perforated with a 0.5-inch diameter hole at 2 shots per foot on a 60° phasing. The perforations are located between 7,660 feet and 8,450 feet and from 8,540 feet to 8,620 feet.

The total depth of the well is 10,119 feet with the plug back depth at 9,022 feet. On August 30, 2009, fill was tagged at 8,986 feet.

Current Loading on Pipe and Pipe Specifications

Pipe Size (in)	Type	Weight (lb/ft)	Depth Ref. to Hole		Cement Volume (sks)	Collapse (psi)	Yield (psi)	
			Ground Level (ft) Top	Ground Level (ft) Bottom				
13-3/8	Conductor							
	Casing, J-55	54-1/2	Surface	400	17.5	425	1130	2730
9-5/8	Surface Casing Protection, J-55	36	Surface	2604	12.25	1025	2020	3520
7	Casing, N-80, P-110	26 & 29	Surface	9450	8.75	1350	5410	7240
4-1/2	Injection Tubing, J-55	11.6	Surface	7561	6.184	N/A	4960	5350
7x 2-7/8	Arrow Packer X-1	N/A	7561	7569	2.5	N/A	N/A	N/A
4-1/2	Liner, N-80	11.6	9051	10119	6.5	175	6350	7780

Depth to Injection Zone

The WDW-3 Injection Zone is 7,303 to 8,894 ft bls.

Pressures and Other Stresses That May Cause Well Failure

There are no known pressures or stresses that may cause failure of WDW-3.



Hole Size

The borehole advanced for the original oil and gas well that was later converted to WDW-3 was 12.25 inches in diameter.

Well Casing Information

Figure 12 and Appendix H include information about the WDW-3 well casing. The preceding table provides an overview of the casing information.

Cement Information

Figure 12 and Appendix H include information about the WDW-3 cement.

Rate, Temperature and Volume of Injected Fluid

Average and Maximum Daily Flow Rate and Volume

The average injection rate for all three Navajo injection wells is approximately 400 gpm and the maximum permitted injection rate between the three wells is 800 gpm.

Temperature

The temperature of the injected fluid is within average ambient temperature ranges.

Volume of Injected Fluid

The maximum annual volume of injected fluid, based on a maximum injection rate of 800 gpm is 420,480,000 gallons.

Chemical and Physical Characteristics of Injected Fluid

The fluid injected into WDW-3 is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated groundwater, and general wash waters are blended to form the fluid injected into WDW-3. Table 2 and Appendix D present data characterizing the injection fluid.

Chemical and Physical Characteristics of Formation Fluid

Formation testing was conducted during the initial construction of the Navajo refinery injection wells to obtain site-specific data relating to the chemical, physical and radiological characteristics of the Injection Zone. The formation fluid contained in the Injection Zone is compatible with the well construction components and the injected fluid. Formation fluid information pertinent to the reservoir calculations is included in Appendix E.

Chemical and Physical Characteristics of the Receiving Formation

The Injection Zone is porous carbonates of the lower portion of the Wolfcamp Formation, the Cisco Formation, and the Canyon Formation.

The lower portion of the Wolfcamp Formation (Lower Wolfcamp) is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation (Permian-Wolf campaign age) consists of light brown to tan, fine to medium-grained, fossiliferous limestones with variegated shale interbeds (Meyer, 1966, page 69). The top of the Wolfcamp Formation was correlated for this study to be below the base of the massive, dense dolomites of the overlying Abo Formation. The base of the Wolfcamp coincides with the top of the Cisco Formation. The thickness of log porosity greater than 5 percent in the entire Wolfcamp Formation ranges from 0 feet to 295 feet in a band three miles wide that trends northeast-southwest across the study area.

The Cisco Formation (Pennsylvanian-Virgilian age) of the Northwest Shelf is described by Meyer (1966, page 59) as consisting of uniform, light colored, chalky, fossiliferous limestones interbedded with variegated shales. Meyer (1966, page 59) also describes the Cisco at the edge of the Permian basin as consisting of biohermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 659 feet thick in WDW-1, 745 feet in WDW-2, and 720 feet in WDW-3. The total thickness of intervals with log porosity greater than 5 percent is approximately 310 feet in WDW-1, 580 feet in WDW-2, and 572 feet in WDW-3. The total thickness with log porosity greater than 10 percent is approximately 100 feet in WDW-1, 32 feet in WDW-2, and 65 feet in WDW-3. The thickness of the porous intervals in the Cisco ranges from 0 feet in

the northwestern part of the study area to nearly 700 feet in a band three miles wide that trends northeast-southwest.

The Canyon Formation (Pennsylvanian-Missourian age) consists of white to tan to light brown fine grained, chalky, fossiliferous limestone with gray and red shale interbeds (Meyer, 1966, page 53). Locally, the Canyon occurs between the base of the Cisco dolomites and the top of the Strawn Formation (Pennsylvanian-Desmoinesian age). The total thickness of intervals with log porosity greater than 5 percent is 34 feet in WDW-1, 30 feet in WDW-2, and 10 feet in WDW-3. No intervals appear to have log porosity greater than 10 percent in any of the three injection wells.

Permeability measurements that range from less than 100 md to 2,733 md are available for the Lower Wolfcamp-Cisco-Canyon injection zone. Permeability measurements from hydrocarbon-producing intervals in the Wolfcamp, Cisco, and Canyon from Meyer (1966, Table) are summarized in Appendix I. Meyer reported permeabilities in the Cisco of up to 114 millidarcies (md), up to 38 md in the Canyon, and up to 200 md in the Wolfcamp.

Permeability was estimated to be 597 md from DST No. 5 conducted in WDW-1 on August 26, 1993. DST No. 5 was conducted near the top of the Cisco Formation from 7,817 feet to 7,851 feet (Appendix I).

Historical falloff data obtained during the life of the wells shows that the permeability ranges from 500 md to 1,000 md throughout the injection interval.

Chemical and Physical Characteristics of the Confining Zone

The Confining Zone extends from 4,000 feet to 7,450 feet in WDW-1, from 4,120 feet to 7,270 feet in WDW-2, and from 4,030 feet to 7,303 feet in WDW-3. The Confining Zone includes massive low-porosity carbonate beds and layers of shale in the Upper Wolfcamp, Abo, and Yeso Formations that will confine the injected fluids to the permitted Injection Zone (Lower Wolfcamp, Cisco, and Canyon Formations). The formations that comprise the Confining Zone are described below.

The Injection Zone is directly overlain by the confining layers of the upper portion of the Wolfcamp Formation. Three (3) DSTs were conducted in the upper portion of the Wolfcamp in WDW-1, in the interval from 7,016 feet to 7,413 feet, that indicate that the interval has low permeability and can confine injected fluids to the injection zone. An average permeability of 0.36 md was calculated from the data from DST No. 3, as follows:

$$\begin{aligned}
 k &= 162.6 \frac{q B \mu}{mh} \\
 &= 162.6 \frac{(20 \text{ bbl/ 89 min} \times 1440 \text{ min/day})(1)(0.53 \text{ cp})}{(570.883 \text{ psi/cycle})(7382 \text{ feet} - 7230 \text{ feet})} \\
 &= 162.6 \frac{(323.6 \text{ bpd})(1)(0.53 \text{ cp})}{(570.883 \text{ psi/cycle})(152 \text{ feet})} \\
 &= 0.36 \text{ md}
 \end{aligned}$$

A permeability on the order of 0.1 md is at the low end of the permeability range for carbonates, and is at the high end of the permeability range for shales, according to Freeze and Cherry (1979, p. 29). Therefore, the low-permeability carbonates of the upper Wolfcamp will provide the first level of confinement for the Injection Zone.

The Abo Formation overlies the Wolfcamp and extends from 5,400 feet to 6,890 feet in WDW-1, from 5,506 feet to 6,728 feet in WDW-2, and from 5,380 feet to 6,745 feet in WDW-3. Although the Abo is well known as a major oil producer in the AOR, the producing intervals lie in the upper Abo, whose equivalents are above 6,100 feet in WDW-1 and above 6,200 feet in proposed Gaines Well No. 2. The deepest Abo test well in the AOR, Map ID No. 126, located 6,000 feet east (downdip) of WDW-3, was drilled to 6,412 feet. No Abo production in the AOR has been established below 6,298 feet, the producing interval in Map ID No. 112, located 3,800 feet southeast (downdip) of WDW-1. The base of the producing interval within the Abo Formation in the AOR, therefore, is over 900 feet above the top of the proposed injection zone. The lower 600 feet of the Abo Formation (below the deepest producing interval in the AOR), consisting primarily of dolomite with an average porosity less than 5 percent and interbedded shale, will serve as the secondary confining layer above the proposed injection zone.

The Yeso Formation, which will provide additional confining capabilities, directly overlies the Abo Formation. The top of the Yeso is not consistently identified in the AOR, according to well records submitted to the OCD and available scout tickets. However, the top of the Confining Zone can be considered to extend to the top of the low-porosity limestone interval below the higher-porosity dolomites below the Glorieta Member of the San Andres Formation (at 4,000 feet in WDW-1, 4,120 feet in WDW-2, and 4,030 feet in WDW-3). The Yeso consists of low-porosity carbonates and clastic beds. The Tubb shale, a shale interval that is up to 150 feet thick in some wells in the study area, also occurs in this interval. Although no faults are known to exist in the confining zone within the AOR, the Tubb shale will serve to prevent movement of fluids through a hypothetical unknown fault.

Depth, Thickness and Chemical Characteristics of Penetrated Formations Containing Ground Water

The base of the USDW, groundwater with total dissolved solids concentration with less than 10,000 milligrams per liter (mg/L), occurs at the base of the Tansill Formation. Figure 3 presents a hydrostratigraphic cross-section for the local area. Figure 4 presents a potentiometric surface map indicating the direction of groundwater movement in the freshwater aquifers.

The base of the USDW occurs at the following approximate depths in Navajo's three injection wells:

- WDW-1: approximately 493 feet KB (3,200 feet above mean sea level)
- WDW-2: approximately 473 feet KB (3,150 feet above mean sea level)
- WDW-3: approximately 420 feet KB (3,150 feet above mean sea level)

In the eastern part of the study area, at depth, the Tansill Formation is overlain by the Salado Formation (Permian - Ochoan age). The Salado consists of halite, polyhalite, anhydrite, and potassium salts, which are soluble. The Salado is overlain by the Rustler Formation (Permian - Ochoan age). In the AOR, which straddles the outcrop area of the Salado, and to the east, the Salado has been removed by solution by ground water flowing through the Rustler.

To the east, where the Rustler is present, the Rustler is the USDW. To the west, where the Rustler has been removed by erosion and the Salado has been removed by solution, the Tansill is the USDW. The Tansill Formation and the underlying Yates Formation comprise the Three Twins Member of the Chalk Bluff Formation known in outcrops in the region (Hendrickson and Jones, 1952, page 20), and listed as a freshwater-producing interval.

The top of the Injection Zone (Lower Wolfcamp, Cisco, and Canyon Formations) is separated from the base of the USDW by several thousand feet of lower permeability carbonates, siltstones and shales as follows:

- WDW-1: 6957 feet (7,450 feet - 493 feet)
- WDW-2: 6,797 feet (7,270 feet - 473 feet).
- WDW-3: 6,883 feet (7,303 feet - 420 feet).

7 (m) Contingency Plans

WDW-3 is equipped with a high-level shutoff switch to prevent operation of the injection pump at pressures greater than the designated MASIP. The well is equipped with a low pressure shutoff switch that will deactivate the injection pump in the event of a surface leak. In addition, the well is equipped with a high/low pressure shutdown switch with a pressure sensor on the tubing/casing annulus. This pressure switch is intended to stop the injection pump in the event of 1) a tubing leak, or 2) a casing, packer, or wellhead leak.

If an alarm or shutdown is triggered, the cause of the alarm or shutdown will be immediately investigated.

- Immediately cease injection operations;
- Take all necessary steps to determine the presence or absence of a leak; and
- Provide verbal notification to OCD within 24 hours.

If the alarm or shutdown is not related to mechanical integrity and the cause of the alarm or shutdown is corrected, injection operations will be resumed. If the mechanical integrity of the well is in question, the well will remain out of service

until the mechanical integrity of the well is restored to the satisfaction of OCD and the agency approves resumption of injection operations.

7 (n) MIT Monitoring Plans (20.6.2.5207 NMAC)

Navajo has an ongoing monitoring program that satisfies all applicable requirements of Section 20.6.2.5207.NMAC.

- The mechanical integrity of WDW-3 is demonstrated on an annual basis.
- Continuous monitoring devices are used to provide a record of injection pressure, flow rate, flow volume, and annular pressure.

The results of these monitoring activities are reported to NMED as required by regulation.

7 (o) Additional Monitoring Plans for Class I Non-Hazardous Waste Injection Wells (20.6.2.5207B NMAC)

Appendix J includes an Injected Fluids Monitoring Plan that describes the procedures to be carried out on a quarterly basis to obtain a detailed chemical and physical analysis of a representative sample of the injected fluid, including the quality assurance procedures. The plan will be updated as necessary.

The plan includes the following elements:

- The parameters for which the injected fluid will be analyzed and the rationale for the selection of these parameters;
- The test methods that will be used to test for these parameters;
- The sampling method that will be used to obtain a representative sample of the injected fluid being analyzed;
- Field sampling documentation methodologies;
- The commercial laboratory who performs the analysis; and
- Method of reporting analytical results to OCD.

7 (p) Additional Monitoring Plans for Class III Wells (20.6.2.5207C NMAC)

This section is Not Applicable; WDW-3 is not a Class III well.

7 (q) Financial Assurance

Appendix K includes a well closure plan for WDW-3. The estimated cost to plug and abandon WDW-3 is presented in the table below. This cost estimate has been prepared to reflect the estimated costs that would be incurred by Navajo to abandon the well in accordance with the procedures in Appendix K.

Description of Service	Estimated Cost
Wireline (BHP, RTS, PFOT, Perforate)	20,000
Rental Tools	5,000
Pumping Service	10,000
Cementing Service	20,000
Excavating and Welding	2,500
Mud/Brine	5,000
Frac Tanks	2,500
Vacuum Trucks	2,500
Miscellaneous	2,500
SUBTOTAL	70,000
Field Supervision, Project Management, Procurement	25,000
Total Estimated Cost	\$95,000

Appendix L includes a copy of the financial assurance instrument that Navajo has established to provide the appropriate monies for plugging and abandoning WDW-3, any groundwater restoration that may be necessary, and any post-operational monitoring that may be required.

7 (r) Logging and Testing Data

Appendix M includes a copy of an open-hole log run on the original oil and gas well that was drilled in 1991 and later converted to WDW-3. Appendix N includes



copies of cased-hole logs that were run in WDW-3 as the well was being converted to disposal services.

7 (s) Mechanical Integrity Data (20.6.2.5204 NMAC)

Mechanical Integrity Testing (MIT) is conducted on WDW-3 on an annual basis in accordance with OCD regulations. Copies of each annual MIT report are submitted to OCD. Appendix G includes copies of the report documenting the most recent annual MIT work at WDW-3.

7 (t) Maximum Pressure and Flow Rate

As described in Section 7(f), the maximum composite injection rate into the three Navajo injection wells and maximum surface injection pressure are as follows:

- Maximum Injection Rate: 800 gpm
- Maximum Surface Injection Pressure: 1,460 psi

7 (u) Formation Testing Program Data

Appendix E includes the results of formation testing that was performed on the well when it was originally drilled as an oil and gas exploratory well.

7 (v) Compatibility

All components of WDW-3 that are in direct contact with the non-corrosive waste stream and formation fluids in the Injection Interval (e.g., wetted surfaces) are constructed of materials that are compatible with these fluids.

7 (w) Area of Review Corrective Actions

No corrective action plan is required for any of the artificial penetrations identified in the 1-mile radius AOR because all artificial penetrations have been properly constructed, plugged and/or abandoned in order to prevent movement of fluids



into or between USDWs which could be caused by pressures in the Injection Zone.

8.0 Modification(s)

There are no proposed modifications to existing discharge processes.

9.0 Inspection/Maintenance and Reporting

Navajo performs daily visual inspections of their three injection wells and the pipeline and performs required maintenance (PM) activities as scheduled to ensure safe operation of the wells.

Navajo performs routine reporting in accordance with the requirements of 20.6.2.5208.A NMAC for Class I nonhazardous waste injection wells.

10.0 Contingency Plans

Navajo has an Integrated Contingency Plan detailing responses to spills of all types, reporting spills/releases, mitigation and corrective actions, clean up and disposal as applicable. The remote WDW-3 is equipped with a high-pressure shutoff switch to prevent operation of the injection pump at pressures greater than the designated MASIP. The well is equipped with a low pressure shutoff switch that will deactivate the injection pump in the event of a surface leak. In addition, the well is equipped with a high/low pressure shutdown switch with a pressure sensor on the tubing/casing annulus. This pressure switch is intended to stop the injection pump in the event of 1) a tubing leak, or 2) a casing, packer, or wellhead leak.

If an alarm or shutdown is triggered at the wellhead, electronic signals are sent to the Control Room at the refinery notifying of the shutdown and the cause of the alarm or shutdown will be immediately investigated.

Operators will immediately cease injection operations at the wellhead and divert flow to another well; and notify Maintenance and Environmental to take all



necessary steps to determine the presence or absence of a leak; and Environmental will provide verbal notification to OCD within 24 hours.

If the alarm or shutdown is not related to mechanical integrity and the cause of the alarm or shutdown is corrected, injection operations will be resumed. If the mechanical integrity of the well is in question, the well will remain out of service until the mechanical integrity of the well is restored to the satisfaction of OCD and the agency approves resumption of injection operations.

11.0 Other Information

No additional information is required to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use.

12.0 Filing Fee

A check in the amount of \$100, made payable to Water Quality Management Fund, accompanies this permit renewal application document.

13.0 Draft Public Notice

20.6.2.3108.C requires that Navajo provide notice in accordance with 20.6.2.3108.F within thirty (30) days of OCD deeming the permit renewal application to be administratively complete. Appendix O includes a DRAFT copy of the public notice that will be published following receipt of written notification from OCD that this discharge permit renewal application has been deemed administratively complete.

Navajo understands the requirement to submit to OCD within 15 days of completion of public notice requirements stipulated Subsection C of 20.6.2.3108 NMAC proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.



14.0 Certification

The required certification language is included at the end of the completed OCD Discharge Permit Application Form in the front of this permit renewal application document. The appropriate Navajo refinery authority has signed the form.

TABLE IA
 NON-FRESHWATER (OIL AND GAS) WELLS IN WD-3 AREA OF REVIEW
 NAVAJO REFINING COMPANY, L.L.C.
 ARTESIA, NEW MEXICO

ID NO	API	Sect	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILL DATE	DEPTH (ft)
1	30-015-00662	36	17S	27E	330S	330W	STATE NO. 2	ACREY, B L & F D	O	10/15/1942	P&A	10/15/1942	600
2	30-015-00676	36	17S	27E	330N	990W	EMPIRE ABO UNIT #017	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	?	5797
3	30-015-00677	36	17S	27E	330S	990E	EMPIRE ABO UNIT #020	BP AMERICA PRODUCTION COMPANY	O	4/13/2009	P&A	3/17/1960	6013
4	30-015-00696	1	18S	27E	1980S	1980E	EMPIRE ABO UNIT #019Q	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	8/20/1959	6180
5	30-015-00697	1	18S	27E	1980S	660E	EMPIRE ABO UNIT #020K	BP AMERICA PRODUCTION COMPANY	O	1/5/2003	P&A	1/5/2003	6185
6	30-015-00698	1	18S	27E	660S	1980E	EMPIRE ABO UNIT #191	BP AMERICA PRODUCTION COMPANY	S	N/A	ACTIVE	11/8/1959	6385
7	30-015-00699	1	18S	27E	940S	330E	EMPIRE ABO UNIT #020B	APACHE CORPORATION	O	N/A	ACTIVE	12/2/1961	6250
8	30-015-00703	1	18S	27E	1980S	660W	EMPIRE ABO UNIT #017A	BP AMERICA PRODUCTION COMPANY	O	3/27/2009	P&A	5/22/1995	6137
9	30-015-00704	1	18S	27E	1980N	660W	EMPIRE ABO UNIT J NO. 17	ARCO OIL & GAS	O	3/26/1959	P&A	3/26/1959	5980
10	30-015-00705	1	18S	27E	990S	660W	EMPIRE ABO UNIT #017B	BP AMERICA PRODUCTION COMPANY	O	7/21/2004	P&A	6/25/1959	6150
11	30-015-00706	1	18S	27E	2310N	1980W	EMPIRE ABO UNIT #018A	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	5/31/1959	6087
12	30-015-00707	1	18S	27E	1980S	1980W	EMPIRE ABO UNIT #018B	APACHE CORPORATION	O	N/A	ACTIVE	5/22/1959	6163
13	30-015-00708	1	18S	27E	660N	1980E	EMPIRE ABO UNIT #019B	LIME ROCK RESOURCES II-A, L.P.	O	N/A	ACTIVE	7/7/1959	6078
14	30-015-00709	1	18S	27E	1980N	1980E	EMPIRE ABO UNIT #019C	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	8/2/1959	6205
15	30-015-00710	1	18S	27E	660N	1980W	AAO FEDERAL No. 013	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	7/21/2004	6200
16	30-015-00711	1	18S	27E	1980N	660E	EMPIRE ABO UNIT #020C	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	10/13/1959	6218
17	30-015-00712	1	18S	27E	647N	667W	EMPIRE ABO UNIT I NO. 17	ARCO OIL & GAS	O	1/24/1987	P&A	1/24/1987	5902
18	30-015-00713	1	18S	27E	995S	1644W	EMPIRE ABO UNIT #018D	BP AMERICA PRODUCTION COMPANY	O	9/27/2003	P&A	9/27/2003	6150
19	30-015-00715	1	18S	27E	330N	330W	SOUTH RED LAKE GRAYBURG UNIT #037	LEGACY RESERVES OPERATING LP	I	N/A	ACTIVE	?	1820
20	30-015-00716	2	18S	27E	1980S	1830E	EMPIRE ABO UNIT #015	APACHE CORPORATION	O	N/A	ACTIVE	3/23/1959	6100
21	30-015-00718	2	18S	27E	330S	610W	PRE-ONGARD WELL #2	PRE-ONGARD WELL OPERATOR	O	N/A	P&A	?	512
22	30-015-00720	2	18S	27E	990N	1650E	RIVERWOLF UNIT #004	BP AMERICA PRODUCTION COMPANY	O	12/12/2008	P&A	10/21/1959	5881
23	30-015-00721	2	18S	27E	330N	990E	SOUTH RED LAKE GRAYBURG UNIT #036	FAIRWAY RESOURCES OPERATING LLC	O	N/A	P&A	11/6/1947	1705
24	30-015-00722	2	18S	27E	660S	660E	EMPIRE ABO UNIT #016A	APACHE CORPORATION	O	2/24/2009	P&A	1/20/1959	6114
25	30-015-00724	2	18S	27E	990N	330E	EMPIRE ABO UNIT #016B	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	?	5920
26	30-015-00731	2	18S	27E	660S	1980E	EMPIRE ABO UNIT #015A	BP AMERICA PRODUCTION COMPANY	O	2/11/2009	P&A	11/19/1958	6135
27	30-015-00737	2	18S	27E	905N	1601E	SOUTH RED LAKE GRAYBURG UNIT #038	FAIRWAY RESOURCES OPERATING LLC	O	N/A	ACTIVE	5/23/1948	1685
28	30-015-00740	2	18S	27E	1650N	2197E	SOUTH RED LAKE GRAYBURG UNIT #040	MCQUADRANGLE, LC	I	7/10/2002	P&A	7/10/2002	5884
29	30-015-00741	2	18S	27E	2310N	1980E	EMPIRE ABO UNIT #015B	APACHE CORPORATION	O	N/A	ACTIVE	6/6/1959	5984
30	30-015-00742	2	18S	27E	1650N	990E	SOUTH RED LAKE GRAYBURG UNIT 39 WIW	S&J OPERATING COMPANY	O	2/8/1991	P&A	2/8/1991	1741
31	30-015-00744	2	18S	27E	2310S	1640E	STATE 1	COMPTON-SMITH	O	N/A	P&A	?	5962
32	30-015-00745	2	18S	27E	1980N	660E	STATE H #001	MACK ENERGY CORPORATION	O	3/7/2008	P&A	3/7/2008	6140
33	30-015-00868	11	18S	27E	660N	1980E	EMPIRE ABO UNIT #015C	BP AMERICA PRODUCTION COMPANY	O	7/16/2004	P&A	7/16/2004	6263
34	30-015-00869	11	18S	27E	330N	653E	EMPIRE ABO UNIT #016C	BP AMERICA PRODUCTION COMPANY	O	10/25/2004	P&A	10/25/2004	6211
35	30-015-00871	12	18S	27E	330N	330W	FEDERAL EA #001	RHONDA OPERATING CO	O	4/12/1994	P&A	4/12/1994	6219
36	30-015-00872	12	18S	27E	310S	990W	MAGRUDER NO. 1	MCKEE-JONES	O	2/18/1943	P&A	2/18/1943	2000
37	30-015-00874	12	18S	27E	2310S	2355E	COMSTOCK FEDERAL #007	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	6/29/1948	1604
38	30-015-01215	1	18S	27E	667N	666E	EMPIRE ABO UNIT #020D	APACHE CORPORATION	O	N/A	ACTIVE	11/5/1959	6118
39	30-015-01218	36	17S	27E	330S	2310W	EMPIRE ABO UNIT #018	BP AMERICA PRODUCTION COMPANY	O	3/11/2009	P&A	3/11/2009	6849
40	30-015-01251	36	17S	27E	660S	1980E	EMPIRE ABO UNIT #019	BP AMERICA PRODUCTION COMPANY	O	4/27/2009	P&A	9/8/1959	6200
41	30-015-02610	6	18S	28E	955S	1750W	EMPIRE ABO UNIT #022C	APACHE CORPORATION	O	N/A	ACTIVE	8/5/1960	6243
42	30-015-02613	6	18S	28E	990N	660W	EMPIRE ABO UNIT #021B	APACHE CORPORATION	O	N/A	ACTIVE	12/30/1959	6119
43	30-015-02619	6	18S	28E	1990N	660W	EMPIRE ABO UNIT #021C	APACHE CORPORATION	O	N/A	ACTIVE	10/30/1959	6202

Map ID No. - Refer to Drawing 2
 Well Type - O=Oil, I=Injection, G=Gas
 (ft) - Feet
 N/A - Not Applicable
 Well Status - P=TABLE II Wells_in_1_Mile_Sorted= Plug Abandoned, TTABLE II Wells_in_1_Mile_Sorted=Temporarily Abandoned
 ? - Data Not Available

TABLE IA
 NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW
 NAVAJO REFINING COMPANY, L.L.C.
 ARTESIA, NEW MEXICO

ID NO	API	Sect	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILL DATE	DEPTH (ft)
44	30-015-02622	6	18S	28E	2219S	660W	EMPIRE ABO UNIT #021D	APACHE CORPORATION	O	N/A	ACTIVE	1/23/1960	6194
45	30-015-02623	6	18S	28E	2248S	2075W	EMPIRE ABO UNIT #022F	APACHE CORPORATION	O	N/A	ACTIVE	2/22/1960	6210
46	30-015-02627	6	18S	28E	949S	990W	STATE M-AI #002	RUTH OIL CO, LLC	O	N/A	ACTIVE	10/21/1960	6225
47	30-015-10184	36	17S	27E	330S	920W	STATE #006	ASPEN OIL INC	O	N/A	ACTIVE	?	1343
48	30-015-20394	1	18S	27E	953S	2197E	EMPIRE ABO FEDERAL NO. 5	HUMBLE OIL & REFINING CO	O	4/9/1971	P&A	4/9/1971	3301
49	30-015-20535	12	18S	27E	330N	455W	FEDERAL EA 2	ROBERT G COX	O	8/7/1973	P&A	8/7/1973	6248
50	30-015-20894	12	18S	27E	1980N	660W	WDW #002	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	7/18/1973	10372
51	30-015-21395	6	18S	28E	2630N	1300W	EMPIRE ABO UNIT #211	APACHE CORPORATION	O	N/A	ACTIVE	2/11/1975	6200
52	30-015-21544	2	18S	27E	1110S	1322E	EMPIRE ABO UNIT #151	APACHE CORPORATION	O	N/A	T&A	11/4/1975	6285
53	30-015-21552	1	18S	27E	2500N	2500E	EMPIRE ABO UNIT #191	CFM OIL, LLC	O	N/A	ACTIVE	9/7/1975	6259
54	30-015-21553	1	18S	27E	2501N	20E	EMPIRE ABO UNIT #201	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	7/19/1975	6225
55	30-015-21554	1	18S	27E	1367S	1440W	EMPIRE ABO UNIT #181	BP AMERICA PRODUCTION COMPANY	O	4/17/2003	P&A	4/17/2003	6203
56	30-015-21623	36	17S	27E	360S	455W	STATE #007	GEORGE A CHASE JR & C SERVICE	O	N/A	ACTIVE	?	1366
57	30-015-21783	1	18S	27E	2490N	1299E	EMPIRE ABO UNIT #202	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	5/13/1976	6296
58	30-015-21792	1	18S	27E	1533S	2370W	EMPIRE ABO UNIT #182	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	6/11/1976	6369
59	30-015-21825	2	18S	27E	320S	2602E	EMPIRE ABO UNIT #152	APACHE CORPORATION	O	N/A	T&A	6/17/1976	6335
60	30-015-21873	1	18S	27E	1526S	1470E	EMPIRE ABO UNIT #191A	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	9/23/1976	6350
61	30-015-22013	2	18S	27E	90S	1456E	EMPIRE ABO UNIT #153	BP AMERICA PRODUCTION COMPANY	O	10/30/2008	P&A	4/20/1977	6303
62	30-015-22051	2	18S	27E	1370S	2445W	EMPIRE ABO UNIT #141A	APACHE CORPORATION	O	N/A	ACTIVE	5/17/1977	3203
63	30-015-22096	1	18S	27E	2370S	1510W	EMPIRE ABO UNIT #183	APACHE CORPORATION	O	N/A	ACTIVE	7/24/1977	6210
64	30-015-22527	6	18S	28E	2630N	1930W	EMPIRE ABO UNIT #223	APACHE CORPORATION	O	N/A	ACTIVE	5/19/1978	6250
65	30-015-22559	1	18S	27E	2290S	2445W	EMPIRE ABO UNIT #184	APACHE CORPORATION	O	N/A	SHUT IN	7/25/1978	6200
66	30-015-22560	1	18S	27E	220S	1390E	EMPIRE ABO UNIT #192	BP AMERICA PRODUCTION COMPANY	O	N/A	ACTIVE	6/25/1978	6250
67	30-015-22568	11	18S	27E	400N	1450E	EMPIRE ABO UNIT #151B	BP AMERICA PRODUCTION COMPANY	O	8/16/2006	P&A	8/16/2006	6310
68	30-015-22569	11	18S	27E	560N	2588E	EMPIRE ABO UNIT #152B	BP AMERICA PRODUCTION COMPANY	O	9/24/2008	P&A	8/23/1978	6300
69	30-015-22608	2	18S	27E	100S	1950W	EMPIRE ABO UNIT #142	BP AMERICA PRODUCTION COMPANY	O	N/A	P&A	?	6200
70	30-015-22637	6	18S	28E	2450N	400W	EMPIRE ABO UNIT #212	APACHE CORPORATION	O	N/A	ACTIVE	12/28/1978	6267
71	30-015-22656	1	18S	27E	2400N	700E	EMPIRE ABO UNIT #203	APACHE CORPORATION	O	N/A	ACTIVE	10/10/1978	6225
72	30-015-22657	1	18S	27E	2490S	2200E	EMPIRE ABO UNIT #193	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	10/26/1978	6225
73	30-015-22658	1	18S	27E	1500S	2130E	EMPIRE ABO UNIT #194	APACHE CORPORATION	O	N/A	ACTIVE	11/14/1978	6325
74	30-015-22669	2	18S	27E	800S	2500E	EMPIRE ABO UNIT #154	BP AMERICA PRODUCTION COMPANY	O	1/27/2009	P&A	12/4/1978	6200
75	30-015-22808	2	18S	27E	600S	1330E	EMPIRE ABO UNIT #156	BP AMERICA PRODUCTION COMPANY	O	2/5/2009	P&A	4/12/1979	6225
76	30-015-22815	1	18S	27E	670S	330W	EMPIRE ABO UNIT #171	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	5/22/1979	6300
77	30-015-22816	1	18S	27E	1120S	1440E	EMPIRE ABO UNIT L #192	ARCO OIL & GAS	O	6/23/1980	ABANDONED	6/28/1980	6350
78	30-015-22834	11	18S	27E	225N	2280W	EMPIRE ABO UNIT #141B	APACHE CORPORATION	O	N/A	ACTIVE	5/21/1979	6225
79	30-015-22838	11	18S	27E	200N	1925E	EMPIRE ABO UNIT #153B	BP AMERICA PRODUCTION COMPANY	O	1/4/2009	P&A	5/6/1979	6225
80	30-015-22885	2	18S	27E	1040S	2025E	EMPIRE ABO UNIT #155	APACHE CORPORATION	O	N/A	T&A	5/11/1979	6202
81	30-015-22896	2	18S	27E	1820S	2550W	EMPIRE ABO UNIT #143A	WALTER SOLT, LLC	O	N/A	ACTIVE	5/13/1979	6108
82	30-015-22914	2	18S	27E	1310S	590E	EMPIRE ABO UNIT #161	COG OPERATING, LLC	O	N/A	ACTIVE	9/13/1979	6225
83	30-015-23115	12	18S	27E	330N	380W	FEDERAL EA NO. 3	RHONDA OPERATING CO	O	3/16/1980	P&A	3/16/1980	6300
84	30-015-23116	6	18S	28E	2050N	100W	EMPIRE ABO UNIT #213	APACHE CORPORATION	O	N/A	ACTIVE	6/2/1980	6242
85	30-015-23548	6	18S	28E	1950S	1000W	EMPIRE ABO UNIT #211A	APACHE CORPORATION	O	N/A	ACTIVE	7/17/1980	6311
86	30-015-25099	12	18S	27E	1809N	990E	COMSTOCK FEDERAL #006	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	9/11/1985	1652

Map ID No. - Refer to Drawing 2
 Well Type - O=Oil, I=Injection, G=Gas
 (ft) - Feet
 N/A - Not Applicable
 Well Status - P=Table II Wells_in_1_Mile_Sorted= Plug Abandoned, T=Table II Wells_in_1_Mile_Sorted=Temporarily Abandoned
 ? - Data Not Available

TABLE IA

NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW
 NAVAJO REFINING COMPANY, L.L.C.
 ARTESIA, NEW MEXICO

ID NO	API	Sect	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILL DATE	DEPTH (ft)
87	30-015-25201	12	18S	27E	1650S	1770W	COMSTOCK FEDERAL #002	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	3/16/1985	1600
88	30-015-25270	12	18S	27E	2310N	2310W	CHUKKA FEDERAL #001	BILL MILLER	O	N/A	ACTIVE	4/23/1985	1600
89	30-015-25545	12	18S	27E	990S	990W	COMSTOCK FEDERAL #003	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	5/19/1986	1530
90	30-015-25649	12	18S	27E	1650S	990W	COMSTOCK FEDERAL NO. 8	FRED POOL DRILLING CO	O	10/10/1986	P&A	?	2000
91	30-015-25675	7	18S	28E	940N	1757W	LAUREL STATE #002	EASTLAND OIL CO	O	N/A	ACTIVE	11/10/1988	1690
92	30-015-25738	12	18S	27E	2310N	2310E	COMSTOCK FEDERAL #009	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	4/25/1987	1586
93	30-015-25997	7	18S	28E	940N	1757W	LAUREL STATE #001	EASTLAND OIL CO	O	N/A	ACTIVE	2/23/1987	1690
94	30-015-26017	12	18S	27E	990S	1650W	COMSTOCK FEDERAL #010	EASTLAND OIL CO	O	1/23/2003	P&A	1/23/2003	2040
95	30-015-26404	12	18S	27E	660N	990E	FEDERAL T #001	APACHE CORPORATION	I	N/A	ACTIVE	9/13/1990	10141
96	30-015-26575	6	18S	28E	778N	995W	WDW-3 (ORIGINAL LOC.)	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	?	10119
97	30-015-26741	1	18S	27E	1650N	1350W	CHALK BLUFF FEDERAL COM #002	MEWBOURNE OIL CO	G	N/A	ACTIVE	8/24/1991	10140
98	30-015-26943	6	18S	28E	990S	730W	CHALK BLUFF 6 STATE #001	MEWBOURNE OIL CO	G	N/A	ACTIVE	4/16/1992	10200
99	30-015-27163	1	18S	27E	1980S	990E	CHALK BLUFF FEDERAL COM #003	MEWBOURNE OIL CO	G	N/A	ACTIVE	1/16/1993	10150
100	30-015-27286	36	17S	27E	660S	990W	CHALK BLUFF 36 STATE #001	MEWBOURNE OIL CO	O	N/A	ACTIVE	3/30/1993	10060
101	30-015-31087	6	18S	28E	990S	330W	LP STATE #003	MARBOB ENERGY CORP	O	3/17/2008	P&A	7/15/2000	446
102	30-015-31319	7	18S	28E	2310N	330W	LAUREL STATE #003	EASTLAND OIL CO	O	N/A	ACTIVE	1/31/2001	1630
103	30-015-31592	36	17S	27E	330S	2310E	RAMAPO #007	ROJO GRANDE COMPANY LLC	O	12/21/2001	P&A	12/21/2001	612
104	30-015-32307	1	18S	27E	330N	990W	AAO FEDERAL #001	APACHE CORPORATION	O	N/A	ACTIVE	12/10/2002	3851
105	30-015-32308	1	18S	27E	430N	2310W	AAO FEDERAL #002	APACHE CORPORATION	O	N/A	ACTIVE	9/19/2002	4150
106	30-015-32309	1	18S	27E	330N	1690E	AAO FEDERAL #003	APACHE CORPORATION	O	N/A	ACTIVE	4/10/2003	4125
107	30-015-32310	1	18S	27E	990N	990E	AAO FEDERAL #004	APACHE CORPORATION	O	N/A	ACTIVE	5/4/2004	4100
108	30-015-32946	2	18S	27E	2210S	1650E	SCBP STATE #1	APACHE CORPORATION	O	N/A	ACTIVE	4/26/2005	3880
109	30-015-32959	1	18S	27E	1650N	875W	AAO FEDERAL #005	APACHE CORPORATION	O	N/A	ACTIVE	10/12/2004	3900
110	30-015-33473	1	18S	27E	1750N	1650S	AAO FEDERAL #007	MARBOB ENERGY CORP	O	N/A	ACTIVE	4/4/2005	4100
111	30-015-33784	1	18S	27E	1650N	330W	AAO FEDERAL #008	MARBOB ENERGY CORP	O	N/A	ACTIVE	2/25/2005	4310
112	30-015-34071	1	18S	27E	2169N	1963W	AAO FEDERAL #006	MARBOB ENERGY CORP	O	N/A	ACTIVE	8/5/2005	3977
113	30-015-34387	1	18S	27E	1980S	630W	AAO FEDERAL #009	MARBOB ENERGY CORP	O	N/A	ACTIVE	1/17/2006	3950
114	30-015-34555	1	18S	27E	890S	660W	AAO FEDERAL #011	MARBOB ENERGY CORP	O	N/A	ACTIVE	3/9/2006	4100
115	30-015-34576	1	18S	27E	2060S	2160W	AAO FEDERAL #010	MARBOB ENERGY CORP	O	N/A	ACTIVE	10/28/2006	4000
116	30-015-34998	1	18S	27E	890S	1650W	AAO FEDERAL #012	MARBOB ENERGY CORP	O	N/A	ACTIVE	9/21/2006	4075
117	30-015-35814	2	18S	27E	2063N	441E	STATE H NO 2	MACK ENERGY CORPORATION	O	N/A	ACTIVE	1/11/2008	7545
118	30-015-36281		18S	27E	2193S	1520W	SUN DEVILS FEDERAL NO. 001	MACK ENERGY CORPORATION	O	N/A	PERMIT TO DRILL	?	6000
119	30-015-39324	36	17S	27E	480S	2210E	BIG BOY STATE NO. 6	COG OPERATING, LLC	O	N/A	PERMIT TO DRILL	?	5072
120	30-015-39898	1	18S	27E	1258N	1005E	EMPIRE ABO UNIT #412	APACHE CORPORATION	O	N/A	NEW	?	6300
121	30-015-39899	1	18S	27E	1305N	2535W	EMPIRE ABO UNIT #016	APACHE CORPORATION	O	N/A	NEW	?	6300
122	30-015-39900	1	18S	27E	1120N	1205W	EMPIRE ABO UNIT #016	APACHE CORPORATION	O	N/A	NEW	?	6300
123	30-015-00695	1	18S	27E	1650S	330W	HILL NO. 1	WILLIAM & EDWARD HUDSON	O	6/18/1948	P&A	6/18/1948	?
124	30-015-00717	2	18S	27E	1980S	660E	EMPIRE ABO UNIT #016	APACHE CORPORATION	O	N/A	ACTIVE	2/6/1995	6100
125	30-015-00701	1	18S	27E	330N	330W	SOUTH RED LAKE GRAYBURG UNIT 37 WIW	FAIRWAY RESOURCES OPERATING LLC	O	N/A	ACTIVE	?	?

Map ID No. - Refer to Drawing 2
 Well Type - O=Oil, I=Injection, G=Gas
 (ft) - Feet
 N/A - Not Applicable
 Well Status - PTABLE II Wells_in_1_Mile_Sorted= Plug Abandoned, TTABLE II Wells_in_1_Mile_Sorted=Temporarily Abandoned
 ? - Data Not Available

TABLE 1B

**NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW
PENETRATING TOP OF INJECTION ZONE
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO**

ID NO	API	SECT	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILL DATE	DEPTH (ft)
50	30-015-20894	12	18S	27E	1980N	660W	WDW #002	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	7/18/1973	10372
96	30-015-26575	6	18S	28E	778N	995W	WDW-3	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	?	10119
97	30-015-26741	1	18S	27E	1650N	1350W	CHALK BLUFF FEDERAL COM #002	MEWBOURNE OIL CO	G	N/A	ACTIVE	8/24/1991	10140
95	30-015-26404	12	18S	27E	660N	990E	FEDERAL T #001	APACHE CORPORATION	I	N/A	ACTIVE	9/13/1990	10141
99	30-015-27163	1	18S	27E	1980S	990E	CHALK BLUFF FEDERAL COM #003	MEWBOURNE OIL CO	G	N/A	ACTIVE	1/16/1993	10150
98	30-015-26943	6	18S	28E	990S	730W	CHALK BLUFF 6 STATE #001	MEWBOURNE OIL CO	G	N/A	ACTIVE	4/16/1992	10200
100	30-015-27286	36	17S	27E	660S	990W	CHALK BLUFF 36 STATE #001	MEWBOURNE OIL CO	O	N/A	ACTIVE	3/30/1993	10060
117	30-015-35814	2	18S	27E	2063N	441E	STATE H NO 2	MACK ENERGY CORPORATION	O	N/A	ACTIVE	1/11/2008	7545

Map ID No. - Refer to Drawing 2

Well Type - O=Oil, I=Injection, G=Gas

(ft) - Feet

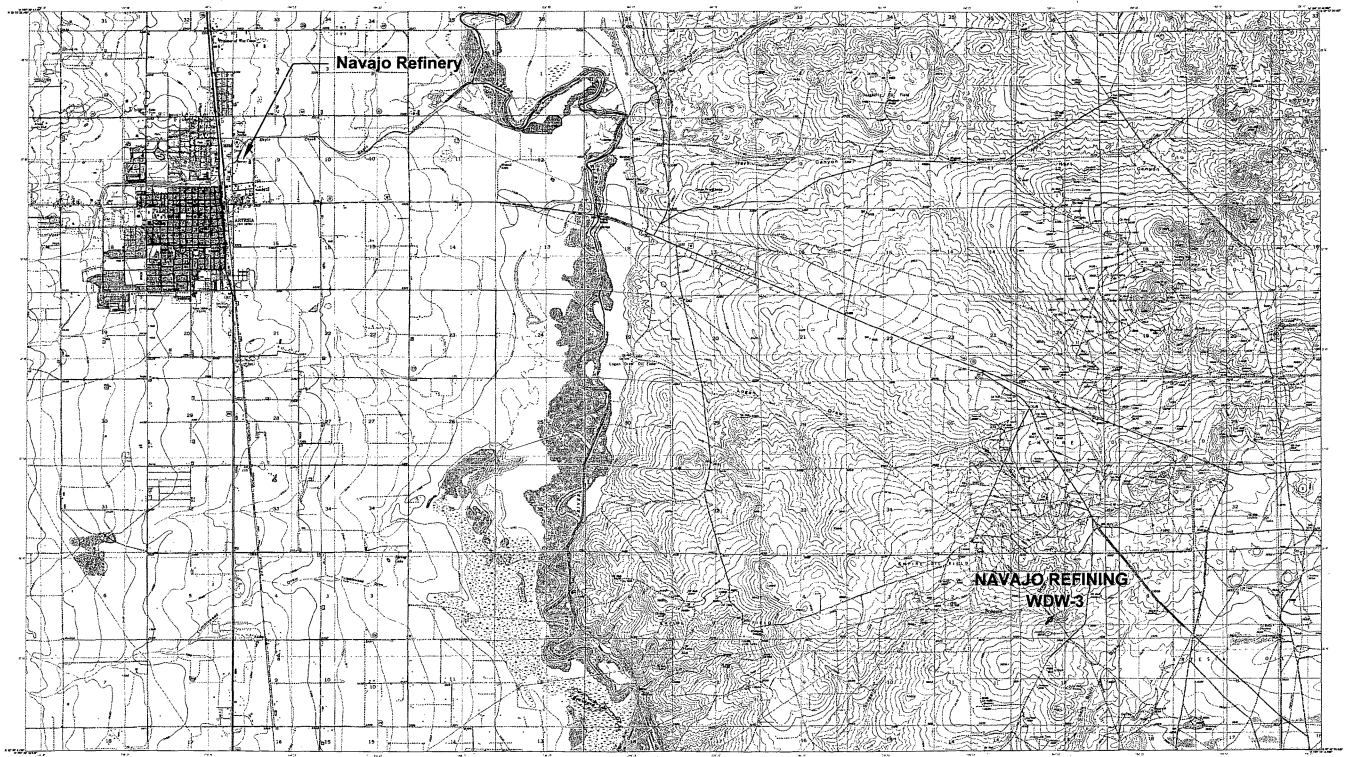
N/A - Not Applicable

? - Data Not Available

TABLE 2
INJECTION FLUID CHARACTERIZATION DATA
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

	February 2011	May 2011	August 2011	November 2011	February 2012
Miscellaneous					
Reactive Cyanide (mg/Kg)	<40.0	<40.0	<40.0	<40.0	<40.0
Reactive Sulfide (mg/Kg)	<40.0	<40.0	<40.0	<40.0	<40.0
Chloride (mg/L)	410	213	404	332	519
Sulfate (mg/L)	1,510	2,240	2,290	2,350	1,870
Alkalinity (Total) (mg/L)	441	243	302	217	466
Sp. Cond. (umhos/cm)	6,270	4,680	7,380	5,430	5,990
Ignitability (oF)	>212	>212	>212	>212	>212
pH (S.U.)	7.40	7.85	8.11	7.52	7.30
TDS (mg/L)	3,310	3,400	4,320	4,840	3,890

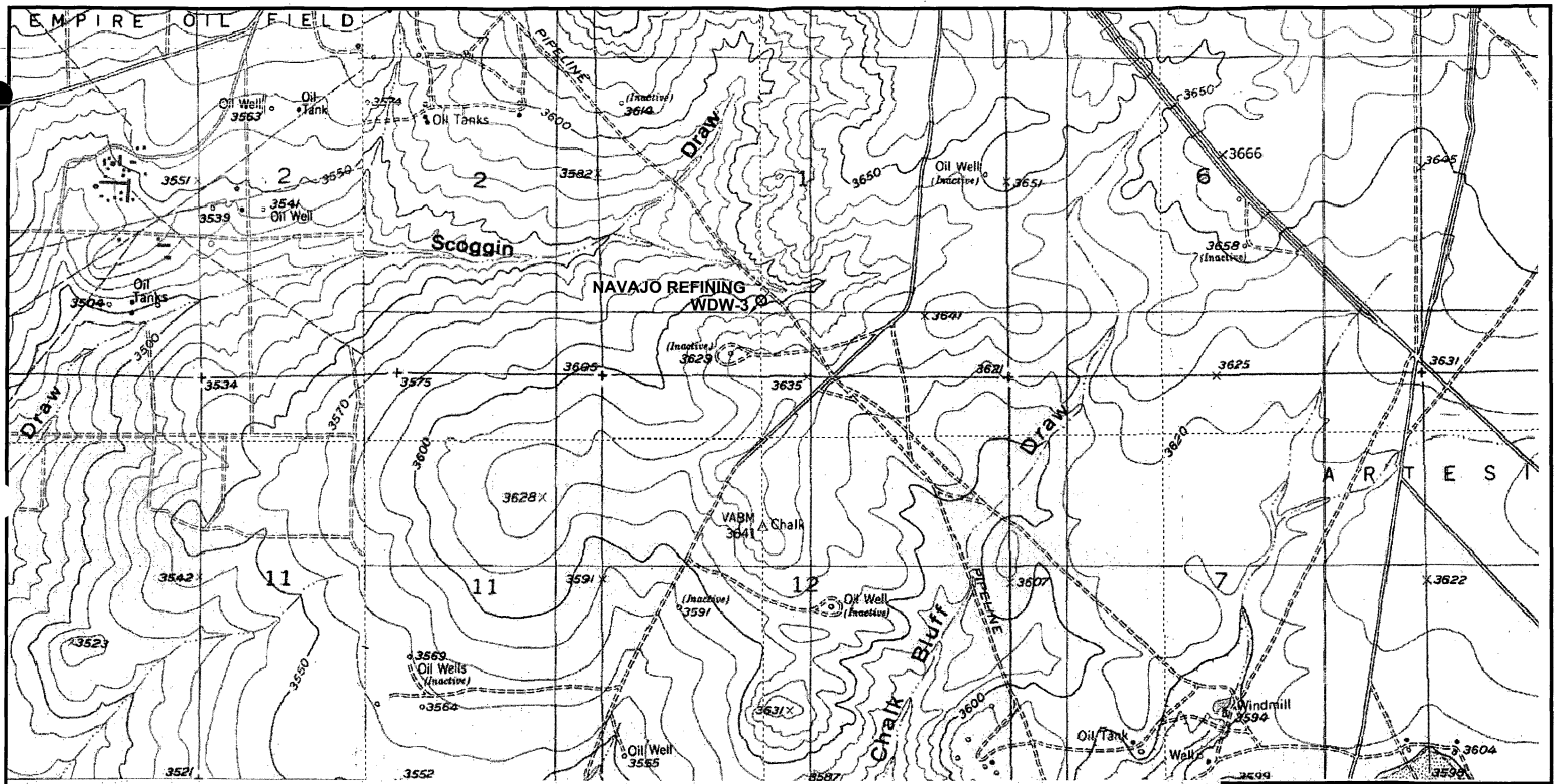
mg/Kg Milligrams per kilogram.
mg/L Milligrams per liter.
umhos/cm Micromhos per centimeter.
°F Degrees Fahrenheit.
S.U. Standard Units
> Greater Than.



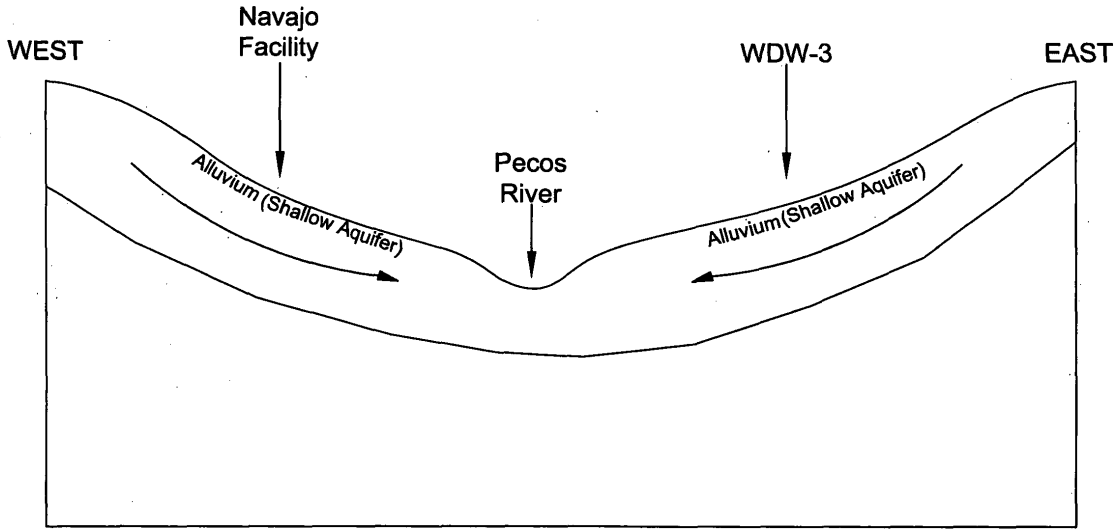
Maps compiled from USGS Quads: Artesia, NM; Spring Lake, MN;
 Red Lake, MN; Illinois Camp,
 NM; Dayton, NM; Lake
 Mcmillan N, NM



SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
FIGURE 1		
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO		
SITE LOCATION MAP		
DATE: 06/06/12	CHECKED BY:	JOB NO: 6006781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



SUBSURFACE		HOUSTON, TX
		SOUTH BEND, IN
		BATON ROUGE, LA
FIGURE 2		
NAVAJO REFINING COMPANY, L.L.C.		
ARTESIA, NEW MEXICO		
SITE MAP		
DATE: 05/30/12	CHECKED BY:	JOB NO: 6006781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



NOT TO SCALE

SUBSURFACE



HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 3

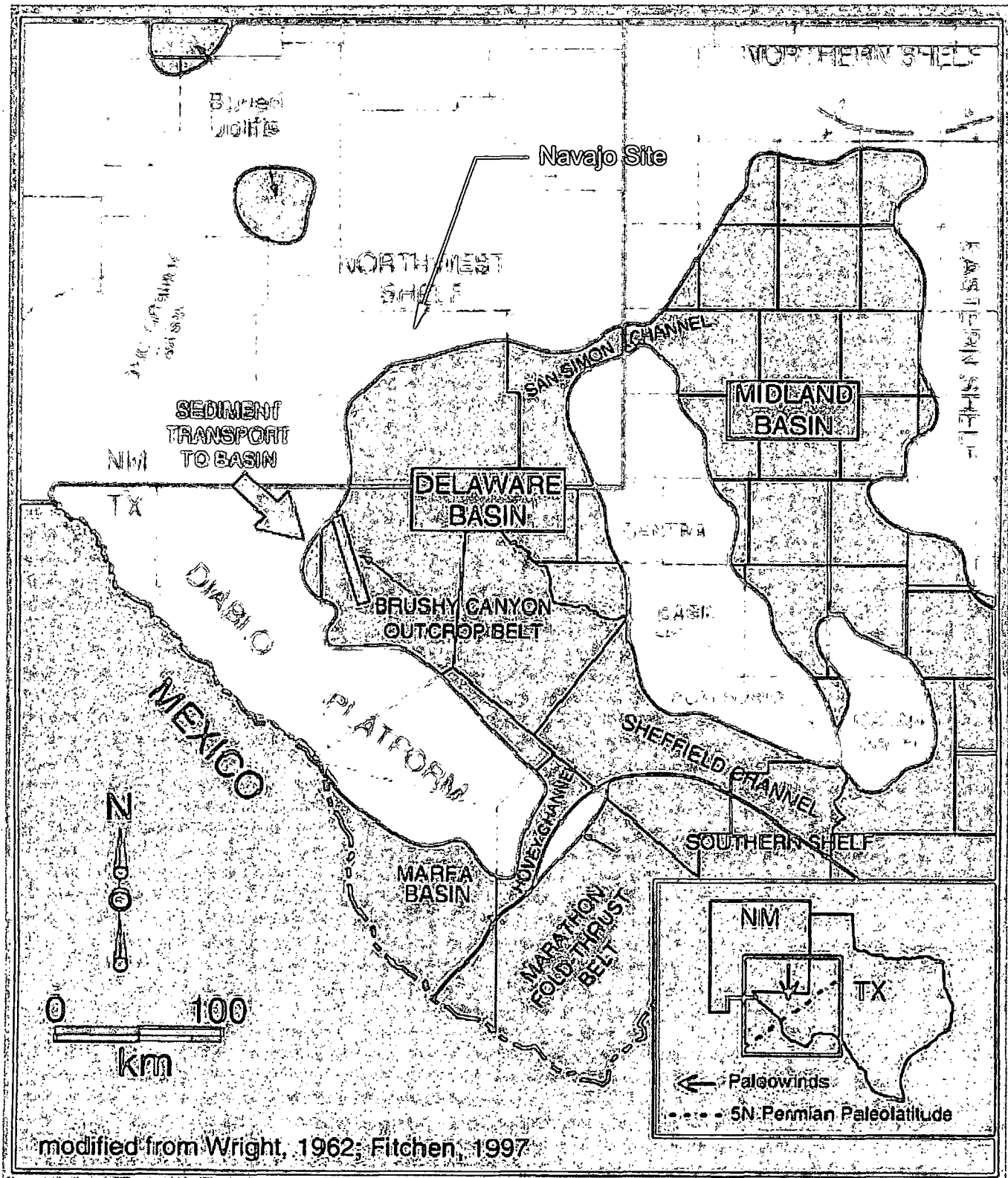
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

**GENERALIZED HYDROGEOLOGIC
CROSS-SECTION**

EXPLANATION

→ Direction of Groundwater Movement

DATE: 06/05/12	CHECKED BY:	JOB NO: 60D6786
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



SUBSURFACE

HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 5

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

PERMIAN BASIN MAP

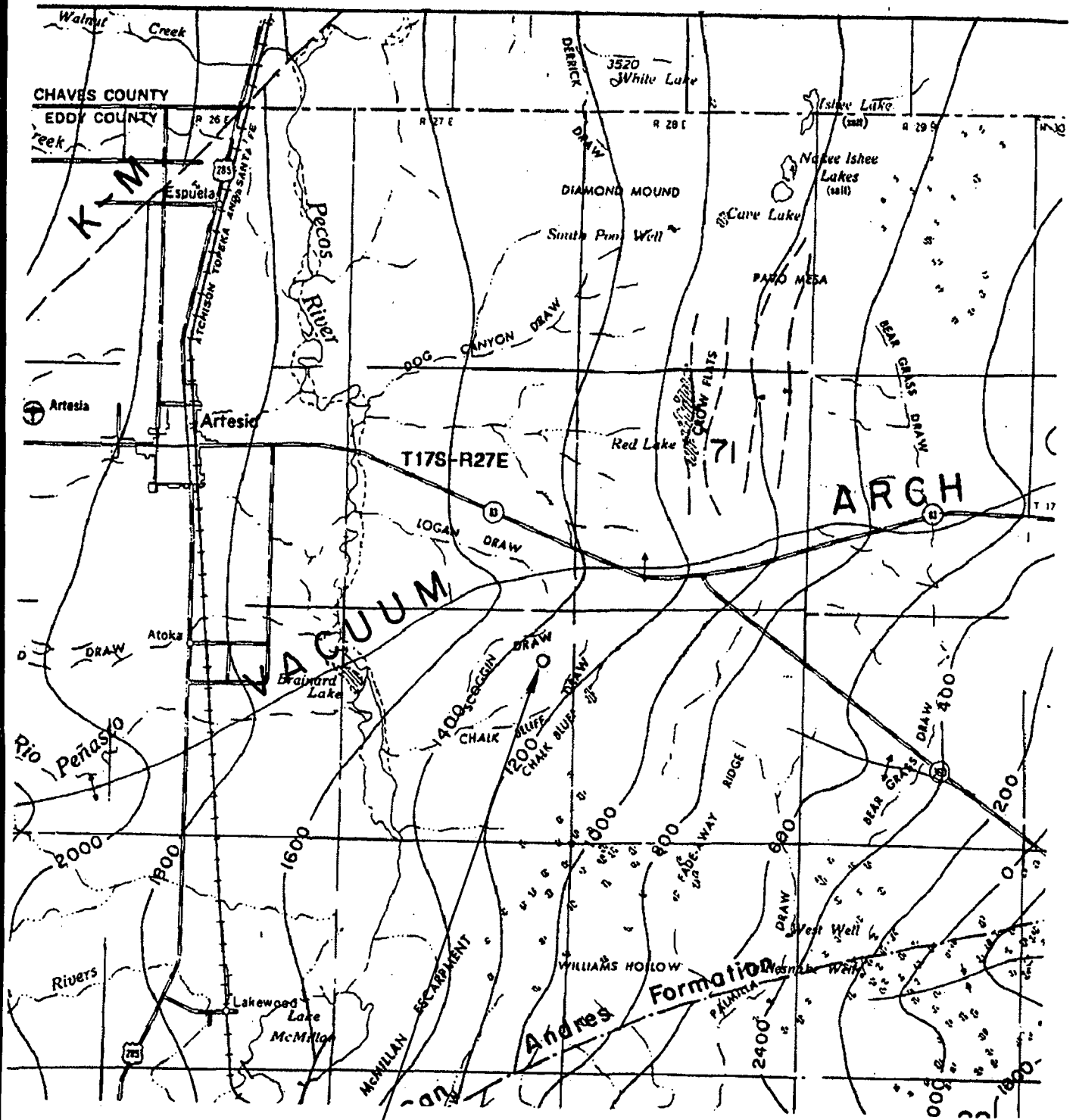
DATE: 05/29/12	CHECKED BY:	JOB NO: 60D6781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

NORTHWEST SHELF, CENTRAL BASIN PLATFORM

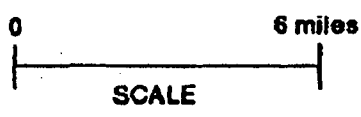
Age		Strata	Oil Plays	
Triassic		Chinle		
		Santa Rosa		
		Dewey Lake		
Permian	Ochoan	Rustler		
		Salado		
	Guadalupian	Artesia Group	Tansill	Artesia Platform Sandstone
			Yates	
			Seven Rivers	
			Queen	
			Grayburg	
		San Andres	Upper San Andres and Grayburg Platform - Artesia Vacuum Trend Upper San Andres and Grayburg Platform - Central Basin Platform Trend	
	Leonardian	Yeso	Glorieta	Leonardian Restricted Platform Carbonate
			Paddock	
Blinberry				
Tubb				
Drinkard				
	Abo	Abo Platform Carbonate		
Wolfcampian		Hueco ("Wolfcamp")	Wolfcamp Platform Carbonate	
Pennsylvanian	Virgilian	Bough Cisco	Northwest Shelf Upper Pennsylvanian Carbonate	
	Missourian	Canyon		
	Des Moinesian	Strawn	Northwest Shelf Strawn Patch Reef	
	Atokan	Atoka		
	Morrowan	Morrow		
Miss.		undivided		
Dev.	Upper	Woodford		
	Middle			
	Lower	Thirtyone	Devonian Thirtyone Deepwater Chert	
Sil.	Upper	Wristen	Wristen Buildups and Platform Carbonate	
	Middle			
	Lower	Fusselman	Fusselman Shallow Platform Carbonate	
Ord.	Upper	Montoya		
	Middle	Simpson	Simpson Cratonic Sandstone	
	Lower	Ellenburger	Ellenburger Karst-Modified Restricted Ramp Carbonate	
		Bliss		
Cambrian				
Precambrian		igneous, metamorphics volcanics		

FIGURE 6

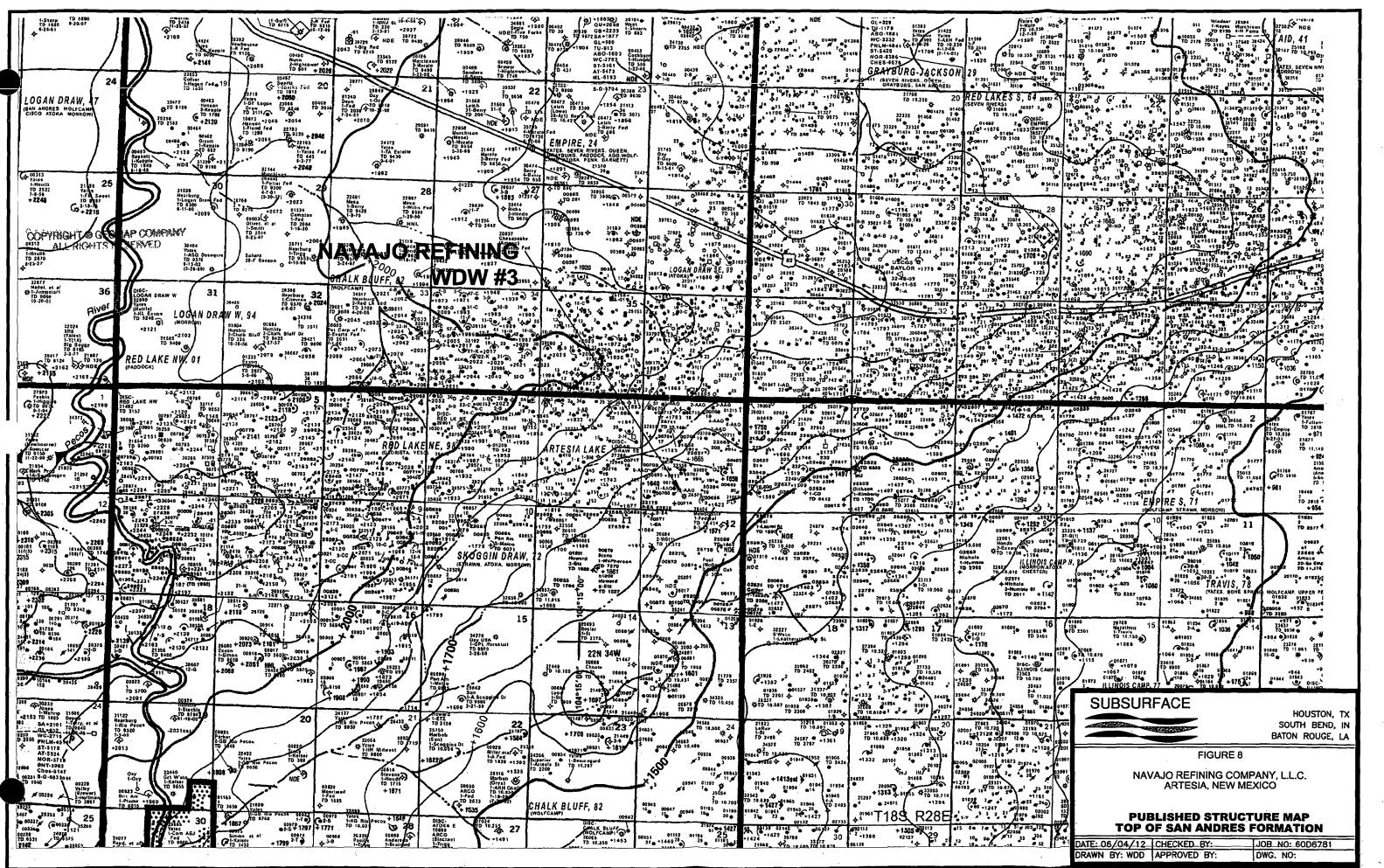
STRATIGRAPHIC COLUMN



NAVAJO SITE



SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
<p>FIGURE 7</p> <p>NAVAJO REFINING COMPANY, L.L.C.</p> <p>ARTESIA, NEW MEXICO</p> <p>REGIONAL GEOLOGIC FEATURES</p>		
DATE: 05/29/12	CHECKED BY:	JOB NO: 60D6781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



SUBSURFACE

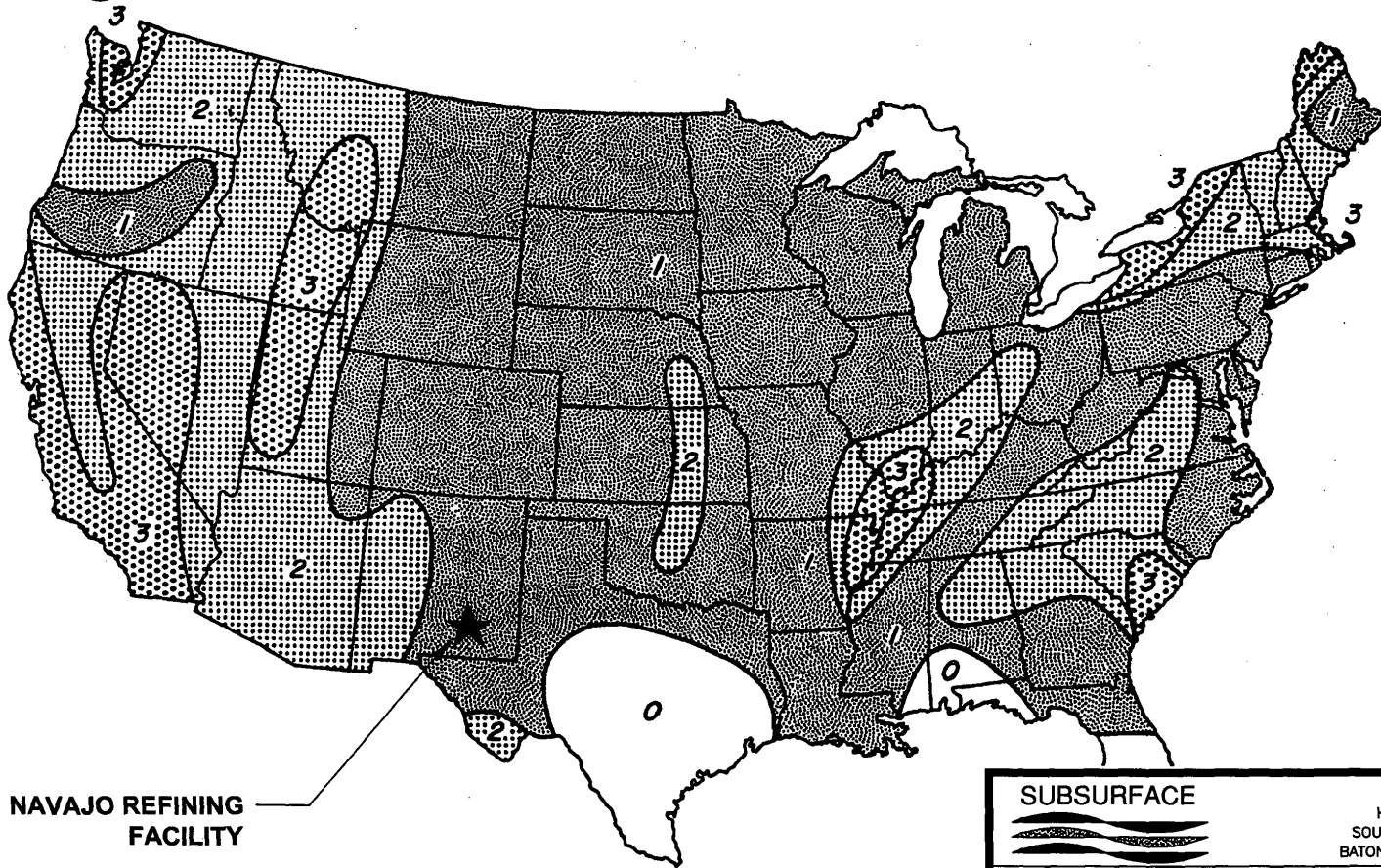
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 8

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

**PUBLISHED STRUCTURE MAP
TOP OF SAN ANDRES FORMATION**

DATE: 06/04/12 | CHECKED BY: | JOB NO: 606781
DRAWN BY: WDD | APPROVED BY: | DWG. NO:



NAVAJO REFINING FACILITY

LEGEND

- Zone 0 - no damage.
 - Zone 1 - minor damage; corresponds to Intensities V and VI of the M.M.* Scale.
 - Zone 2 - moderate damage; corresponds to Intensity VII of the M.M.* Scale.
 - Zone 3 - major damage; corresponds to Intensity VIII and higher of the M.M.* Scale.
- (* - M.M. Refers to the Modified Mercalli Intensity Scale.)

SUBSURFACE



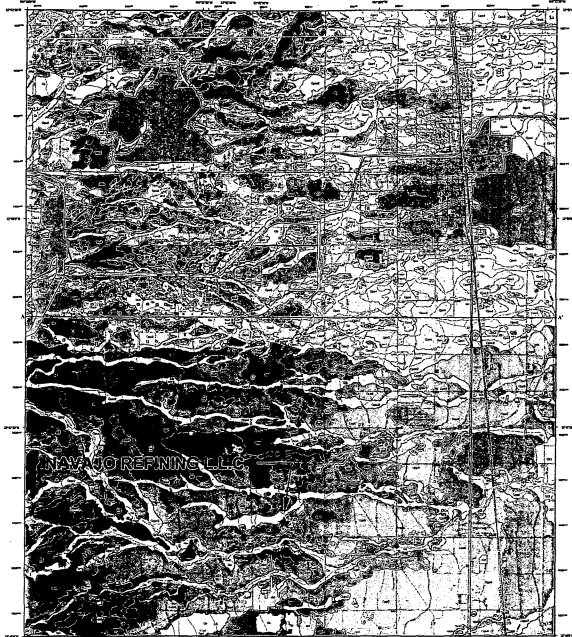
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 9

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

SEISMIC RISK MAP

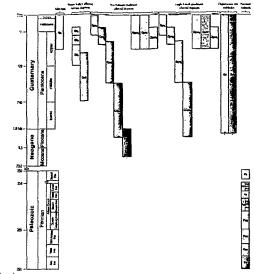
DATE: 05/29/12	CHECKED BY:	JOB NO: 60D6786
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



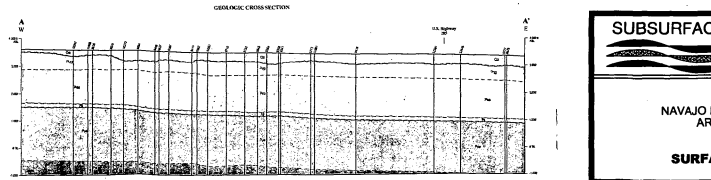
CENOZOIC

Map Units and their correlation to other geologic maps in the area. This section lists various geological units and their descriptions, including their thicknesses and relationships to other units.

CORRELATION OF MAP UNITS



Geologic map of the Artesia quadrangle, Eddy County, New Mexico. Includes a title block with author information (David A. McCrez and Shannon Williams), date (May 2011), and a location map of the quadrangle within the state of New Mexico. It also includes a north arrow and a scale bar.



SUBSURFACE HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA

FIGURE 10

NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO

SURFACE GEOLOGIC MAP

DATE: 05/30/12 CHECKED BY: JOB NO: 6006781

DRAWN BY: WDD APPROVED BY: DWG. NO:

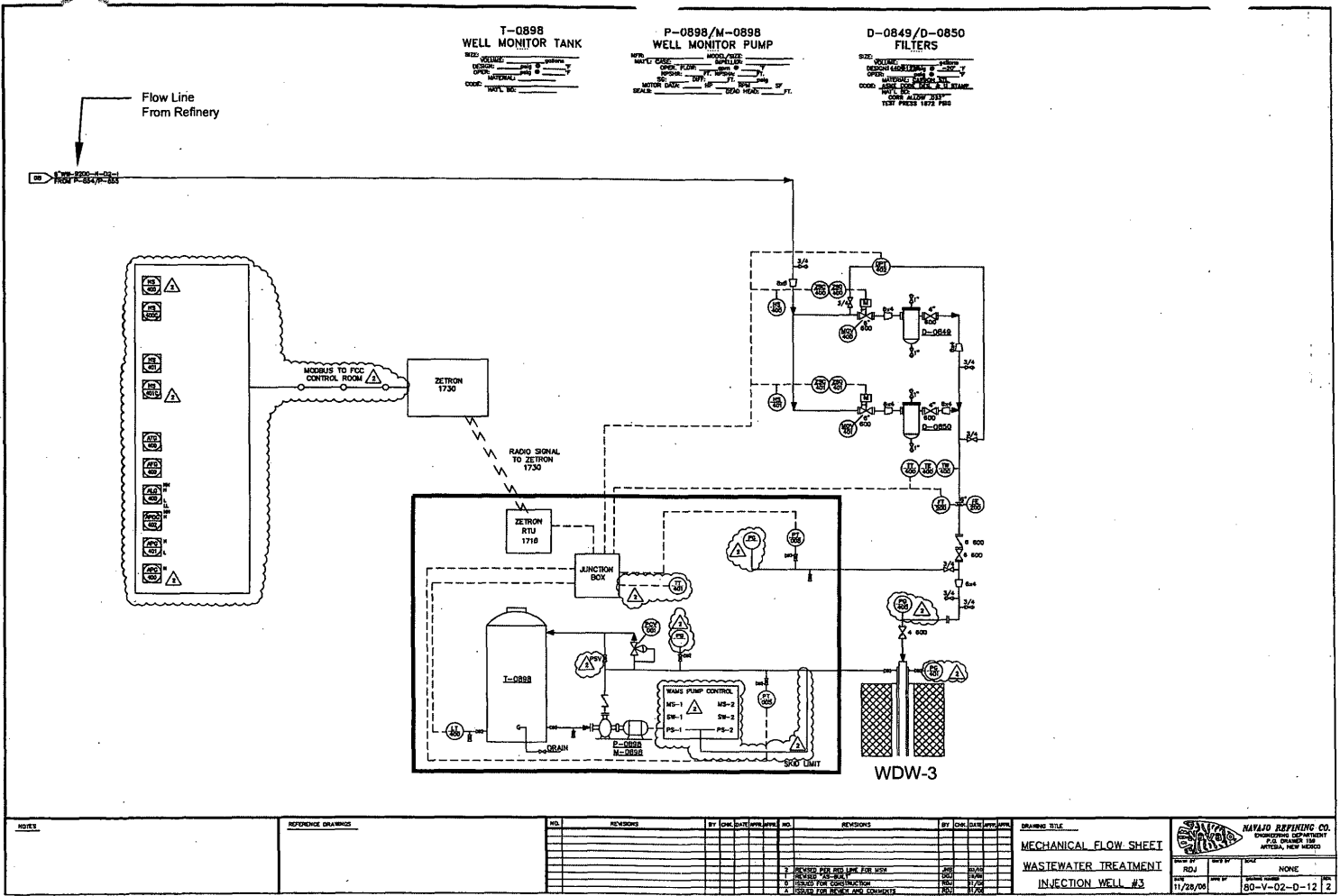


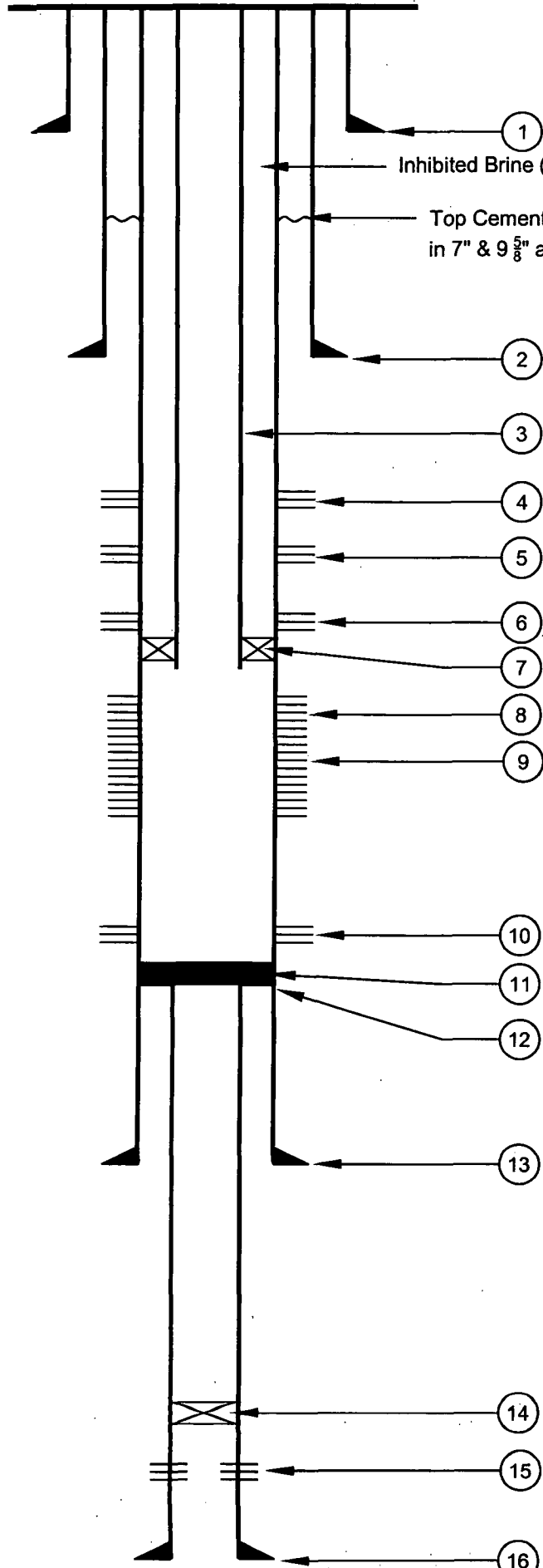
FIGURE 11
PRE-INJECTION SURFACE FACILITIES
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

NOTES	REFERENCE DRAWINGS	NO.	REVISIONS	BY	CHK	DATE	APP	NO.	REVISIONS	BY	CHK	DATE	APP	DRAWING TITLE
														MECHANICAL FLOW SHEET
														WASTEWATER TREATMENT
														INJECTION WELL #3

NAVAJO REFINING CO.
OPERATIONS DEPARTMENT
P.O. BOX 100
ARTESIA, NEW MEXICO

DATE: 11/28/00
BY: RDJ
SCALE: NONE
JOB NO: 80-N-02-0-12 2

BELOW GROUND DETAILS



1. Surface Casing: 13 $\frac{3}{8}$ " , 54 $\frac{1}{2}$ " lb/ft, J-55 set in a 17 $\frac{1}{2}$ " open hole at 400' and cemented to the surface with 425 sacks of Class C cement.
2. First Intermediate Casing: 9 $\frac{5}{8}$ " , 36 lb/ft, J-55 set in a 12 $\frac{1}{4}$ " open hole at 2604' and cemented to the surface with 1025 sacks Class C cement.
3. Injection Tubing: 4 $\frac{1}{2}$ " , 11.6 lb/ft, J-55 LT&C set at 7568'.
4. Squeeze Perforations: 7050' - 7102' with 80 sacks.
5. Squeeze Perforations: 7262' - 7278' with 100 sacks.
6. Squeeze Perforations: 7304' - 7314' with 80 sacks.
7. Arrow X-1 Packer 7" x 2 $\frac{7}{8}$ " set at 7575', 37K Tension, no nipples.
8. Old Open Perforations: 7676' - 7698'.
9. Perforations: 7660' - 8450', 2 JSPF, 60°, 0.5" 10/14/06.
10. Perforations: 8540' - 8620', 23 SPF, 60°, 0.5" 10/15/16.
11. Cement Plug: top tagged at 9022'.
12. Liner Top: 4 $\frac{1}{2}$ " set at 9051'.
13. Second Intermediate Casing: 7" , 29 lb/ft, N-80 and P-110 steel set in an 8 $\frac{3}{4}$ " open hole at 9450' with 1350 sacks of Type H cement from 900' to 9450'.
14. Cast Iron Bridge Plug set at 9800' with 35' cement.
15. Old Perforations: 9861' - 9967'
16. Production Liner: 4 $\frac{1}{2}$ " , 17 lb/ft, J-55 set in a 6 $\frac{1}{4}$ " open hole from 9051' to 10119' with 175 sacks Type H cement.

All depths are relative to Kelly bushing

SUBSURFACE



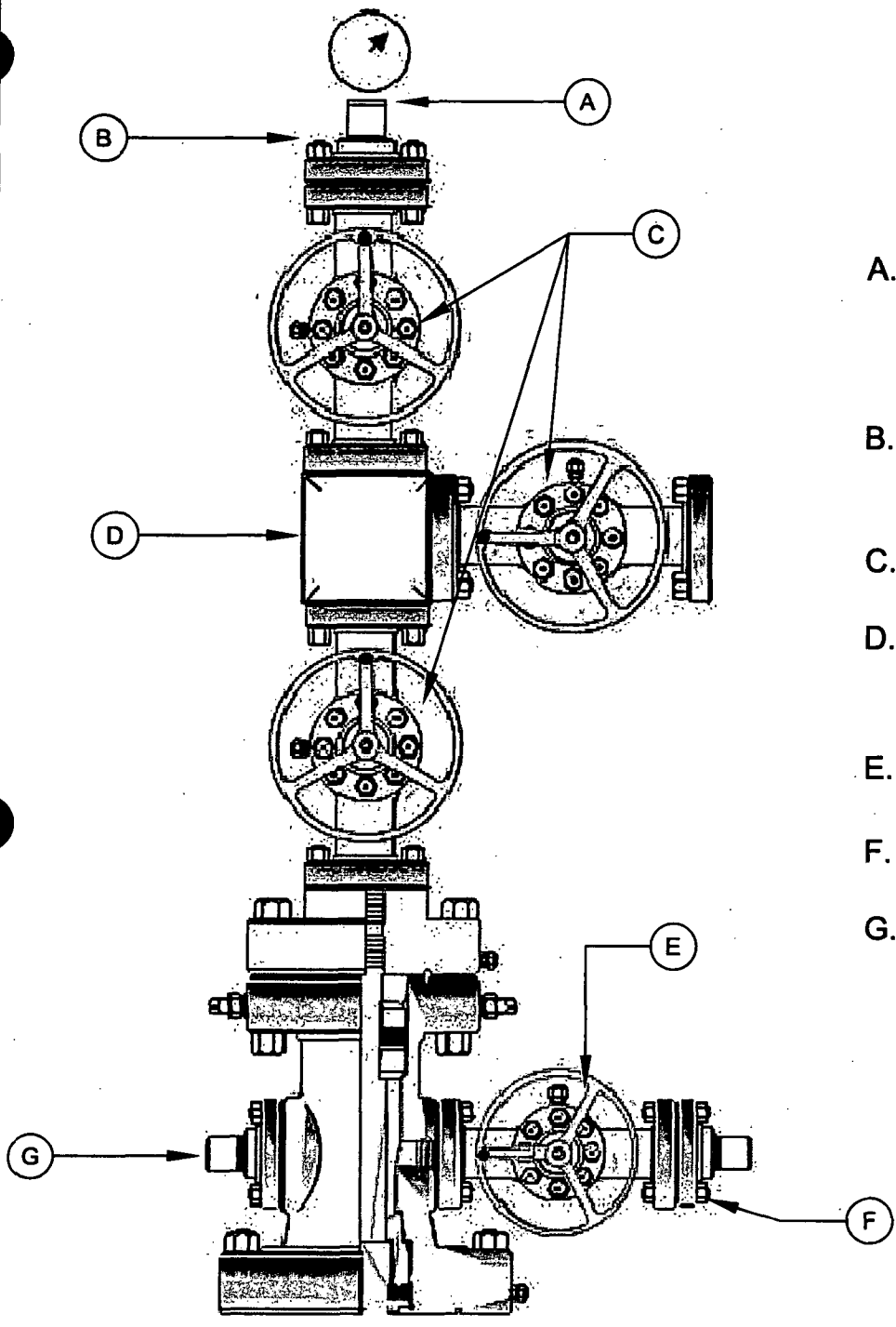
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 12

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

BELOW GROUND WELL SCHEMATIC WASTE DISPOSAL WELL NO. 3

DATE: 05/24/12	CHECKED BY:	JOB NO: 60Z6642	
DRAWN BY: WDD	APPROVED BY:	DWG. NO:	



WELLHEAD DETAILS

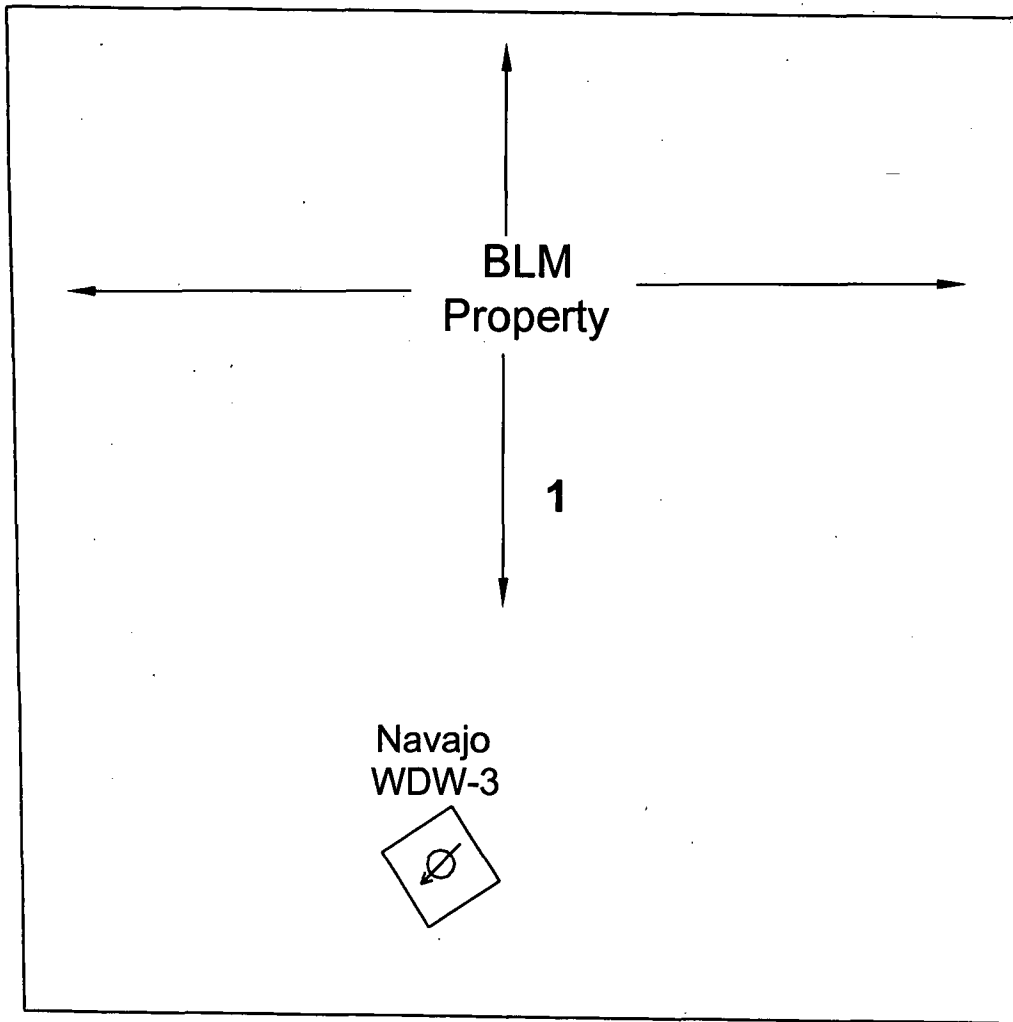
- A. Top Connection: 4 1/2" EUE, 2 7/8" 8rd, 2 7/8" bull plug, 1/2" NPT 5000 lb gauge.
- B. Flange: 4 1/16" 3K x 4 1/2" UPTBG 3K
- C. Tree Gate Valves: 4 1/16" 3K
- D. Upper Tree Assembly: A5PP, 4 1/2", 7 1/16" 3K x 4 1/16" 3K
- E. Annulus Valve: 2 1/16" 5K
- F. Flange: 2 1/16" 5K x 2" LP 5K
- G. Annulus Valve: 2" ball valve 3K

SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
FIGURE 13		
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO		
WELLHEAD SCHEMATIC WASTE DISPOSAL WELL NO. 3		
DATE: 05/24/12	CHECKED BY:	JOB NO: 60Z6642
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

APPENDIX A

SURROUNDING LAND OWNERSHIP INFORMATION





Section 1, Township 18 South, Range 27 East

NOTE: The U.S. Department of the Interior, Bureau of Land Management owns all land in Section 1, Township 18 South, Range 27 East. Navajo WDW-3 Class I Non-Hazardous Waste Injection well is located on land owned by the BLM.

SUBSURFACE		Houston, TX South Bend, IN Baton Rouge, LA
APPENDIX A		
NAVAJO REFINING COMPANY, L.L.C. ARTESIA, NEW MEXICO		
SURROUNDING LAND OWNERSHIP INFORMATION		
DATE: 06/05/12	CHECKED BY:	JOB NO.: 60A6781
DRAWN BY: WDD	APPROVED BY:	DWG NO.:

APPENDIX B

AREA OF REVIEW WELL FILES AND SCHEMATICS



SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.

Map ID No. 50

Artificial Penetration Review

OPERATOR Navajo Refining Co.

STATUS Active

LEASE WDW

LOCATION Sec. 12-T18S-R27E

WELL NUMBER #2

MUD FILLED BOREHOLE _____

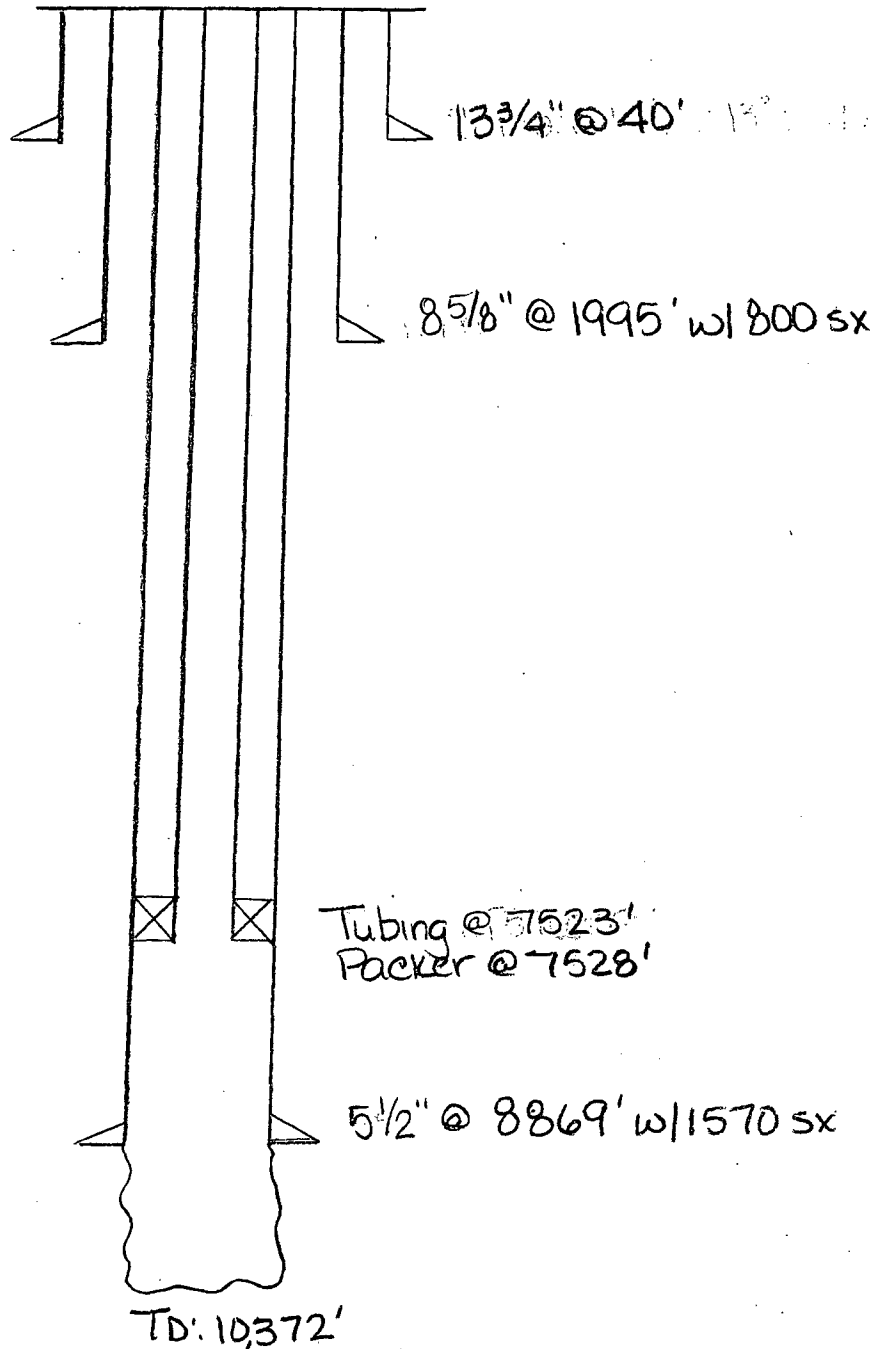
DRILLED 7/18/73

TOP INJECTION ZONE -3663'

PLUGGED NA

API NO. 30-015-20894

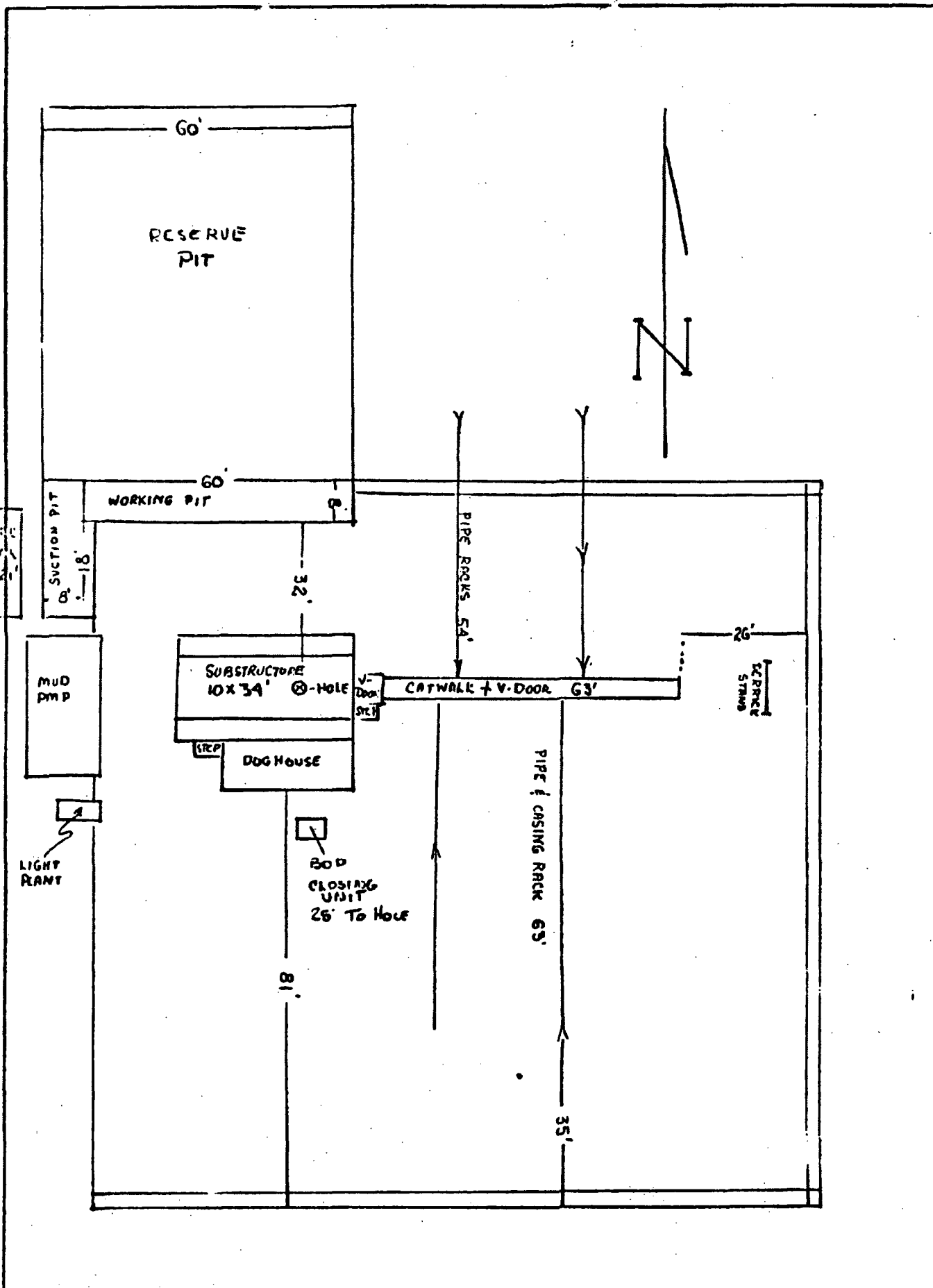
REMARKS:



MAP ID NO. 50

**NAVAJOR FEFINING COMPANY
WASTE DISPOSAL WELL NO. 2**

API NO. 30-015-20894



Amoco Production Company

SCALE:

GENERAL RIG LAYOUT

DRG. NO.

- 1. Existing Wells - This Plat
- 2. Planned Access Roads - This plat
- 3. Location of Wells - This Plat
- 4. Lateral Roads to well Location
- 5. This Plat
- 6. Location of Tank Battery & Flow Lines - To be at well loc.
- 7. Location & Types of Water - To be trucked
- 8. Methods for Handling Waste Disposal - In suitable containers and pits on location.
- 9. Camps - None
- 10. Air Strips - None
- 11. Pig Layout - See Attached
- 12. Make location cleanup in accordance with good operating practice and if P&A clean & level location around well.
- 13. None
- 14. There are no houses, buildings, and windmills within 1/4 mile of the location

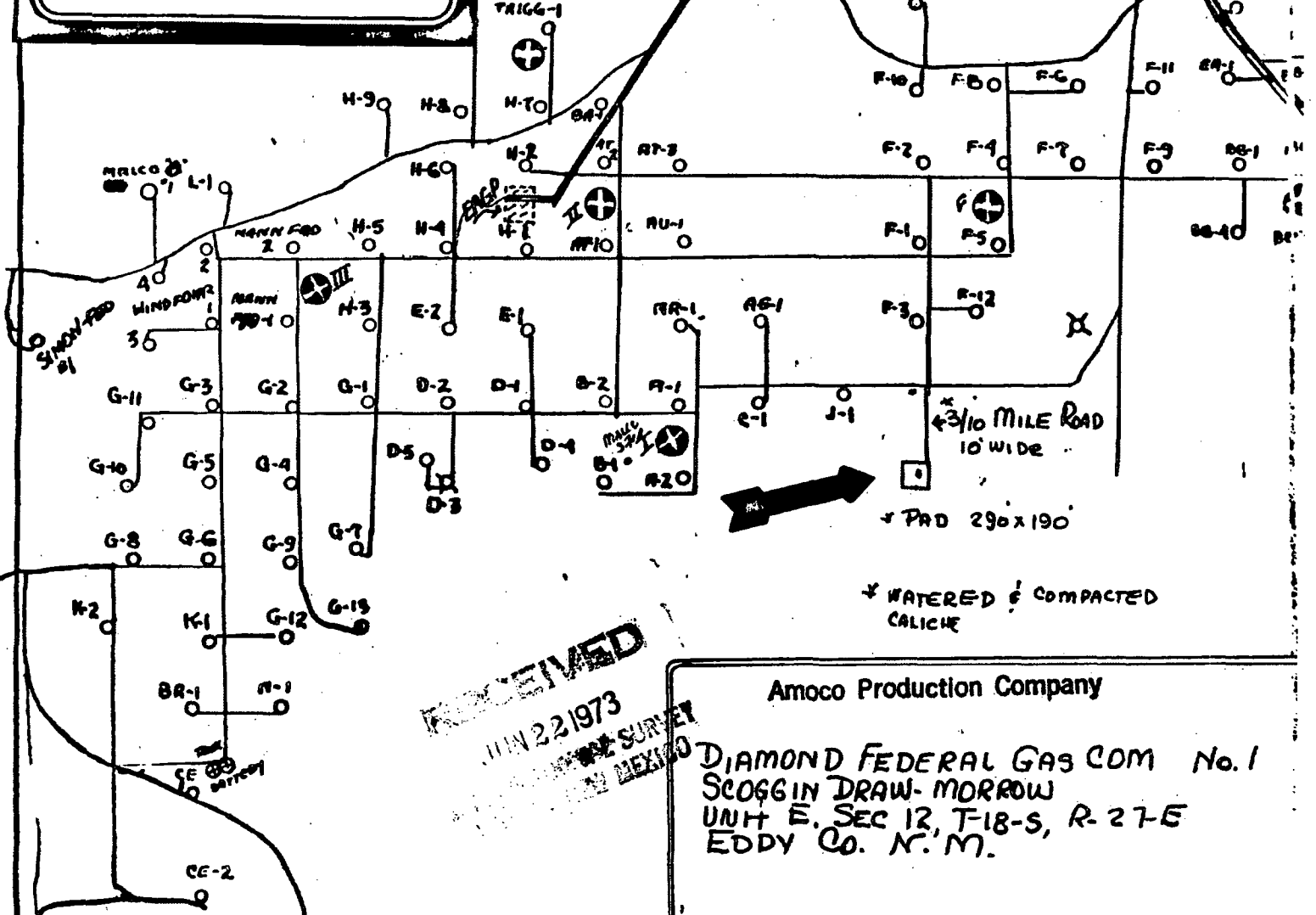
NM 9 MI

POWER STATION

ST HWAY 8

1.7

2.2



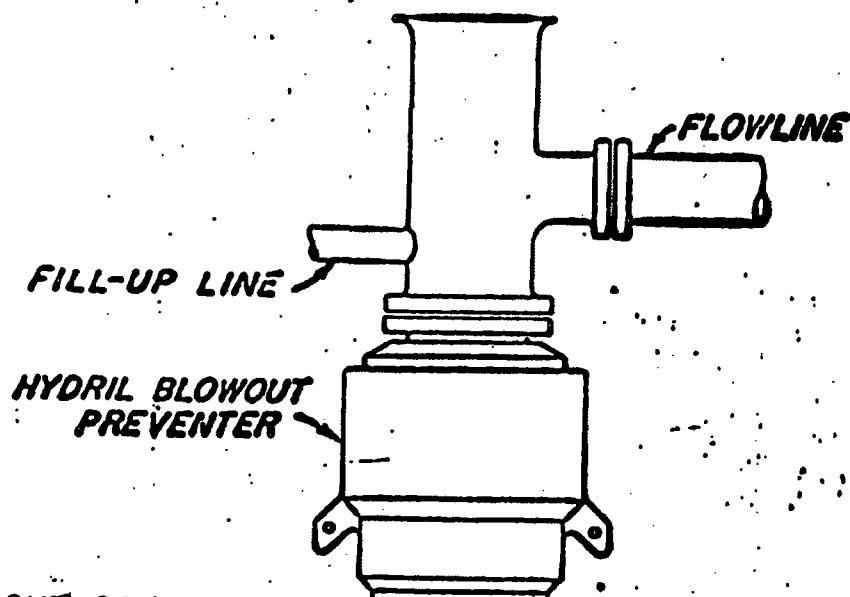
RECEIVED
JUN 22 1973
DIAMOND FEDERAL GAS COMPANY
SCOGGIN DRAW-MORROW SURVEY
EDDY COUNTY, NEW MEXICO

Amoco Production Company

DIAMOND FEDERAL GAS COM No. 1
SCOGGIN DRAW-MORROW
UNIT E, SEC 12, T-18-S, R-27-E
EDDY CO. N. M.

BLOWOUT PREVENTER HOOK-UP FOR DRILLING BELOW INTERMEDIATE CASING

1. BLOWOUT PREVENTERS AND MASTER VALVE TO BE FLUID OPERATED AND ALL FITTINGS MUST BE IN GOOD CONDITION (MINIMUM: WP - 3000 PSI, TEST - 6000 PSI).
2. EQUIPMENT THROUGH WHICH BIT MUST PASS SHALL BE AS LARGE AS THE INSIDE DIAMETER OF CASING THAT IS BEING DRILLED THROUGH.
3. KELLY COCK REQUIRED (MINIMUM: 3000 PSI WP, 6000 PSI TEST)
4. OMSCO OR COMPARABLE SAFETY VALVE MUST BE AVAILABLE ON RIG FLOOR AT ALL TIMES WITH PROPER CONNECTION OR SUB. (MINIMUM: 3000 PSI WP, 6000 PSI TEST)



BLOWOUT PREVENTER

AMOCO PRODUCTION COMPANY

DIAMOND *Federal Gas Com*

1

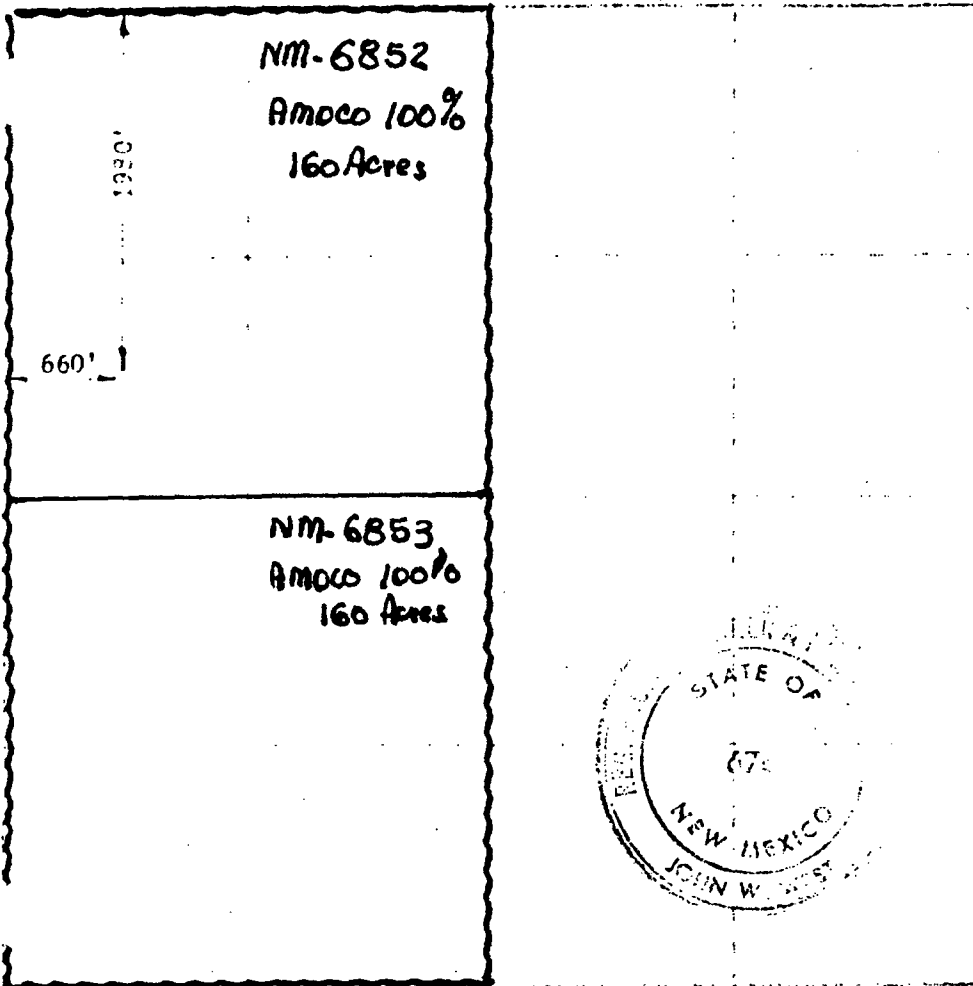
12 18 SOUTH 27 EAST EDDY
1930 NORTH 660 WEST

36°6.9' MORROW SCOGGIN DRAW MORROW (S) 320

- 1. Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- 2. If any other acreage is dedicated to the well, outline each and identify the ownership thereof by name and percentage interest.
- 3. If any other acreage of different ownership is dedicated to the well, have the interests of all owners consolidated by name, with an amount, unitization factor and percentage.

Answer the following: If answer is "Yes," type of consolidation.

If the interests of the owners and their descriptions which have actually been consolidated are shown on the plat, the same will be used in the well until all interests have been consolidated. The consolidation of interests on the plat will be in effect until a non-stamped unit eliminating such interests has been approved by the Bureau of Land Management.



1. I hereby certify that the above is a true and correct copy of the original plat as shown on the original plat as shown on the original plat as shown on the original plat.

J. E. York
AREA ENGINEER

Amoco Production Company

JUN 21 1973

I hereby certify that the above is a true and correct copy of the original plat as shown on the original plat as shown on the original plat as shown on the original plat.

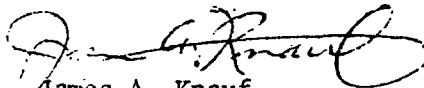
JUNE 20, 1973

John W. West



drilling into the Wolfcamp formation
and used until production casing is run and cemented. Monitoring
equipment shall consist of the following:

- (1) A recording pit level indicator to determine pit volume gains and losses.
 - (2) A mud volume measuring device for accurately determining mud volume necessary to fill the hole on trips.
 - (3) A flow sensor on the flow-line to warn of any abnormal mud returns from the well.
6. When coming out of the hole with drill pipe, the annulus shall be filled with mud before the mud level drops below 150 feet. The volume of mud required to fill the hole shall be watched, and any time there is an indication of swabbing, or influx of formation fluids, proper blowout prevention precautions must be taken. The mud shall not be circulated and conditioned except on or near bottom, unless well conditions prevent running the pipe to bottom.
7. A copy of these requirements shall be posted on the rig floor or in the dog house during the drilling of the well.


James A. Knauf
District Engineer

Lease No. NM-6852
Well Amoco Production Co. 1-Diamond Federal Gas Com.
Drillsite 1980/N 660/W 12-18S-27E
Depth 10,000' Morrow
Approved July 6, 1973

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

30-015-20894

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK DRILL [X] DEEPEN [] PLUG BACK []

b. TYPE OF WELL OIL WELL [] GAS WELL [X] OTHER [] RECEIVED SINGLE ZONE [X] MULTIPLE ZONE []

2. NAME OF OPERATOR Amoco Production Company JUL 9 1973

3. ADDRESS OF OPERATOR BOX 68, HOBBS, N. M. 88240

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.) At surface ARTESIA, OFFICE 1980 FNLy 660 F RWL Sec. 12 (Unit E, S4 N1/4)

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

16. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any)

18. NO. OF ACRES IN LEASE

17. NO. OF ACRES ASSIGNED TO THIS WELL 320

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

19. PROPOSED DEPTH 10,000

20. ROTARY OR CABLE TOOLS ROTARY

21. ELEVATIONS (Show whether DF, RT, GR, etc.) 3607' GL

22. APPROX. DATE WORK WILL START* 7-1-73

23. PROPOSED CASING AND CEMENTING PROGRAM

Table with 5 columns: SIZE OF HOLE, SIZE OF CASING, WEIGHT PER FOOT, SETTING DEPTH, QUANTITY OF CEMENT. Includes handwritten entries like 11", 7 1/8", 8 5/8", 4 1/2", 32 24", 95-11.6", 1000, 10000, and SUFFICIENT TO FILL 500' ABOVE UPPER MOST PAY.

After drilling well, logs will be run and evaluations made, perforating and/or stimulating as necessary on attempting commercial production.

BOP program attached.

Mud Program: 0-1000' Water mud & water 1000-5000' Min. quality low solids gel for satisfactory operations & samples. 9000-10000'

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED J. E. York TITLE AREA ENGINEER DATE JUN 21 1973

PERMIT NO. APPROVAL DATE JUL 6 1973

APPROVED BY [Signature] TITLE DISTRICT ENGINEER DATE JUL 6 1973

USGS-Per Subject to attached "Notice" dated 6-22-73

- Div - SUSP - RRY - ARCO

See Instructions On Reverse Side

Copy to SF

RECEIVED

JUL 10 1973

D. C. C.
ARTESIA, OFFICE

P. O. Drawer U
Artesia, New Mexico 88210

July 9, 1973

Mr. Jim York
Amoco Production Company
Post Office Box 68
Hobbs, New Mexico 88240

Dear Mr. York:

This is to confirm my telephone conversation with you today whereby we requested that the 8-5/8-inch casing string be set in the top of the San Andres formation (approximately 2,000 feet below the surface) in your No. 1 Diamond Federal Gas Com. well on lease WM-6852 in the SW 1/4 sec. 12, T. 18 S., R. 27 E., N.M.P.M., Eddy County, New Mexico.

Sincerely yours,

JAMES A. KNAUF

James A. Knauf
District Engineer

cc:
Roswell
N.M.O.C.C. (2)

RECEIVED

JUL 10 1973

D. C. C.
ARTESIA, OFFICE

N. M. O. C. C. COPY
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Copy 431

PERMIT IN TRIANGLE STATE
(Other instructions on reverse side)
5. LEASE NO. AT SURFACE SERIAL NO.
6. IF INDIAN ALLIANCE TRIP NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT" for such proposals.)

7. UNIT AGREEMENT NAME
DIAMOND FED. GAS COM
8. FARM OR LEASE NAME

9. WELL NO.
1
10. FIELD AND POOL, OR WILDCAT
SCOGGIN DRAW - MORROW
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

12-18-27-NMPM
12. COUNTY OR PARISH 13. STATE
EDDY N.M.

1. TYPE OF WELL GAS WELL OTHER **DRILLING RECEIVED**

2. NAME OF OPERATOR
Amoco Production Company

3. ADDRESS OF OPERATOR
BOX 68, HOBBS, N. M. 88240

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface
D. C. C. ARTESIA, OFFICE

1980 FNL x 660 FWL SEC. 12 (UNIT E, SE 1/4 NW 1/4)

14. PERMIT NO. 15. ELEVATIONS (Show whether DP, RT, OR, etc.)
36107' GL 3623' R.D.B

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETION <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>
(Other) <input type="checkbox"/>	

SUBSEQUENT REPORT OF:

WATER SHUT-OFF <input checked="" type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
(Other) Spudding <input checked="" type="checkbox"/>	

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

*Delta Drilling Co. spudded 11" hole 3: PM 7-18-73.
On 7-22-73, 8 7/8" OD 32" BR K-55 Casing was set @ 1955 w/ 7005x Incon 2% Gal + 100 psi meat. Circ. 200 Sq. Feet w/ 18 hours. Tested casing w/ 500 psi for 30 min. Test O.K.
Reduced hole to 7 7/8" @ 1955 and resumed drilling.*

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JUL 24 1973
U. S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

18. I hereby certify that the foregoing is true and correct

SIGNED *[Signature]* TITLE **ADMINISTRATIVE ASSISTANT** DATE **JUL 23 1973**

(This space for Federal or State office use)
APPROVED CONDITION APPROVAL ANY: TITLE DATE

APPROVED
JUL 24 1973
H. L. BEEKMAN
ACTING DISTRICT ENGINEER *See Instructions on Reverse Side

1- DIV
1- SUS P
1- RRY
1- ARCD

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE

(See other instructions on reverse side)

Form approved. Budget Bureau No. 42-R355.6.

5. LEASE DESIGNATION AND SERIAL NO.

NM-6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

DIAMOND FED. GAS COM

8. FARM OR LEASE NAME

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL [] GAS WELL [] DRY [X] Other []
b. TYPE OF COMPLETION: NEW WELL [] WORK OVER [] DEEP-EN. [] PLUG BACK [] DIFF. SERV. [] Other []

RECEIVED

2. NAME OF OPERATOR Amoco Production Company

SEP 24 1973

3. ADDRESS OF OPERATOR BOX 68, HOBBS, N. M. 88240

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
At surface 1980' FNL X 660' FWL Sec 12. (Unit F, SE 1/4 NW 1/4)
At top prod. interval reported below
At total depth

10. FIELD AND FOOT OR WILDCAT

SCOGGIN DRAW-MORROW

11. SEC. T. R. S. OR BLOCK AND SURVEY OR AREA

12-18-27 NMPM

12. COUNTY OR PARISH EDDY

13. STATE N.M.

14. PERMIT NO. DATE ISSUED

15. DATE SPUNDED 7-18-73 16. DATE T.D. REACHED 8-27-73 17. DATE COMPL. (Ready to prod.) P&A 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)* 3623' RDB

20. TOTAL DEPTH, MD & TVD 10.372 21. PLUG BACK T.D., MD & TVD P+A 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY 0-TD

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* NONE

25. WAS DIRECTIONAL SURVEY MADE No

26. TYPE ELECTRIC AND OTHER LOGS RUN GR-N - DUAL IND LL

27. WAS WELL CORED No

CASING RECORD (Report all strings set in well)

Table with columns: CASING SIZE, WEIGHT, LB./FT., DEPTH SET (MD), HOLE SIZE, CEMENTING RECORD, AMOUNT PULLED. Values: 8 7/8, 32#, 1955, 11", 800 SY, NONE.

29. LINER RECORD and 30. TUBING RECORD tables with columns for SIZE, TOP (MD), BOTTOM (MD), SACKS CEMENT, SCREEN (MD), DEPTH SET (MD), PACKER SET (MD).

31. PERFORATION RECORD (Interval, size and number) and 32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC. tables.

33. PRODUCTION DATE FIRST PRODUCTION, PRODUCTION METHOD, WELL STATUS

Table with columns: DATE OF TEST, HOURS TESTED, CHOKER SIZE, PROD'N. FOR TEST PERIOD, OIL-BBL., GAS-MCF., FLOW, TUBING PRESS., CASING PRESSURE, CALCULATED 24-HOUR RATE, OIL-BBL., GAS-MCF., WATER-BBL.

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

35. LIST OF ATTACHMENTS

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records. SIGNED: [Signature] TITLE: ADMINISTRATIVE ASSISTANT DATE: 9-10-73

RECEIVED SEP 19 1973 U.S. GEOLOGICAL SURVEY ARTESIA, N.M.

013- USGS-ART 1-W7 1-DIV 1-REV

(See Instructions and Spaces for Additional Data on Reverse Side)

INSTR. ONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 16: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: "Sacks Cement": Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES: SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES				38. GEOLOGIC MARKERS			
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP		
					MEAS. DEPTH	TRUE VERT. DEPTH	
			NO OIL OR GAS	T	ABO	5 506	
				T	WOLFLAMP	6 728	
				T	CISCO	7 485	
				T	STRAWN	8 820	
				T	ATOKA	9 460	
				T	MORROW	9 725	
				T	CHESTER	10 158	
				T	Miss Lm	10 338	

N. M. O. C. C. COPY
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Form approved
 Bureau No. 12-20121
 5. LEASE DESIGNATION (If Serial No.)
NM-0002
 6. IF INDIAN, ALLOY, OR TRIPPLE BASE

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT-" for such proposals.)

1. GAS WELL OTHER **DRILLING - DRY HOLE**

2. NAME OF OPERATOR
Amoco Production Company

3. ADDRESS OF OPERATOR
BOX 68, HOBBS, N. M. 88240

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
 At surface
1980 FNLx 660 FWL Sec. 12 (Unit E, SE1/4 NW1/4)

14. PERMIT NO. _____ 15. ELEVATIONS (Show whether DF, RT, OR, etc.)
3623 R.D.B.

7. UNIT AND WELL IDENTIFICATION
DIAMOND FEDERAL CO. COM

8. FARM OR RANCH NAME _____

9. WELL NO. _____

10. FIELD AND FOOT OF SURFACE
SCOGGIN DRAIN MUDROW

11. SEC., T., R., M., OR LER. AND SURVEY OR AREA
12-18-22 NMPM

12. COUNTY OR PARISH 13. STATE
EDDY N.M.

RECEIVED
SEP 12 1973
O. C. C.
ARTESIA, OFFICE

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

<input type="checkbox"/> TEST WATER SHUT-OFF	<input type="checkbox"/> PULL OR ALTER CASING	<input type="checkbox"/> WATER SHUT-OFF	<input type="checkbox"/> REPAIRING WELL
<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> MULTIPLE COMPLETE	<input type="checkbox"/> FRACTURE TREATMENT	<input type="checkbox"/> ALTERING CASING
<input type="checkbox"/> SHOOT OR ACIDIZE	<input checked="" type="checkbox"/> ABANDON*	<input type="checkbox"/> SHOOTING OR ACIDIZING	<input type="checkbox"/> ABANDONMENT*
<input type="checkbox"/> REPAIR WELL	<input type="checkbox"/> CHANGE PLANS	(Other) _____	
(Other) _____			

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled to a TD of 10,372' without encountering oil or gas. Logs and evaluations confirmed Dry Hole.

* Propose to P+A as follows: Cement Plugs - Class 14

<u>INTERVAL</u>	<u>LENGTH</u>	<u>FORMATION</u>	<u>SX CEMENT</u>
9775-9675	100'	Mudrow	45
7535-7435	100'	GISCO	50
5556-5456	100'	ABO	40
3720-3620	100'	YESO	50
2045-1945	100'	8 7/8" CSA 1995	40
Surface	10-20'	Fract P+A marker	10 SX

*All intervals to be filled w/ Arly mud.
 Location to be cleaned & levelled.*

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SEP-4 1973
U. S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

* Pursuant to Mr. Leon Beekmans verbal approval 8-25-73.

18. I hereby certify that the foregoing is true and correct

SIGNED _____ TITLE **AREA ENGINEER** DATE **AUG 31 1973**

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL (If any):

- 4 USGS-Aet
- 1- D.V
- 1- JSP
- 1- RRV
- 1- Arco

APPROVED
SEP 11 1973
H. L. BEEKMAN
ACTING DISTRICT ENGINEER

See Instructions on Reverse Side

N. M. O. C. C. Co.
UN I T E D STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPI
(Other instructions
verse side)

Form approved
Bureau No. 42-R1424

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

6. LEASE DESIGNATION AND SERIAL NO.

N.M. 6852

8. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

DIAMOND FED. GAS CO.

9. FARM OR LEASE NAME

9. WELL NO.

10. FIELD AND POOL, OR WILDCAT

SCOGGIN DRAW-MORROW

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

12-18-27 NMPM

12. COUNTY OR PARISH 13. STATE

EDDY NM

1. OIL WELL GAS WELL OTHER

DRY HOLE

RECEIVED

2. NAME OF OPERATOR
Amoco Production Company

SEP - 6 1974

3. ADDRESS OF OPERATOR
BOX 68, HOBBS, N. M. 88240

O. C. C.

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface

1980 FNLy 660 FWL Sec. 12 (UNIT E, SE 1/4 NW 1/4)

14. PERMIT NO.

15. ELEVATIONS (Show whether DP, ST, OR, etc.)

3623 R.D. B.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF
FRACTURE TREAT
SHOOT OR ACIDIZE
REPAIR WELL
(Other)

PULL OR ALTER CASING
MULTIPLE COMPLETS
ABANDON*
CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF
FRACTURE TREATMENT
SHOOTING OR ACIDIZING
(Other)

REPAIRING WELL
ALTERING CASING
ABANDONMENT*

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

*Physical abandonment of well concluded 8-31-73.
Plugged and abandoned as follows:*

Sx CEMENT	INTERVAL	LENGTH	FORMATION
45	9775 - 9765	100'	MORROW
50	7535 - 7435	100'	CLICO
40	5556 - 5456	100'	ABO
50	3720 - 3620	100'	YESO
40	2045 - 1945	876' CSA	1995' - circ
10	Surface & erected P x A marker.		

*all intervals filled w/ mud.
Location to be cleaned & leveled.*

RECEIVED
SEP - 5 1973

18. I hereby certify that the foregoing is true and correct

SIGNED

Roy Yorkum

ADMINISTRATIVE ASSISTANT

DATE SEP 5 1973

(This space for Federal or State office use)

APPROVED BY

APPROVED

TITLE

DATE

- 1 - Div
- 1 - Susp
- 1 - RR
- 1 - ARGO

SEP 6 1974
R. L. BEEKMAN
ACTING DISTRICT ENGINEER

*See Instructions on Reverse Side

EXHIBIT "D"
SKETCH OF WELL PAD
FRED POOL DRILLING, INC.
Well #2 Chukka Federal
SW $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 12: T-18-S, R-27-E

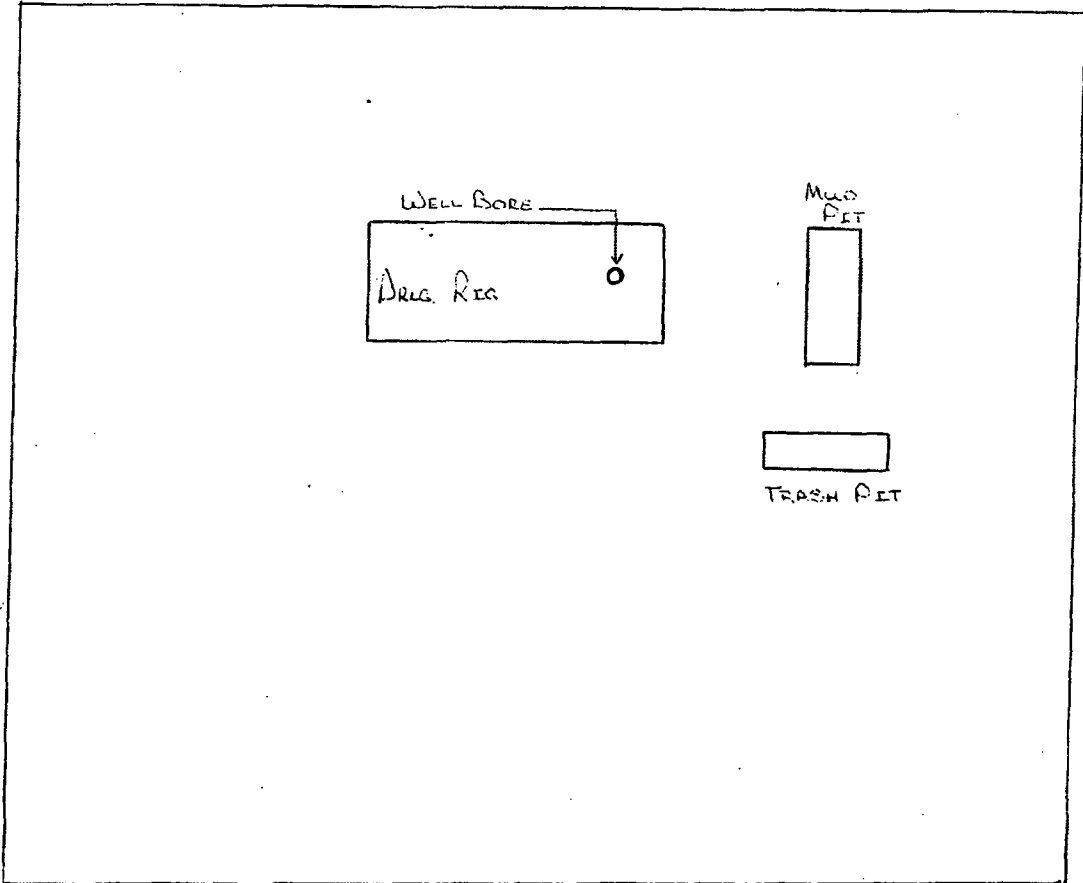
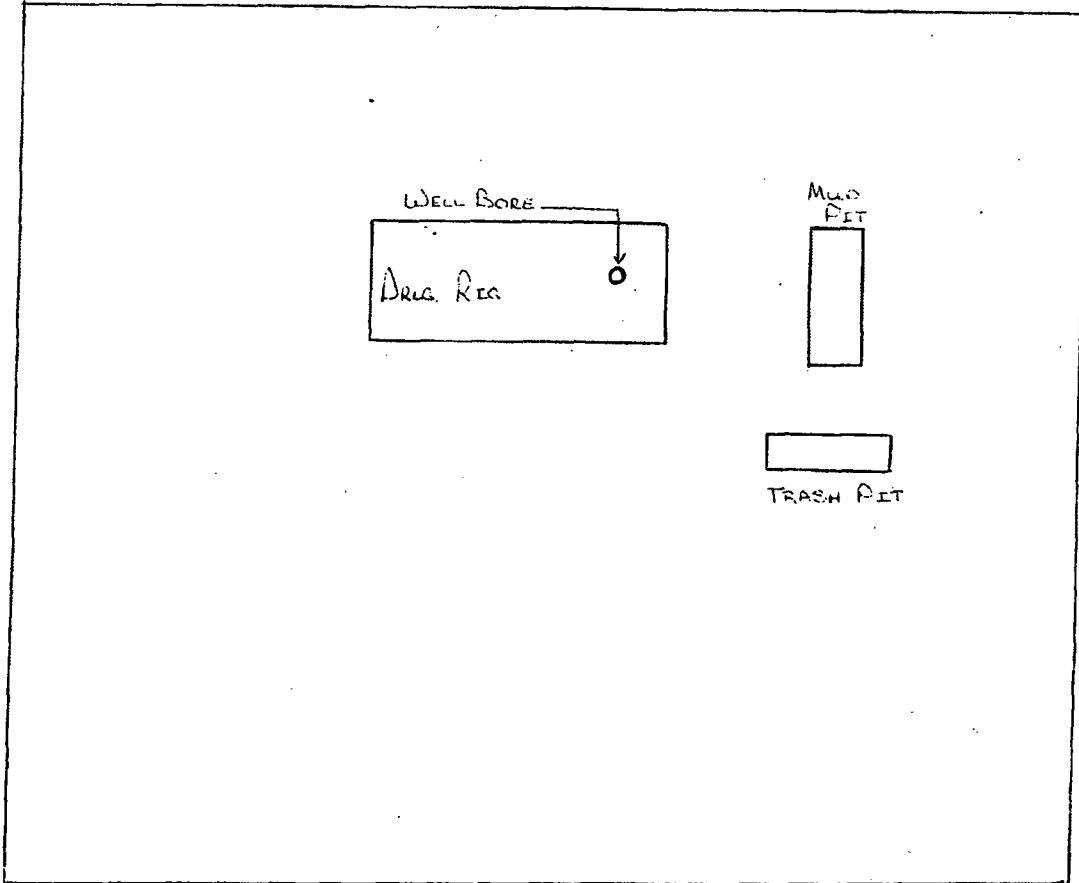


EXHIBIT "D"
SKETCH OF WELL PAD

FRED POOL DRILLING, INC.
Well #2 Chukka Federal
SW $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 12: T-18-S, R-27-E



OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 37501

Form C-102
Revised 10-1-79

All distances must be from the outer boundaries of the Section.

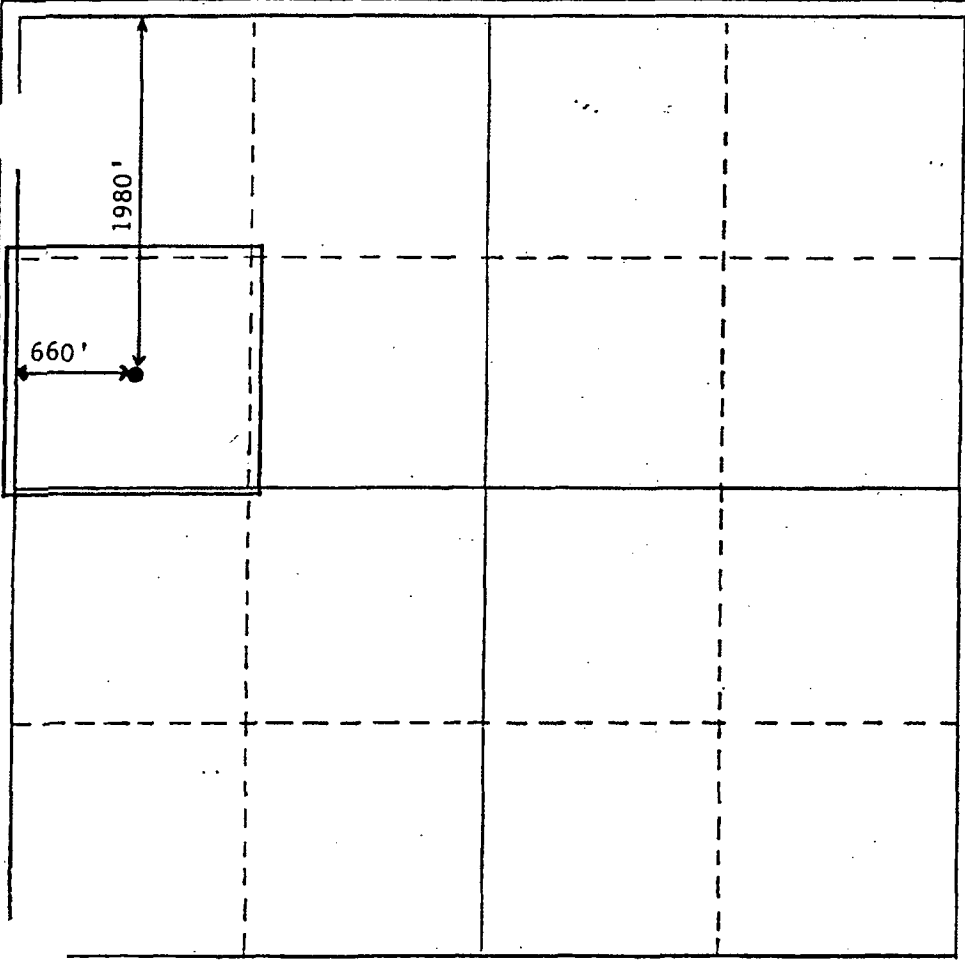
Owner Fred Pool Drilling, Inc.			Lease Chukka Federal			Well No. 2		
Unit Letter E	Section 12	Township 18-S	Range 27-E	County Eddy				
Actual Footage Location of Well: 1980 feet from the North line and 660 feet from the West line								
Ground Level Elev. 3607	Producing Formation		Pool Artesia			Dedicated Acreage: 40 Acres		

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

Yes No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name *Fred Pool*
Position
President

Company
Fred Pool Drilling, Inc.

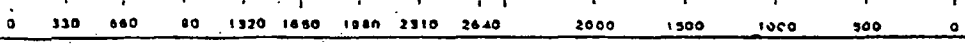
Date
8-16-85

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed _____

Registered Professional Engineer and/or Land Surveyor _____

Certificate No. _____



4/8

RECEIVED BY
AUG 30 1985
ARTESIA OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

30-115-20894

5. LEASE DESIGNATION AND SERIAL NO.
NM-6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Chukka Federal

9. WELL NO.
2

10. FIELD AND POOL, OR WILDCAT
Artesia Oil Pool

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 12, T-18-S, R-27-E

12. COUNTY OR PARISH
Eddy

13. STATE
NM

APPLICATION OR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1. TYPE OF WELL
ARTESIA OFFICE DRILL DEEPEN PLUG BACK

b. TYPE OF WELL
OIL WELL GAS WELL OTHER *Re-entry* SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
Fred Pool Drilling, Inc.

3. ADDRESS OF OPERATOR
P. O. Box 1393, Roswell, N.M. 88201

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)*
At surface
1980' FNL & 660' FWL
At proposed prod. zone (Unit E)
(SW $\frac{1}{2}$ NW $\frac{1}{4}$)

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
11 air miles east-southeast of Artesia, N.M.

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any)	660'	16. NO. OF ACRES IN LEASE	160	17. NO. OF ACRES ASSIGNED TO THIS WELL	40
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	1650'	19. PROPOSED DEPTH	1945'	20. ROTARY OR CABLE TOOLS	Rotary
21. ELEVATIONS (Show whether DF, RT, GR, etc.)	3607 GR	22. APPROX. DATE WORK WILL START*	8-31-85		

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
1 1/4 1 1/4" PSE	8 5/8"	32#	2000	Circ.
<i>Csg. in place</i>				

This is a re-entry of Diamond Fed. Gas Com #1 plugged and abandoned 8-31-73.

OTO: 10,372

- Attached are:
- 1) Well location & acreage dedication plat
 - 2) Supplemental drilling data
 - 3) Surface use plan
 - 4) Designation of operator
 - 5) Original approved application by Amoco Production Co. for Diamond Federal Gas Com #1

*Packed 10/1
x H-1
9-13-85*

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

34. SIGNED *Fred Pool* TITLE President DATE 8-16-85

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY *Orig: Sgd. C. G. S. D. M.* TITLE _____ DATE 8-29-85

*See Instructions On Reverse Side

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN THE ORIGINAL
(Other instructions on reverse side)

Form approved
Budget Bureau No. 42-R1424

C/SF

5. LEASE DESIGNATION AND SERIAL NO.

NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Chukka Federal

9. WELL NO.

2

10. FIELD AND POOL OR WILDCAT

Artesia Oil Pool

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

Sec. 12-T 18S- R 27E

12. COUNTY OR PARISH 13. STATE

Eddy

NM

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED BY
SEP 11 1985
O. C. D.
ARTESIA, OFFICE

1. OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR
FRED POOL DRILLING, INC.

3. ADDRESS OF OPERATOR
P. O. Box 1393 Roswell, N.M. 88201

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.)
At surface

1980 0NL 660 FWL
Unit E SW 1/4 NW 1/4

14. PERMIT NO.

15. ELEVATIONS (Show whether DP, RT, GR, etc.)

3607 GR

12. COUNTY OR PARISH 13. STATE

Eddy

NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF

PULL OR ALTER CASING

WATER SHUT-OFF

REPAIRING WELL

FRACTURE TREAT

MULTIPLE COMPLETE

FRACTURE TREATMENT

ALTERING CASING

SHOOT OR ACIDIZE

ABANDON*

SHOOTING OR ACIDIZING

ABANDONMENT*

REPAIR WELL

CHANGE PLANS

(Other)

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

9-5-85: Drilled cement out of surface from 0-30 ft.
Stringers of cement to 50 ft.
Tagged No. 2 plug at 1912 ft. Pulled tubing back to 1804 ft.; circulated hole with fresh water.
Preparing to log and perforate well.



18. I hereby certify that the foregoing is true and correct

SIGNED

Kenta Pool

TITLE

Clerk

DATE

9-6-85

(This space for Federal or State office use)

APPROVED BY

APPROVED FOR RECORD

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY

SEP 10 1985

*See Instructions on Reverse Side

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
NM OIL CONS. COM. DRAWER D OTHER INSTRUCTIONS (Reverse side)
Artesia, NM 88210

Form approved.
Budget Bureau No. 42-R1424

5. LEASE DESIGNATION AND SERIAL NO.
NM 6852
6. IF INDIAN, ALLOTTEE OR TRIBE NAME
7. UNIT AGREEMENT NAME
8. FARM OR LEASE NAME
Chukka Federal
9. WELL NO.
2
10. FIELD AND POOL, OR WILDCAT
Artesia Oil Pool
11. SEC., T., R., M., OR BLE. AND SURVEY OR AREA
Sec, 12-T18S-R27E
12. COUNTY OR PARISH
Eddy
13. STATE
NM,

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to surface (Use Mr. Use "APPLICATION FOR PERMIT..." for such proposals.)

RECEIVED BY
SEP 18 1985
O. C. D.
ARTESIA, OFFICE

1. OIL WELL GAS WELL OTHER re-entry
2. NAME OF OPERATOR
Fred Pool Drilling, Inc.
3. ADDRESS OF OPERATOR
P.O. Box 1393 Roswell, N.M. 88201

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.)
At surface
1980 FNL 660 FWL Unit E
SW 1/4 NW 1/4

14. PERMIT NO.
3001520894
15. ELEVATIONS (Show whether DF, RT, GR, etc.)
3607 GR

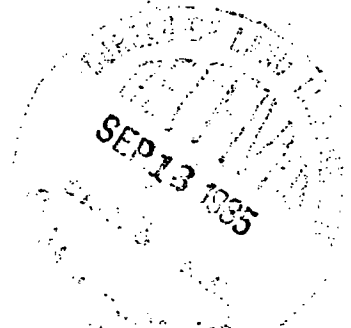
16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input checked="" type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <input type="checkbox"/>	

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

September 8, 1985

Perforations: 1446-56 ft. and 1459-62
14 shots.
Acidized with 1000 gallons NE 15%; and 30,000 gallons Versagel; 30,000# 20/40 sand and 12,000 # 10/20 sand.
Pumping well back to test.



18. I hereby certify that the foregoing is true and correct
SIGNED Fred Pool TITLE Vice - president DATE 9-11-85

(This space for Federal or State office use)

APPROVED BY ACCEPTED FOR RECORD TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY

SEP 16 1985

*See Instructions on Reverse Side

SUPPLEMENTAL DRILLING DATA

FRED POOL DRILLING, INC.
WELL #2 CHUKKA FEDERAL
SW $\frac{1}{4}$ NW $\frac{1}{4}$, SEC. 12, T-18-S, R-27-E
EDDY COUNTY, NEW MEXICO

1. SURFACE FORMATION: Artesia Group of Permian Age. (Elev. 3607')
2. ESTIMATED TOPS OF GEOLOGIC MARKERS:

Yates	275'	Grayberg	1650'
Seven Rivers	475'		
Queen	1225'		
3. ANTICIPATED POROSITY ZONES:

Water	-	Above 300'
Oil	-	1500-2500'
4. CASING DESIGN:

<u>Size</u>	<u>Interval</u>	<u>Weight</u>	<u>Grade</u>	<u>Joint</u>
8 5/8"	0 - 2000'	32#		
5. SURFACE CONTROL EQUIPMENT: Control head.
6. CIRCULATING MEDIUM: KCL water.
7. AUXILIARY EQUIPMENT: None considered necessary on this shallow development well.
8. TESTING, LOGGING AND CORING PROGRAM: No coring or DST's are planned. Electric logs will include an cement bond log and a Compensated Neutron Log with Gamma Ray.
9. ABNORMAL PRESSURES, TEMPERATURES OR GASES: None anticipated.
10. ANTICIPATED STARTING DATE: It is planned that operations will commence about August 31, 1985. Duration of drilling, completion and testing operations should be one to five days.
11. RE-ENTRY DETAILS: Drill out cement plug at top of casing. Clean hole to plug at 1945' with tubing. Pressure test casing to be sure it does not leak. Run cement bond log from 1945' to surface. Perforate the Penrose section from 1450' to 1470' acidize and swab test.

75F

Drawer DD
Artesia, NM 88210

Form 7-85

RECEIVED BY

SEP 23 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE

(See other instructions on reverse side)

Form approved, Budget Bureau No. 42-R255.6.

5. LEASE DESIGNATION AND SERIAL NO.

NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Chukka Federal

9. WELL NO.

2

10. FIELD AND FORM OR WILDCAT
Artesia Oil Pool

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA

Sec. 12-T18S-R27E

12. COUNTY OR PARISH
Eddy

13. STATE
NM

14. PERMIT NO.

3001520894

DATE ISSUED

9-30-85

15. DATE SPUDDED

8-30-85

16. DATE T.D. REACHED

9-6-85

17. DATE COMPL. (Ready to prod.)

9-10-85

18. ELEVATIONS (DF, RSB, BT, GR, ETC.)*

3607 GR

19. ELEV. CASINGHEAD

3607 GR

20. TOTAL DEPTH, MD & TVD

1912 ft.

21. PLUG, BACK T.D., MD & TVD

1912 ft.

22. IF MULTIPLE COMPL., HOW MANY*

23. INTERVALS DRILLED BY

ROTARY TOOLS

CABLE TOOLS

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*

1446-1462 ft.

Penrose

25. WAS DIRECTIONAL SURVEY MADE

No

26. TYPE ELECTRIC AND OTHER LOGS RUN

Compensated Neutron

27. WAS WELL CORED

no

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8 5/8	32#	2000	11"	circulated	0

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2 3/8	1804 ft.	

31. PERFORATION RECORD (Interval, size and number)

1446-56 ft.

1459-62 ft.

14 holes

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
1446-56	1000 gal. NE 15%, 30,000 gal. Versagel; 30,000 # 20/40 sand; 12,000# 10/20 sand.
1459-62	

33. PRODUCTION

DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)				WELL STATUS (Producing or shut-in)	
9-12-85		Pumping				Producing	
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
9-12-85	24	none	→	31	TSTM	0	
FLOW TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)	
40#	40#	→	31	TSTM	0	35	

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

vented

TEST WITNESSED BY

SEP 19 1985 Fred Pool, Jr.

35. LIST OF ATTACHMENTS

Compensated Neutron log, mailed 9-10-85

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Fred Pool

TITLE Vice President

DATE 9-13-85

*(See Instructions and Spaces for Additional Data on Reverse Side)

INSTR/ ONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: "Sacks Cement": Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES: SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES				38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
Queen & Grayburg TD	0	65	Caliche and red bed			
	65	1100	Salt, red bed and anhydrite.			
	1100	1365	Dolomite and anhydrite			
	1365	1570	Sand dolomite			
	1570	1912	dolomite			

OIL CONSERVATION DIVISION

COPIES OF THIS FORM REQUIRED	
DISTRIBUTION	
STATE	<input checked="" type="checkbox"/>
FILE	<input checked="" type="checkbox"/>
M.S.P.	
LAND OFFICE	
TRANSPORTER OIL	<input checked="" type="checkbox"/>
GAS	<input checked="" type="checkbox"/>
OPERATOR	<input checked="" type="checkbox"/>
PRODUCTION OFFICE	

RECEIVED BY
SEP 18 1985
O. C. D.
ARTESIA

P.O. BOX 2088
NEW MEXICO 87501
REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Operator: Fred Pool Drilling, Inc.
Address: P.O. Box 1393 Roswell, N.M. 88201

Reason(s) for filing (Check proper box):
 New Well Re-entry Change in Transporter of:
 Recompletion Oil Dry Gas
 Change in Ownership Casinghead Gas Condensate

Other (Please explain): CASINGHEAD GAS MUST NOT BE FLARED AFTER 10-24-85 UNLESS AN EXCEPTION FROM THE B.L.M. IS OBTAINED

If change of ownership give name and address of previous owner: _____

DESCRIPTION OF WELL AND LEASE

Lease Name <u>Chukka Federal</u>	Well No. <u>2</u>	Pool Name, including formation <u>Artesia Oil Pool</u>	Kind of Lease State, Federal or Fee <u>Federal</u>	Lease <u>6852</u>
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Location:
Unit Letter E : 1980 Feet From The North Line and 660 Feet From The West
Line of Section 12- Township 18S Range 27E , NMPM, Eddy Co.

DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input checked="" type="checkbox"/> or Condensate <input type="checkbox"/> <u>Navajo Crude Oil Purchasing</u>	Address (Give address to which approved copy of this form is to be sent) <u>Box 159 Artesia, N.M. 88210</u>
Name of Authorized Transporter of Casinghead Gas <input checked="" type="checkbox"/> or Dry Gas <input type="checkbox"/> <u>Phillips Petroleum</u>	Address (Give address to which approved copy of this form is to be sent) <u>Bartlesville, Okla.</u>

If well produces oil or liquids, give location of tanks: Unit E Sec. 12 Twp. 18S Rge. 27E Is gas actually connected? no When _____

If this production is commingled with that from any other lease or pool, give commingling order number: _____

COMPLETION DATA

Designate Type of Completion - (X)	Oil Well <input checked="" type="checkbox"/>	Gas Well <input type="checkbox"/>	New Well <input type="checkbox"/>	Workover <input checked="" type="checkbox"/>	Deepen <input type="checkbox"/>	Plug Back <input type="checkbox"/>	Some Other <input type="checkbox"/>	SHLH <input checked="" type="checkbox"/>
Date Spudded <u>8-30-85</u>	Date Compl. Ready to Prod. <u>9-10-85</u>	Total Depth <u>1912 ft.</u>			P.B.T.D. <u>1912 ft.</u>			
Elevations (DF, HFR, RT, GR, etc.) <u>GR 3607</u>	Name of Producing Formation <u>Penrose</u>	Top Oil/Gas Pay <u>1446 ft.</u>			Tubing Depth <u>1804</u>			
Previous Well Numbers <u>1445-56</u> <u>1459-62</u>	TUBING, CASING, AND CEMENTING RECORD			Depth Casing Shoe <u>-</u>				

HOLE SIZE <u>11"</u>	CASING & TUBING SIZE <u>8 5/8"</u>	DEPTH SET <u>3607</u>	SACKS CEMENT <u>24</u>
	<u>1 3/8"</u>	<u>1814</u>	

TEST DATA AND REQUEST FOR ALLOWABLE (Test must be after recovery of total volume of load oil and must be equal to or greater than top casinghead gas flow for this depth or be for full 24 hours)

Date First New Oil Run To Tanks <u>9-12-85</u>	Date of Test <u>9-12-85</u>	Producing Method (Flow, pump, gas lift, etc.) <u>pumping</u>	
Length of Test <u>24 hrs.</u>	Tubing Pressure <u>40#</u>	Casing Pressure <u>40#</u>	Choke Size <u>none</u>
Actual Prod. During Test <u>31 bbls</u>	Oil-Bbls. <u>31</u>	Water-Bbls. <u>0</u>	Gas-MCF <u>TSTM</u>

GAS WELL

Actual Prod. Test-MCF/D <u>TSTM</u>	Length of Test <u>24hrs.</u>	Bbls. Condensate/MMCF <u>TSTM</u>	Gravity of Condensate <u>-</u>
Testing Method (pilot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size <u>none</u>

CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Rente Pool
(Signature)
Vice President
9-16-85
(Date)

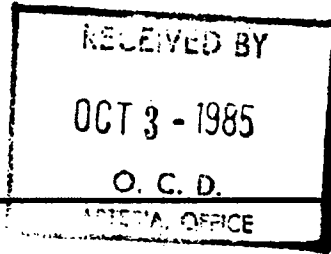
OIL CONSERVATION DIVISION
SEP 24 1985

APPROVED _____, 19____
BY Les A. Clements
Supervisor District 11

TITLE _____

This form is to be filed in compliance with RULE 1104.
If this is a request for allowable for a newly drilled or deep well, this form must be accompanied by a tabulation of the deviate tests taken on the well in accordance with RULE 111.
All sections of this form must be filled out completely for all wells on new and recompleted wells.
Fill out only Sections I, II, III, and VI for changes of operator name or number, or transporter, or other such change of condition.
Separate Forms C-104 must be filed for each pool in multicompleted wells.

FRED POOL, JR.



September 25, 1985

P. O. Box 1393
Roswell, NM 88201

New Mexico Energy and Resources Board
P.O.Box 2088
Santa Fe, N.M. 87501

RE: Chukka Federal No. 2
Lease No. 6852
SW/4 NW/4 Sec. 12-18S-27E
Eddy County, N.M.

Gentlemen,

Please be advised that the above well was spudded on 8-3-85 and completed as a producing well on September 10, 1985. This well was potentialed at 31 barrels per day of oil and gas was TSTM.

All necessary records and logs have been filed with the appropriate offices.

Sincerely,


Penta Pool

OIL CONSERVATION DIVISION

Drawer DD Artesia, NM.

DISTRICT OFFICE #2

Sept. thru Dec. 1985

NO. 2058 H

SUPPLEMENT TO THE OIL PRORATION SCHEDULE

DATE September 24, 1985

PURPOSE ALLOWABLE ASSIGNMENT - NEW OIL

Effective September 12, 1985 an allowable of 31 barrals of oil per day is hereby assigned to Fred Pool Drilling, Incorporated, Chukka Federal #2-E-12-18-27 in the Artesia Queen Grayburg San Andres Pool.

L - F
MP - P

Sept. Total - 589 bbls.
Oct. Total - 961 bbls.
Nov. Total - 930 bbls.
Dec. Total - 961 bbls.

Form. - Penrose
Perfs. - 1446' - 1462'
Comp. - 9-10-85
TD - 1912'

LAC:fc
Fred Pool Drig., Inc.
HRC
PP

OIL CONSERVATION DIVISION



DISTRICT SUPERVISOR

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR
THE EASTLAND OIL COMPANY

3. ADDRESS OF OPERATOR
P. O. DRAWER 3488, MIDLAND, TX 79702

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface
UNIT LETTER E, 1980 FT. FNL AND 660 FWL, SECTION 12, TS 18S, RG. 27E, EDDY CO., NM

14. PERMIT NO.
30-015-20894

RECEIVED

OCT 19 '90

O. C. D.
ARTESIA, OFFICE

5. LEASE DESIGNATION AND SERIAL NO.
NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
CHUKKA FEDERAL

9. WELL NO.
2

10. FIELD AND POOL, OR WILDCAT
ARTESIA Q-G-SA

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
SEC. 12, TWP 18S, RGE. 27E

12. COUNTY OR PARISH
EDDY

13. STATE
NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other) CHANGE OF OPERATOR

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

LEASE PURCHASED FROM FRED POOL DRILLING, INC. 09/01/90.

RECEIVED
OCT 17 11 09 AM '90
CARI AREA

18. I hereby certify that the foregoing is true and correct

SIGNED Thomas Reed TITLE PRODUCTION SUPERINTENDENT DATE 10/11/90

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

OCT 18 '90

C. C. O.

ARTESIA, OFFICE

REQUEST FOR ALLOWABLE AND AUTHORIZATION
TO TRANSPORT OIL AND NATURAL GAS

Operator THE EASTLAND OIL COMPANY		Well API No. 30-015-20894
Address P. O. DRAWER 3488, MIDLAND, TEXAS 79702		
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)		
New Well <input type="checkbox"/>	Change in Transporter of:	
Recompletion <input type="checkbox"/>	Oil <input type="checkbox"/>	Dry Gas <input type="checkbox"/>
Change in Operator <input checked="" type="checkbox"/>	Casinghead Gas <input type="checkbox"/>	Condensate <input type="checkbox"/>
EFFECTIVE 09/01/90		
If change of operator give name and address of previous operator FRED POOL DRILLING, INC., P. O. DRAWER 1393, ROSWELL, NM 88201		

II. DESCRIPTION OF WELL AND LEASE

Lease Name CHUKKA FEDERAL	Well No. 2	Pool Name, including Formation ARTESIA Q-G-SA	Kind of Lease <input checked="" type="checkbox"/> State, <input type="checkbox"/> Federal <input type="checkbox"/> MCFEX	Lease No. 6852
Location Unit Letter E : 1980 Feet From The North Line and 660 Feet From The West Line Section 12 Township 18S Range 27E , NMPM , EDDY County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input checked="" type="checkbox"/> or Condensate <input type="checkbox"/> NAVAJO CRUDE OIL PURCHASING	Address (Give address to which approved copy of this form is to be sent) BOX 159, ARTESIA, NM 88210
Name of Authorized Transporter of Casinghead Gas <input checked="" type="checkbox"/> or Dry Gas <input type="checkbox"/> PHILLIPS PETROLEUM	Address (Give address to which approved copy of this form is to be sent) BARTLESVILLE, OK
If well produces oil or liquids, give location of tanks.	Unit | Sec. | Twp. | Rge. | is gas actually connected? | When ? E | 12 | 18S | 27E | NO

If this production is commingled with that from any other lease or pool, give commingling order number:

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
Date Spudded	Date Compl. Ready to Prod.		Total Depth			P.B.T.D.		
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation		Top Oil/Gas Pay			Tubing Depth		
Perforations						Depth Casing Shoe		
TUBING, CASING AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE		DEPTH SET			SACKS CEMENT		

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size posted ID-3 10-26-90
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas- MCF chg OP

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pilot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Travis Reed
Signature
TRAVIS REED PRODUCTION SUPERINTENDENT
Printed Name
10/08/90 Date
915/683-6293 Telephone No.

OIL CONSERVATION DIVISION

Date Approved **OCT 23 1990**

By **ORIGINAL SIGNED BY**
MIKE WILLIAMS

Title **SUPERVISOR, DISTRICT II**

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

District I
1625 N. French Dr., Hobbs, NM 88240

District II
811 South First, Artesia, NM 88210

District III
100 W. Broad Rd., Aztec, NM 87410

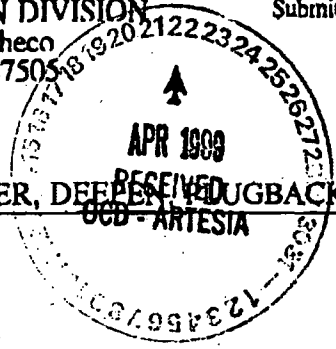
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources

Revised March 12, 1999

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Submit to Appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies



el
BLM
OP

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUG BACK, OR ADD A ZONE

Operator Name and Address: Navajo Refining Company Post Office Box 159 Artesia, New Mexico 88211		OGRID Number 15694
		API Number 30-015-20894
Property Code 23592	Property Name WDW	Well No. 2

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	18S	27E		1980	North	660	West	Eddy

Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Proposed Pool 1 Lower Wolfcamp Cisco Canyon Injection Zone					Proposed Pool 2 Navajo Injection; Permo-Penn. 96918				

Work Type Code E-Reentry	Well Type Code Class I Injection	Cable/Rotary R	Lease Type Code Federal	Ground Level Elevation 3607' GR, 3623' KB
Multiple No	Proposed Depth 9200'	Formation Strawn	Contractor	Spud Date 5/15/99

Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
11"	8-5/8"	32 lb/ft	1995 feet	800	Surface
7-7/8"	5-1/2"	17 lb/ft	9200 feet	Caliper vol. +20%	Surface

Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Proposed Reentry of The Eastland Oil Company (originally Fred Pool Drilling, Inc.) Chukka Federal No. 2 (PBD 1912 feet, September 10, 1985) formerly Amoco Production Company Diamond Federal Gas Com. No. 1 (OTD 10,372 feet, P&A August 31, 1973). The well currently produces oil and gas from perforations from 1446 feet to 1462 feet (Penrose.)

Navajo will squeeze the perforations from 1446 feet to 1462 feet, drill out cement plugs, and clean out the well to 9200 feet, set 5-1/2 inch casing at 9200 feet and cement to the surface, perforate porous intervals in the Lower Wolfcamp, Cisco, and Canyon Formations between 7270 feet and 9200 feet, and conducted injectivity tests.

Attached are the Well Location Plat and Drilling Program.

I hereby certify that the information given above is true and complete to the best of my knowledge and belief.		OIL CONSERVATION DIVISION	
Signature: <i>Darrell Moore</i>	Printed name: Darrell Moore	Approved by: <i>Sign. Lt. Gen. B6X</i>	Title: District Supervisor
Title: Env. Mgr. for Water & Waste	Date: 4/21/99	Approval Date: 5-3-99	Expiration Date: 5-3-00
Phone: 605-748-3311	Conditions of Approval: Attached <input type="checkbox"/>		

District I
1625 N. French Dr., Hobbs, NM 88240

District II
South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department.

Form C-102
Revised March 17, 1999

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-20894		Pool Code	Pool Name Lower Wolfcamp-Cisco-Canyon Injection Zone
Property Code	Property Name WDW-2		Well Number
GRID No.	Operator Name Navajo Refining Company		Elevation 3607' GR

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	18S	27E		1980	North	660	West	Eddy

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
-------------------------------	-------------------------------	----------------------------------	-------------------------

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

				<p>¹⁷ OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief</p>
				<p>Signature <i>Darrell Moore</i></p> <p>Printed Name <u>Darrell Moore</u></p> <p>Title <u>Env. Mgr. for Water & Waste</u></p> <p>Date <u>4/21/99</u></p>
				<p>¹⁸ SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p>
				<p>Date of Survey</p> <p>Signature and Seal of Professional Surveyor:</p> <p>Well is active. Location was not re-surveyed by Navajo.</p>
				Certificate Number

OIL CONSERVATION DIVISION

**2040 South Pacheco
Santa Fe, NM 87505
(505) 827-7133
Fax: (505) 827-8177**



(PLEASE DELIVER THIS FAX)

To: TIM GUMM - ARTESIA OCD FAX 748-9920

From: WAYNE PRICE - OCD SF

Date: 4/30/99

Number of Pages (Includes Cover Sheet) 7/6

Message: APPROVED BOND FOR NAVAJO WDW #2

CLASS I INJECTION WELL (COPY)

**If you have any trouble receiving this, please call:
(505) 827-7133**



**NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT**

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

April 19, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z 559 573 590

J.S. Ward & Son, Inc.
104 South Fourth Street
Artesia, New Mexico 88210-2195

Attention: Mr. Gary Sims

Re: Navajo Refining Company Discharge Plan UIC-CLI-008-2
Bond No. 58 96 12
\$ 95,000.00 One-Well Plugging Bond
to the State of New Mexico for Class I Injection Well WDW#2
1980' FNL and 660' FWL - Sec 12-Ts18s-R27e N.M.P.M.
Eddy, County, New Mexico
J.S. Ward & Son, Inc., Principal

Gulf Insurance Company, Surety
Bond 58 96 12

The New Mexico Oil Conservation Division hereby approves the above-captioned One-Well Plugging Bond.

Sincerely,

RAND CARROLL,
Legal Counsel

RC/wp

cc: OCD Artesia Office
Gulf Insurance Company

PROJECT BILLING INFORMATION SHEET

Proposal No. 71Z5678

Project No. 70D6806

Original Proposal/Project
Submittal Date: 4/23/12

CLIENT INFORMATION

Company Name: * Bio-Lab Inc. Is this a revision: Yes No
Attention Line: * Steve Marr Revision Date:
"Billing" Address: * 1400 East Michigan Street
Adrian, Michigan 49221
Project Manager: * Joe Thatcher
"Main" Telephone No: * (517) 265-6138 Ext. 253 (Steve Marr) Fax No.
Project Manager's Tele. No.* (517) 605-0908 (Joe Thatcher's Cell #) Fax No.
Physical (Delivery) Address: * Salesperson (One Only):
Email Address Taxable Nontaxable
Client's PO/Contract No. P.O. 4500349691 PO/Contract Date: 04/23/12

Description of Work (TO BE PRINTED ON INVOICE): * Well No. 1 MIT and Falloff Survey

Subsurface Project Manager: RWS State Work Performed (One Only): MI

BILLING METHOD: (You must complete only one of the following billing methods):

- (1) X 2011 Price List Less _____%, _____% Handling Charge, or _____% Procurement Fee
- (2) _____ 2004 Price List Less _____%, _____% Handling Charge, or _____% Procurement Fee
- (2) _____ Lump-Sum (Project Manager to Notify Accounting When to Bill)
- (3) _____ Special Billing (Describe:)
- (4) _____ Standard Government Billing: _____% Overhead, _____% Fixed Fee (Attach Form OF-60)

APPROVED PROJECT BUDGET: /

Amount to be Billed: (A) \$ 11,670
Subsurface Project Cost: (B) \$
Gross Profit: (C=A-B) \$
Gross Profit: (D=C/A) %

CRITICAL DEADLINES:

Proposal Due Date: 3/20/2012
Project Start-up Date:
Project Completion Date:

PROJECT CODES (One Code Per Line): **

Industry Sector Code:
Business Line Code:
Service Type Code:
Project Type Code:

PREPARATION: ***

RFP Received: Yes No
Written Verbal
PBI Prepared By: RWS

* Maximum of 30 characters. This description will appear on all client billing information. Be concise.
** See back of Project Billing Information Sheet for Business Line/Service Type/Project Type codes.
*** A completed (i) RFP for a proposal or (ii) manpower summary and cost estimate for a project should be attached.
Revised 7-27-01



J. S. Ward & Son, Inc.

101 South Fourth Street
(505) 746-2796
FAX (505) 746-4244
Artesia, New Mexico
88210-2195

Insurance
Bonds

April 22, 1999

26

State of New Mexico
Energy, Minerals & Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505-5472

Attention: Mr. Roger Anderson

Re: Navajo Refining Company
Bond No. 58 96 12
\$95,000 One-Well Plugging Bond
to the State of New Mexico for
Class I Injection Well
Chukka Federal #2

Dear Mr. Anderson:

Enclosed please find the captioned bond through Gulf Insurance Company which we trust you find in order and acceptable for filing.

Very truly yours,

J. S. WARD & SON, INC.

By *J. Gary Sims*

SGS:emb

Enclosure

cc: Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211-0159
Attention: Mr. Joe Akins - Copy of Bond & Invoice

Navajo Refining Company

Gulf Insurance Company

PRINCIPAL
Post Office Box 159
Artesia, New Mexico 88211-0159

SURETY
101 South Fourth Street
Artesia, New Mexico 88210-2195

Address
By: [Signature]
Signature
President
Title

Address
By: [Signature]
Attorney-In-Fact

(Note: Principal, if corporation, affix corporate seal here.)

(Note: Corporate surety affix corporate seal here.)

ACKNOWLEDGEMENT FORM FOR NATURAL PERSONS

STATE OF _____)
COUNTY OF _____) ss.

On this _____ day of _____, 19____, before me personally appeared _____, to me known to be the person (persons) described in and who executed the foregoing instrument and acknowledged that he (they) executed the same as his (their) free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

Notary Public

My Commission Expires _____

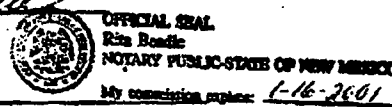
ACKNOWLEDGEMENT FORM FOR CORPORATION

STATE OF New Mexico)
COUNTY OF Eddy) ss.

On this 22nd day of April, 1999, before me personally appeared Jack P. Reid, to me personally known who, being by me duly sworn, did say that he is President of Navajo Refining Company and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

[Signature]
Notary Public



1-16-2001
My Commission Expires

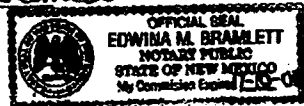
ACKNOWLEDGEMENT FORM FOR CORPORATE SURETY

STATE OF New Mexico)
COUNTY OF Eddy) ss.

On this 22nd day of April, 1999, before me appeared S. Gary Sims, to me personally known, who, being by me duly sworn, did say that he is Attorney-in-Fact of Gulf Insurance Company and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

Edwina M. Bramlett
Notary Public



7-10-01
My Commission Expires

(Note: Corporate surety attach power of attorney.)

APPROVED BY:
OIL CONSERVATION DIVISION OF NEW MEXICO
By: [Signature]
Date: 4/30/99



POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS:

That GULF INSURANCE COMPANY, a corporation of the State of Missouri, hereinafter called "Company," does hereby appoint

CHARLENE M. WARD or S. GARY SIMS or JOHN C. KNIGHT
ARTESIA, NEW MEXICO

As true and lawful Attorney-in-fact to make, execute, seal and deliver on his behalf, as surety, any and all bonds and undertakings of suretyship, not to exceed \$250,000.00 or any bond where the penalty is not stated in the bond form. No authority is granted where the attorney in fact is a party at interest in the bond.

The execution of such bonds or undertakings in pursuance of these presents shall be as binding upon the Company as if they had been executed and acknowledged by the regularly elected officers of the Company.

This Power of Attorney is issued pursuant to and by authority of the following resolution of the Board of Directors of the Company, adopted effective July 1, 1983, and now in full force and effect:

1. 1983, and now in full force and effect:
"Resolved that the President, or any Senior Vice President, or any Year President, or the Secretary, or any Assistant Secretary may request Attorneys-in-fact in any state, territory or foreign district to represent the Company and to act on its behalf within the scope of the authority granted to them, in writing, which authority may include the power to make, execute, seal and deliver on behalf of the Company, as surety, any and all bonds and undertakings of suretyship and other documents and the ordinary course of surety business they require, including authority to appoint agents for the service of process in any jurisdiction, state or foreign, and authority to attend to the signature of the President, or any Senior Vice President, or any Year President, or the Secretary, or any Assistant Secretary and to verify any affidavit or other statement relating to the foregoing, and to carry to a copy of any of the officers of the Company and to any resolutions adopted by its Board of Directors; and any such Attorney-in-fact may be removed and the authority granted hereunder by the President, or any Senior Vice President, or any Year President, or the Secretary, or any Assistant Secretary, or by the Board of Directors."

This Power of Attorney and Certificate are signed and sealed by facsimile under and by authority of the following resolution of the Board of Directors of the Company, adopted effective July 1, 1983, and now in full force and effect:

"Resolved that the signature of the President, or of any Senior Vice President, or of any Year President, or of the Secretary, or of any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto regarding Authority-in-fact for purposes of executing and delivering bonds and undertakings and other writings obligatory in the nature thereof, including any legal power of attorney and certificate relating to the foregoing Authority-in-fact, as well as for the appointment of agents for the service of process in any jurisdiction, state or foreign, including any such power of attorney and certificate relating to the foregoing, and any such power of attorney or certificate having such legal authority, signature or facsimile seal shall be as binding upon the Company as if the same were signed and sealed by the person whose signature and facsimile seal are so used and binding upon the Company at the time the Company and its agents power of attorney or certificate are executed and submitted by such facsimile signature and facsimile seal and binding upon the Company at the time the Company and its agents are executed and submitted to the same with respect to any bond or undertaking in which they are executed."

and, the Company has caused this Power of Attorney to be signed and its corporate seal to be affixed by its authorized officer this April 12, 1992.



By *OR Lopez*
Sr. Vice President



12, 1992, before me, a Notary Public of the State and County aforesaid, residing therein, duly commissioned and sworn to, and duly qualified to perform the duties of said office, and appearing and saying that he is the officer of the company designated in and under authority of the foregoing instrument, that he knows the seal of said company; that the seal affixed to such instrument is the corporate seal of said company; and that the signature of the officer of the company designated in and under authority of the foregoing instrument is the signature of said company.
WITNESSED my hand and the seal of my office this 30th day of June, 1992.

Clifford R. Beard
Notary Public
1992

CERTIFICATE

I, the undersigned, do hereby certify that the original Power of Attorney of which the foregoing is a true and correct copy is in full force and effect, and the corporate resolutions are true and correct transcripts from the records of GULF INSURANCE COMPANY and that the above named officer was on the date hereof exercising Power of Attorney authorized to execute this Power of Attorney.

22nd day of April, 1992.
Ed McHenry
Vice President



STATE OF NEW MEXICO

ONE-WELL PLUGGING BOND

FOR CHAVES, EDDY, LEA, MCKINLEY, RIO ARRIBA, ROOSEVELT, SANCHEZ, AND SAN JUAN COUNTIES ONLY

BOND NO. 58 96 12
AMOUNT OF BOND \$95,000.00
COUNTY Eddy

NOTE: For wells less than 5,000 feet deep, the minimum bond is \$5,000.00*
For wells 5,000 to 10,000 feet deep, the minimum bond is \$7,500.00*
For wells more than 10,000 feet deep, the minimum bond is \$10,000.00

*Under certain conditions, a well being drilled under a \$5,000.00 or \$7,500 bond may be permitted to be drilled as much as 500 feet deeper than the normal maximum depth, i.e., a well being drilled under a \$5,000.00 bond may be permitted to go to 5,500 feet, and a well being drilled under a \$7,500.00 bond may be permitted to go to 10,500 feet. (See Rule 101)

File with Oil Conservation Division, P. O. Box 2088, Santa Fe 87501

KNOW ALL MEN BY THESE PRESENTS:

That Navajo Refining Company, a corporation organized in the State of New Mexico, with its principal office in the city of Artesia, State of New Mexico, and authorized to do business in the State of New Mexico, as PRINCIPAL, and Gulf Insurance Company, a corporation organized and existing under the Laws of the State of Missouri, and authorized to do business in the State of New Mexico, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Division of New Mexico pursuant to Section 70-2-12, New Mexico Statutes Annotated, 1978 Compilation, as amended, in the sum of Ninety-Five Thousand and no/100ths Dollars lawful money of the United States, for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO2) gas leases, or helium gas leases, or brine mineral leases with the State of New Mexico; and

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO2) gas leases, or helium gas leases, or brine mineral leases on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals; and

WHEREAS, The above principal, individually, or in association with one or more other parties, has commenced or may commence the drilling of one well not to exceed a depth of 9200 feet, to prospect for and produce oil or gas, or carbon dioxide (CO2) gas or helium gas, or does own or may acquire, own or operate such well, or such well started by others on land embraced in said State oil and gas leases, or carbon dioxide (CO2) leases, or helium gas leases, or brine minerals, and on land patented by the United States of America to private individuals, and on land otherwise owned by private individuals, the identification and location of said well being being 1980' FNL and 660' FWL, Section 12, Township 18, Range 27, (East) HAWKS, N.M.P.M., Eddy County, New Mexico.

(Here state exact legal footage description) Range 27 (East) HAWKS, N.M.P.M., Eddy County, New Mexico.

NOW, THEREFORE, if the above bounden principal and surety or either of them or their successors or assigns, or any of them, shall plug said well when dry or when abandoned in accordance with the rules, regulations, and orders of the Oil Conservation Division of New Mexico in such way as to confine the oil, gas, brine, and water in the strata in which they are found, and to prevent them from escaping into other strata;

THEN, THEREFORE, This obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

Signed and sealed this 22nd day of April, 1999

ATTACHMENT A

Sunday, May 9, 1999

Pressure testing the 8-5/8 inch Surface Casing from 1922 feet (KB) to 30 feet (KB) using a fresh water fluid. Pressure testing was performed after the perforations between 1446 feet and 1462 feet were squeezed with cement.

Pressure Test No. 1

Time (hrs.)	Cumulative Time (minutes)	Pressure (psig)	Delta Pressure (psi)
1303	0	660	----
1308	5	660	0
1313	10	660	0
1318	15	660	0
1323	20	660	0
1328	25	659	-1
1333	30	659	0

Total = -1 psi per 30 minutes

Pressure Test No. 2

Time (hrs.)	Cumulative Time (minutes)	Pressure (psig)	Delta Pressure (psi)
1333	0	659	----
1338	5	659	0
1343	10	659	0
1348	15	658	-1
1353	20	658	0
1358	25	657	-1
1303	30	657	0

Total = -2 psi per 30 minutes



TELEPHONE
748-3311

EASYLINK
62905278



WF
REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

May 10, 1999

Mr. Tim Gumm
State of New Mexico
Energy, Minerals and Natural
Resources Department
Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210



RE: Re-Entry for Navajo Refining Company's Waste Disposal Well No. 2

Dear Mr. Gumm:

Navajo Refining Company (Navajo) has contracted Subsurface Technology, Inc. to re-enter, test and complete Waste Disposal Well No. 2 (WDW-2), formerly the Chukka Federal No. 2 operated by The Eastland Oil Company. The United States Department of the Interior, Bureau of Land Management approved the Application for Permit to Drill or Deepen on April 27, 1999. Subsequent approval from the State of New Mexico Oil Conservation Commission (OCD) was granted on Tuesday, May 4, 1999.

Navajo initiated field operations on Wednesday, May 5, 1999. The existing pumping equipment, rods, and tubing were removed from the wellbore. The perforations from 1446 feet to 1462 feet were squeezed using 100 sacks of Class 'H' cement (approximately 50 sacks of cement were displaced into the perforated interval). The cement was allowed to cure and drilled out to a total depth of 1922 feet (KB)(1911 feet below ground level).

On Sunday, May 9, 1999, the 8-5/8 inch surface casing, set from 1955 feet (KB) to surface, was pressure tested for internal mechanical integrity between 1922 feet (KB) and 30 feet (KB) using a packer set at 30 feet. The 8-5/8 inch surface casing was pressure tested to 660 pounds per square inch and monitored at the surface for one hour (Attachment A). The fluid used for testing was a clean fresh water fluid. A pressure loss of 1 psi (0.15%) was observed during the first 30 minutes of the test. A pressure loss of 2 psi (0.30%) was observed during the last 30 minutes of the test. The results from the pressure test confirmed internal mechanical integrity of the 8-5/8 inch surface casing from 1922 feet (KB) to 30 feet (KB).

The 8-5/8 inch surface casing was originally set in an 11 inch open-hole to a depth of 1955 feet (KB) and cemented to surface using 700 sacks of Class 'H' cement with 2% gel and 100 sacks of Class 'H' neat. A total of 200 sacks of cement was recorded circulated to surface. The calculated volume between an 11 inch hole and 8-5/8 inch casing is (0.2407 cubic feet per foot X 1955 feet) 471 cubic feet. The volume of cement pumped is (1.18 cubic feet per sack X 800 sacks) 944 cubic feet for an excess of 473 cubic feet or 400 sacks circulated to surface. The calculated volume of cement and apparent volume of actual cement pumped indicated excess cement was circulated to surface.

On Sunday, May 9, 1999, Halliburton Logging Services completed a cement bond and microsiesmogram (same as a variable density log) logging survey within the 8-5/8 inch casing from a wireline total depth of 1919 feet (KB) to the surface (Attachment B). The results from the survey indicate a continuous column of cement from 1922 feet to surface with good bonding characteristics. The cement behind the 8-5/8 inch casing will provide an effective hydraulic seal to prevent the movement of groundwater fluids into the underground source of drinking water with a base at 473 feet.

Please review and approve the pressure testing and cement bond log results at your earliest convenience. Navajo will proceed with the mobilization of the drilling rig Wednesday, May 12, 1999 and begin re-entry of the WDW-2 wellbore according to the approved drilling program. Navajo will periodically contact the OCD, Artesia office with a status update of the re-entry operations. The Bureau of Land Management will be notified in sufficient time for a representative to witness the cementing of the 5-1/2 inch protection casing.

Should you have any questions or concerns, please call me at (505) 748-3311.

Sincerely yours,



Darrell Moore
Environmental Manager for Water and Waste

c: Mr. David Glass
Bureau of Land Management
Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201

Mr. Brian Rogers
Subsurface Technology, Inc.
7020 Portwest, Suite 100
Houston, Texas 77024

File: Injection Wells



March 30, 1999

Mr. Barry Hunt
Bureau of Land Management
Carlsbad Resource Area
620 East Greene Street
Carlsbad, New Mexico 88220-6292

RE: Navajo Refining Company Proposed WDW-2, Eddy County, New Mexico
Request for On-Site Inspection of Wellsite
Subsurface Project No. 60A4937

Dear Mr. Hunt:

Navajo Refining Company (Navajo) is purchasing an existing well in Eddy County, New Mexico for planned use as a Class I nonhazardous effluent disposal well, and plans to reenter and test the well in the next few months. The well is on federal land. Subsurface Technology, Inc. (Subsurface), formerly Envirocorp Services & Technology, Inc., on behalf of Navajo, requests your participation in an on-site inspection of the wellsite as soon as possible.

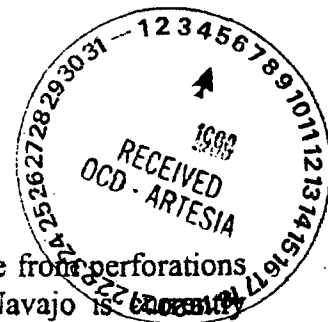
Pertinent information about the existing well is provided below:

Lease Number: NM 6852
Current Operator: The Eastland Oil Company (September 1990 to present)
Lease: Chukka Federal No. 2
Former Operator: Fred Pool Drilling Company (August 1985 to September 1990)
Former Operator: Amoco Production Company (July 1973 to August 1985)
Former Lease: Diamond Federal Gas Com. No. 1
Location: 1980' FNL, 660' FWL (SW/4 NW/4, Unit Letter E) 12-T18S-R27E

Topographic Map (Attachment A)

Original Total Depth: 10,372 feet
Plugged-Back Total Depth: 1912 feet
Well Schematic (Attachment B)

Status: The well is producing from the Penrose from perforations between 1446 feet and 1462 feet. Navajo is



Mr. Barry Hunt
Bureau of Land Management

March 30, 1999
Page 2

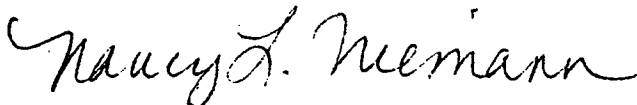
negotiating to purchase the well from Eastland Oil Company. The purchase should be completed by April 1, 1999.

Navajo proposes to reenter the well, squeeze the perforations from 1446 feet to 1462 feet, drill out the plugs and clean out the well to approximately 9200 feet, set 5-1/2 inch casing at 9200 feet and cement it to the surface, and conduct one or more injectivity tests. The proposed injection intervals are porous zones in the lower portion of the Wolfcamp Formation (7270 feet to 7645 feet), the Cisco Formation (7645 feet to 8390 feet), and the Canyon Formation (8390 feet to 8894 feet). Navajo's proposed reentry, testing, and recompletion procedure is included as Attachment C. A schematic of the well after recompletion is included as Attachment D.

Subsurface is currently preparing a discharge plan application for the Class I well for Navajo to submit to the New Mexico Oil Conservation Division and the BLM Roswell office near the end of April 1999. Subsurface is also preparing BLM Form 3160-3 (Application for Permit to Drill) for Navajo to submit to the BLM Roswell office.

Please contact me at (713) 880-4640 to schedule an on-site inspection of the wellsite. Do not hesitate to call me if you need additional information or if you have questions.

Sincerely,

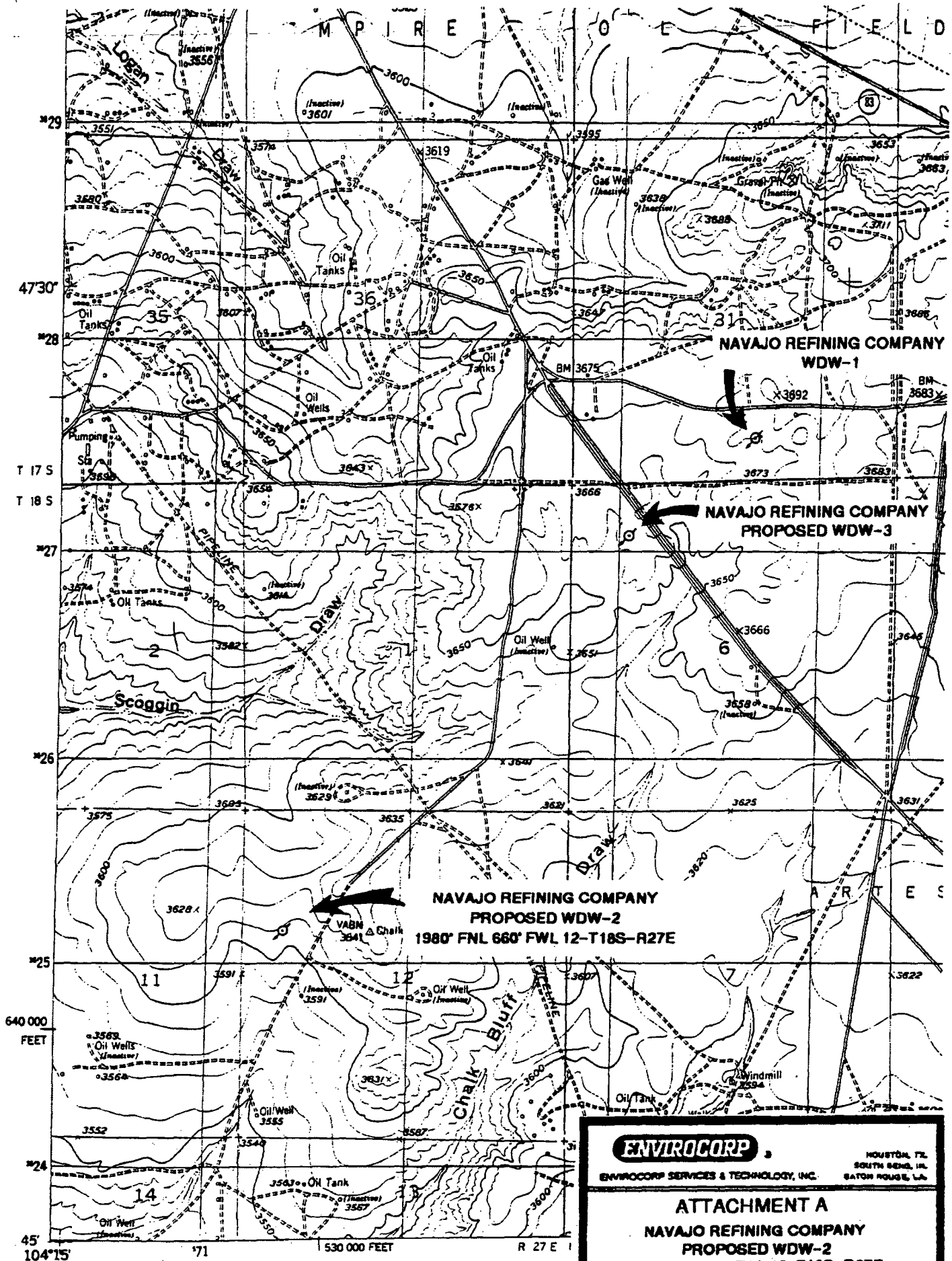


Nancy L. Niemann
Senior Geologist

NLN/paf
Attachments

c: Joe Lara – BLM, Carlsbad
David Glass – BLM, Roswell
Wayne Price – OCD, Santa Fe
Tim Gum – OCD, Artesia
Phil Youngblood – Navajo
Darrell Moore – Navajo
George Walbert – Holly Petroleum, Inc.

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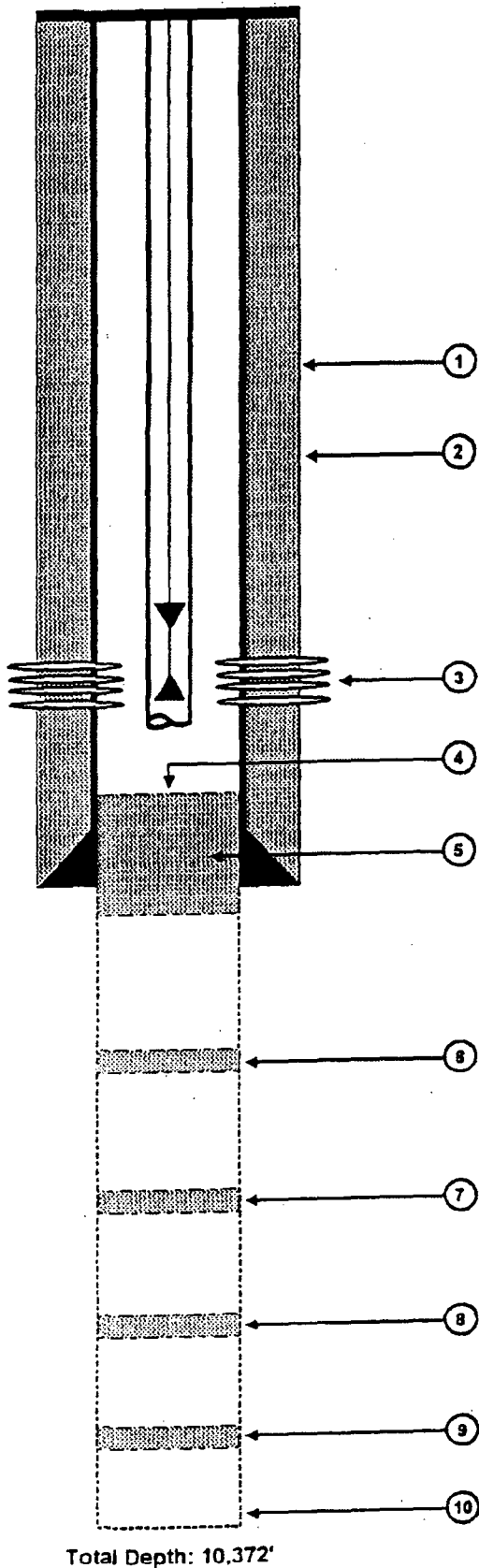


RED LAKE QUADRANGLE

		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
ENVIROCORP SERVICES & TECHNOLOGY, INC.		
ATTACHMENT A NAVAJO REFINING COMPANY PROPOSED WDW-2 1980' FNL 660' FWL 12-T18S-R27E EDDY COUNTY, NM		
DATE:	CHECKED BY:	JOB NO.:
DRAWN BY:	APPROVED BY:	DWG. NO.:

BELOW GROUND DETAIL

All depths are referenced to the kelly bushing elevation of 13 feet. The surface elevation is 3610 feet.



Total Depth: 10,372'

1. Base of the USDW at 473'.

2. Casing: 8-5/8", 32 lb/ft, set at 1955' in an 11" hole. Cemented to surface with 700 sacks of cement.

3. Perforations: 1446' - 1462'.

4. PBTD: 1912'.

5. Cement Plug: 40 sacks from 1912' to 2045'.

6. Cement Plug: 50 sacks from 3620' to 3720'.

7. Cement Plug: 40 sacks from 5456' to 5556'.

8. Cement Plug: 50 sacks from 7435' to 7535'.

9. Cement Plug: 45 sacks from 9675' to 9775'.

10. Hole Size: 7-7/8".

		HOUSTON, TX.
		SOUTH BEND, IN.
		RATON ROUGE, LA.
ATTACHMENT III-2 NAVAJO REFINING COMPANY CURRENT WELL CONFIGURATION CHUKKA FEDERAL No. 2		
Date: 03/10/99	Checked By: NLN	Job No.: 60A4937
Drawn By: LKM	Approved By: NLN	File: WDW2A.DS4

ATTACHMENT C

DRILLING AND RECOMPLETION PROCEDURE FOR NAVAJO REFINING COMPANY'S PROPOSED WDW-2

1. Obtain all permits and approvals for the reentry, testing and completion of a currently existing well.
2. Move in and rig up a workover unit. Remove the pumping equipment and pull the tubing out of the well.
3. Go in the hole with a squeeze packer and squeeze the perforations from 1446 feet to 1462 feet with 100 sacks of Class "H" cement. Allow the cement to cure.
4. Drill out the cement, circulate the well clean and pressure test the squeezed perforations at 500 psig for 30 minutes. Pull the squeeze tools out of the hole.
5. Conduct a CBL/VDL survey from 1912 feet to the surface. Submit the results of the pressure test and CBL/VDL survey to the OCD and the BLM for their review and approval prior to mobilizing the drilling rig.
6. After receiving approval from the OCD and the BLM to continue the reentry, prepare the location for the selected drilling rig. Construct the lined reserve pits, dig out the cellar, and install a mousehole and rathole.
7. Move in and rig up the rotary drilling rig and install the blowout preventers.
8. Drill out the following cement plugs and conduct deviation surveys every 1000 feet or on trips:
 - a. 1912 feet to 2045 feet, 40 sacks
 - b. 3620 feet to 3720 feet, 50 sacks
 - c. 5456 feet to 5556 feet, 40 sacks
 - d. 7435 feet to 7535 feet, 50 sacks
9. Clean the well out to a depth of 9200 feet and circulate and condition the hole for logging. Make a wiper trip to the base of the 8-5/8 inch surface casing while strapping the drillpipe.
10. Conduct a formation microimager (FMI) survey with gamma ray from the well's total depth to 4000 feet. Continue the four-arm caliper survey to the 8-5/8 inch

ATTACHMENT C (Continued)

casing shoe. Process the FMI for fracture identification over the lower 200 feet of the confining zone and zones of interest in the injection zone, if warranted.

11. Spot a gelled pill at 9200 feet and lay down the drillpipe.
12. Run the 5-1/2 inch casing with a packoff shoe and float collar to 9200 feet. Install a "DV" tool at 5500 feet. Run centralizers at approximately 120-foot intervals.
13. Cement the 5-1/2 inch casing in place. Use a minimum of 20% excess cement as calculated from the caliper log. Circulate cement to the surface and allow to cure.
14. Clean out the mud pits and release the drilling rig 12 hours after cementing the 5-1/2 inch casing in place.
15. Stabilize the 5-1/2 inch casing at the surface using ready-mix cement.
16. Move in and rig up the completion rig pump, tank, power swivel, and work string. Install the blowout preventer.
17. Run in the well with a 4-3/4 inch bit to the "DV" tool and test the casing to 1500 psig for 30 minutes.
18. Drill out the "DV" tool and clean out the wellbore to the float collar. Test the casing to 1500 psig for 30 minutes. Circulate the wellbore with clean brine, preceded by 15% HCL to clean the casing. Trip the work string out of the well.
19. Conduct the casing inspection, CBL/VDL, and differential temperature surveys.
20. Perforate the selected injection interval as determined from the open hole logs. (Zone 1).
21. Run in the well with a packer and tailpipe. Set the packer above the top perforation and swab test the perforated interval. Recover at minimum two tubing volumes of the reservoir fluid for analysis (Note: Set up H₂S monitoring equipment prior to swabbing operations).
22. Acidize the zone using diverters. Pull the packer out of the well.
23. Perforate the next selected injection interval as determined from the open hole logs (Zone 2).

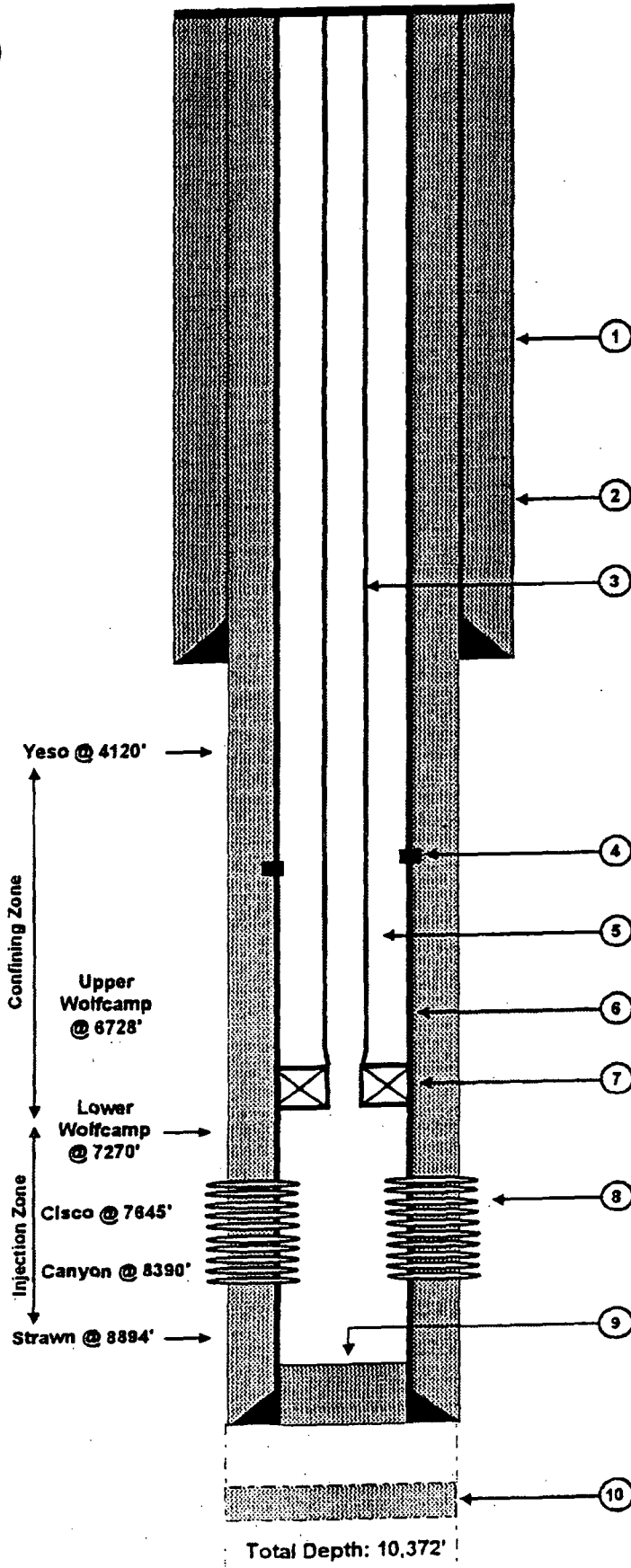
ATTACHMENT C (Continued)

24. Run a retrievable bridge plug and packer into the well and isolate Zone 2.
25. Acidize Zone 2 using diverters. Pull the retrievable bridge plug and packer out of the well, laying down the work string.
26. Conduct an injection test down the 5-1/2 inch casing at 420 gpm for 12 hours followed by a pressure falloff test.
27. Conduct a differential temperature survey and radioactive tracer survey to determine the injection profile.
28. Run the injection tubing and packer. Fill the annulus with corrosion inhibited brine.
29. Wait for the well system to come to thermal stabilization (approximately 24 hours).
30. Conduct an annulus pressure test witnessed by the OCD.
31. Rig down and move out all equipment and close the reserve pit.
32. Install the annulus monitoring system and return the well to the client.

ATTACHMENT D

BELOW GROUND DETAIL

All depths are referenced to the kelly bushing elevation of 13 feet. Surface elevation is 3610 feet.



1. Base of the USDW at 473'.

2. Casing: 8-5/8", 32 lb/ft, set at 1955' in an 11" hole. Cemented to surface with 700 sacks of cement.

3. Injection Tubing: 3-1/2".

4. DV Tool: at 5500'.

5. Annulus Fluid: Corrosion inhibited brine water.

6. Protection Casing: 5-1/2" set in a 7-7/8" hole. Casing cemented to surface. Calipered hole volume plus 20% excess.

7. Packer: Fullbore retrievable packer set 100' above the top perforated injection interval.

8. Perforations: Perforated in two intervals between 7270' and 8894'.

9. PBTD: 9200'

10. Cement Plug: 45 sacks from 9675' to 9775'.

ENVIROCORP		HOUSTON, TX SOUTH BEND, IN. BATON ROUGE, LA.
ATTACHMENT III-4 NAVAJO REFINING COMPANY PROPOSED WDW-2 ARTESIA, NEW MEXICO		
Date: 03/11/99	Checked By: NLN	Job No.: 60A4937
Drawn By: LKM	Approved By: NLN	File: WDW2B.DS4

CONDITIONS OF APPROVAL - DRILLING

Operator's Name: Navajo Refining Company Well No. 2 - WDW
Location: 1980' FNL & 660' FWL sec. 12, T. 18 S., R. 27 E.
Lease: NM-6852

.....

I. DRILLING OPERATIONS REQUIREMENTS: [Deepening]

1. The Bureau of Land Management (BLM) is to be notified at (505) 887-6544 in sufficient time for a representative to witness:

A. Cementing casing: 5-1/2 inch

2. Unless the injection casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

II. CASING:

1. Minimum required fill of cement behind the 5-1/2 inch injection casing is sufficient to circulate to the surface.

III. PRESSURE CONTROL:

1. Before drilling into the 100 foot 8-5/8 inch surface casing shoe cement plug at approximately 1912 feet, the blowout preventer assembly shall consist of a minimum of One Annular Preventer, Two Ram-Type Preventers, and a Kelly Cock/Stabbing Valve

2. Minimum working pressure of the blowout preventer and related equipment (BOPE) shall be 3000 psi.

3. After drilling into the 100 foot 8-5/8 inch surface casing shoe cement plug at approximately 1912 feet and before drilling into the 100 foot Abo cement plug at approximately 5450 feet, the BOPE shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.

A. The results of the test will be reported to the BLM Carlsbad Resource Area office at 620 East Greene Street, Carlsbad, New Mexico 88220-6292.

B. Testing fluid must be water or an appropriate clear liquid suitable for sub-freezing temperatures. Use of drilling mud for testing is not permitted since it can mask small leaks.

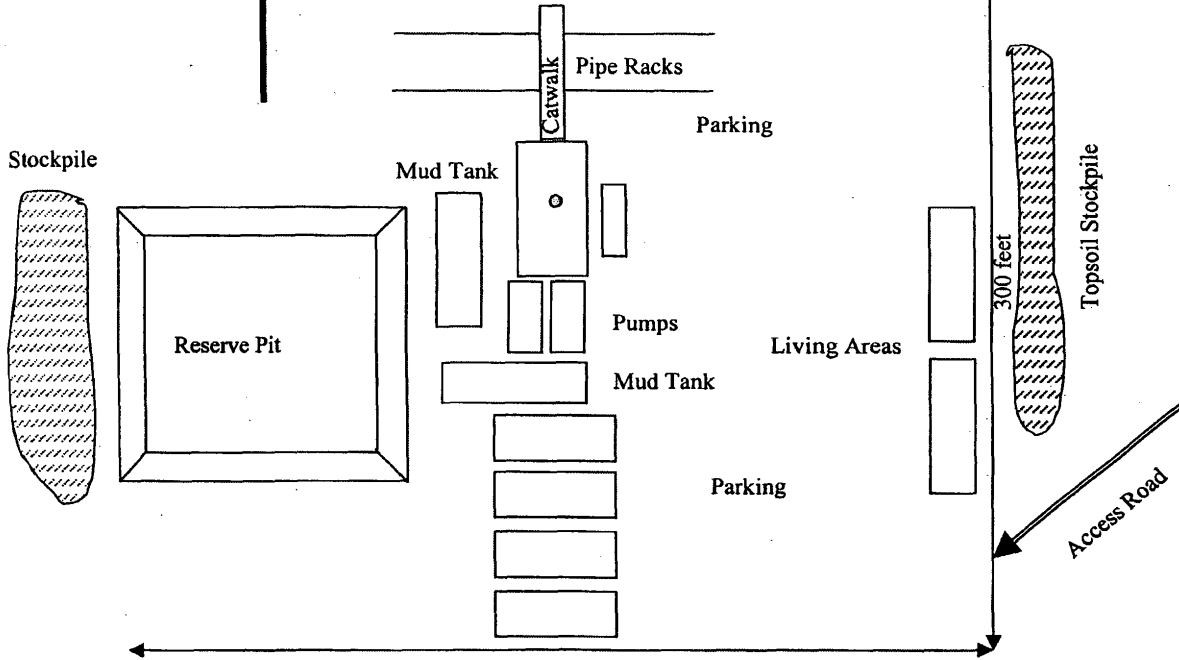
C. Testing must be done in a safe workman like manner. Hard line connections shall be required.

Layout of Typical Drilling Rig

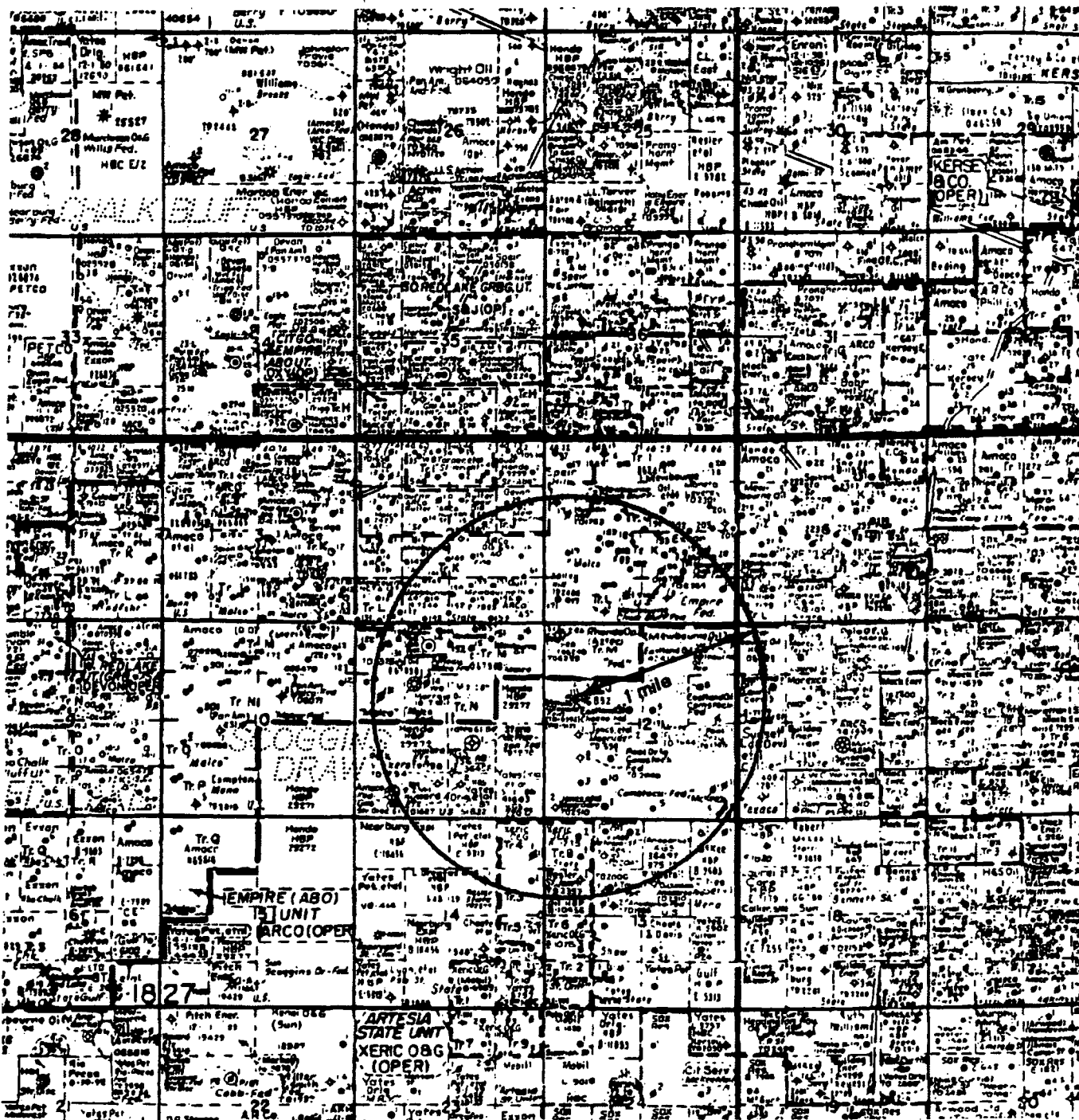
Navajo Refining
WDW-2
1980' FNL, 660' FWL 12-T18S-R27E
Eddy County, NM

Scale 1"=50 ft

N

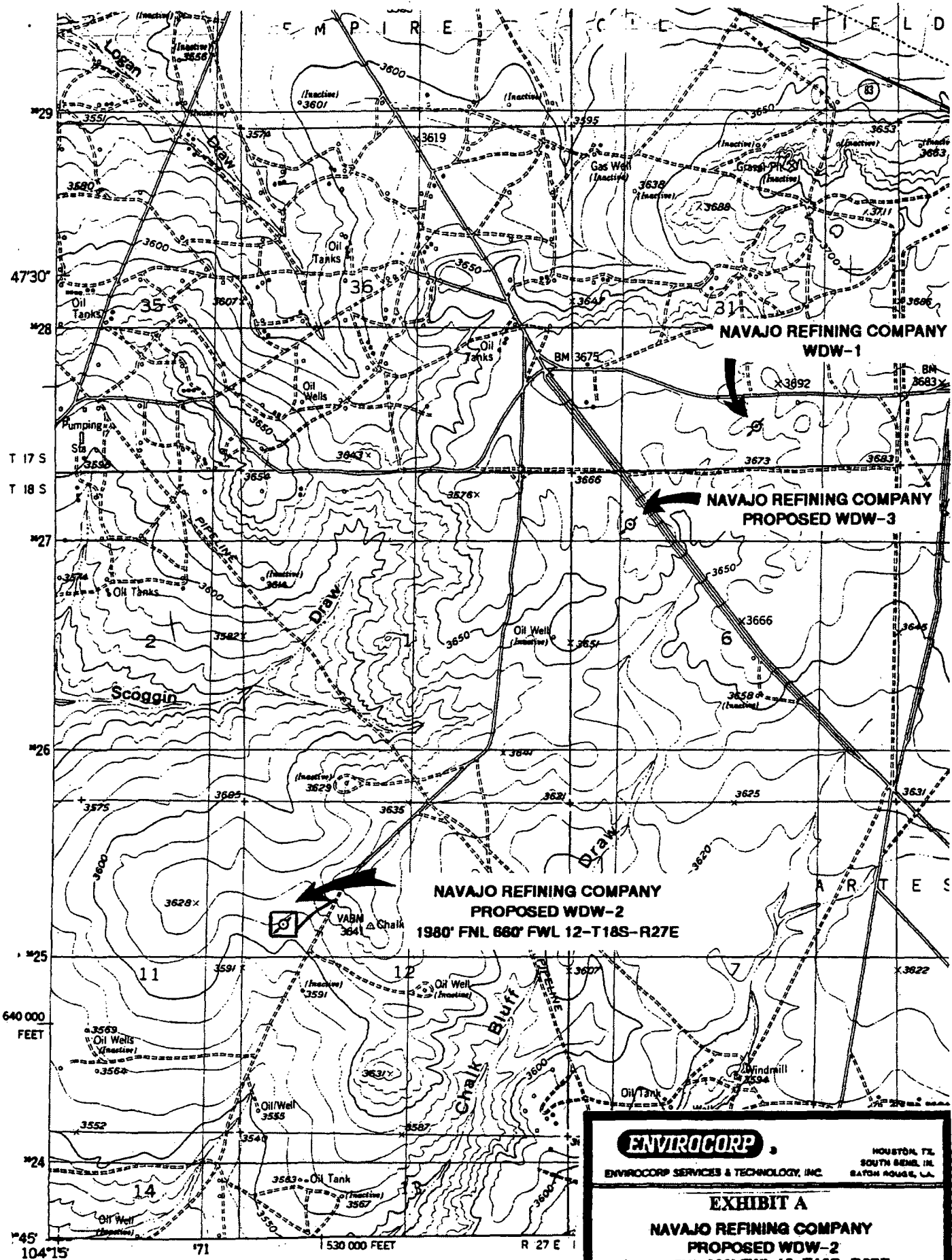


Note: No Cut Nor Fill Will Be Required



Map courtesy of Midland Map Company

ENVIROCORP		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
ENVIROCORP SERVICES & TECHNOLOGY, INC.		
EXHIBIT B		
WELLS WITHIN 1 MILE OF		
NAVAJO REFINING COMPANY'S		
PROPOSED WDW-2		
1980' FNL, 660' FWL 12-T18S-R27E		
DATE: 4/7/99	CHECKED BY:	JOB NO:
DRAWN BY: NLN	APPROVED BY:	DWEL, NC



RED LAKE QUADRANGLE

ENVIROCORP

ENVIROCORP SERVICES & TECHNOLOGY, INC. HOUSTON, TX
SOUTH BEND, IN BAYON ROUGE, LA.

EXHIBIT A

NAVAJO REFINING COMPANY
PROPOSED WDW-2
1980' FNL 660' FWL 12-T18S-R27E
EDDY COUNTY, NM

DATE:	CHECKED BY:	JOB NO:
DRAWN BY:	APPROVED BY:	OWG. NO:

SURFACE USE PLAN

**NAVAJO REFINING COMPANY
PROPOSED WDW-2
1980' FSL, 660' FWL of 12-T18S-R27E
EDDY COUNTY, NEW MEXICO**

1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.
2. Access Roads To Be Constructed: No new access road is proposed.
3. Location of Existing Wells: Existing wells within one mile of proposed WDW-2 are shown on Exhibit B.
4. Location of Proposed Facilities If Well Is Completed: The well will be shut in after completion and testing.
5. Location and Type of Water Supply: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.
6. Source of Construction Materials: Materials required for construction of the site will be taken from a state-owned pit.
7. Methods of Handling Waste Disposal:
 - A. Drill cuttings will be disposed of in the drilling pits.
 - B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.
 - C. Water produced during tests will be disposed of in the drilling pits.
 - D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind. Location of the trash pit is shown on Exhibit C.

- E. All trash and debris will be buried or removed from the wellsite after finishing drilling and/or completion operations.
8. Ancillary Facilities: None anticipated.
9. Wellsite Layout:
- A. The wellsite will be surveyed, and a 400' x 400' area will be staked and flagged.
 - B. The dimensions and relative location of the drill pad, mud pit, and trash pit, with respect to the wellbore, are shown on Exhibit C.
 - C. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the northeastern (uphill) end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.
 - D. The well pad will be surfaced with material found in place.
 - E. The pits for mud and cuttings will be lined with 6-mil plastic.
10. Plans for Restoration of Surface:
- A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.
 - B. Any unguarded pits containing fluids will be fenced until they are filled.
 - C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.
 - D. The stockpiled topsoil will be spread over the surface of the location.
11. Surface Ownership: U.S. Department of Interior, Bureau of Land Management.

12. Archaeological Survey: An archaeological survey of the drill pad was submitted to the BLM on July 31, 1985, on behalf of Fred Pool Drilling Company. An archeological survey was conducted by Navajo Refining Company and will be submitted by Navajo under separate cover.

13. Operator's Representatives: Representatives responsible for assuring compliance with the approved Surface Use Plan:

Mr. Darrell Moore
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505/748-3311

Mr. Jim Bundy
Subsurface Technology, Inc.
7020 Portwest Drive, Suite 100
Houston, Texas 77024
713/880-4640

Exhibits

- A. Topographic Map
- B. Oil and Gas Map
- C. Sketch of Well Pad

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

4/15/99
Date

Darrell Moore
Signature

Darrell Moore
Name

Env. Mgr. for Water & Waste
Title

Navajo Refining Company
Company

BOP Minimum Requirements

- a. 11-inch, 3000-psi working pressure double-hydraulic BOP.
- b. 11-inch, 3000-psi working pressure annular BOP.
- c. 3-inch, 3000-psi working pressure manual choke manifold.

A schematic of the BOP stack is included as Exhibit A.

8. Drill out the following cement plugs and conduct deviation surveys every 1000 feet or on trips:
 - a. 1912 feet to 2045 feet, 40 sacks
 - b. 3620 feet to 3720 feet, 50 sacks
 - c. 5456 feet to 5556 feet, 40 sacks
 - d. 7435 feet to 7535 feet, 50 sacks

Estimated Tops of Geologic Formations

San Andres	2005'	Lower Wolfcamp	7270'
Yeso	4210'	Cisco	7645'
Abo	5506'	Canyon	8390'
Wolfcamp	6728'	Strawn	8894'

No fresh water or hydrocarbons are expected to be encountered.

Expected Bottom-Hole Pressure and Hazards

The expected bottom-hole pressure is 3500 psia at the total depth of 9200 feet. The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-1, or 2928 psia, at 7924 feet. Navajo's WDW-1 is completed in the same interval proposed for WDW-2 and is located 11,000 feet northeast of WDW-2 in 31-T17S-R28E. The average specific gravity of the fluid between 7924 feet and 9200 feet is expected to be 1.034, which is the specific gravity of the fluid swabbed from the interval between 8220 feet and 8476 feet in WDW-1. The expected bottom-hole pressure at 9200 feet in proposed WDW-2 is calculated below:

$$\begin{aligned}\text{BHP (9200 feet)} &= 2928 \text{ psia} + (9200 \text{ feet} - 7924 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.034 \\ &= 3500 \text{ psia}\end{aligned}$$

No abnormal pressures or temperatures or other hazards are expected while drilling or testing the well. Hydrogen sulfide monitoring equipment will be set up prior to swabbing operations.

9. Clean the well out to a depth of 9200 feet and circulate and condition the hole for logging. Make a wiper trip to the base of the 8-5/8 inch surface casing while strapping the drillpipe.
10. Conduct a formation microimager (FMI) survey with gamma ray from the well's total depth to 4000 feet. Continue the four-arm caliper survey to the 8-5/8 inch casing shoe. Process the FMI for fracture identification over the lower 200 feet of the confining zone and zones of interest in the injection zone, if warranted.
11. Spot a gelled pill at 9200 feet and lay down the drillpipe.
12. Run the 5-1/2 inch, 17-lb/ft, J-55, LT&C casing with a packoff shoe and float collar to 9200 feet. Install a "DV" tool at approximately 5800 feet. Run centralizers at approximately 120-foot intervals.
13. Cement the 5-1/2 inch casing in place. Use a minimum of 20% excess cement as calculated from the caliper log. Circulate cement to the surface and allow to cure.

Cement Program

- a. Stage 1 Cement (total depth to 5800 feet): Lightweight Class H with fly ash, gel, friction reducer, and salt mixed with fresh water.
 - b. Stage 2 Lead Cement (5200 feet to the surface): Lightweight Class C with gel and bridging agents mixed with fresh water.
 - c. Stage 2 Tail Cement (5800 feet to 5200 feet): Class C mixed with fresh water:
14. Clean out the mud pits and release the drilling rig 12 hours after cementing the 5-1/2 inch casing in place.
 15. Stabilize the 5-1/2 inch casing at the surface using ready-mix cement.

16. Move in and rig up the completion rig pump, tank, power swivel, and work string. Install the blowout preventer.
17. Run in the well with a 4-3/4 inch bit to the "DV" tool and test the casing to 1500 psig for 30 minutes.
18. Drill out the "DV" tool and clean out the wellbore to the float collar. Test the casing to 1500 psig for 30 minutes. Circulate the wellbore with clean brine, preceded by 15% HCL to clean the casing. Trip the work string out of the well.
19. Conduct the casing inspection, CBL/VDL, and differential temperature surveys.
20. Perforate the selected injection interval as determined from the open hole logs. Depending on the height of the perforated interval, the interval may be perforated in two stages, as Zone Nos. 1 and 2.
21. Run in the well with a packer and tailpipe. Set the packer above the top perforation and swab test the perforated interval. Recover at minimum two tubing volumes of the reservoir fluid for analysis (Note: Set up H₂S monitoring equipment prior to swabbing operations).
22. Acidize the perforated zone (Zone 1) using diverters. Pull the packer out of the well.
23. Perforate the next selected injection interval (Zone 2) as determined from the open hole logs.
24. Run a retrievable bridge plug and packer into the well and isolate Zone 2.
25. Acidize Zone 2 using diverters. Pull the retrievable bridge plug and packer out of the well, laying down the work string.
26. Conduct an injection test down the 5-1/2 inch casing at 420 gpm for 12 hours, followed by a pressure falloff test.
27. Conduct a differential temperature survey and radioactive tracer survey to determine the injection profile.

28. Run the injection tubing and packer. Fill the annulus with corrosion inhibited brine.
29. Wait for the well system to come to thermal stabilization (approximately 24 hours).
30. Conduct an annulus pressure test witnessed by the OCD.
31. Rig down and move out all equipment and close the reserve pit.
32. Install the annulus monitoring system and return the well to the client.

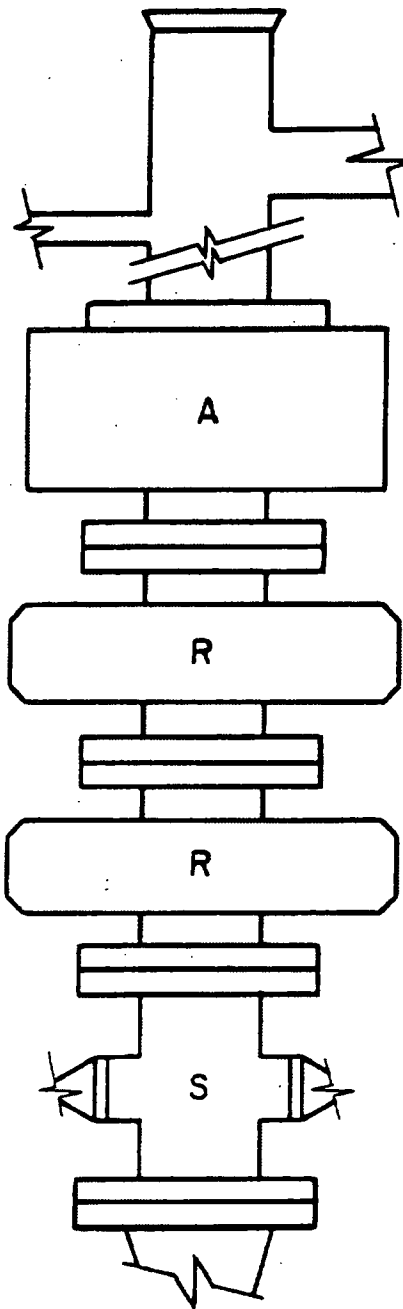
Logging, Testing, And Coring Program

A formation fluid sample will be retrieved from the proposed injection zone in proposed WDW-2. Navajo will conduct injectivity testing in the injection zone of proposed WDW-2.

No coring is planned.

The proposed logging program is described below:

HOLE/CASING	OPEN-HOLE LOGS	CASED-HOLE LOGS
Proposed WDW-2		
11 inch Surface Borehole (8-5/8 inch Casing) 1995 feet		Logs Run in 1973: Gamma Ray Logs Proposed on Reentry: Cement Bond/Variable Density Casing Inspection Log
7-7/8 inch Long-String Borehole (5-1/2 inch Casing) 9200 feet	Logs Run on August 27, 1973: Dual Induction-Laterolog/ Spontaneous Potential Compensated Neutron/ Formation Density Caliper Gamma Ray Logs Proposed on Reentry: Fracture Identification Log 4-Arm Caliper	Logs Proposed on Reentry: Cement Bond/Variable Density Casing Inspection Log Differential Temperature Log Radioactive Tracer Survey



A = ANNULAR-TYPE BLOWOUT PREVENTER
11-inch throughbore, 3000-psi working pressure

R = RAM-TYPE BLOWOUT PREVENTER
11-inch throughbore, 3000-psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLET CONNECTIONS
FOR CHOKE AND KILL LINES

MANUAL CHOKE MANIFOLD
3-inch throughbore, 3000-psi working pressure

Source: API RP 53: Recommended Practices for
Blowout Prevention Equipment Systems

ENVIROCORP		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
ENVIROCORP SERVICES & TECHNOLOGY, INC.		
EXHIBIT A		
BLOWOUT PREVENTER STACK AND MINIMUM REQUIREMENTS		
DATE: 4/7/98	CHECKED BY: JDB	JOB NO:
DRAWN BY: ALN	APPROVED BY:	DWG. NO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Oil Cons. Division

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK
 DRILL DEEPEN Reenter

b. TYPE OF WELL
 OIL WELL GAS WELL OTHER Class I Waste Disposal Well SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
 Navajo Refining Company 15694

3. ADDRESS AND TELEPHONE NO.
 Post Office Box 159, Artesia, New Mexico 88210

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
 At surface 1980' FNL and 660' FWL Unit Letter
 At proposed prod. zone

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE
 11 air miles east-southeast of Artesia

18. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any)
 19. PROPOSED DEPTH 9200'

17. NO. OF ACRES ASSIGNED TO THIS WELL
 20. ROTARY OR CABLE TOOLS Rotary

21. ELEVATIONS (Show whether DP, RT, GR, etc.)
 3607' GR, 3623' KB

22. APPROX. DATE WORK WILL START
 May 1, 1999

5. LEASE DESIGNATION AND SERIAL NO.
 NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME
 23592

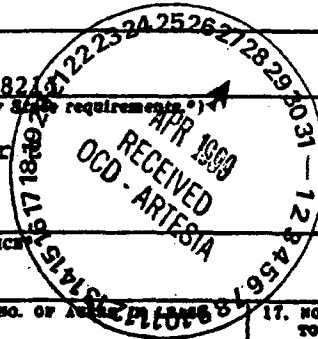
8. FARM OR LEASE NAME WELL NO.
 WDW-# 2

9. AN WELL NO.
 30-015-20894

10. FIELD AND POOL, OR WILDCAT
 L. Wolfcamp-Cisco-Canyon Injection Zone

11. SEC., T., R., N., OR S.E. AND SURVEY OR AREA
 12-T18S-R27E

12. COUNTY OR PARISH 13. STATE
 Eddy NM



23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
11"	8-5/8"	32 lb/ft	1995'	800 sx circulated
7-7/8"	5-1/2"	17 lb/ft	9200'	Caliper volume + 20% excess

Proposed reentry of the Eastland Oil Company (originally Fred Pool Drilling, Inc.) Chukka Federal No. 2 (PBD 1912 feet, September 10, 1985) formerly Amoco Production Company Diamond Federal Gas Com. No. 1 (OTD 10,372 feet, P&A August 31, 1973). The well currently produces oil and gas from perforations from 1446 feet to 1462 feet (Penrose).

Navajo will squeeze the perforations from 1446 feet to 1462 feet, drill out cement plugs and clean out the well to 9200 feet, set 5-1/2 inch casing at 9200 feet and cement to the surface, perforate porous intervals in the Lower Wolfcamp, Cisco, and Canyon Formations between 7270 feet and 9200 feet, and conduct injectivity tests.

Attached are the Well Location Plat, Drilling Program, and Surface Use Plan.

Post ID-1
5-28-99
Re-entry

SUBJECT TO LIKE APPROVAL BY STATE AND RIGHT OF WAY APPROVAL
APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS

4 ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present production zone and proposed zone. If proposal is to drill or open directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give drilling program, if any.

SIGNED David Moore TITLE Env. Mgr. DATE 4/15/99

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
CONDITIONS OF APPROVAL, IF ANY:

(ORIG. SGD.) DAVID R. GLASS PETROLEUM ENGINEER APR 27 1999

APPROVED BY _____ TITLE _____ DATE _____

*See Instructions On Reverse Side

District I
1625 N. French Dr., Hobbs, NM 88240

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised March 17, 1999

District II
111 South First, Artesia, NM 88210

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-20894		² Pool Code		³ Pool Name Lower Wolfcamp-Cisco-Canyon Injection Zone	
⁴ Property Code		⁵ Property Name WDW-2			⁶ Well Number
⁷ OGRID No.		⁸ Operator Name Navajo Refining Company			⁹ Elevation 3607' GR

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	18S	27E		1980	North	660	West	Eddy

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	<p>¹⁷ OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief</p> <p><i>Darrell Moore</i></p> <p>Signature: <u>Darrell Moore</u></p> <p>Printed Name: _____</p> <p>Title: <u>Env. Mgr.</u></p> <p>Date: <u>4/18/99</u></p>			
	<p>¹⁸ SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>Date of Survey _____</p> <p>Signature and Seal of Professional Surveyor: _____</p> <p>Well is active. Location was not re-surveyed by Navajo.</p> <p>Certificate Number _____</p>			

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

4/12/99
Date

Darrell Moore
Signature

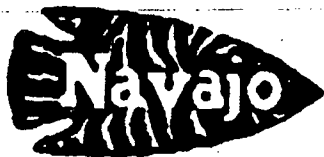
Darrell Moore
Name

Env. Mgr. for Water & Waste
Title

Navajo Refining Company
Company

TELEPHONE
(505) 748-3311

FAXLINK
62905278



N.M. Oil Cons. Division
811 S. 1st Street
ARTESIA, NEW MEXICO 88210
NAVJO REFINING COMPANY

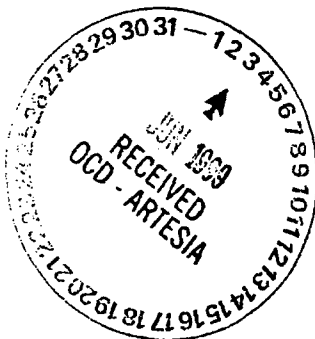
501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

C/SF

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P/L

May 10, 1999

Mr. Tim Gumm
State of New Mexico
Energy, Minerals and Natural
Resources Department
Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210



RE: Re-Entry for Navajo Refining Company's Waste Disposal Well No. 2

Dear Mr. Gumm:

Navajo Refining Company (Navajo) has contracted Subsurface Technology, Inc. to re-enter, test and complete Waste Disposal Well No. 2 (WDW-2), formerly the Chukka Federal No. 2 operated by The Eastland Oil Company. The United States Department of the Interior, Bureau of Land Management approved the Application for Permit to Drill or Deepen on April 27, 1999. Subsequent approval from the State of New Mexico Oil Conservation Commission (OCD) was granted on Tuesday, May 4, 1999.

Navajo initiated field operations on Wednesday, May 5, 1999. The existing pumping equipment, rods, and tubing were removed from the wellbore. The perforations from 1446 feet to 1462 feet were squeezed using 100 sacks of Class 'H' cement (approximately 50 sacks of cement were displaced into the perforated interval). The cement was allowed to cure and drilled out to a total depth of 1922 feet (KB)(1911 feet below ground level).

On Sunday, May 9, 1999, the 8-5/8 inch surface casing, set from 1955 feet (KB) to surface, was pressure tested for internal mechanical integrity between 1922 feet (KB) and 30 feet (KB) using a packer set at 30 feet. The 8-5/8 inch surface casing was pressure tested to 660 pounds per square inch and monitored at the surface for one hour (Attachment A). The fluid used for testing was a clean fresh water fluid. A pressure loss of 1 psi (0.15%) was observed during the first 30 minutes of the test. A pressure loss of 2 psi (0.30%) was observed during the last 30 minutes of the test. The results from the pressure test confirmed internal mechanical integrity of the 8-5/8 inch surface casing from 1922 feet (KB) to 30 feet (KB).

The 8-5/8 inch surface casing was originally set in an 11 inch open-hole to a depth of 1955 feet (KB) and cemented to surface using 700 sacks of Class 'H' cement with 2% gel and 100 sacks of Class 'H' neat. A total of 200 sacks of cement was recorded circulated to surface. The calculated volume between an 11 inch hole and 8-5/8 inch casing is (0.2407 cubic feet per foot X 1955 feet) 471 cubic feet. The volume of cement pumped is (1.18 cubic feet per sack X 800 sacks) 944 cubic feet for an excess of 473 cubic feet or 400 sacks circulated to surface. The calculated volume of cement and apparent volume of actual cement pumped indicated excess cement was circulated to surface.

On Sunday, May 9, 1999, Halliburton Logging Services completed a cement bond and microsiestmogram (same as a variable density log) logging survey within the 8-5/8 inch casing from a wireline total depth of 1919 feet (KB) to the surface (Attachment B). The results from the survey indicate a continuous column of cement from 1922 feet to surface with good bonding characteristics. The cement behind the 8-5/8 inch casing will provide an effective hydraulic seal to prevent the movement of groundwater fluids into the underground source of drinking water with a base at 473 feet.

Please review and approve the pressure testing and cement bond log results at your earliest convenience. Navajo will proceed with the mobilization of the drilling rig Wednesday, May 12, 1999 and begin re-entry of the WDW-2 wellbore according to the approved drilling program. Navajo will periodically contact the OCD, Artesia office with a status update of the re-entry operations. The Bureau of Land Management will be notified in sufficient time for a representative to witness the cementing of the 5-1/2 inch protection casing.

Should you have any questions or concerns, please call me at (505) 748-3311.

Sincerely yours,



Darrell Moore
Environmental Manager for Water and Waste

c: Mr. David Glass
Bureau of Land Management
Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201

Mr. Brian Rogers
Subsurface Technology, Inc.
7020 Portwest, Suite 100
Houston, Texas 77024

File: Injection Wells

APPROVED

JUN 02 1999

~~(ORIG. SGD) DAVID B. GLASS~~
AUTHORIZED OFFICER, MINERALS
BUREAU OF LAND MANAGEMENT

**SUBJECT TO
LIKE APPROVAL
BY STATE**



Patterson Drilling Company

410 N. Loraine Street — (915) 682-9401
Midland, Texas 79701

RECEIVED

JUN 04 1999

June 2, 1999

SUBSURFACE TECHNOLOGY, INC.

Drilling Department
Subsurface Construction Corporation
7020 Port West, Ste 100
Houston, TX 77024

RE: Inclination Report
Navajo WDW-2
Sec 12; T-18-S; R-27-E

Gentlemen:

The following is an inclination survey on the above referenced well located in Eddy County, New Mexico:

2898' - 0.25
3838' - 0.25
4783' - 0.50
6106' - 0.75
6633' - 0.50

Sincerely,

Rebecca Edwards

Rebecca A. Edwards
Administrative Assistant

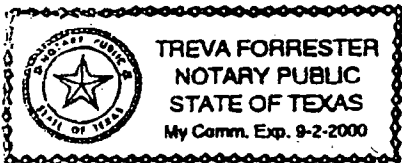
STATE OF TEXAS)
)
COUNTY OF MIDLAND)

The foregoing was acknowledged before me this 2nd day of June, 1999 by Rebecca A. Edwards.

MY COMMISSION EXPIRES:

Treva Forrester

NOTARY PUBLIC



INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or re-drilled well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico

T. Anhy _____	T. Canyon _____ 8390
T. Salt _____	T. Strawn _____ 8894
B. Salt _____	T. Atoka _____
T. Yates _____	T. Miss _____
T. 7 Rivers _____	T. Devonian _____
T. Queen _____	T. Silurian _____
T. Grayburg _____	T. Montoya _____
T. San Andres _____ 2005	T. Simpson _____
T. Glorieta _____	T. McKee _____
T. Paddock _____	T. Ellenburger _____
T. Blinberry _____	T. Gr. Wash _____
T. Tubb _____	T. Delaware Sand _____
T. Drinkard _____	T. Bone Springs _____
T. Abo _____ 5506	T. _____
T. Wolfcamp _____ 6728	T. _____
T. Penn _____	T. _____
T. Cisco (Bough C) _____ 7645	T. _____

Northwestern New Mexico

T. Ojo Alamo _____	T. Penn. "B" _____
T. Kirtland-Fruitland _____	T. Penn. "C" _____
T. Pictured Cliffs _____	T. Penn. "D" _____
T. Cliff House _____	T. Leadville _____
T. Menefee _____	T. Madison _____
T. Point Lookout _____	T. Elbert _____
T. Mancos _____	T. McCracken _____
T. Gallup _____	T. Ignacio Otzte _____
Base Greenhorn _____	T. Granite _____
T. Dakota _____	T. _____
T. Morrison _____	T. _____
T. Todilto _____	T. _____
T. Entrada _____	T. _____
T. Wingate _____	T. _____
T. Chinle _____	T. _____
T. Permian _____	T. _____
T. Penn "A" _____	T. _____

OIL OR GAS SANDS OR ZONES

No. 1, from _____ to _____
 from _____ to _____

No. 3, from _____ to _____
 No. 4, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from _____ to _____ feet.

No. 2, from _____ to _____ feet.

No. 3, from _____ to _____ feet.

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology

Submit To Appropriate District Office
 State Lease - 6 copies
 Fee Lease - 5 copies
 District I
 1625 N. French Dr., Hobbs, NM 87240
 District II
 1st. Artesia, NM 87210
 Brazos Rd., Aztec, NM 87410
 District IX
 2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-105
 Revised March 25, 1999

OIL CONSERVATION DIVISION
 2040 South Pacheco
 Santa Fe, NM 87505

Federal Well

JUL 16 1999
 RECEIVED
 OGD - ARTESIA

WELL API NO.
 30-015-20894

5. Indicate Type of Lease
 STATE FEE *Federal*

State Oil & Gas Lease No. NM 6852

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:
 OIL WELL GAS WELL DRY OTHER Class I Waste Disposal Well

b. Type of Completion:
 NEW WORK WELL OVER DEEPEN PLUG BACK DIFF. RESVR. OTHER Recovery

2. Name of Operator
 Navajo Refining Company

3. Address of Operator
 Post Office Box 159, Artesia, New Mexico 88211

4. Well Location
 Unit Letter E 1980 Feet From The North Line and 660 Feet From The West Line

Section 12 Township 18 South Range 27 East NMPM Eddy County

7. Lease Name or Unit Agreement Name
 Navajo Refining Company
 WDW-2

8. Well No.
 WDW-2

9. Pool name or Wildcat
~~L. Wolfcamp-Cisco Canyon Injection Zone~~
Navajo Permo-Perm

10. Date Spudded July 18, 1973

11. Date T.D. Reached August 27, 1973

12. Date Compl. (Ready to Prod.) June 8, 1999

13. Elevations (DF& R(B. RT, GR, etc.) 3607 feet GL, 3623 feet RKB

14. Elev. Casinghead 3609 feet GL

15. Total Depth 10,372 feet

16. Plug Back T.D. 8770 feet

17. If Multiple Compl. How Many Zones? 1

18. Intervals Drilled By Rotary Tools All Cable Tools N/A

19. Producing Interval(s), of this completion - Top, Bottom, Name
 L. Wolfcamp-Cisco-Canyon

20. Was Directional Survey Made Yes

21. Type Electric and Other Logs Run
 Fracture Finder and Caliper Logs, Dual Induction Laterolog, Compensated Neutron Formation Density

22. Was Well Cored No

23. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	N/A	40'	N/A	N/A	None
8-5/8"	32	1995'	11"	800 sacks circulated	None
5-1/2"	17	8869'	7-7/8"	1570 sacks circulated	None

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
3-1/2"	7528'	7528'

26. Perforation record (interval, size, and number)

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
7570' to 7620', 7676' to 7736', 7826' to 7834', 7858' to 7880', 7886' to 7904', 7916' to 7936', 7944' to 7964', 7990' to 8042', 8096' to 8116', 8191' to 8201', 8304' to 8319', 8395' to 8399' (2 jspf for total of 598 holes).	10,000 gallons of 15% HCl, plus 4600 pounds of rock salt as diverter

28. PRODUCTION

Date First Production N/A

Production Method (Flowing, gas lift, pumping - Size and type pump) N/A

Well Status (Prod. or Shut-in) N/A

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl	Gas - Oil Ratio
N/A	N/A	N/A		--	--	--	--

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl	Gas - MCF	Water - Bbl	Oil Gravity - API - (Corr.)
--	--		--	--	--	--

29. Disposition of Gas (Sold, used for fuel, vented, etc.) N/A

Test Witnessed By

30. List Attachments
 Deviation Report

I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief

Signature Darrell Moore Printed Name Darrell Moore Title Env Mgr. Date 7/14/99

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Oil Cons. Division
SUBMIT IN JURISDICTION
811 S. 1st Street
Artesia, NM 88210-2834

FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 1995

WELL DESIGNATION AND SERIAL NO.

NM 6852

8. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME, WELL NO.

WDW-2

9. API WELL NO.

30-015-20894

10. FIELD AND POOL OR WILDCAT

Nadao Perm - Pen N
L. Wolfcamp-Cisco Canyon 9/6/98
11. SEC. T., R., M., OR BLOCK AND SURVEY
OR AREA
Section 12, Township 18 South
Range 27 East, Unit Letter E

12. COUNTY OR PARISH

Eddy

13. STATE

New Mexico

1a. TYPE OF WELL OIL WELL GAS WELL DRY Other Class I Waste

1b. TYPE OF COMPLETION NEW WELL DEEPEN PLUG BACK DIFF-GENVR Other Reentry

2. NAME OF OPERATOR
Navajo Refining Company

3. ADDRESS AND TELEPHONE NO.
Post Office Box 159, Artesia, New Mexico 88211

4. LOCATION OF WELL
At surface 1980' FNL and 660' FWL Unit Letter E

At top prod. interval reported below

Same

At total depth

Same

14. PERMIT NO.

WDW-2

DATE ISSUED

April 27, 1999

15. DATE SPUNDED

7-18-73

16. DATE T.D. REACHED

8-27-73

17. DATE COMP (Ready to prod.)

6-8-99

18. ELEVATIONS (OF. RKB, RT, GR, ETC.)*

3607' GL; 3623' RKB

19. ELEV. CASINGHEAD

3609' GL

20. TOTAL DEPTH, MD & TVD

10,372' TVD

21. PLUG, BACK T.D., MD & TVD

8770'

22. IF MULTIPLE COMPL., HOW MANY*

1

23. INTERVALS DRILLED BY

Rotary Tools

ROTARY TOOLS

All

CABLE TOOLS

--

24. PRODUCING INTERVAL (S), OF THIS COMPLETION - TOP, BOTTOM NAME (MD AND TVD)*

L. Wolfcamp-Cisco-Canyon

25. WAS DIRECTIONAL SURVEY MADE?

Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN

Fracture Finder and Caliper Logs,
Induction Laterlog, Compensated Neutron, Formation Density

27. WAS WELL CORED?

No

CASING RECORD (Report all strings set in well)

SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
13-3/8"	N/A	40'	N/A	Surface	None
8-5/8"	32	1995'	11	Surface, 800 sx CLH	None
5-1/2"	17	8869'	7-7/8"	Surface, 1570 sx CLH and CLC	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
					3-1/2"	7528'	7528'

31. PERFORATION RECORD (Interval, size and number)

7570'-7620', 7676'-7736', 7826'-7834',
7858'-7880', 7886'-7904', 7916'-7936',
7944'-7964', 7990'-8042', 8096'-8116',
8191'-8201', 8304'-8319', 8395'-8399'
(2 ispf for total of 598 holes)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD) AMOUNT AND KIND OF MATERIAL USED
7570' to 8399' 10,000 gallons 15% HCL, plus
4600 pounds of rock salt as
diverter

PRODUCTION

DATE FIRST PRODUCTION N/A PRODUCTION METHOD (Flowing, gas lift, pumping-size and type of pump) N/A WELL STATUS (Producing or shut-in) N/A

DATE OF TEST N/A HOURS TESTED N/A CHOKER SIZE N/A PROOF FOR TEST PERIOD OIL-BBL. GAS-MCF. WATER-BBL. GAS-OIL RATIO

FLOW, TUBING PRESS CASING PRESSURE 24-HOUR RATE CALCULATED OIL-BBL. GAS-MCF. WATER-BBL. OIL GRAVITY-API (CORE)

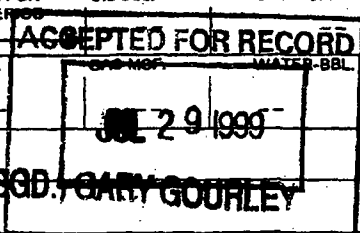
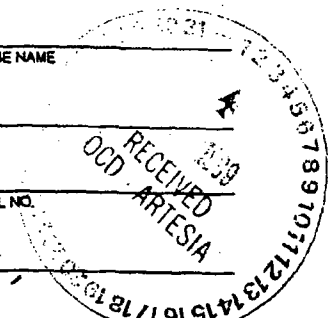
34. DISPOSITION OF (Sold, used for fuel, vented, etc.) N/A TEST WITNESSED BY

35. LIST OF ATTACHMENTS Deviation Report (ORIG. SGB, GARY GOURLEY)

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

ED David Mace TITLE Env. Mgr. DATE 7/19/99

*(See Instructions and Spaces for Additional Data on Reverse Side)





Patterson Drilling Company

104 N. Loraine Street — (915) 682-9401
Midland, Texas 79701

1999 JUL 21 A 10 05
BUREAU OF LAND MGMT.
WILDLIFE RESOURCE AREA

RECEIVED

JUN 04 1999

SUBSURFACE TECHNOLOGY, INC.

June 2, 1999

Drilling Department
Subsurface Construction Corporation
7020 Port West, Ste 100
Houston, TX 77024

RE: Inclination Report
Navajo WDW-2
Sec 12; T-18-S; R-27-E

Gentlemen:

The following is an inclination survey on the above referenced well located in Eddy County, New Mexico:

2898' - 0.25
3838' - 0.25
4783' - 0.50
6106' - 0.75
6633' - 0.50

Sincerely,

Rebecca Edwards

Rebecca A. Edwards
Administrative Assistant

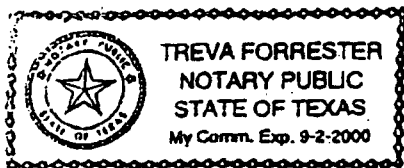
STATE OF TEXAS)
)
COUNTY OF MIDLAND)

The foregoing was acknowledged before me this 2nd day of June, 1999 by Rebecca A. Edwards.

MY COMMISSION EXPIRES:

Treva Forrester

NOTARY PUBLIC



TELEPHONE
505 748-3311

FAXLINK
62905278



REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

July 19, 1999

Mr. James Amos
United States Department of the Interior
Bureau of Land Management
P.O. Box 1778
Roswell, NM 88220

RE: Well Completion Report for Navajo's WDW-2i in E-12-T18S, R27E

Dear Mr. Amos,

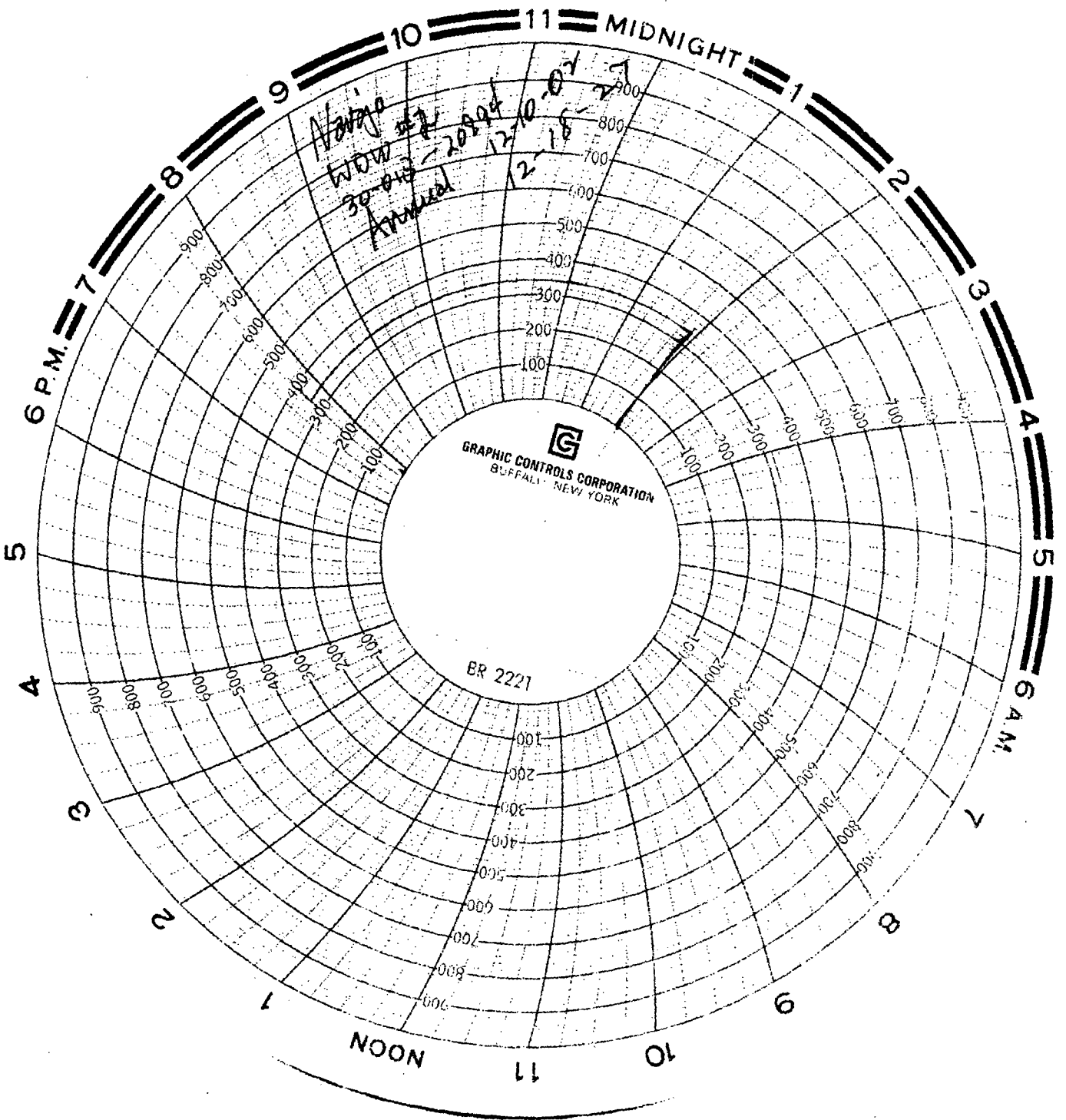
Enclosed, please find two (2) copies of form OMB Form 1004-0137 pertaining to our WDW-2 injection well. If there are any questions concerning this submission, please call me at 505-748-3311. Thank you for your time in this matter.

Sincerely,
NAVAJO REFINING COMPANY

Darrell Moore
Environmental Mgr. for Water and Waste

Encl.

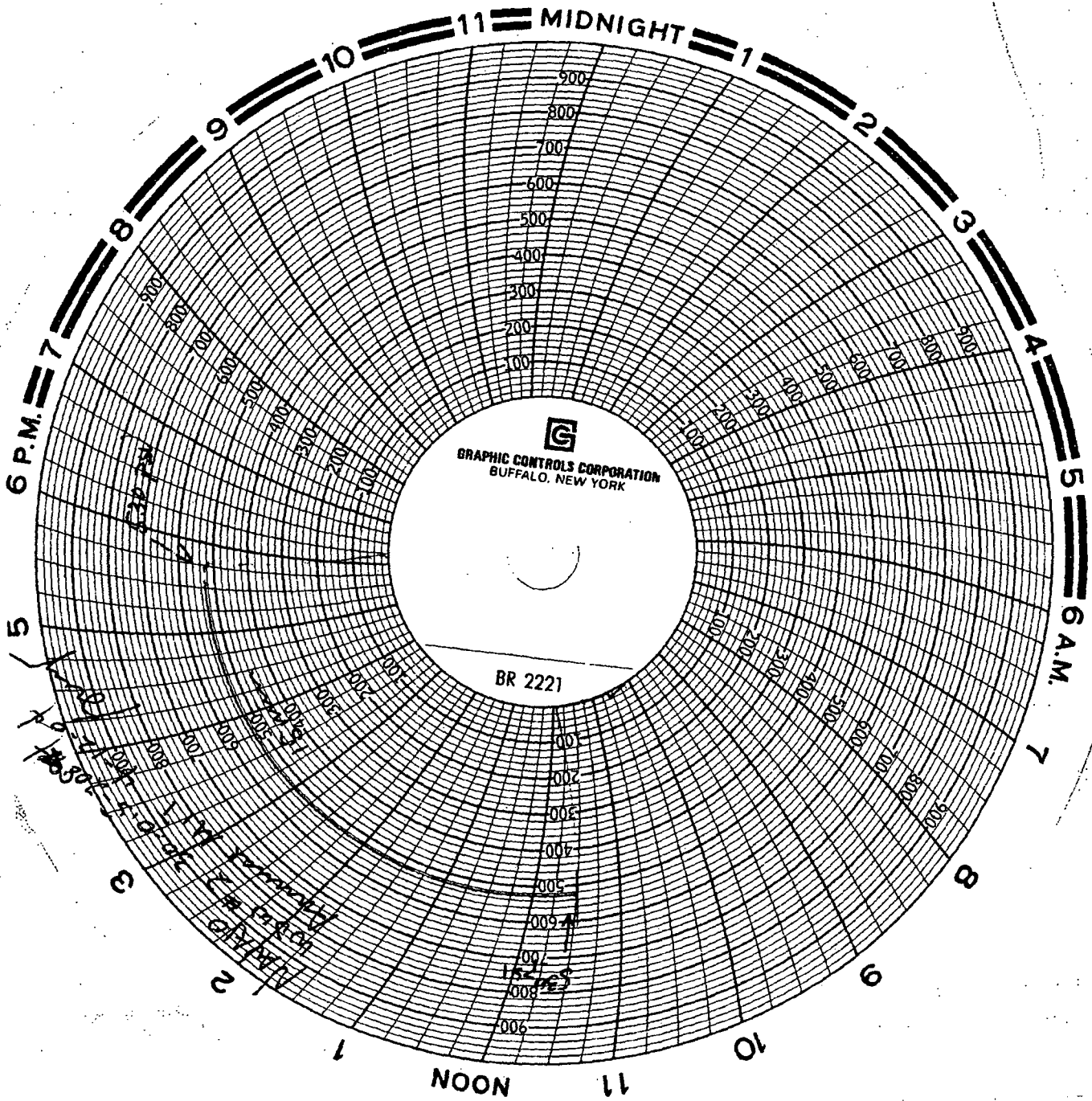
RECEIVED
1999 JUL 21 A 10:23
BUREAU OF LAND MGMT
LAND RESOURCE AREA

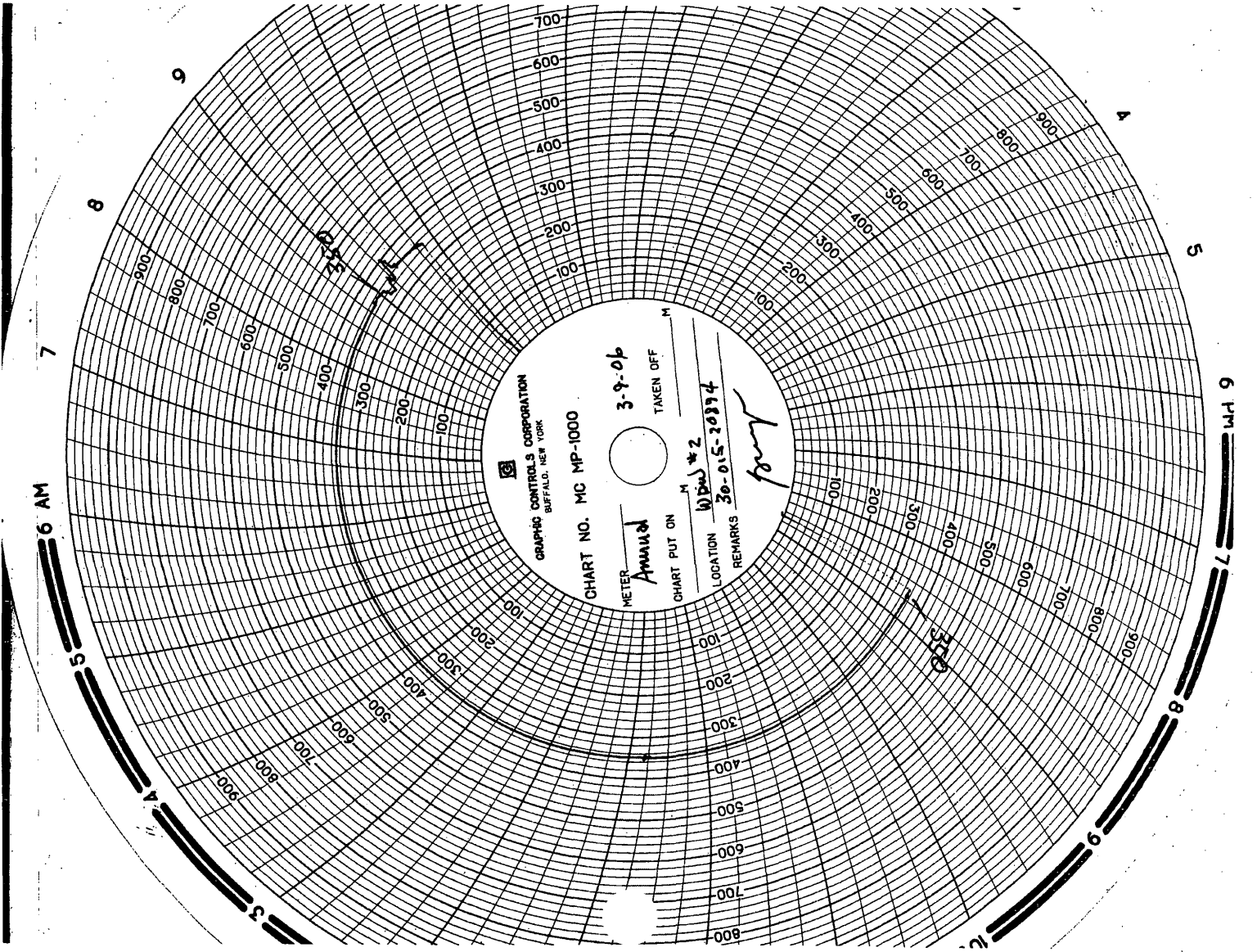


RECEIVED

APR 15 2004

OCB-ARTESIA





WT 9

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, August 12, 2010 1:55 PM
To: 'Moore, Darrell'; Dade, Randy, EMNRD
Cc: Lackey, Johnny
Subject: RE: Mechanical Integrity Tests

Darrell:

OCD confirms that the annual MITs performed on WDW-1 (UICI-8) and WDW-2 (UICI-8-1) passed.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Moore, Darrell [<mailto:Darrell.Moore@hollycorp.com>]
Sent: Thursday, August 12, 2010 10:39 AM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD
Cc: Lackey, Johnny
Subject: MIT's

Carl

Attached, please find the charts for the MIT's that were performed on our Injection wells WDW-1 and WDW-2 today. Both wells passed the Mechanical Integrity Tests with no drop off in pressure. As you know, the MIT on WDW-3 was performed earlier in the year and was submitted to OCD. In addition, there was no pressure on either of the well's bradenhead. If there are any questions concerning this submission, please call me or email me. Thank you.

Darrell Moore
Environmental Manager for Water and Waste
Navajo Refining Company, LLC
Phone Number 575-746-5281
Cell Number 575-703-5058
Fax Number 575-746-5451

CONFIDENTIAL

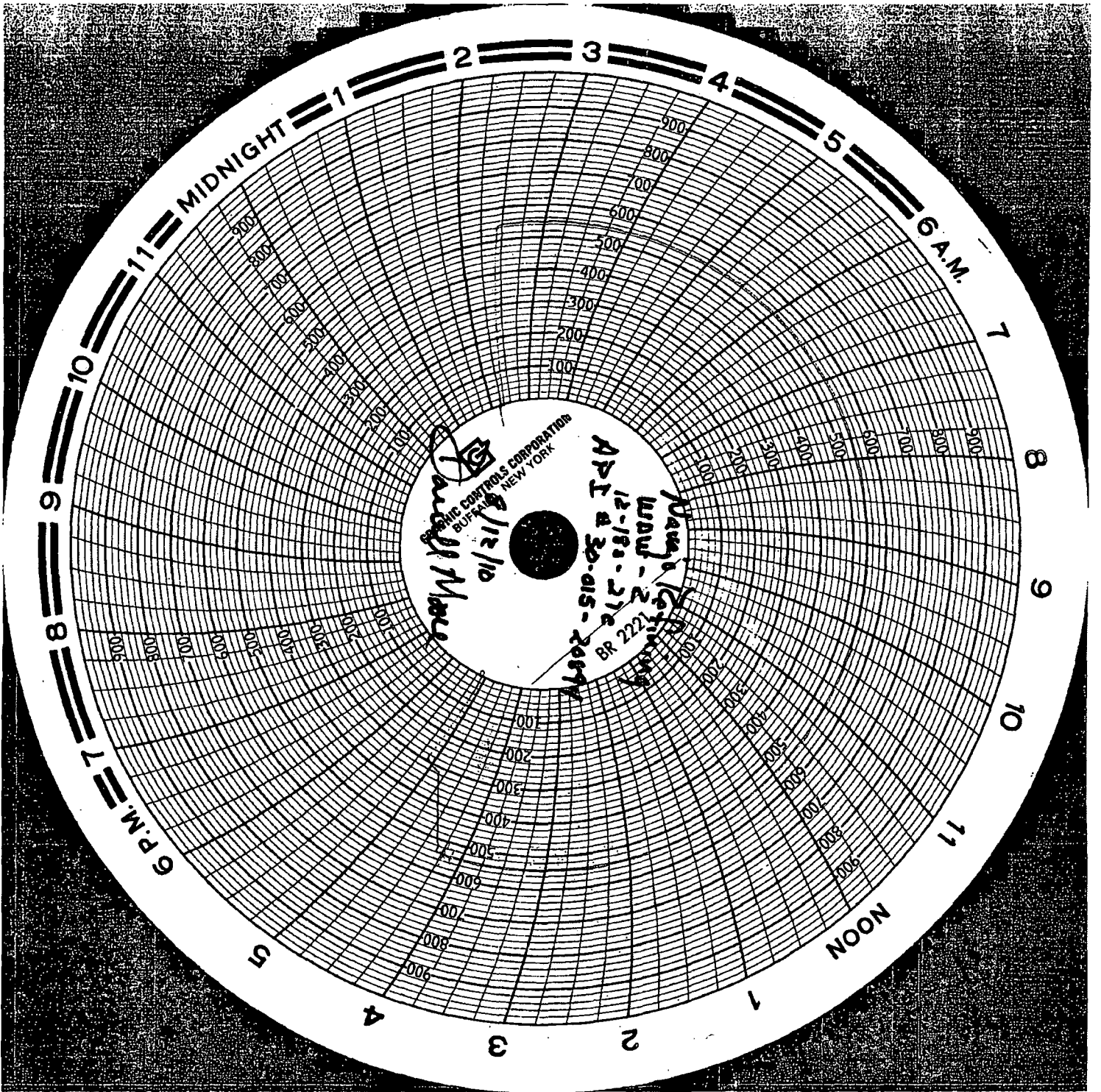
This e-mail message and all corresponding e-mail messages, including all attachments, are intended solely for the individual(s) named above. They contain confidential and/or proprietary information. Do not forward, copy, distribute or otherwise relay the messages or their content to any individual without first contacting the sender of this message. If you have received this e-mail message in error, do not read, forward, copy or distribute it or any of its content to anyone. In addition, please notify the sender that you have received this message immediately by return e-mail and delete it.



Please consider the environment before printing this e-mail.

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any

attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.



District I - (575) 393-6161
1625 N French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S St Francis Dr., Santa Fe, NM 87505

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-015-20894
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. 6852
7. Lease Name or Unit Agreement Name Chukka WDW-2
8. Well Number WDW-2
9. OGRID Number
10. Pool name or Wildcat: Navajo Permo-Penn 96918
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3607' GL, 3623' RKB

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

1. Type of Well: Oil Well Gas Well Other Injection Well

2. Name of Operator
Navajo Refining Company

3. Address of Operator
Post Office Box 159, Artesia, New Mexico 88211

4. Well Location
Unit Letter **E** : **1980** feet from the **North** line and **660** feet from the **West** line
Section **12** Township **18S** Range **27E** NMPM County **Eddy**

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

<p>NOTICE OF INTENTION TO:</p> <p>PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/></p> <p>TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/></p> <p>PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/></p> <p>DOWNHOLE COMMINGLE <input type="checkbox"/></p> <p>OTHER: PERFORM PRESSURE FALLOFF TEST, ANNULUS PRESSURE TEST <input checked="" type="checkbox"/></p>	<p>SUBSEQUENT REPORT OF:</p> <p>REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/></p> <p>COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input type="checkbox"/></p> <p>CASING/CEMENT JOB <input type="checkbox"/></p> <p>OTHER: <input type="checkbox"/></p>
--	--

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

October 17, 2011 - Perform an annulus pressure test with an initial pressure of 600 psig and run the test for 30 minutes. Install bottomhole gauges into WDW-1, WDW-2, and WDW-3 by 11:45am. Continue injection into all three wells.
 October 18, 2011 - Continue injection into all three wells.
 October 19, 2011 - At 12:15pm, the offset wells WDW-1 and WDW-3 will be shut-in. A constant injection rate will be established for WDW-2 and continue for a 30 hour injection period. Do not exceed 1000 psig wellhead pressure.
 October 20, 2011 - At 7:00pm, WDW-2 will be shut in for a 30-hour falloff period. WDW-1 and WDW-3 will remain shut-in.
 October 21, 2011 - All three wells will continue to be shut in while monitoring falloff pressure in all three wells.
 October 22, 2011 - At 7:00am, acquire downhole pressure gauges from all three wells. Tag bottom of fill and come out of hole very slowly, making 7-minute gradient stops while coming out of the WDW-2 every 1000 feet (7000 ft, 6000 ft, 5000 ft, 4000 ft, 3000 ft, 2000 ft, 1000 ft, surface). Run in hole with a temperature tool and conduct temperature survey from the surface to the top of the fill. Turn the wells back to Navajo personnel.

RDade 10/11/11
Accepted for record
NMOCD

RECEIVED
OCT 07 2011
NMOCD ARTESIA

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011
Type or print name Timothy Jones E-mail address: jjones@subsurfacegroup.com PHONE: 713-880-4640
or State Use Only

APPROVED BY: _____ TITLE _____ DATE _____
Conditions of Approval (if any):

Submit 1 Copy To Appropriate District Office
 District I - (575) 393-6161
 1625 N. French Dr., Hobbs, NM 88240
 District II - (575) 748-1283
 811 S. First St., Artesia, NM 88210
 District III - (505) 334-6178
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV - (505) 476-3460
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 Revised August 1, 2011

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-015-20894
1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other Injection Well <input type="checkbox"/>		5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
2. Name of Operator Navajo Refining Company		6. State Oil & Gas Lease No. 6852
3. Address of Operator Post Office Box 159, Artesia, New Mexico 88211		7. Lease Name or Unit Agreement Name Chukka WDW-2
4. Well Location Unit Letter E : 1980 feet from the North line and 660 feet from the West line Section 12 Township 18S Range 27E NMPM County Eddy		8. Well Number WDW-2
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3607' GL, 3623' RKB		9. OGRID Number
10. Pool name or Wildcat: Navajo Permopenn 96918		10. Pool name or Wildcat: Navajo Permopenn 96918

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO: PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/> PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/> DOWNHOLE COMMINGLE <input type="checkbox"/> OTHER: PERFORM PRESSURE FALLOFF TEST, ANNULUS PRESSURE TEST <input checked="" type="checkbox"/>	SUBSEQUENT REPORT OF: REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/> COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input type="checkbox"/> CASING/CEMENT JOB <input type="checkbox"/> OTHER: <input type="checkbox"/>
--	---

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

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Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011
Type or print name Timothy Jones E-mail address: tjones@subsurfacegroup.com PHONE: 713-580-4640
or State Use Only

APPROVED BY: Carl J. Chavez TITLE Environmental Engineer DATE 10/19/2011
Conditions of Approval (if any): See E-mail conditions dated 10/19/2011 attached to WDW-1.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, October 19, 2011 4:06 PM
To: 'Moore, Darrell'
Cc: Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject: Navajo Refining Company UIC Class I (NH) Injection Wells WDWs 1, 2 & 3 (UICI-008) Fall Off Test Plan (August 2011)

Darrell:

The New Mexico Oil Conservation Division (OCD) is in receipt of your above subject test plan. OCD has already approved the Fall-Off Test (FOT) Plan with conditions on July 28, 2009. The OCD notes that it is also in the process of reviewing C-103s Sundry Notices for the upcoming FOTs.

OCD observes some changes in this FOT Plan submittal that are not acceptable to the OCD. For example, Exhibit 1 is not an acceptable exhibit to the OCD for reasons specified in the 2010 FOT report review and later during the May 2011 meeting in Santa Fe. However, the operator continues to submit exhibits with certain assumptions that have not been accepted or approved by the OCD; i.e., that the injection wells are show interconnection with the injection zone during past FOTs. Perhaps the operator can conduct the 2011 FOT with the information and exhibits needed to prove the interconnection of injection wells with the injection zone? The Certified PE should provide the exhibits in the 2011 FOT Report with the analysis and conclusions supporting any claims for the OCD to review and consider before approving. This is apparently a FOT frequency per well issue that the operator is attempting to prove.

The OCD provides the following comments, observations, and/or recommendations on the above subject plan below.

Comments:

- The OCD approved the original Fall-Off Test (FOT) Plan based on OCD Guidance dated December 3, 2007. There should not be any significant changes to this FOT Plan because it is flexible where needed to allow operators to implement it on each injection well.
- OCD likes to be notified to witness the installation of bottom hole gauges and to be present at least one hour before injection shut-off and commencement of FOT monitoring.
- OCD is concerned about the Section VI No. 1(e) WDW-3 Cement Bond Log quality being poor from 900 ft. to 1200 ft- especially at the depths: 2662 – 2160; 4876 – 5372; and 6750 – 7600 ft. micro annulus scenario.

Observations:

- Section V No. 2: The objective of the FOT is NOT to achieve or limit a 100 psig pressure differential before vs. after FOT injection vs. shut-off, but it is a minimum pressure differential that OCD stipulates in its guidance for a successful FOT and injection zone that may still continue to be utilized for disposal, i.e., not too pressured up and subject to continued fracturing under daily allowed maximum surface injection pressure operational limits.
- Section V No. 7 and Exhibit 1: OCD observes a bottom hole pressure chart for WDWs 1, 2 and 3 at 7660 feet that the operator presented in the 2010 FOT and again during a May 2011 meeting in Santa Fe, New Mexico to show the interconnection between injection wells and the injection formation. The OCD had commented that there was no explanation or conclusion provided from the Certified PE who conducted and completed the 2010 FOT report that supports the operator's claim that all injection wells are interconnected based on Exhibit 1.

Furthermore, the OCD requested a statement or information supporting the operator's claim by the Certified PE, but never received one. At the meeting, the OCD explained that based on Exhibit 1, there was no support for the claim. In order to make the interconnection determination, during each FOT at each well and off-set injection wells (WDWs not being FOT'd) before and throughout the FOT would need bottom hole pressures monitored in tandem at each well location to establish the interconnectivity of the injection wells with the receiving injection formation under a uniform time scale. This would be a chart that could be plotted that would show during the test the interconnectivity of the wells for each FOT. The OCD doubts that the operator can make the case for interconnectivity between injection wells and injection formation because of the significant distance between the injection wells and fact that sedimentation in formation varies laterally and uniformity in sedimentation, saturated porosity and permeability due to variation in sedimentation would by chance make the injection formation aerially extensive and uniform over a 3 to 5 mile radius from each injection well. Also, even if by chance there was

uniformity over the mileage specified, the distance between injection wells and corresponding pressure would likely not be observed.

- Exhibit 6: OCD observes in Section B a proposed MIT once every 5 years. OCD's UIC Program requires annual MITs and/or after down hole work is performed on a well.

Recommendations:

- Operator is running survey logs to the bottom of fill or below USDW (fresh water) zones, which excludes an evaluation of casing in the fresh water zone. Please run logs up to surface.
- Be sure to also record and provide injection flow rate and pressure leading up to shut-off and monitoring throughout the FOT monitoring period. OCD needs to confirm that a pseudo steady-state condition was achieved before shut-off. This data is also needed for software modeling of the FOT.
- Please provide electronic data from the FOTs at each well in order for the OCD to run its software model to confirm the results in the report.
- Section V No. 13: Surface pressure monitoring and Horner Plot during injection should be used to confirm radial flow condition is achieved instead of waiting a set period if operator wishes to reduce the injection period.

Disclaimer: Please be advised that OCD has already approved with conditions Navajo Refining Company's Fall-Off Test (FOT) Plan on July 28, 2009, and is not providing approval of this FOT Plan; however, comments, observations and recommendations herein should help Navajo Refining Company understand the OCD's concerns based on the submittal.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us

Website: <http://www.emnrd.state.nm.us/ocd/>
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
<http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>)

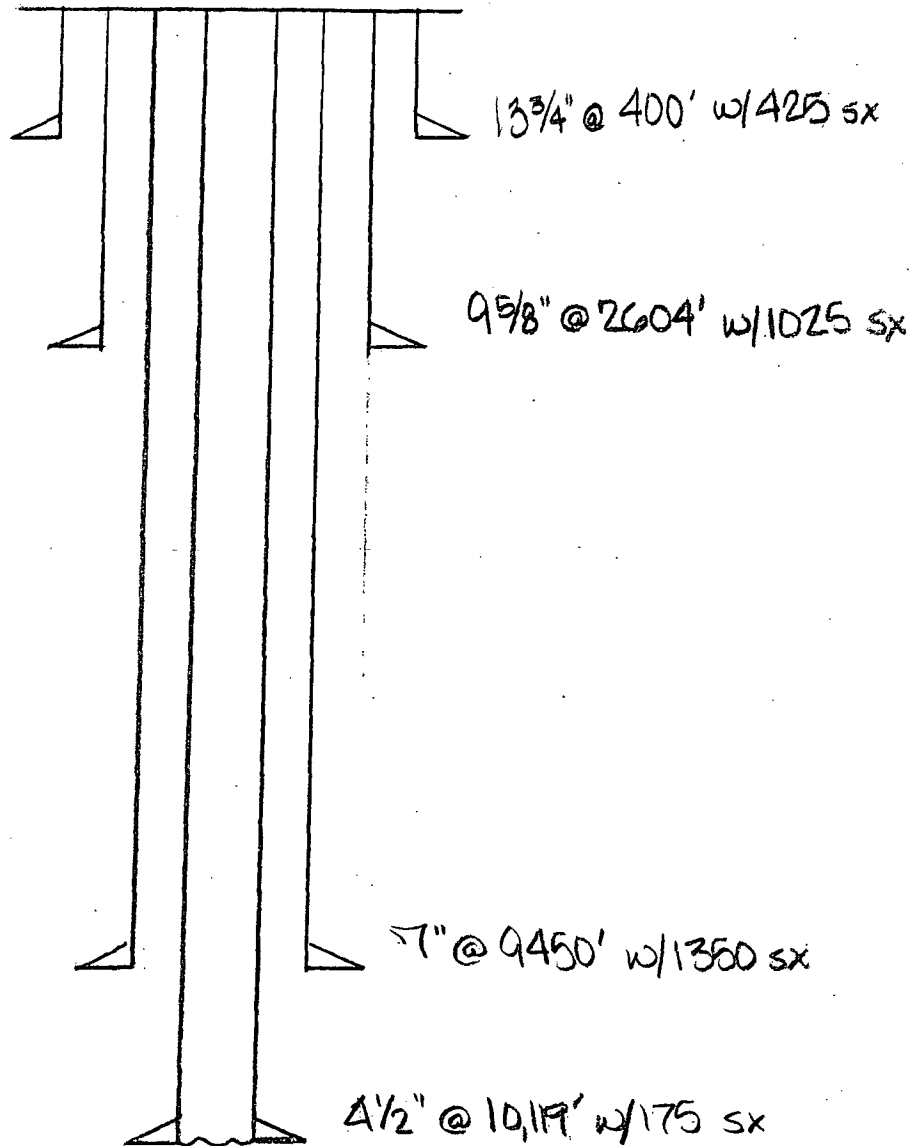
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 96
Artificial Penetration Review

OPERATOR Navajo Refining Co.
LEASE WDW.
WELL NUMBER 3
DRILLED N/A
PLUGGED N/A

STATUS Active
LOCATION Sec. 6-T18S-R27E
MUD FILLED BOREHOLE —
TOP INJECTION ZONE -3694'
API NO. 30-015-26575

REMARKS:



MAP ID NO. 96

**NAVAJO REFINING COMPANY
WASTE DISPOSAL WELL NO. 3**

API NO. 30-015-26575

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. C. Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993
Bureau Identification and Serial No.
NM-0557371

CLSF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other	6. If Indian, Allottee or Tribe Name
2. Name of Operator Mewbourne Oil Company	7. If Unit or CA, Agreement Designation
3. Address and Telephone No. PO Box 5270, Hobbs, NM 505-393-5905	8. Well Name and No. Chalk Bluff Federal Comm #1
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 790' FSL & 2250' FWL, Sec.1 T-18S R-27E	9. API Well No. 30-015-26575
	10. Field and Pool, or Exploratory Area N. Illinois Camp Morrow
	11. County or Parish, State Eddy, NM

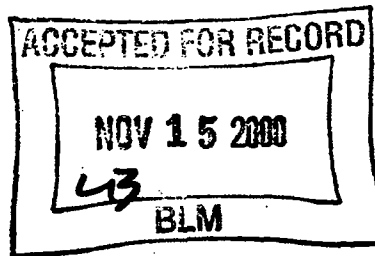
12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other MIT
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

3. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The above caption well was successfully MIT'ed on 10/25/2000. (500 psi for 30 min.)
The pressure chart is enclosed.
If any question, please call.



14. I hereby certify that the foregoing is true and correct

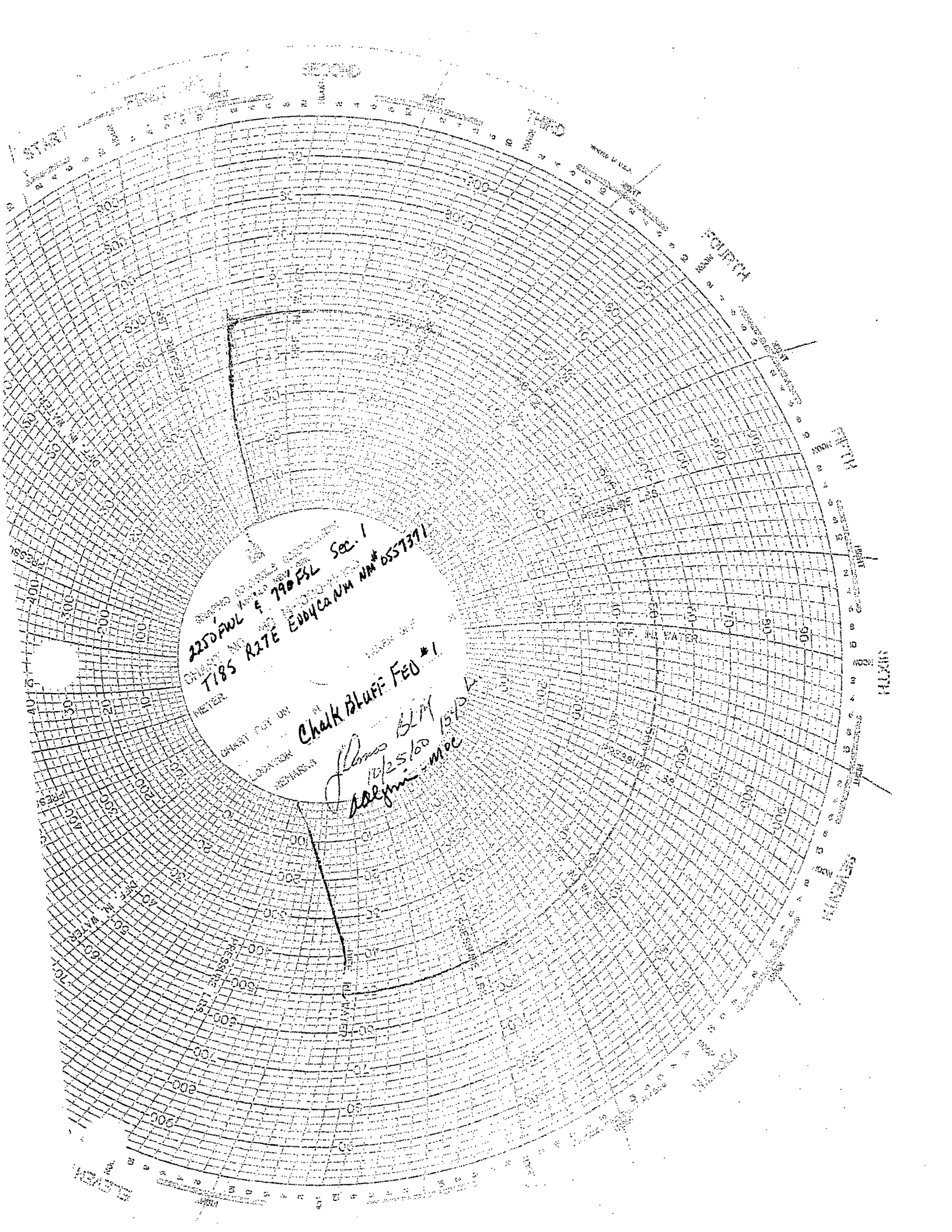
Signed: [Signature] Title: N.M. Young District Manager Date: 11/01/00

(This space for Federal or State office use)

Approved by: Record Only Title: _____ Date: _____

Conditions of approval, if any: _____

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



2250 PWT @ 790 FSL Sec. 1
T185 R27E EDDYCA NM # 6557371

Chalk Bluff - FED #1

James BLM
10/25/60
Adey - moc

FIRST

THIRD

FOURTH

FIRST

SECOND

THIRD

CHART FOR USE IN
LOGGING

TEMPERATURE

PRESSURE

CISF

Form 3160-5
1990

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JUN 20 1991

O. C. L.
ARTESIA, OFFICE

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
CHALK BLUFF FED. COM #1

9. API Well No.
30-015-26575

10. Field and Pool, or Exploratory Area
No. Illinois Camp Morrow

11. County or Parish, State
Eddy, New Mexico

RECEIVED
MAY 24 1991
BUREAU OF LAND MANAGEMENT
DIST. 6 N.M.
Carlsbad, New Mexico

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
P. O. Box 7698, Tyler, Texas 75711

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2250' FWL & 790' FSL of Sec. 1, T18S-R27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Fracture Treat</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form 1)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

4/24/91 - Western fracture treated Morrow Sand perms 9936-46', 9964-67' down tubing with 16,000 gals 73 downhole slurry quality Binary Westfoam carrying 16,000# 20/40 mesh ACFRAC Black Westprop-3. Screened out with 545 gals CO₂/N₂ 2% KCL water. Screened out at 10,100# with 1200 gals of 3# Stage in formation and 545 gals flush in tubing. Pumped 116 sxs Proppant into formation and left 25 sacks in casing and 19 sacks in tubing. ISDP 8300#, 5 mins 7600#, 10 mins 7200#, 15 mins 6800#. Avg 10.0 BPM at 8200#. Job complete 10:20 AM.

ACCEPTED FOR RECORD
JUN 14 1991
SJS
CARLSBAD, NEW MEXICO

14. I hereby certify that the foregoing is true and correct

Signed *Raymond Thompson* Title Engr. Oprns. Secretary Date 5/21/91

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

CSF

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

FEB 21 1994

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2250' FWL & 790' FSL
Sec. 1-T18S-R27E

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Chalk Bluff Fed. Com. #1

9. API Well No.
30-015-26575

10. Field and Pool, or Exploratory Area
N. Illinois Camp

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion	<input type="checkbox"/> New Construction
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Altering Casing	<input type="checkbox"/> Conversion to Injection
	<input checked="" type="checkbox"/> Other <u>Shut-In-Status</u>	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil Company here by requests temporarily abandon status pending further evaluation of the lease for the above well. The well was spudded 12/22/90.

APPROVED FOR 12 MONTH PERIOD
ENDING 1/25/95

JAN 21 10 06 AM '94
RECEIVED

14. I hereby certify that the foregoing is true and correct

Signed Robert G. Jones

Title Petroleum Engineer

Date 01/25/94

(This space for Federal or State office use)

Approved by (ORIG. SCD.) JOE G. LARA
Conditions of approval, if any:

Title PETROLEUM ENGINEER

Date 2/16/94

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Form 3160-3
(June 1990)

RECEIVED
OCT 15 11 41 AM '93
CAB

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL GERS. COMMISSION
Drawer DD
Altosia, NM

DSF

PERMIT APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

NOV 17 1993

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2250' FWL & 790' FSL of Sec. 1-T18S-R27E

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Chalk Bluff Fed. Comm. #1

9. API Well No.
30-015-26575

10. Field and Pool, or Exploratory Area
N. Illinois Camp

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
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<input type="checkbox"/> Final Abandonment Notice	<input checked="" type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

* Verbal from Adam Salameh

9/10/93 Abandon Morrow formation. Set CIBP @ 9800' & cover w/35' cement.
 9/11/93 Perforate Cisco from 7826'-7830'. Test & evaluate.
 9/12/93 Squeeze Cisco from 7826'-7830' w/600 sx. Class "C".
 9/15/93 Drill out squeeze perfs. to 7792'. Squeeze held 2,000#.
 9/16/93 Perforate Cisco from 7676'-7678'. Test and evaluate.
 9/17/93 Abandon Cisco formation, set CIBP @ 7600' & cover w/35' cement.
 9/18/93 Perforate Wolfcamp 7304'-7314'. Test & evaluate.
 9/19/93 Acidize Wolfcamp w/1500 gal. 15% NE-FE from 7304'-7314'.
 9/21/93 Set CIBP @ 7294' & perforate Wolfcamp from 7262'-7278'. Test & evaluate.
 9/22/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7262'-7278'.
 9/23/93 Set CIBP @ 7208' & perforate Wolfcamp from 7050'-7102'. Test & evaluate.
 9/24/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7050'-7102'.
 9/25/93 Set CIBP @ 7010'.

14. I hereby certify that the foregoing is true and correct
Signed Robert C. Jones Title Petroleum Engineer Date 10/05/93
(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

ACCEPTED FOR RECORD
NOV 15 1993

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instructions at CARLOS ALVARO NEW MEXICO

C9SF

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED
OCT 19 1993

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

2250' FWL & 790' FSL of Sec. 1-T18S-R27E

5. Lease Designation and Serial No.

NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed. Com. #1

9. API Well No.

30-015-26575

10. Field and Pool, or Exploratory Area

N. Illinois Camp

11. County or Parish, State

Eddy Co., N.M.

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<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input checked="" type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input checked="" type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

09/08/93 Abandon Morrow Perfs 9861' - 9967'

- Set CIBP @ 9800' - cover w/35' cement.

- Recomplete in Cisco Formation - Test & evaluate.

- If unecomomical recomplete in Wolfcamp - Test & evaluate.

RECEIVED
SEP 22 10 43 AM '93
GARD AREA

14. I hereby certify that the foregoing is true and correct

Signed

[Signature]

Title

Petroleum Engineer

Date

09/07/93

(This space for Federal or State office use)

Approved by

(ORIG. SGD.) JOE G. LARA

Title

PETROLEUM ENGINEER

Date

10/15/93

Conditions of approval, if any:

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*See Instruction on Reverse Side

rm 3160-5
nc 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

SEP 28 1992

O. C. D.
Special Service

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P. O. Box 7698, Tyler, Texas 75711 (903) 561-2900

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

2250' FWL & 790' PSL Sec. 1, T18S-R27E

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed. Com. #1

9. API Well No.

30-015-26575

10. Field and Pool, or Exploratory Area

N. Illinois Camp-Mor.-Gas

11. County or Parish, State

Eddy

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Additional perms.</u>
	<u>acidize & frac</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

8/13/92 - Perf Middle Morrow 9861-9882', 2 SPF, 10' Net, 22 holes.

8/14/92 - Acidized w/3500 gals 7 1/2% HCL + additives + 1000 SCF/bbl nitrogen carrying 80 ball sealers. Flushed w/2% KCL wtr + 1000 SCF/bbl nitrogen. ISDP 4300#, 5 mins 3800#, 10 mins 3400#, 15 mins 2800#. Avg rate 3.7 BPM, AP 5000#, MP 5600#. Blew well down to pit 8/15 - 8/18/92.

8/19/92 - MI swab unit. Pressure tested tbg to 2000#. Held OK. Removed tree. RU BOP. RU swab. Swabbed well down to 5300'.

8/20/92 - Swabbed down to 6500'. POOH w/tbg & pkr. TIH w/new pkr assembly & 200 jts tbg. Tested tbg to 8000#. 8/21/92 - Continued testing tbg. Set pkr @ 9740.68' w/15 pts compression. Press annulus to 2000#. Held OK. Started swabbing. Had light blow of gas.

8/22/92 - RU Western Co. Acidized perms w/1500 gals 7 1/2% HCL acid + additives + 1000 scf/bbl nitrogen + 35 ball sealers. Flushed w/2% KCL wtr. ISDP 400#. 5 min 3700#, 10 min 3700#, 15 min 3600#. ATP 5100#, MTP 5400#. RD Western. Opened well to pit on 12/64" choke. No show of gas or oil. Recovering load.

8/23/92 - RU swab. FL @ 7000'. Swabbed dry in 3 runs. Continued swabbing. Recovering load.

14. I hereby certify that the foregoing is true and correct

Signature [Signature] Title Engr. Oprns. Secretary

Date 9/11/92

(This space for Federal or State office use)

Approved by _____
Conditions of approval, if any:

Title [Signature]

Date _____

8 502

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL RECEIVED

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special		Test Date 03/15/91	
Company Mewbourne Oil Company		Connection Transwestern	
Pool Undesignated		Formation Morrow	
North Illinois Camp Morrow		MAY - 7 1991	
Completion Date 03/05/91		Total Depth 10,120'	
Plug Back TD 10,075'		O.V.O. ARTESIA OFFICE 3609	
Cag. Size 5 1/2"		Well No. 1	
Wt. 11.6#		Perforations: From 9936' To 9967'	
Tbg. Size 2 7/8"		Wt. 6.5	
Set At 10,120'		Perforations: From Open To End	
Set At 9,805'		Unit Sec. Twp. Rye N 1 18S 27E	
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Single Gas		Packer Est At 9805'	
Producing Thru Tbg.		State New Mexico	
Reservoir Temp. °F 148 @ 10,120		Mean Annual Temp. °F 72	
Base Press. - P _g 13.2		County Eddy	
L 9949	H 9949	Cg .660	% CO ₂ .43
			% N ₂ .42
			% H ₂ S ---
			Prover 3.068
			Meter Run Taps Fig.

NO.	FLOW DATA				TUBING DATA		CASING DATA		Duration of Flow	
	Prover Line Size	x	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F		Press. p.s.i.g.	Temp. °F
SI	S.I.						2380			72 Hr.
1.	3 X 1.125			426.8	4	51	2175		Pkr.	1 Hr.
2.	3 X 1.125			446.8	11	51	2070		Pkr.	1 Hr.
3.	3 X 1.125			446.8	32	51	1900		Pkr.	1 Hr.
4.	3 X 1.125			426.8	72	45	1605		Pkr.	1 Hr.
5.										

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow O. Mcfd
1	6.217	41.952	440	1.009	1.225	1.048	337
2	6.217	71.134	460	1.009	1.225	1.051	574
3	6.217	121.326	460	1.009	1.225	1.051	980
4	6.217	177.989	440	1.015	1.225	1.051	1446
5							

NO.	P _g	Temp. °R	T _g	Z	Gas Liquid Hydrocarbon Ratio	Dry Gas	Mcf/bbl.
1	.65	511	1.37	.910	A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.		
2	.68	511	1.37	.906	Specific Gravity Separator Gas	.660	XXXXXXXXXX
3	.68	511	1.37	.906	Specific Gravity Flowing Fluid	XXXXXX	
4	.65	505	1.35	.905	Critical Pressure	673	P.S.I.A. _____ P.S.I.A.
5					Critical Temperature	374	R _____ R

NO.	P _g	P _w	P _e	P _e ² - P _w ²
1	2264	5125	985.7	
2	2147	4609	1501.7	
3	1966	3865	2245.7	
4	1639	2686	3424.7	
5				

$P_c = 2472$ $P_c^2 = 6110.7$

(1) $\frac{P_c^2}{P_e^2 - P_w^2} = 1.784$ (2) $\left[\frac{P_e^2}{P_e^2 - P_w^2} \right]^n = 1.967$

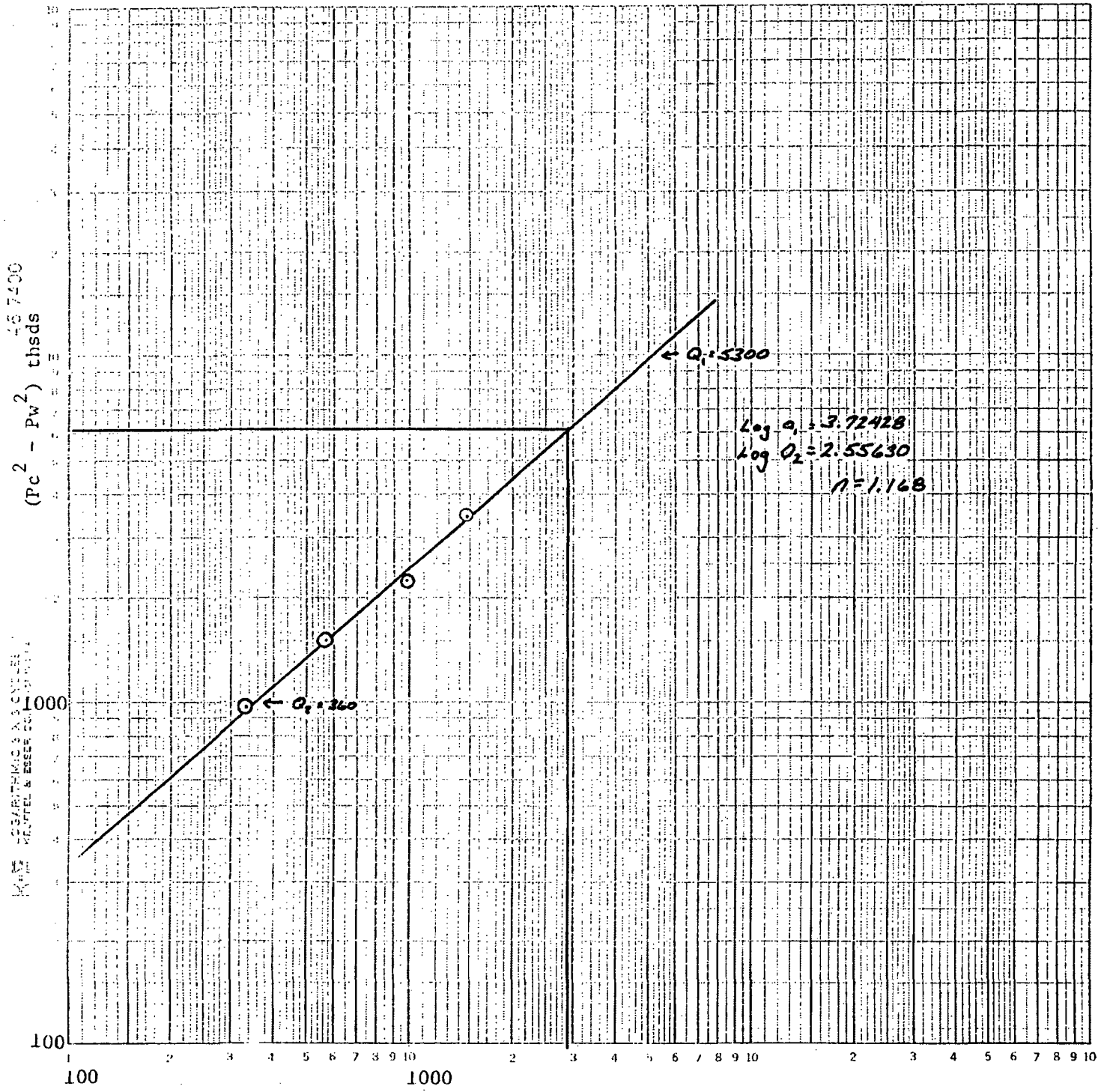
AOF = O $\left[\frac{P_e^2}{P_e^2 - P_w^2} \right]^n = 2.844$

Absolute Open Flow 2,844 Mcfd @ 15.025 Angle of Slope ϕ 41° Slope, n 1.168

Remarks: Well made 0 bbl. fluid during test

Approved By Division	Conducted By: Greg Milner	Calculated By: Greg Milner	Checked By: Bill Pierce
----------------------	------------------------------	-------------------------------	----------------------------

KPM RESERVING & CONSULTING
KARTEL & BESEK CO. INC.



Q MCF/D

AOF = 2.9 MMCF/D



Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Mewbourne Oil Co.
Attention: Mr, Greg Milner
P. O. Box 5270
Hobbs, New Mexico 88241

SAMPLE Chalk Bluff
IDENTIFICATION: Federal #1
COMPANY: Mewbourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA:	DATE SAMPLED: 03-15-91	GAS (XX)	LIQUID ()
	ANALYSIS DATE: 03-18-91	SAMPLED BY: Gregory Milner	
	PRESSURE - PSIG 460.00	ANALYSIS BY: Rolland Perry	
	SAMPLE TEMP. °F 51.00		
	ATMOS. TEMP. °F		

REMARKS:

COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM	
Oxygen (O2)			
Hydrogen Sulfide (H2S)			
Nitrogen (N2)	0.42		
Carbon Dioxide (CO2)	0.43		
Methane (C1)	87.54		
Ethane (C2)	7.07	1.886	
Propane (C3)	2.38	0.654	
I-Butane (IC4)	0.31	0.100	
N-Butane (NC4)	0.54	0.169	
I-Pentane (IC5)	0.20	0.071	
N-Pentane (NC5)	0.14	0.052	
Hexane (C6)	0.97	0.399	
Heptanes Plus (C7+)	0.00	0.000	
	100.00	3.331	
BTU/CU.FT. - DRY	1156	MOLECULAR WT	19.0972
AT 14.650 DRY	1153		
AT 14.650 WET	1133	26# GASOLINE -	0.578
AT 15.025 DRY	1182		
AT 15.025 WET	1162		
SPECIFIC GRAVITY -			
CALCULATED	0.660		
MEASURED	0.000		

WORK SHEET FOR CALCULATION OF WELL .D PRESSURES (P_c or ~~P_w~~)

Form C-122F
Adopted 9-1-63

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or ~~P_s~~)

COMPANY Mewbourne Oil LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91

LOCATION: Unit _____ Section 1 Township 18S Range 27E

9949 H 9949 L/H 1.000 G .660 % CO₂ .43 % N₂ .42 % H₂S _____

GH 6566 P_{cr} 673 T_{cr} 374
TABLE IX & X TABLE IX & X

LINE		1	2	3	4	5	6	7	8
1	T_w (W.H. °R)	532	532						
2	T_s (B.H. °R)	608	608						
3	$T = \frac{T_w + T_s}{2}$	570	570						
4	Z (Est.)	.800	.790						
5	TZ	456.0	450.4						
6	GH/TZ	14.399	14.578						
7	e^S (Table XIV)	1.716	1.727						
8	P_f or P_s	3249	3249						
9	P_f^2 or P_s^2	10556	10556						
10	$P_c^2 = P_f^2 / e^S$ or P_s^2 / e^S	6151.7	6110.6						
11	P_c or P_s	2480.3	2472.0	= P_c					
12	$P_r = \frac{P_w + P_s}{2}$ or $\frac{P_c + P_f}{2}$	2864.6	2860.5						
13	$P_r = (P/P_{cr})$	4.26	4.25						
14	$T_r = (T/T_{cr})$	1.52	1.52						
15	Z (Table XI)	.790	.790						

One copy to be filed in District Office (Work copy acceptable)

WORK SHEET FOR CALCULATION OF W. HEAD PRESSURES (P_s or P_w)

Form C-122
Adopted 9-1-66

FROM KNOWN BOTTOM HOLE PRESSURE (P_b or P_s)

COMPANY Mewbourne LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91
 LOCATION: Unit _____ Section 1 Township 185 Range 27E
 L 9949 H 9949 L/H 1.00 G .660 % CO₂ .43 % N₂ .42 % H₂S _____
 GH 6566 P_{cr} 673 T_{cr} 374
TABLE IX & X

LINE		1	2	3	4	5	6	7	8
1	T _w (W.H. °R)	532	532	532	532	532	532	532	532
2	T _s (B.H. °R)	608	608	608	608	608	608	608	608
3	T = $(\frac{T_w + T_s}{2})$	570	570	570	570	570	570	570	570
4	Z (Est.)	.835	.783	.783	.781	.781	.780	.780	.792
5	TZ	476.0	446.5	446.5	445.1	445.2	444.8	444.6	451.7
6	GH/TZ	13.796	14.704	14.712	14.753	14.749	14.761	14.768	14.537
7	e ^s (Table XIV)	1.678	1.736	1.736	1.739	1.739	1.739	1.740	1.725
8	P_s or P_s	2983	2983	2831	2831	2593	2593	2152	2152
9	P_s or P_s^2	8898.3	8898.3	8014.6	8014.6	6723.6	6723.6	4631.1	4631.1
10	$P_s = P_i^2/e^s$ or $P_w^2 = P_s^2/e^s$	5304.3	5126.6	4616.2	4609.0	3867.2	3865.5	2661.7	2684.9
11	P_s or P_w	2303.1	2264.2	2148.5	2146.9	1966.5	1966.1	1631.5	1638.6
12	$P_r = (\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_i}{2})$	2643.1	2623.6	2489.8	2488.9	2279.8	2279.5	1891.7	1895.3
13	$P_r = (P/P_{cr})$	3.93	3.90	3.70	3.70	3.39	3.39	2.81	2.82
14	T _r = (T/T _{cr})	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
15	Z (Table XI)	.783	.783	.781	.781	.780	.780	.792	.792

One copy to be filed in District Office (Work copy acceptable)

COMPANY: PRO WIRELINE
CLIENT: MEWBOURNE OIL
GAUGE NUMBER: 12235
WELL NAME: CHALK BLUFF
WELL NUMBER: 1
TEST NUMBER: 1
LOCATION:
TEST OPERATOR: BURRELL
COMMENTS: 4 POINT FLOW TEST RAN
AFTER 72 HOUR BUILD UP

POSITION	GAUGE SERIAL NUMBER
1	
2	
3	
4	

AGE START DATE: 3/15/91

GAUGE S/N: 12235

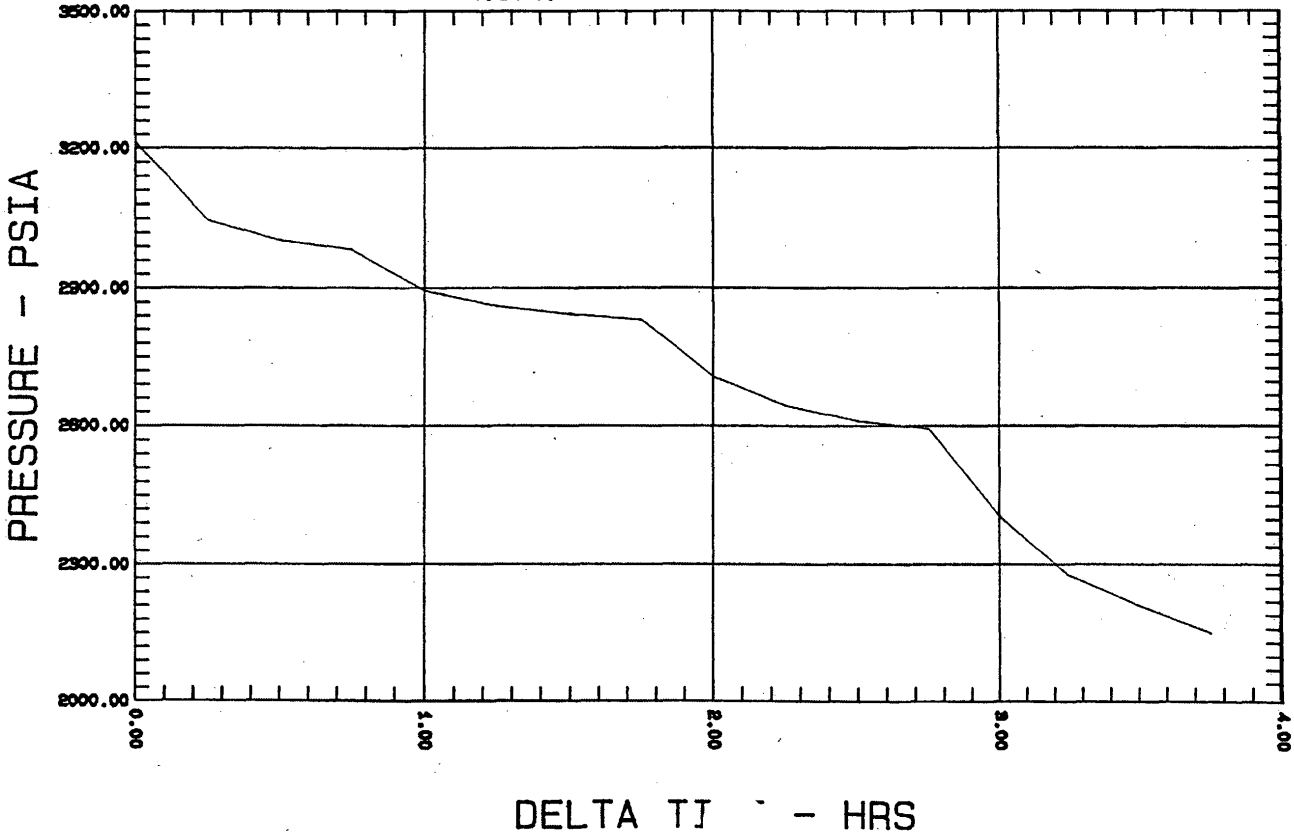
DATA FILE: 3

REAL TIME	DELTA TIME HRS	PRESSURE PSIA	TEMPERATURE 'F	COMMENTS
9:45: 0	0.0000	3213.00		START RATE 1
10: 0: 0	0.2500	3046.00		
10:15: 0	0.5000	3003.00		
10:30: 0	0.7500	2983.00		START RATE 2
10:45: 0	1.0000	2894.00		
11: 0: 0	1.2500	2861.00		
11:15: 0	1.5000	2843.00		
11:30: 0	1.7500	2831.00		START RATE 3
11:45: 0	2.0000	2707.00		
12: 0: 0	2.2500	2643.00		
12:15: 0	2.5000	2610.00		
12:30: 0	2.7500	2593.00		START RATE 4
12:45: 0	3.0000	2405.00		
13: 0: 0	3.2500	2276.00		
13:15: 0	3.5000	2210.00		
13:30: 0	3.7500	2152.00		END OF TEST

Plot starting date: 3/15/91
time: 9:45:0
Gauge S/N

Company: PRO WIRELINE
Client: NEWBOURNE OIL
Well name: CHALK BLUFF
Well #: 1
Test #: 1

Location:
Operator: BURRELL
Comments: 4 POINT FLOW TEST RAN
AFTER 72 HOUR BUILD UP



UNITED STATES COMMISSION
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.
NM-0557371

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Chalk Bluff Federal Com

9. WELL NO.

1

10. FIELD AND POOL, OR WILDCAT

N. Illinois Camp Morrow

11. SEC., T., R. N., OR BLOCK AND SURVEY OR AREA

Sec. 1-T18S-R27

12. COUNTY OR PARISH

Eddy

13. STATE

N.M.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other _____

b. TYPE OF COMPLETION: NEW WELL WORK OVER DEEP-EN PLUG BACK DIFF. REVER. Other _____

2. NAME OF OPERATOR
Mewbourne Oil Company

3. ADDRESS OF OPERATOR
P. O. Box 7698, Tyler, Texas 75711

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
At surface 2250' FWL & 790' FSL

At top prod. interval reported below

At total depth Same

14. PERMIT NO. DATE ISSUED
API #30-015-26575

15. DATE SPUNDED 12/22/90 16. DATE T.D. REACHED 1/29/91 17. DATE COMPL. (Ready to prod.) 3/07/91 18. ELEVATIONS (DV, HKB, RT, OR, ETC.)* KB 3625', GM 3609' 19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD 10,120' 21. PLUG, BACK T.D., MD & TVD 10,079' 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY 24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* 9936-46', 9964-67' - Morrow 25. WAS DIRECTIONAL SURVEY MADE Yes 26. TYPE ELECTRIC AND OTHER LOGS R/U'N SDL-DSN, DLL-MSFL, DILL 27. WAS WELL CORED No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.50#	400'	17-1/2"	425 - Circ	None
9-5/8"	36#	2604'	12-1/4"	1025 - Circ	None
7"	26# & 29#	9450'	8-3/4"	1350 - Circ	None

29. LINER RECORD 30. TUBING RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
4-1/2"	9051'	10119'	175		2-3/8"	9805'	9805'

31. PERFORATION RECORD (Interval, size and number)
9936-46', 9964-67'
13', 2 SPF, Total 28

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
9936-67'	3000 gals Mod-101 acid + 1000 SCF, bbl N2 + 50 ball sealers, Flushed w/35 bbls 2% KCl water + 100 SCF/bbl N2.

33. PRODUCTION

DATE FIRST PRODUCTION PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) WELL STATUS (Producing or shut-in)

Flowing Producing

DATE OF TEST	HOURS TESTED	CHOKES SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS/OIL RATIO
3/11/91	24 hrs	8/64"		1	886	0	886:1

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
1600#			1	886	0	58.16

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) TEST WITNESSED BY

35. LIST OF ATTACHMENTS
Logs

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

SIGNED *Raymond Thompson* TITLE Engr. Oprns. Secretary

*(See Instructions and Spaces for Additional Data on Reverse Side)

CONFIDENTIAL
RECEIVED
JUL 23 1992
O. C. D.

ACCEPTED FOR RECORD
SSS
records
APR 1 1991
DATE 3/18/91
CARLSBAD, NEW MEXICO

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries)

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
Lower Morrow	9936'	9967'	Sandstone	Yates	424'	
Middle Morrow	9861'	9881'	Sandstone	Queen	1138'	
				Grayburg	1484'	
				San Andres	1976'	
				Glorietta	3458'	
				Tubb	4451'	
				Drinkard	5376'	
				Abo	5794'	
				Wolfcamp	6420'	
				Cisco	7666'	
				Canyon	8368'	
				Strawn	8844'	
				Morrow	9454'	
				Morrow Clastics	9770'	
				Barnett	10016'	



DRILLING CO., INC. - OIL WELL DRILLING CONTRACTORS

**KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT**

**P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM**

February 05, 1991

Mewbourne Oil Company, Inc.
P.O. Box 5270
Hobbs, N.M. 88241

REF: Chalk Bluff Fed Comm #1

Gentlemen:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

400' - 1/4°	4674' - 1 1/4°	6559' - 2 1/2°
905' - 3/4°	5120' - 1 1/2°	6650' - 2 1/4°
1303' - 3/4°	5639' - 1 1/4°	7146' - 1 3/4°
1901' - 1 1/4°	6077' - 3 1/2°	7672' - 3/4°
2399' - 1 3/4°	6126' - 3 3/4°	7800' - 3/4°
2600' - 1 3/4°	6189' - 3 3/4°	8291' - 1°
3098' - 1 1/2°	6250' - 3 3/4°	8815' - 1°
3592' - 1 1/2°	6312' - 3 1/2°	9313' - 3/4°
3682' - 3/4°	6374' - 3 1/4°	9808' - 1 1/4°
4177' - 1°	6467' - 2 3/4°	10,120' 3/4° TD

Sincerely,

Arnold Newkirk
Vice-President

STATE OF NEW MEXICO)

COUNTY OF CHAVES)

The foregoing was acknowledged before me this 05th day of February 1991 by Arnold Newkirk.

MY COMMISSION EXPIRES

October 07, 1992

NOTARY PUBLIC

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL RECEIVED

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special		Test Date 03/15/91	
Company Mewbourne Oil Company		Connection Transwestern	
Pool Undesignated		Formation Morrow	
North Illinois Camp Morrow		MAY - 7 1991	
Completion Date 03/05/91		Total Depth 10,120'	
Plug Back TD 10,075'		O.G.O. ARTESIA OFFICE 3609	
Form or Lease Name Chalk Bluff Federal		Well No. 1	
Coq. Size 4 1/2"	Wt. 11.6#	Set At 10,120'	Perforations From 9936' To 9967'
Tbg. Size 2 7/8"	Wt. 6.5	Set At 9,805'	Perforations From Open To End
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Single Gas		Packer Set At 9805'	
Producing Thru Tbg.		Reservoir Temp. °F 148 @ 10,120	
Mean Annual Temp. °F 72		Baro. Press. - P _a 13.2	
State New Mexico		County Eddy	
L 9949	H 9949	C _g .660	% CO ₂ .43
% N ₂ .42	% H ₂ S ---	Prover 3.068	Meter Run Taps Fig.

NO.	FLOW DATA				TUBING DATA		CASING DATA		Duration of Flow
	Prover Line Size	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI	S.I.					2380			72 Hr.
1.	3 X 1.125		426.8	4	51	2175		Pkr.	1 Hr.
2.	3 X 1.125		446.8	11	51	2070		Pkr.	1 Hr.
3.	3 X 1.125		446.8	32	51	1900		Pkr.	1 Hr.
4.	3 X 1.125		426.8	72	45	1605		Pkr.	1 Hr.
5.									

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Fl.	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow O, Mcld
2	6.217	71.134	460	1.009	1.225	1.051	574
3	6.217	121.326	460	1.009	1.225	1.051	980
4	6.217	177.989	440	1.015	1.225	1.051	1446
5							

NO.	R _f	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio _____ Dry Gas _____ Mcf/bbl.		
					A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.	Specific Gravity Separator Gas _____	Specific Gravity Flowing Fluid _____
1	.65	511	1.37	.910	.660	XXXXXX	XXXXXX
2	.68	511	1.37	.906	XXXXX		
3	.68	511	1.37	.906	673	P.S.I.A.	P.S.I.A.
4	.65	505	1.35	.905	374	R	R
5							

NO.	P _c 2472 P _c 6110.7		P _w		P _w ² - P _w ²	AOF = Q [$\frac{P_c^2}{P_w^2 - P_c^2} $] ⁿ = 2.844
	P _w ²	P _w	P _w ²	P _w		
1	2264	47.6	5125	72.0	985.7	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.784$ (2) $[\frac{P_c^2}{P_c^2 - P_w^2}]^n = 1.967$
2	2147	46.3	4609	68.0	1501.7	
3	1966	44.4	3865	60.0	2245.7	
4	1639	40.5	2686	50.0	3424.7	
5						

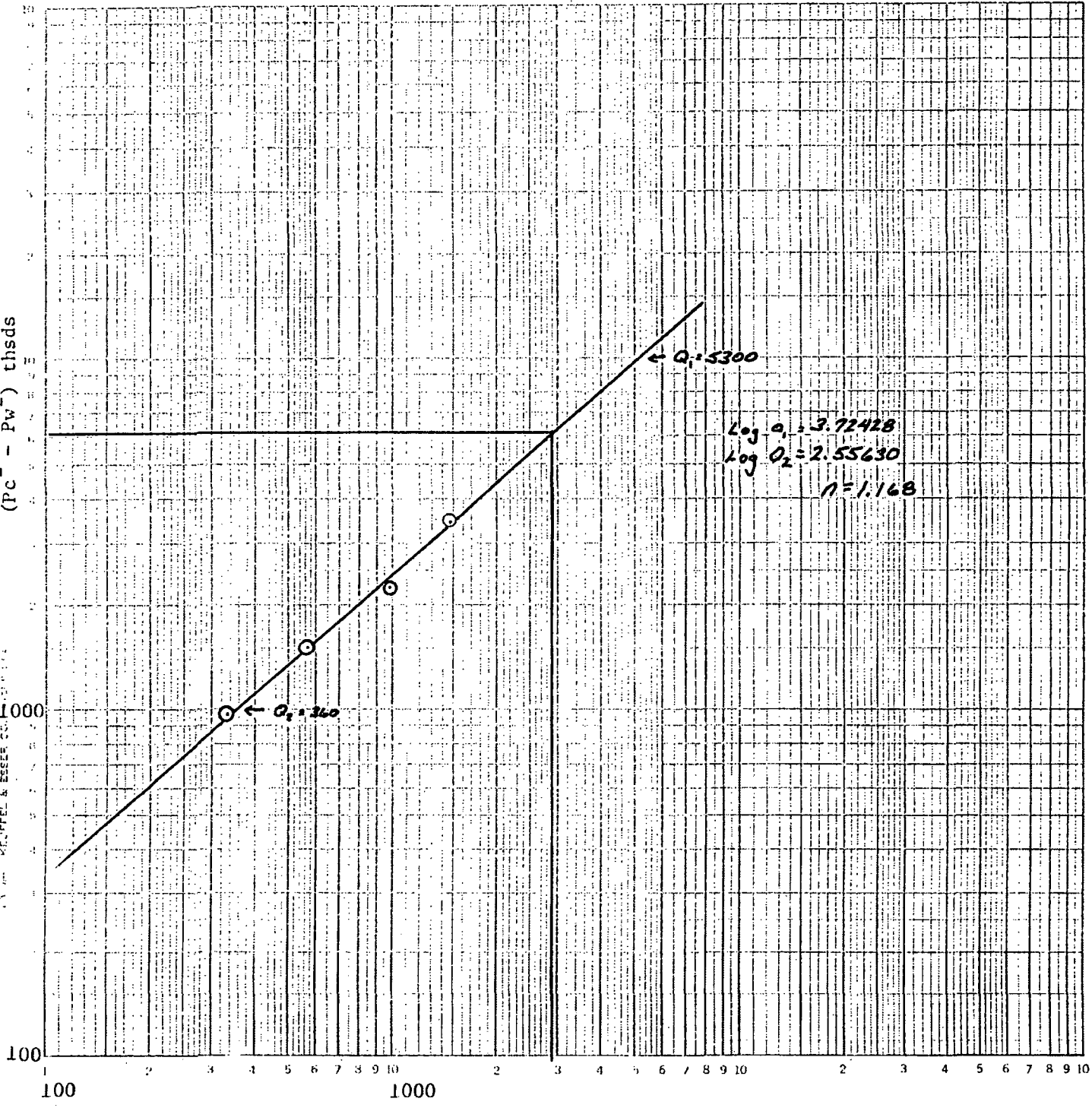
Absolute Open Flow 2,844 Mcld @ 15.025 Angle of Slope @ 41° Slope, n 1.168

Remarks: Well made 0 bbl fluid during test

Approved By Division	Conducted By: Greg Milner	Calculated By: Greg Milner	Checked By: Bill Pierce
----------------------	------------------------------	-------------------------------	----------------------------

167400
(Pc² - Pw²) thsds

GEARTRIMM & SONS
KAPPEL & ESSEK CO.



Q MCF/D

AOF = 2.9 MMCF/D



Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Mewbourne Oil Co.
Attention: Mr, Greg Milner
P. O. Box 5270
Hobbs, New Mexico 88241

SAMPLE Chalk Bluff
IDENTIFICATION: Federal #1
COMPANY: Mewbourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA:	DATE SAMPLED:	03-15-91	GAS (XX)	LIQUID ()
	ANALYSIS DATE:	03-18-91	SAMPLED BY:	Gregory Milner
	PRESSURE - PSIG	460.00	ANALYSIS BY:	Rolland Perry
	SAMPLE TEMP. °F	51.00		
	ATMOS. TEMP. °F			

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM	
Oxygen	(O2)			
Hydrogen Sulfide	(H2S)			
Nitrogen	(N2)	0.42		
Carbon Dioxide	(CO2)	0.43		
Methane	(C1)	87.54		
Ethane	(C2)	7.07	1.886	
Propane	(C3)	2.38	0.654	
I-Butane	(IC4)	0.31	0.100	
N-Butane	(NC4)	0.54	0.169	
I-Pentane	(IC5)	0.20	0.071	
N-Pentane	(NC5)	0.14	0.052	
Hexane	(C6)	0.97	0.399	
Heptanes Plus	(C7+)	0.00	0.000	
		<u>100.00</u>	<u>3.331</u>	
BTU/CU.FT. - DRY		1156	MOLECULAR WT	19.0972
AT 14.650 DRY		1153		
AT 14.650 WET		1133	26# GASOLINE -	0.578
AT 15.025 DRY		1182		
AT 15.025 WET		1162		
SPECIFIC GRAVITY -				
CALCULATED		0.660		
MEASURED		0.000		

WORK SHEET FOR CALCULATION OF WELL HEAD PRESSURES (P_c or P_w)

Form C-122F
Adopted 9-1-65

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_b)

COMPANY Newbourne Oil LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91

LOCATION: Unit _____ Section 1 Township 18S Range 27E

9949 H 9949 L/H. 1.000 G .660 % CO₂ .43 % N₂ .42 % H₂S _____

GH 6566 P_{cr} 673 T_{cr} 374
TABLE IX & X TABLE IX & X

LINE		1	2	3	4	5	6	7	8
1	T_w (W.H. °R)	532	532						
2	T_s (B.H. °R)	608	608						
3	$T = \frac{T_w + T_s}{2}$	570	570						
4	Z (Est.)	.800	.790						
5	TZ	456.0	450.4						
6	GH/TZ	14.399	14.578						
7	e^S (Table XIV)	1.716	1.727						
8	P_f or P_b	3249	3249						
9	P_f^2 or P_b^2	10556	10556						
10	$P_c^2 = P_f^2 / e^S$ or P_b^2 / e^S	6151.7	6110.6						
11	P_c or P_b	2480.3	2472.0 = P_c						
12	$P_w = \frac{P_w + P_s}{2}$ or $\frac{P_c + P_f}{2}$	2864.6	2860.5						
13	$P_f = (P/P_{cr})$	4.26	4.25						
14	$T_r = (T/T_{cr})$	1.52	1.52						
15	Z (Table XI)	.790	.790						

One copy to be filed in District Office (Work copy acceptable)

WORK SHEET FOR CALCULATION OF W. HEAD PRESSURES (P_w or P_w)

Form C-122
Adopted 9-1-85

FROM KNOWN BOTTOM HOLE PRESSURE (P_b or P_b)

COMPANY Newbourne LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91
 LOCATION: Unit _____ Section 1 Township 185 Range 27E
 L 9949 H 9949 L/H 1.00 G .660 % CO₂ .43 % N₂ .42 % H₂S —
 GH 6566 P_{cr} 673 T_{cr} 374
TABLE IX & X TABLE IX & X

LINE		1	2	3	4	5	6	7	8
1	T _w (W.H. °R)	532	532	532	532	532	532	532	532
2	T _s (B.H. °R)	608	608	608	608	608	608	608	608
3	T = $(\frac{T_w + T_s}{2})$	570	570	570	570	570	570	570	570
4	Z (Est.)	.835	.783	.783	.781	.781	.780	.780	.792
5	TZ	476.0	446.5	446.5	445.1	445.2	444.8	444.6	451.7
6	GH/TZ	13.796	14.704	14.712	14.753	14.749	14.761	14.768	14.537
7	e ^s (Table XIV)	1.678	1.736	1.736	1.739	1.739	1.739	1.740	1.725
8	P_b or P _s	2983	2983	2831	2831	2593	2593	2152	2152
9	P_b or P _s ²	8898.3	8898.3	8014.6	8014.6	6723.6	6723.6	4631.1	4631.1
10	$P_b = P_b^2/e^s$ or $P_w^2 = P_s^2/e^s$	5304.3	5126.6	4616.2	4609.0	3867.2	3865.5	2661.7	2684.9
11	P_w or P _w	2303.1	2264.2	2148.5	2146.9	1966.5	1966.1	1631.5	1638.6
12	$P_r = (\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_f}{2})$	2643.1	2623.6	2489.8	2488.9	2279.8	2279.5	1891.7	1895.3
13	P _r = (P/P _{cr})	3.93	3.90	3.70	3.70	3.39	3.39	2.81	2.82
14	T _r = (T/T _{cr})	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
15	Z (Table XI)	.783	.783	.781	.781	.780	.780	.792	.792

One copy to be filed in District Office (Work copy acceptable)

COMPANY: PRO WIRELINE
CLIENT: MEWBOURNE OIL
GAUGE NUMBER: 12235
WELL NAME: CHALK BLUFF
WELL NUMBER: 1
TEST NUMBER: 1
LOCATION:
TEST OPERATOR: BURRELL
COMMENTS: 4 POINT FLOW TEST RAN
AFTER 72 HOUR BUILD-UP

POSITION	GAUGE SERIAL NUMBER
1	
2	
3	
4	

AGE START DATE: 3/15/91

GAUGE S/N: 12235

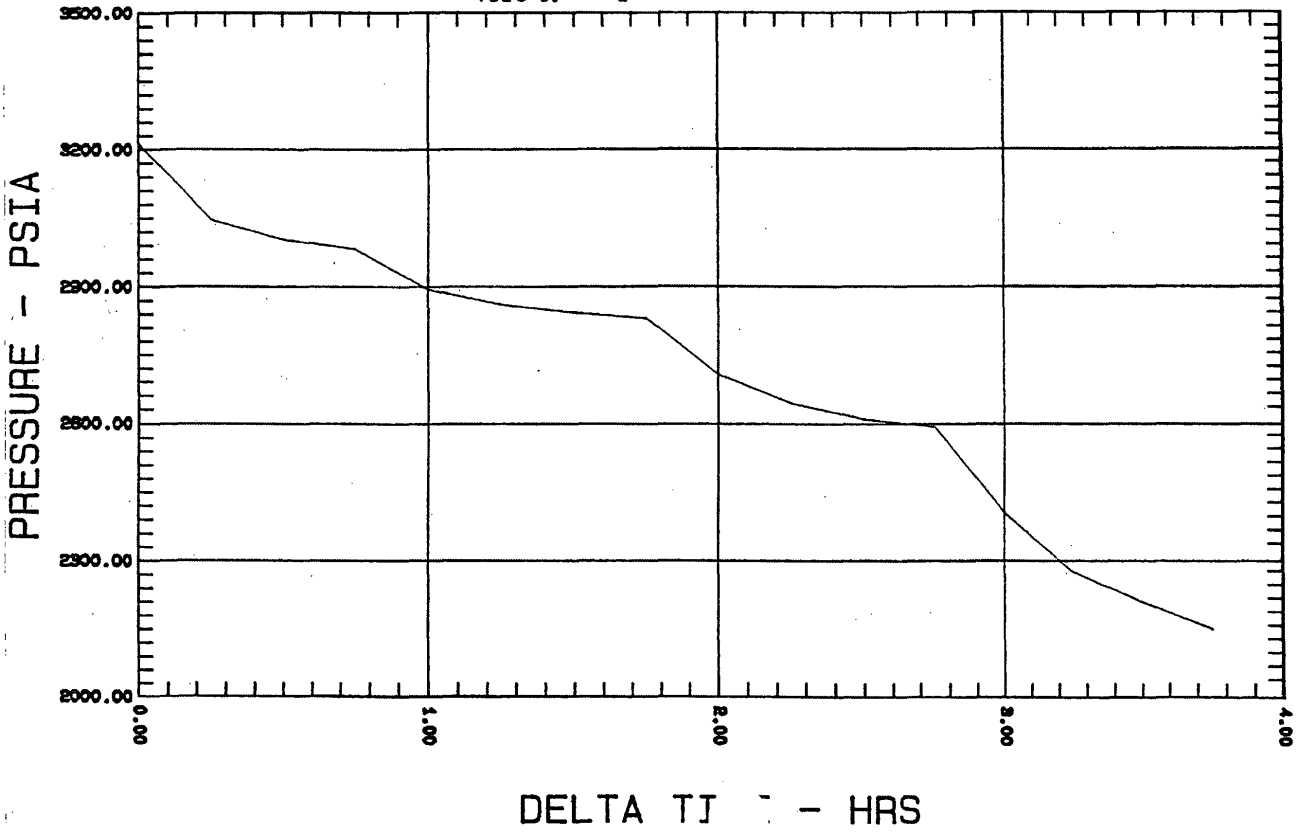
DATA FILE: 3

REAL TIME	DELTA TIME HRS	PRESSURE PSIA	TEMPERATURE 'F	COMMENTS
9:45: 0	0.0000	3213.00		START RATE 1
10: 0: 0	0.2500	3046.00		
10:15: 0	0.5000	3003.00		
10:30: 0	0.7500	2983.00		START RATE 2
10:45: 0	1.0000	2894.00		
11: 0: 0	1.2500	2861.00		
11:15: 0	1.5000	2843.00		
11:30: 0	1.7500	2831.00		START RATE 3
11:45: 0	2.0000	2707.00		
12: 0: 0	2.2500	2643.00		
12:15: 0	2.5000	2610.00		
12:30: 0	2.7500	2593.00		START RATE 4
12:45: 0	3.0000	2405.00		
13: 0: 0	3.2500	2276.00		
13:15: 0	3.5000	2210.00		
13:30: 0	3.7500	2152.00		END OF TEST

Plot starting date: 3/15/91
time: 9:45:0
Gauge S/N

Company: PRO WIRELINE
Client: MEMBOURNE OIL
Well name: CHALK BLUFF
Well #: 1
Test #: 1

Location:
Operator: BURRELL
Comments: 4 POINT FLOW TEST RAN
AFTER 72 HOUR BUILD UP



Form 3160-5
10-1990

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

SEP 28 1992

O. C. D.
OFFICE

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Chalk Bluff Fed.Com.#1

9. API Well No.
30-015-26575

10. Field and Pool, or Exploratory Area
N.Illinois Camp-Mor.-Gas

11. County or Parish, State
Eddy

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P. O. Box 7698, Tyler, Texas 75711 (903) 561-2900

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

2250' FWL & 790' FSL Sec. 1, T18S-R27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Additional perms, acidize & frac</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

8/13/92 - Perf Middle Morrow 9861-9882', 2 SPF, 10' Net, 22 holes.

8/14/92 - Acidized w/3500 gals 7 1/2% HCL + additives + 1000 SCF/bbl nitrogen carrying 80 ball sealers. Flushed w/2% KCL wtr + 1000 SCF/bbl nitrogen. ISDP 4300#, 5 mins 3800#, 10 mins 3400#, 15 mins 2800#. Avg rate 3.7 BPM, AP 5000#, MP 5600#. Blew well down to pit 8/15 - 8/18/92.

8/19/92 - MI swab unit. Pressure tested tbg to 2000#.Held OK. Removed tree. RU BOP. RU swab. Swabbed well down to 5300'.

8/20/92 - Swabbed down to 6500'. POOH w/tbg & pkr. TIH w/new pkr assembly & 200 jts tbg. Tested tbg to 8000#. 8/21/92 - Continued testing tbg. Set pkr @ 9740.68' w/15 pts compression. Press annulus to 2000#. Held OK. Started swabbing. Had light blow of gas.

8/22/92 - RU Western Co. Acidized perms w/1500 gals 7 1/2% HCL acid + additives + 1000 scf/bbl nitrogen + 35 ball sealers. Flushed w/2% KCL wtr. ISDP 400#. 5 min 3700#, 10 min 3700#, 15 min 3600#. ATP 5100#, MTP 5400#. RD Western. Opened well to pit on 12/64" choke. No show of gas or oil. Recovering load.

8/23/92 - RU swab. FL @ 7000'. Swabbed dry in 3 runs. Continued swabbing. Recovering load.

14. I hereby certify that the foregoing is true and correct

Signature [Signature] Title Engr. Oprns. Secretary

Date 9/11/92

(This space for Federal or State office use)

Approved by _____
Conditions of approval, if any:

Title [Signature]

Date _____

6 222

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

UNITED STATES COMMISSION
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

IN DUPLICATE
(See other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other _____

b. TYPE OF COMPLETION: NEW WELL WORK OVER DEEP-EN PLUG BACK DIFF. RENVR. Other _____

2. NAME OF OPERATOR
Mewbourne Oil Company ✓

3. ADDRESS OF OPERATOR
P. O. Box 7698, Tyler, Texas 75711 O. C. D.

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
At surface 2250' FWL & 790' FSL
At top prod. interval reported below
At total depth Same

CONFIDENTIAL
RECEIVED
JUL 23 1992

5. LEASE DESIGNATION AND SERIAL NO.
NM-0557371

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Chalk Bluff Federal Com

9. WELL NO.
1

10. FIELD AND POOL, OR WILDCAT
N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
Sec. 1-T18S-R27

14. PERMIT NO. DATE ISSUED
API #30-015-26575

15. DATE SPUDDED 12/22/90 16. DATE T.D. REACHED 1/29/91 17. DATE COMPL. (Ready to prod.) 3/07/91

18. ELEVATIONS (DV, RKB, RT, OR, ETC.)* KB 3625', CM 3609'

19. ELEV. CASINO HEAD

20. TOTAL DEPTH, MD & TVD 10,120' 21. PLUG BACK T.D., MD & TVD 10,079'

22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY →

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
9936-46', 9964-67' - Morrow

25. WAS DIRECTIONAL SURVEY MADE Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN
SDL-DSN, DLL-MSFL, DILL

27. WAS WELL CORRED No

CASING RECORD (Report all strings set in well)

CASINO SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.50#	400'	17-1/2"	425 - Circ	None
9-5/8"	36#	2604'	12-1/4"	1025 - Circ	None
7"	26# & 29#	9450'	8-3/4"	1350 - Circ	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
4-1/2"	9051'	10119'	175	

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	9805'	9805'

31. PERFORATION RECORD (Interval, size and number)
9936-46', 9964-67'
13', 2 SPF, Total 28

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
9936-67'	3000 gals Mod-101 acid + 1000 SCF, bbl N2 + 50 ball sealers. Flushed w/35 bbls 2% KCl water + 1000 SCF/bbl N2.

33. PRODUCTION

DATE FIRST PRODUCTION _____ PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) Flowing

WELL STATUS (Producing or shut-in) Producing

DATE OF TEST	HOURS TESTED	CHOKER SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	API GRAVITY
3/11/91	24 hrs	8/64"	→	1	886	0	886:1

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
1600#		→	1	886	0	58.6

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)
Sold

TEST WITNESSED BY _____

35. LIST OF ATTACHMENTS
Logs

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Raymond Thompson TITLE Engr. Opns. Secretary

ACCEPTED FOR RECORD
APR 1 1991
DATE 3/18/91
CARLSBAD, NEW MEXICO

*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY
 (drill-stem, recoveries)

PROS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and

38.

GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
Lower Morrow	9936'	9967'	Sandstone	Yates	424'	
Middle Morrow	9861'	9881'	Sandstone	Queen	1138'	
				Grayburg	1484'	
				San Andres	1976'	
				Glorietta	3458'	
				Tubb	4451'	
				Drinkard	5376'	
				Abo	5794'	
				Wolfcamp	6420'	
				Cisco	7666'	
				Canyon	8368'	
				Strawn	8844'	
				Morrow	9454'	
				Morrow Clastics	9770'	
				Barnett	10016'	

Submit 5 Copies
 Appropriate District Office
DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
 Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

Form C-104
 Revised 1-1-89
 See Instructions
 at Bottom of Page

CLSF
 6/1
 6/1
 DP

**REQUEST FOR ALLOWABLE AND AUTHORIZATION
 TO TRANSPORT OIL AND NATURAL GAS**

I.

Operator MEWBOURNE OIL COMPANY ✓	Well API No. 30-015-26575
Address P. O. Box 7698, Tyler, Texas 75711	
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)	
New Well <input checked="" type="checkbox"/>	Change in Transporter of: <input type="checkbox"/> Oil <input type="checkbox"/> Dry Gas <input type="checkbox"/>
Recompletion <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/> Condensate <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name CHALK BLUFF FEDERAL	Well No. 1	Pool Name, including Formation North Illinois Camp Morrow	Kind of Lease Federal Other	Lease No. NM-0557371
Location Unit Letter <u>N</u> : <u>2250</u> Feet From The <u>West</u> Line and <u>790</u> Feet From The <u>South</u> Line Section <u>1</u> Township <u>18 South</u> Range <u>27 East</u> , <u>NMPM</u> , <u>Eddy</u> County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil or Condensate <input type="checkbox"/> or <input checked="" type="checkbox"/> Amoco Pipeline Inter-corporate Trucking	Address (Give address to which approved copy of this form is to be sent) Oil Tender Dept. Box 702068, Tulsa, OK 74170-2068
Name of Authorized Transporter of Casinghead Gas <input type="checkbox"/> or <input checked="" type="checkbox"/> Dry Gas <input checked="" type="checkbox"/> Transwestern Pipeline Company	Address (Give address to which approved copy of this form is to be sent) P.O. Box 1188, Houston, Texas 77251-1188
If well produces oil or liquids, give location of tanks.	Unit <u>N</u> Soc. <u>1</u> Twp. <u>18S</u> Rge. <u>27E</u> Is gas actually connected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No When? <u>March, 1991</u>

If this production is commingled with that from any other lease or pool, give commingling order number: No

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well <input type="checkbox"/>	Gas Well <input checked="" type="checkbox"/>	New Well <input checked="" type="checkbox"/>	Workover <input type="checkbox"/>	Deepen <input type="checkbox"/>	Plug Back <input type="checkbox"/>	Same Res'v <input type="checkbox"/>	Diff Res'v <input type="checkbox"/>
Date Spudded 12/22/90	Date Compl. Ready to Prod. 3/07/91	Total Depth 10,120'	F.B.T.D. 10,079'					
Elevations (DF, RKB, RT, GR, etc.) KB 3625', GR 3609'	Name of Producing Formation Morrow	Top Oil/Gas Pay 9936'	Tubing Depth 9,805'					
Performances 9936-46', 9964-67', 13', 2 SPF, Total 28							Depth Casing Shoe ---	
TUBING, CASING AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT					
17-1/2"	13-3/8"	400'	425 <u>bat 10-2</u>					
12-1/4"	9-5/8"	2604'	1025 <u>5-12-91</u>					
8-3/3"	7"	9450'	1350 <u>comp. F.A.R.</u>					
7"	4-1/2" Liner	10119'	175					

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas - MCF

GAS WELL

Actual Prod. Test - MCF/D 886	Length of Test .24 hours	Bbls. Condensate/MMCF 1	Gravity of Condensate 58°
Testing Method (pilot, back pr.) Back Pressure	Tubing Pressure (Shut-in) 1600#	Casing Pressure (Shut-in) ---	Choke Size 8/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gavlon Thompson
 Signature
 Gavlon Thompson, Engineering Operations
 Print Name Title
 March 11, 1991 (903) 561-2900
 Date Telephone No.

OIL CONSERVATION DIVISION

Date Approved MAY 16 1991

By ORIGINAL SIGNED BY
MIKE WILLIAMS
 Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabular data with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or location.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL CONS COMMISSION
DRAWER DD
ARTERIA, NM

FORM APPROVED
BUREAU OF LAND MANAGEMENT No. 1004-0133
Expires: March 31, 1993

C/SF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
 Mewbourne Oil Company

3. Address and Telephone No.
 P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
 2250' FWL & 790' FSL
 Sec. 1-T18S-R27E

5. Lease Designation and Serial No.
 NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
 Chalk Bluff Fed. Comm. #1

9. API Well No.
 30-015-26575

10. Field and Pool, or Exploratory Area
 N. Illinois Camp Morrow

11. County or Parish, State
 Eddy Co., N.M.

UNIT N

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Interm <input type="checkbox"/> Subsequent Report <input type="checkbox"/> Final Abandonment Notice	<input checked="" type="checkbox"/> Abandonment <input type="checkbox"/> Recompletion <input type="checkbox"/> Plugging Back <input type="checkbox"/> Casing Repair <input type="checkbox"/> Altering Casing <input type="checkbox"/> Other
	<input type="checkbox"/> Change of Plans <input type="checkbox"/> New Construction <input type="checkbox"/> Non-Routine Fracturing <input type="checkbox"/> Water Shut-Off <input type="checkbox"/> Conversion to Injection <input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

- Spot 8 sx. (50') cement plug on top of existing CIBP @ 7010'. Circulate hole with plug mud.
- Spot 17 sx. (100') cement plug @ 2650'.
- Spot 17 sx. (100') cement plug @ 450'.
- Cut off and remove wellhead.
- Spot 8 sx. (50') surface plug.
- Install cup and dry hole marker.
- Clean location.

RECEIVED
 AUG 18 1995
 OIL CON. DIV.
 DIST. 2

RECEIVED
 JUN 2 10 05 AM '95

14. I hereby certify that the foregoing is true and correct

Signed [Signature] Title Engineer Date 5/25/95

(This space for Federal or State office use)

Approved by Orig. Signed by Shannon J. Shaw Title PETROLEUM ENGINEER Date 8/14/95

Conditions of approval, if any:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD - Artesia

CISI

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Federal Comm #1

9. API Well No.

30-015-26575

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy, NM

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

PO Box 5270, Hobbs, NM 505-393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

790' FSL & 2250' FWL, Sec.1 T-18S R-27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion	<input type="checkbox"/> New Construction
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Altering Casing	<input type="checkbox"/> Conversion to Injection
	<input checked="" type="checkbox"/> Other <u>Extend T/A & CIT.</u>	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The above caption well is currently under T/A status. Mewbourne Oil Company would like to extend this status. The well has a 7" CIBP above all perfs @ 7010'. We are considering converting this well into a SWD. At this time, Mewbourne would like to schedule a CIT (500 psi) & after passing, extend T/A status for an additional time.

If any question, please call.



TA Approved for 12 Month Period
Ending 10/25/2001

BUREAU OF LAND MGMT
CARLSBAD RESOURCE AREA
RECEIVED
2000 OCT 10 1 P 2:34

14. I hereby certify that the foregoing is true and correct

Signed [Signature]

Title N.M. Young District Manager

Date 10/06/00

(This space for Federal or State office use)

Approved by (ORIG. SDD.) JES. LARA
Conditions of approval, if any:

Title Administrative Engineer

Date 11/6/2000

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993
Classification and Serial No.
NM-0557371

C/SF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

PO Box 5270, Hobbs, NM 505-393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

790' FSL & 2250' FWL, Sec. 1 T-18S R-27E

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Federal Comm #1

9. API Well No.

30-015-26575

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy, NM

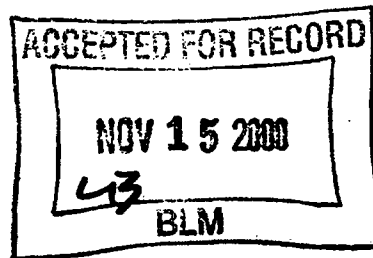
12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other MIT
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

3. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The above caption well was successfully MIT'ed on 10/25/2000. (500 psi for 30 min.)
The pressure chart is enclosed.
If any question, please call.



14. I hereby certify that the foregoing is true and correct

Signed

[Signature]

Title N.M. Young District Manager

Date 11/01/00

(This space for Federal or State office use)

Approved by

Record Only

Title

Date

Conditions of approval, if any:

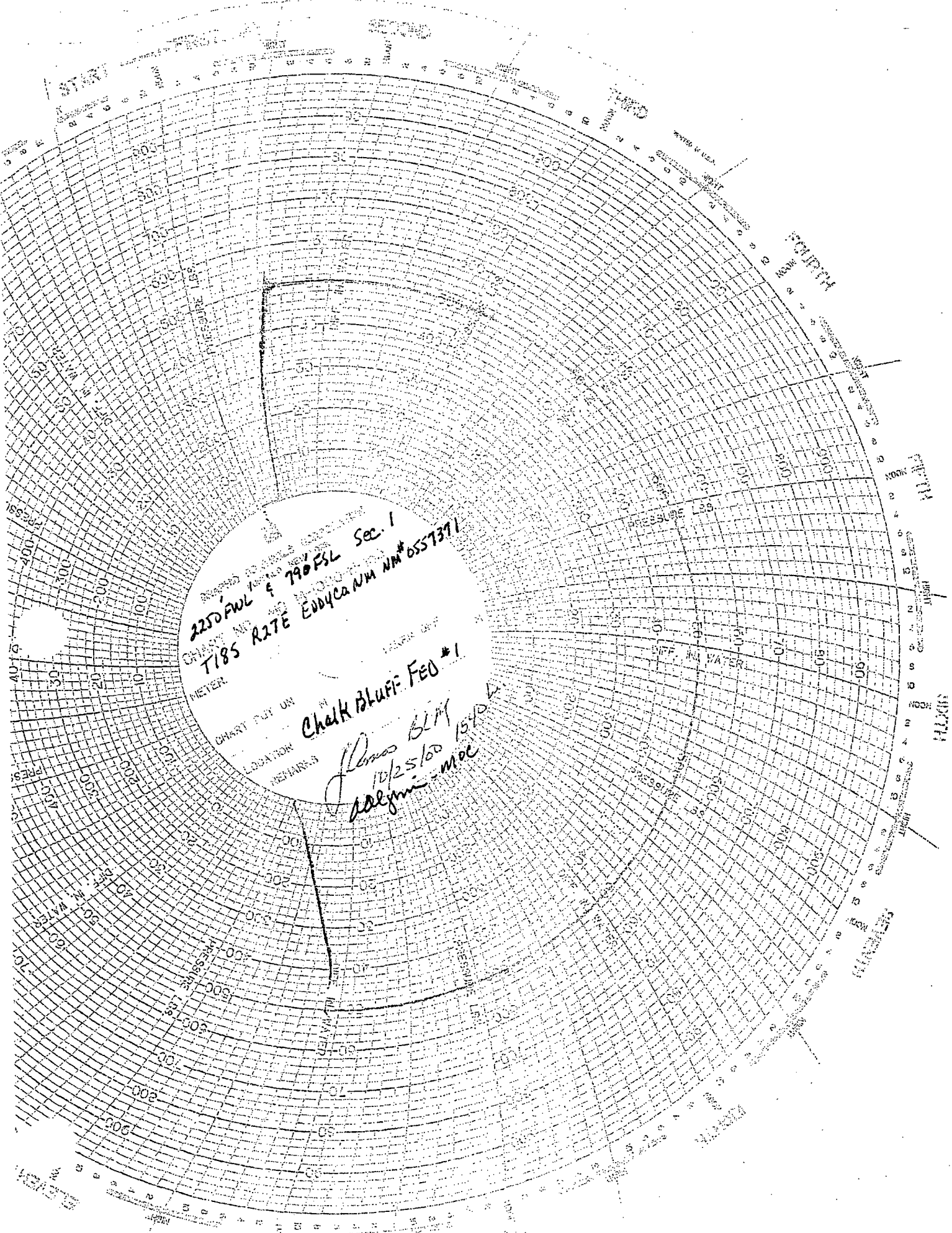
18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

2250 FWL
T185 R2TE EDDYCA NM NM# 6557371

CHALK BLUFF: FE0 #1

James BLM
10/25/00
adgini-moc



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS COMMISSION
Drawer DD

Artesia, NM 88210
FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

C/SF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

FEB 21 1994

1. Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other	5. Lease Designation and Serial No. NM-0557371
2. Name of Operator Mewbourne Oil Company	6. If Indian, Allottee or Tribe Name
3. Address and Telephone No. P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905	7. If Unit or CA, Agreement Designation
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 2250' FWL & 790' FSL Sec. 1-T18S-R27E	8. Well Name and No. Chalk Bluff Fed. Com. #1
	9. API Well No. 30-015-26575
	10. Field and Pool, or Exploratory Area N. Illinois Camp
	11. County or Parish, State Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion	<input type="checkbox"/> New Construction
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Altering Casing	<input type="checkbox"/> Conversion to Injection
	<input checked="" type="checkbox"/> Other <u>Shut-In-Status</u>	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil Company here by requests temporarily abandon status pending further evaluation of the lease for the above well. The well was spudded 12/22/90.

APPROVED FOR 12 MONTH PERIOD
ENDING 1/25/95

RECEIVED
 JAN 27 10 50 AM '94

14. I hereby certify that the foregoing is true and correct

Signed Robert C. Jones Title Petroleum Engineer Date 01/25/94

(This space for Federal or State office use)

Approved by (ORIG. SCD.) JOE G. LARA Title PETROLEUM ENGINEER Date 2/16/94

Conditions of approval, if any:

Article 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Form 3160-3
(June 1990)

RECEIVED
OCT 15 11 22 AM '93

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS. COMMISSION
Drawer 55
Artosia, NM

DSF

PERMITS APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

NOV 17 1993

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2250' FWL & 790' FSL of Sec. 1-T18S-R27E

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Chalk Bluff Fed. Comm. #1

9. API Well No.
30-015-26575

10. Field and Pool, or Exploratory Area
N. Illinois Camp

11. County or Parish, State

Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment	<input type="checkbox"/> Change of Plans
<input checked="" type="checkbox"/> Subsequent Report	<input checked="" type="checkbox"/> Recompletion	<input type="checkbox"/> New Construction
<input type="checkbox"/> Final Abandonment Notice	<input checked="" type="checkbox"/> Plugging Back	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Altering Casing	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Other	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

* Verbal from Adam Salameh

- 9/10/93 Abandon Morrow formation. Set CIBP @ 9800' & cover w/35' cement.
- 9/11/93 Perforate Cisco from 7826'-7830'. Test & evaluate.
- 9/12/93 Squeeze Cisco from 7826'-7830' w/600 sx. Class "C".
- 9/15/93 Drill out squeeze perms. to 7792'. Squeeze held 2,000#.
- 9/16/93 Perforate Cisco from 7676'-7678'. Test and evaluate.
- 9/17/93 Abandon Cisco formation, set CIBP @ 7600' & cover w/35' cement.
- 9/18/93 Perforate Wolfcamp 7304'-7314'. Test & evaluate.
- 9/19/93 Acidize Wolfcamp w/1500 gal. 15% NE-FE from 7304'-7314'.
- 9/21/93 Set CIBP @ 7294' & perforate Wolfcamp from 7262'-7278'. Test & evaluate.
- 9/22/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7262'-7278'.
- 9/23/93 Set CIBP @ 7208' & perforate Wolfcamp from 7050'-7102'. Test & evaluate.
- 9/24/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7050'-7102'.
- 9/25/93 Set CIBP @ 7010'.

14. I hereby certify that the foregoing is true and correct

Signed Robert C. Jones Title Petroleum Engineer Date 10/05/93

(This space for Federal or State office use)

Approved by _____
Conditions of approval, if any:

Title

ACCEPTED FOR RECORD
NOV 15 1993

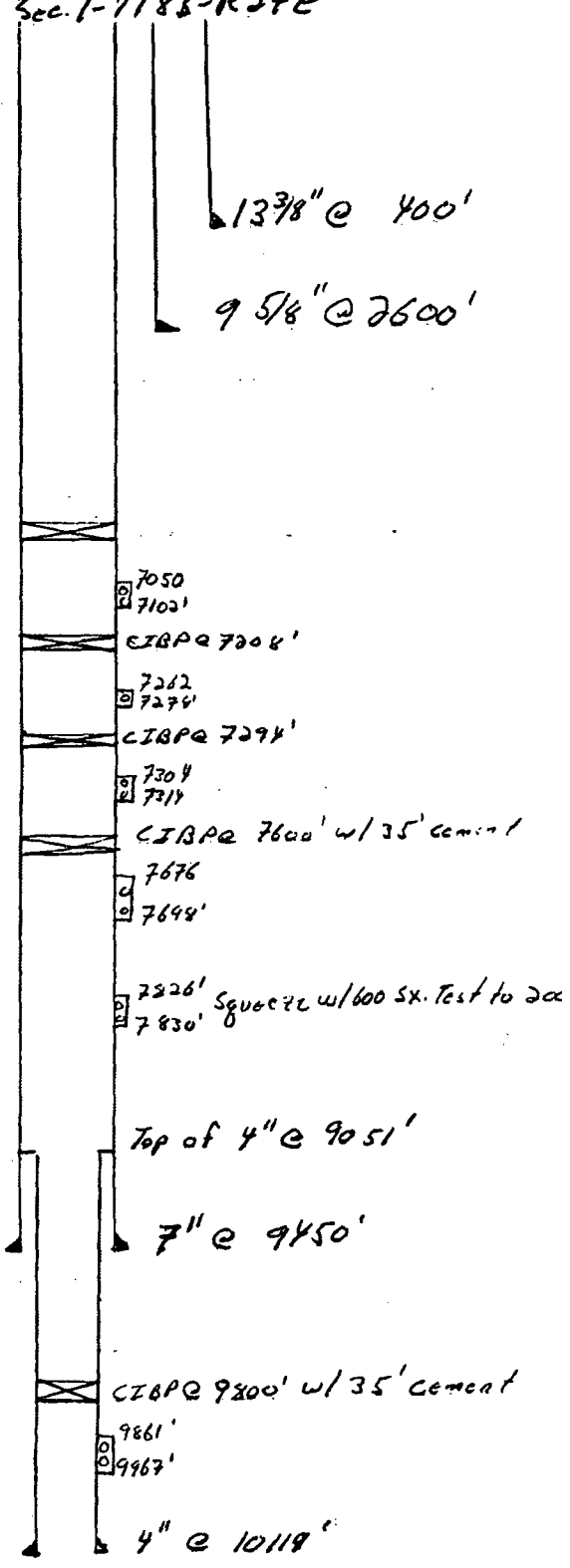
Date

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instructions on REVERSE SIDE NEW MEXICO

Mewbourne Oil Company
Chuck Bluff Federal #1

2250' FULT 790' FSL Sec. 1-T186-R27E



RECEIVED
JUN 2 10 47 AM '03

CISF

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.

NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed. Com. #1

9. API Well No.

30-015-26575

10. Field and Pool, or Exploratory Area

N. Illinois Camp

11. County or Parish, State

Eddy Co., N.M.

SUBMIT IN TRIPLICATE

OCT 19 1993

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

2250' FWL & 790' FSL of Sec. 1-T18S-R27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

TYPE OF ACTION

Notice of Intent
 Subsequent Report
 Final Abandonment Notice

Abandonment
 Recompletion
 Plugging Back
 Casing Repair
 Altering Casing
 Other

Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

09/08/93 Abandon Morrow Perfs 9861' - 9967'

- Set CIBP @ 9800' - cover w/35' cement.

- Recomplete in Cisco Formation - Test & evaluate.

- If unecomomical recomplete in Wolfcamp - Test & evaluate.

RECEIVED
SEP 22 10 48 AM '93
CARL ARELLA

14. I hereby certify that the foregoing is true and correct.

Signed

[Signature]

Title

Petroleum Engineer

Date

09/07/93

(This space for Federal or State office use)

approved by
conditions of approval, if any:

(ORIG. SGD.) JOE G. LARA

Title

PETROLEUM ENGINEER

Date

10/15/93

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any Department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

30-015-810575

Orgid- 14744

Property- 7876

Pool- 78890



3-19-91

DUAL LAT.

2595-9444

9330-1012

DUAL SPACED

NEUTRON

Leaf- 9417

8500-10121



3-19-91

DUAL LAT.

2595-9444

9330-1012

DUAL SPACED

NEUTRON

Leaf- 9417

8500-10121

NC Tops DGM 5/14/91

Queen	1140
Grayburg	1630
San Andves	1975
Glorieta	3598
Abo	>
Wolfcamp	6860
Penn	
Strawn	
Atoka	9135
Morrow	9703



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Betty Rivera
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

31 January 2003

Navajo Refining Co.
P. O. Box 159
Artesia, New Mexico 88211

File
Copy

RE: Chalk Bluff Federal Com # 1 N-1-18-27 API 30-015-26575 Violation of Rule 201:
Idle Well

Dear Sirs:

This second directive is to notify you that this well is still in violation of Rule 201.

On 12 December, 2002 a letter was sent notifying you on the violation of Rule 201. On 3 January, 2003 the form C-104 was faxed to you indicating Navajo Refining was the operator of this well. To date no action has been taken.

Rule 201 of the New Mexico Oil Conservation Division provides as follows:

201 WELLS TO BE PROPERLY ABANDONED

201.A. The operator of any well drilled for oil, gas or injection; for seismic, core or other exploration, or for a service well, whether cased or uncased, shall be responsible for the plugging thereof. [7-12-90...2-1-96]

201.B. A well shall be either properly plugged and abandoned or temporarily abandoned in accordance with these rules within ninety (90) days after:

- (1) A sixty (60) day period following suspension of drilling operations, or
- (2) A determination that a well is no longer usable for beneficial purposes, or
- (3) A period of one (1) year in which a well has been continuously inactive.

[7-12-90...2-1-96]

In the event that a satisfactory response is not received to this letter of direction by 15 March, 2003, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

Sincerely,

Van Barton
Field Rep. II

To: 

Shirley Jones - CRUDE OIL SUPPLY CLERK

LEASE RECORDS

Navajo Refining Company

P.O. Box 159

Artesia, NM 88211-0159

phone (505) 746-5325

fax (505) 746-5283

shirleyj@navajo-refining.com (please note the "j" after shirley)

TO: District II
FAX: 505-748-9720
RE: Chalk Bluff Federal Com #1
API No. 30-015-26575

COMPANY: Oil Conservation Division
PHONE: 505-748-1283

MESSAGE:

We have received the enclosed letter from you showing that Navajo Refining Company is the operator for the above referenced lease.

Navajo Refining Company is neither the operator, transporter or purchaser on this lease. Your Internet site shows Mewbourne Oil Company to be the operator.

We do have them as an operator on some of the leases that we transport. But this lease is not one of them.

We have contact information for them of: PO Box 7698, Tyler, TX 75711, with a New Mexico phone for Jerry Elgin of 505-393-5905.

If you have other information that shows Navajo Refining Company as the operator, would you please forward a copy to me so that I may research it further.

Thank you.


-Shirley Jones

Shirley - Please note the attached document signed by Darrell Moore.



District I
1625 N. French Dr., Hobbs, NM 88240
District II
South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-104A
August 11, 2000

dh
op

Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

Submit a copy of the final affected wells
listing with 2 copies of this form per
number of wells on that list to
appropriate District Office

Change of Operator

Previous Operator Information:

New Operator Information:

OGRID: 14744
Name: Mewbourne Oil Company
Address: P. O. Box 7698
Address: _____
City, State, Zip: Tyler, TX 75711

Effective Date: 5 October, 2000
New Ogrid: 15684
New Name: Navajo Refining Company
Address: ~~100 Crescent Court, Ste 1600~~
Address: P.O. Box 159
City, State, Zip: ~~Dallas, TX 75201~~
Artesia, NM 88211

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information on this form and the attached list of wells is true and complete to the best of my knowledge and belief.

New Operator
Signature: Darrell Moore
Printed name: Darrell Moore
Title: Env. Mgr. for Water and Waste
Date: 12/5/00 Phone: 505-748-3311

Previous operator complete below:

Previous
Operator: Mewbourne Oil Company
Previous
OGRID: 14744
Signature: Monty Whetstone
Printed Name: Monty Whetstone

NMOCD Approval	
Signature:	<u>Jim W. Green</u>
Printed	
Name:	<u>District Supervisor</u>
District:	
Date:	<u>NOV 27 2000</u>

27021 - property code - Chalk Bluff Federal Com #1
30-015-26575 - API Number 1-185-27E

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Oil Cons.
N.M. DIV-Dist. 2
1301 W. Grand Avenue
Artesia, NM 88210

FORM APPROVED
OMB No. 1004-0135
Expires: January 31, 2004

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5. Lease Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
WDW-3 #3 23592

9. API Well No.
30-015-26575

10. Field and Pool, or Exploratory Area
NAVAJO INJECTION, PERMO-PENN.

11. County or Parish, State
EDDY

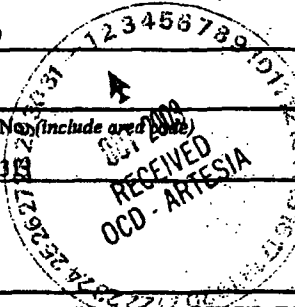
1. Type of Well
 Oil Well Gas Well Other TEMPORARILY ABANDONED

2. Name of Operator
NAVAJO REFINING COMPANY 15694

3a. Address
PO BOX 159, ARTESIA, NM 88211

3b. Phone No. (include area code)
505-748-3113

4. Location of Well (Footage, Sec., T. R., M., or Survey Description)
790' FSL, 2250' FWL, 1-18S-27E



12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input checked="" type="checkbox"/> Water Disposal
			<input type="checkbox"/> Water Shut-Off
			<input type="checkbox"/> Well Integrity
			<input type="checkbox"/> Other RECOMPLETE AS CLASS I INJECTION WELL

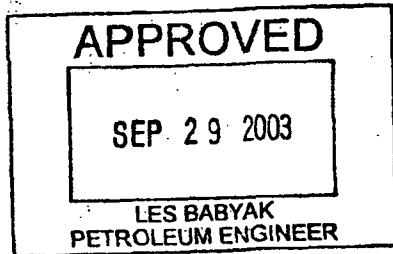
3. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompletes horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once drilling has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

change well name per Darrell Moore

Original well name was CHALK BLUFF FEDERAL COM. NO. 1

DRILL OUT BRIDGE PLUG AT 7010' AND CLEAN OUT TO 7208'.
 INJECTION-TEST PERFORATIONS AT 7050' - 7102', 7262' - 7278' TO PLAN SQUEEZE-CEMENT JOB.
 DRILL OUT BRIDGE PLUGS AT 7208' AND 7294'. CLEAN OUT HOLE THROUGH PERFS AT 7304'-7314'.
 SQUEEZE-CEMENT PERFORATIONS AT 7050' - 7102', 7262' - 7278', AND 7304' - 7314'.
 DRILL OUT BRIDGE PLUG AT 7600' AND CLEAN OUT TO TOP OF LINER AT 9051'.
 RUN CBL/VDL AND CALIPER FROM 9051' TO SURFACE.
 PERFORATE 8540' - 8620' AND 7660' - 8450'.
 RUN INJECTIVITY TEST, AND ACIDIZE IF NECESSARY.
 RUN INJECTION/FALLOFF TEST.
 RUN DIFFERENTIAL TEMPERATURE SURVEY.
 RUN RADIOACTIVE TRACER SURVEY.
 INSTALL INJECTION TUBING AND PACKER TO APPROX. 7600'.
 INSTALL WELL ANNULUS MONITORING EQUIPMENT, AND PREPARE WELL FOR INJECTION.

**SUBJECT TO
LIKE APPROVAL
BY NMOCD**



14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Signature *Darrell Moore*

Title *Env. Mgr. for Waters & Waste*
Date *9/17/03*

Approved by (Signature)

Name (Printed/Typed) Title

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Date

18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Accepted for record - NMOCD

District I
1625 N. French Dr., Hobbs, NM 88240
District II
51 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised June 10, 2003
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30 - 015 -26575		² Pool Code	³ Pool Name Navajo Injection; Permo-Penn
⁴ Property Code 23592	⁵ Property Name WDW		⁶ Well Number 3
⁷ OGRID No. 15694	⁸ Operator Name Navajo Refining Company		⁹ Elevation 3609' GL; 3625' KB

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	1	18S	27E		790	South	2250	West	Eddy

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

¹⁶ 	¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. Signature: <i>Darrell Moore</i> Printed Name: Darrell Moore Title and E-mail Address: Env. Mgr. for Water & Waste, darrell@navajo-refining.com Date: 9/17/03		
	¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. Date of Survey: Signature and Seal of Professional Surveyor:		
	Certificate Number		

Accepted for record - NMOCD

REENTRY PROCEDURE

NAVAJO REFINING COMPANY'S WDW-3 (PROPOSED)

790'FSL and 2250' FWL, Section 1, T18S, R27E
Eddy County, New Mexico
Chalk Bluff Federal Com. No. 1, API No. 30-015-26575

All depths are in feet below well's original kelly bushing height (RKB) of 16 feet above ground level. The original KB elevation is 3625 feet above mean sea level. The ground level elevation is 3609 feet above mean sea level.

Tops of Geologic Formations (from RKB)

The base of the lowermost USDW is at 420 feet.

San Andres	1976 feet	Lower Wolfcamp	7303 feet
Yeso	4030 feet	Cisco	7650 feet
Abo	5380 feet	Canyon	8390 feet
Wolfcamp	6745 feet	Strawn	8894 feet

Depth of Plugs

7010 feet in 7-inch casing above perforations 7050 feet to 7102 feet
7208 feet in 7-inch casing above perforations 7262 feet to 7278 feet
7294 feet in 7-inch casing above perforations 7304 feet to 7314 feet
7600 feet in 7-inch casing above perforations 7676 feet to 7678 and
7826 feet to 7830 feet
9800 feet in 4-1/2-inch liner above perforations 9861 feet to 9967 feet

Anticipated Formation Pressure

The expected bottom-hole pressure is 3448 pounds per square inch absolute (psia) at 9000 feet, for a gradient of 0.383 pounds per square inch (psi) per foot, or an equivalent

Accepted for record - NMOCD

mud weight of 7.36 pounds per gallon (ppg). The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-2, or 2813 psia, at 7570 feet. Navajo's WDW-2 is completed in the same interval proposed for WDW-3 and is located in 12-T18S-R27E, 3200 feet southwest of proposed WDW-3. The average specific gravity of the fluid in the Cisco and Canyon Formations is expected to be 1.025, which is the specific gravity of the fluid swabbed from WDW-2 in June 1999 from the interval between 7826 feet and 8399 feet. The expected bottom-hole pressure at 9000 feet in proposed WDW-3 is calculated below:

$$\begin{aligned}\text{BHP (9000 feet)} &= 2813 \text{ psia} + (9000 \text{ feet} - 7570 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.025 \\ &= 3448 \text{ psia}\end{aligned}$$

Reentry Procedure

1. Level location to accommodate a workover rig, pump, tanks, and ancillary equipment. Build a small working pit approximately 30 feet square and 3 feet deep with a plastic lining. Move in the rig, tank, shale shaker, and work string.
2. Install a 7-1/16-inch, 3000-psi double hydraulic blowout preventer (BOP) and a 7-1/16-inch, 3000-psi annular BOP (see Exhibit A for schematic). Pressure test the BOP stack and casing to 1500 psi for 30 minutes. Pick up a 6-1/8-inch bit, and sufficient 4-3/4-inch drill collars to drill out the cement plugs, on a 2-7/8-inch work string. Mix a tank of 8.5-ppg sodium chloride brine water for circulating fluid.
3. Run the bit to 7000 feet and circulate the wellbore fluid out of the casing into a frac tank for disposal. Drill out the cast iron bridge plug (CIBP), cement at 7010 feet, and clean out to the CIBP at 7208 feet. Circulate the hole clean and pump into the perforations from 7050 feet to 7102 feet to establish a rate and pressure for a pending squeeze cement job.
4. Drill out the CIBP at 7208 feet and clean out past the perforations from 7262 feet to 7278 feet and drill out the third CIBP at 7294 feet. Clean out below the perforations from 7304 feet to 7314 feet. Run a second injection test for injection rate and pressure comparison.

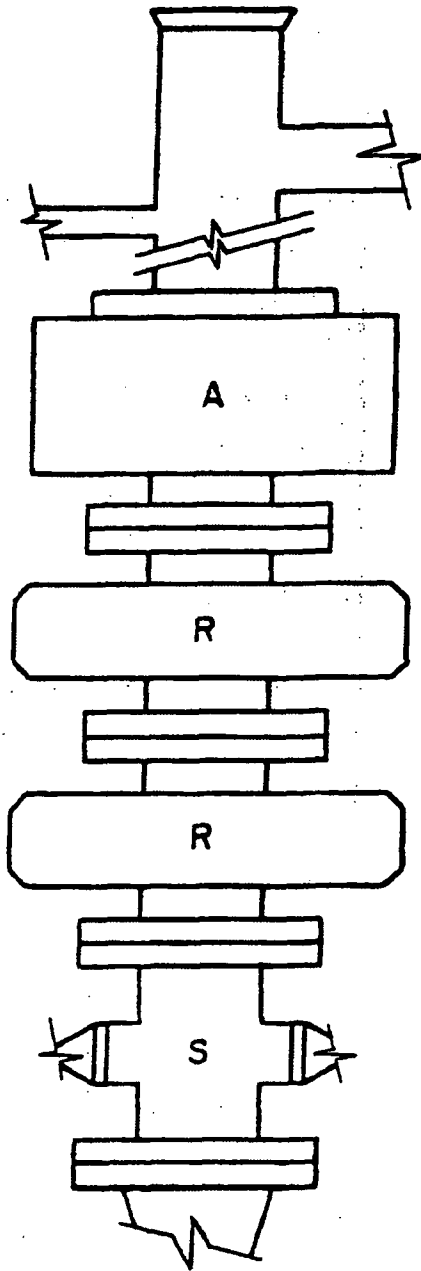
Accepted for record - NMOCD

5. Pull the bit and run a retrievable squeeze packer on the work string. Set the packer at 7150 feet and test for communication between the perforations. Squeeze the perforations from 7262 feet to 7278 feet and 7304 feet to 7314 feet with approximately 100 sacks of neat cement (actual squeeze cement volume to be determined by the injection rate established previously), attempting to reach 1500 psi to 2000 psi squeeze pressure. Release the packer and reverse out any excess cement, then re-test the perforations to the squeeze pressure.
6. Re-set the packer at 6900 feet and squeeze the perforations from 7050 feet to 7102 feet as before.
7. Lay down the squeeze packer and drill out the cement to the CIBP at 7600 feet. Conduct a pressure test to 500 psi for 12 hours to confirm the squeeze cement will contain the annular fluid pressure required during injection operations.
8. Drill out the CIBP at 7600 feet and circulate to the top of the liner at 9051 feet. Circulate the casing clean with 8.5-ppg brine water. Pull the bit and lay down the drill collars.
9. Run a cement bond log with variable density (CBL/VDL) from the liner top to the surface, followed by a baseline multi-finger caliper log from the liner top to the surface.
10. Perforate the intervals 8540 feet to 8620 feet and 7660 feet to 8450 feet with 2 JSPF, using hollow steel carrier perforating guns.
11. Run the work string and retrievable packer to 7600 feet. Swab, or backflow, the perforated interval to recover a representative sample of the formation water for laboratory analysis. Monitor the recovered fluid for hydrogen sulfide.
12. Conduct a short injectivity test with 8.5-ppg brine water to determine the need for stimulation. If required, stimulate the perforations with acid (type and amount to be determined from injectivity results), followed by 500 barrels of 8.5-ppg brine water.

Accepted for record - NMOCD

-
13. Pull the work string and lay it down. Run a surface readout pressure gauge, with memory backup, to 7600 feet. Conduct an injection test down the casing at 420 gallons per minute for 12 hours (7200 barrels). Shut the well in and record the pressure falloff for a minimum of 12 hours.
 14. Pull the gauges and run a differential temperature survey from surface to 9100 feet. Run a radioactive tracer survey to demonstrate mechanical integrity.
 15. Run a tubing conveyed injection packer on 4-1/2-inch, 11.60 lb/ft, K-55, LT&C, 8rd injection tubing. Set the packer at approximately 7600 feet. Fill the annular space with 8.5-ppg brine water containing oxygen scavenger and corrosion inhibitor. Land the injection tubing in the wellhead and install the upper section.
 16. Pressure test the annulus as required by New Mexico regulations.
 17. Install well annulus monitoring equipment and prepare the well for injection.

Accepted for record - NMOCD



A = ANNULAR BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

R = RAM TYPE BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLETS
7-1/16", 3000 psi working pressure

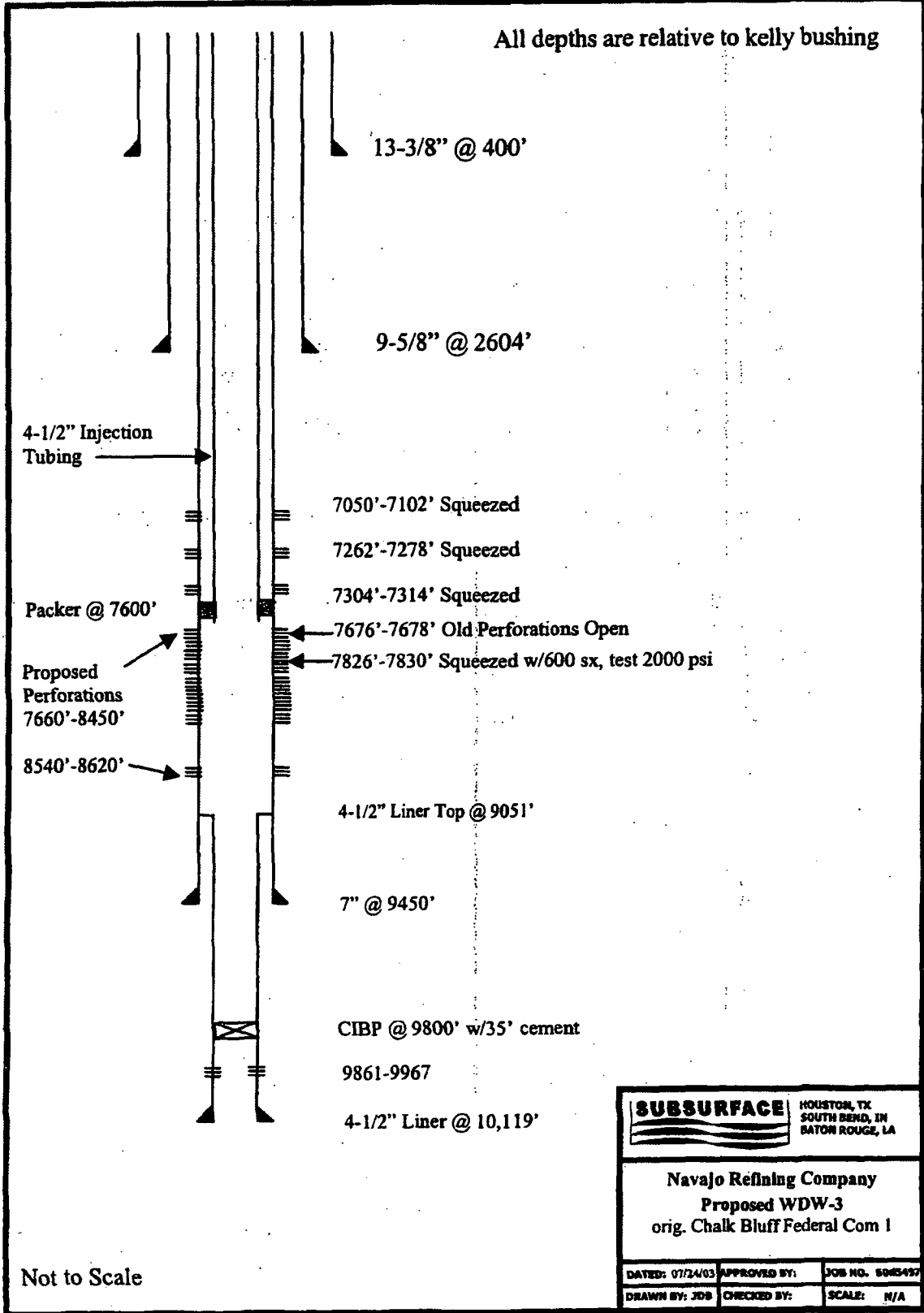
Manual Choke Manifold 2", 3000 psi working pressure

Source: API RP 53, Recommended Practices
for Blowout Prevention Equipment Systems

SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
Exhibit A Blowout Preventer Minimum Requirements		
DATED: 07/24/03	APPROVED BY:	JOB NO. 6025497
DRAWN BY: JDB	CHECKED BY:	SCALE: 1/4" = 1'-0"

Accepted for record - NMOCD

All depths are relative to Kelly Bushing



Not to Scale

SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
Navajo Refining Company Proposed WDW-3 orig. Chalk Bluff Federal Com 1		
DATED: 07/24/03	APPROVED BY:	JOB NO. 5045457
DRAWN BY: JDB	CHECKED BY:	SCALE: N/A

Accepted for record - NMOCD

SURFACE USE PLAN

**NAVAJO REFINING COMPANY
PROPOSED WDW-3
790' FSL, 2250' FWL, 1-T 18S-R27E
EDDY COUNTY, NEW MEXICO**

1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.
2. Access Roads To Be Constructed: No new access road is proposed.
3. Location of Existing Wells: Existing wells within one mile of proposed WDW-3 are shown on Exhibit B.
4. Location of Proposed Facilities If Well Is Completed: The well will be shut in after completion and testing.
5. Location and Type of Water Supply: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.
6. Source of Construction Materials: No construction materials will be required.
7. Methods of Handling Waste Disposal:
 - A. Drill cuttings will be disposed of in the drilling pits.
 - B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.
 - C. Water produced during tests will be disposed of in the drilling pits.
 - D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind.
 - E. All trash and debris will be buried or removed from the wellsite after finishing drilling and/or completion operations.

Accepted for record - NMOCD

8. **Ancillary Facilities:** None anticipated.

9. **Wellsite Layout:**
 - A. The existing well pad will be leveled to accommodate a workover rig, pump, tanks, and ancillary equipment.
 - B. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the uphill end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.
 - C. The well pad will be surfaced with material found in place.
 - D. A small working pit will be constructed to hold drilling fluids and cuttings. The approximate dimensions of the pit will be 30 feet x 30 feet x 3 feet.
 - E. The working pit for drilling fluids and cuttings will be lined with 6-mil plastic.

10. **Plans for Restoration of Surface:**
 - A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.
 - B. Any unguarded pits containing fluids will be fenced until they are filled.
 - C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.
 - D. The stockpiled topsoil will be spread over the surface of the location.

11. **Surface Ownership:** U.S. Department of Interior, Bureau of Land Management.

12. **Archaeological Survey:** Navajo Refining Company is conducting an archeological survey. The report of the survey will be submitted by Navajo under separate cover.

13. **Operator's Representatives:** Representatives responsible for assuring compliance with the approved Surface Use Plan:

Accepted for record - NMOCD

Mr. Darrell Moore
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505/748-3311

Mr. Jim Bundy
Subsurface Technology, Inc.
7020 Portwest Drive, Suite 100
Houston, Texas 77024
713/880-4640

Exhibits

- A. Topographic Map
- B. Oil and Gas Map

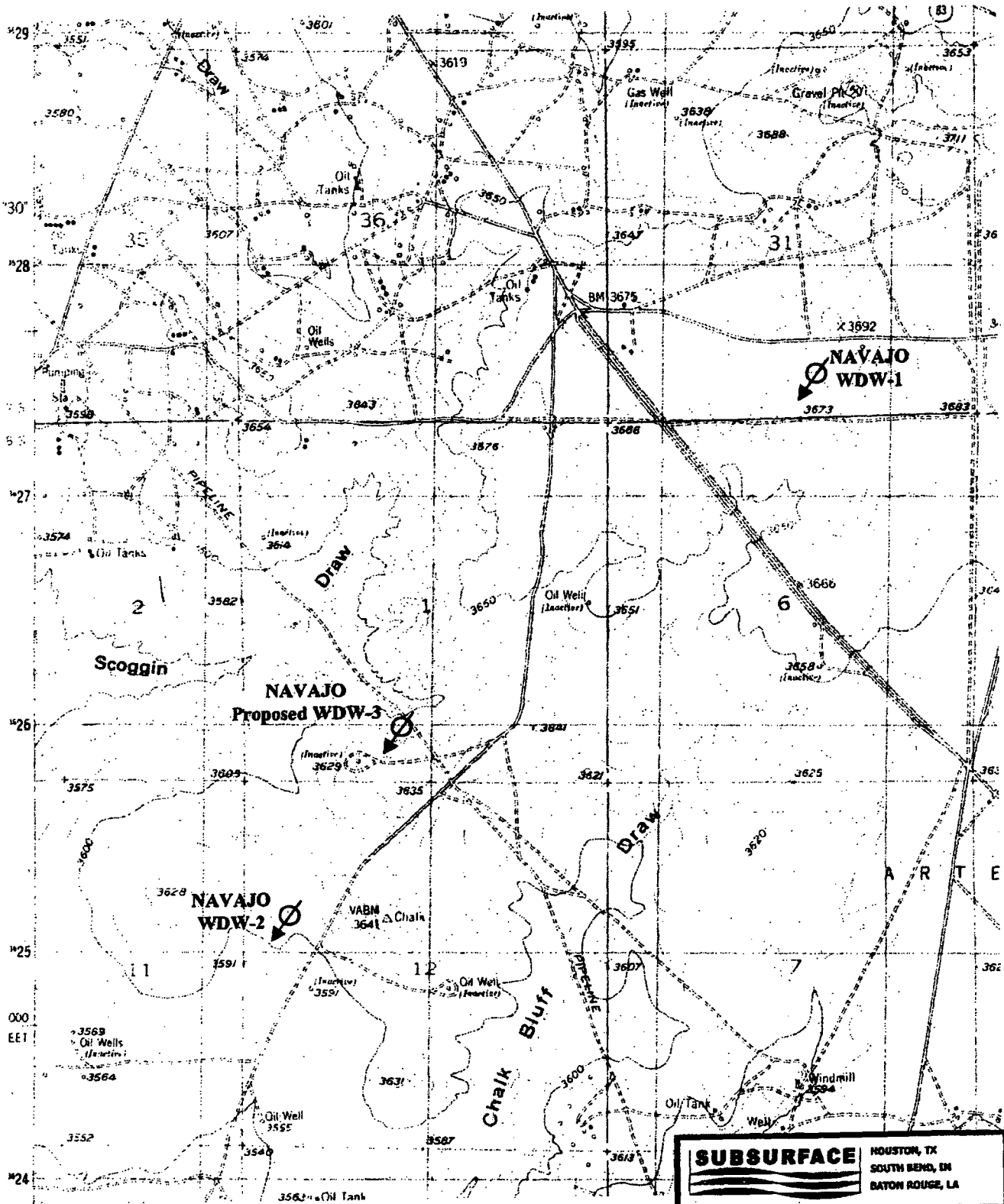
14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

9/17/03
Date

Darrell Moore
Signature
Darrell Moore
Name
Env. Mgr. for Water Waste
Title
Navajo Refining Company
Company

Accepted for record - NMOCD



USGS Topographic Map
 Red Lake Quadrangle, Eddy County, NM

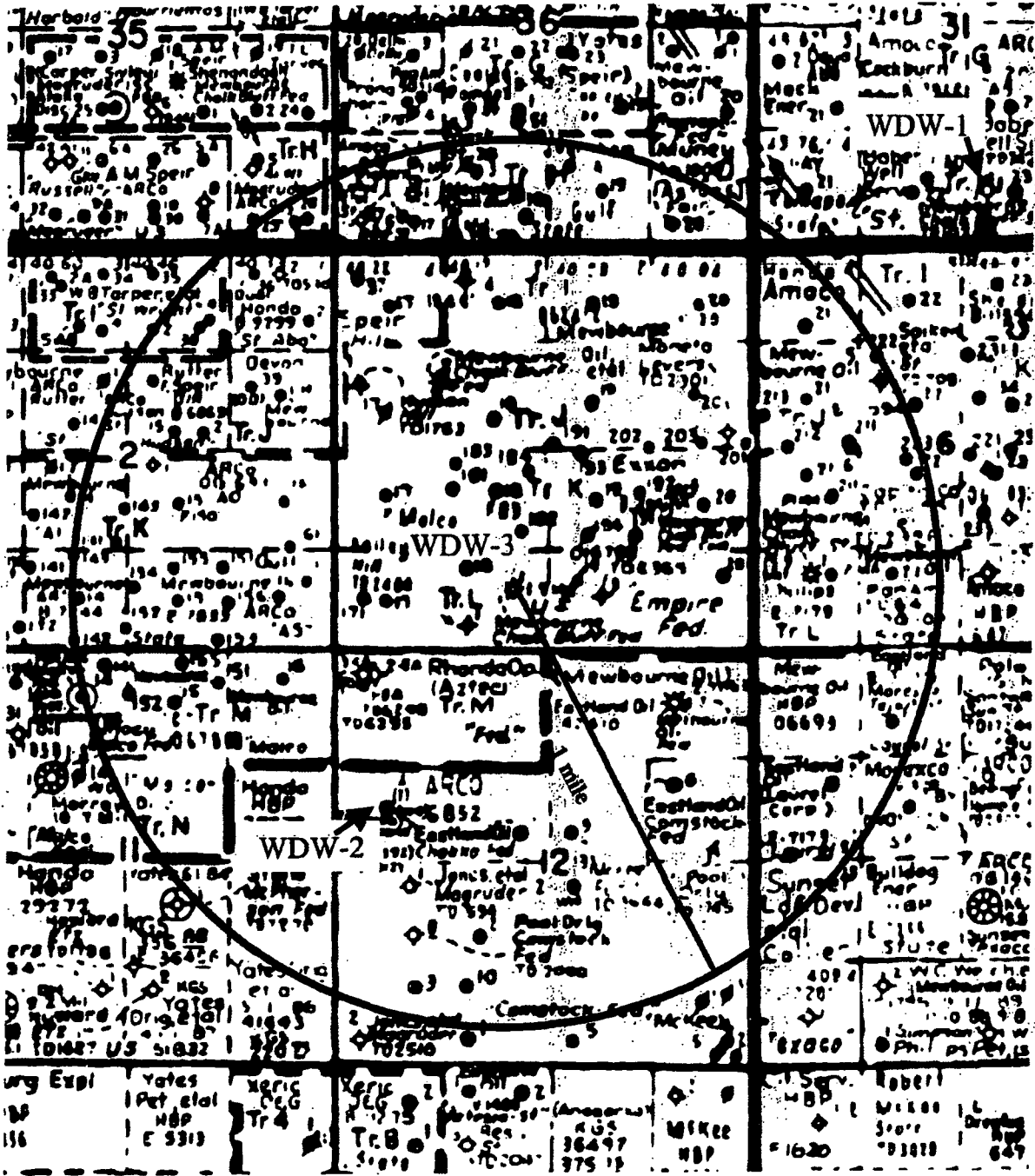
Section corners marked with +

Accepted for record - NMOCD

SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
EXHIBIT A		
NAVAJO REFINING COMPANY PROPOSED WDW-3 790' FSL, 2250' FWL 1-18S-27E		
DATE: 7/28/03	APPROVED BY: RLN	JOB NO: 6605497
DRAWN BY:	CHECKED BY:	SCALE: 1"=2000'

T17S - R27E

T17S - R28E



T18S - R27E
EDDY COUNTY, NM

Accepted for record - NMOCD

Map courtesy of Midland Map Company

SUBSURFACE		HOUSTON, TX
		SOUTH BEND, IN
		BATON ROUGE, LA
EXHIBIT B		
WELLS WITHIN 1 MILE OF NAVAJO REFINING COMPANY PROPOSED WDW-3		
DATE: 7/28/03	APPROVED BY: NLN	JOB NO. 0005407
DRAWN BY:	CHECKED BY:	SCALE: N/A

OCD-ARTESIA
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: March 31, 2007

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5. Lease Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
WDW-3

9. API Well No.
30-015-26575

10. Field and Pool, or Exploratory Area
NAVAJO INJECTION; PERMO-PEN

11. County or Parish, State
EDDY, NM

SUBMIT IN TRIPLICATE- Other instructions on reverse side.

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
NAVAJO REFINING COMPANY

3a. Address
P.O. BOX 159, ARTESIA, NM 8821

3b. Phone No. (include area code)
505-746-5181

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
790' FSL, 2250' FWL, 1-18S - 27E

RECEIVED
JUL 17 2006
OCD-ARTESIA

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other RECOMPLETE AS
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	CLASS 1
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input checked="" type="checkbox"/> Water Disposal	INJECTION WELL

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

**ORIGINAL WELL NAME WAS CHALK BLUFF FEDERAL COM. NO. 1
WELL WILL BE PLUGGED BACK AND COMPLETED AS A CLASS 1 INJECTION WELL AS FOLLOWS:**

**DRILL OUT BRIDGE PLUG AT 7010' AND CLEAN OUT TO 7208';
INJECTION-TEST PERFORATIONS AT 7050'-7102', 7262'-7278' TO PLAN SQUEEZE CEMENT JOB;
DRILL OUT BRIDGE PLUGS AT 7208' AND 7294'. CLEAN OUT HOLE THROUGH PERFS AT 7304'-7314';
SQUEEZE-CEMENT PERFORATIONS AT 7050'-7102', 7262'-7278', AND 7304'-7314';
DRILL OUT BRIDGE PLUG AT 7600' AND CLEAN OUT TO TOP OF LINER AT 9051';
RUN CBL/VDL AND CALIPER FROM 9051' TO SURFACE;
PERFORATE 8540'-8620' AND 7660'-8450';
RUN INJECTIVITY TEST, AND ACIDIZE IF NECESSARY;
RUN INJECTION/FALLOFF TEST;
RUN DIFFERENTIAL TEMPERATURE SURVEY;
RUN RADIOACTIVE TRACER SURVEY;
INSTALL INJECTION TUBING AND PACKER TO APPROX. 7600'; AND
INSTALL WELL ANNULUS MONITORING EQUIPMENT, AND PREPARE FOR WELL INJECTION.**

ACCEPTED FOR RECORD

JUL 12 2006

LES BARYAK
PETROLEUM ENGINEER

14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed) **DARRELL MOORE** Title **ENVIRONMENTAL MANAGER FOR WATER & WASTE**

Signature *Darrell Moore* Date **6/29/06**

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by _____ Title _____
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. Office _____

Accepted for record
NMOCD

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
(Carl Chavez & Leonard Lowe- OCD)
November 15, 2006

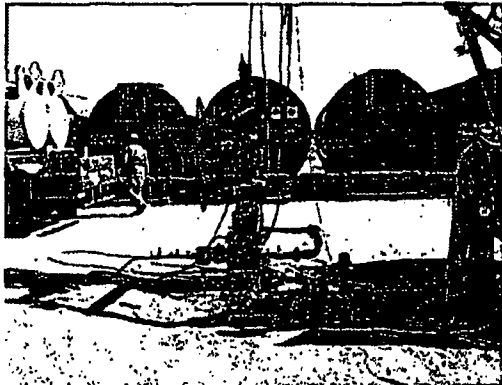


Image 1: Facing west. Christmas Tree with 500-barrel tanks in background. Far left tank was the only tank providing salt water. Truck on left is the pump truck pumping brine water only. Right truck is the rig truck (Wood Group Logging Service).

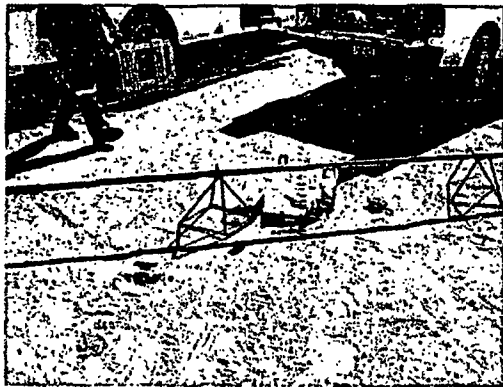


Image 2: Radioactive tool set up. Tracer, Iodine 131 (half-life ~ 8 days).



Image 3: Rig truck with view of data logger compartment (Wood Group Logging Services).

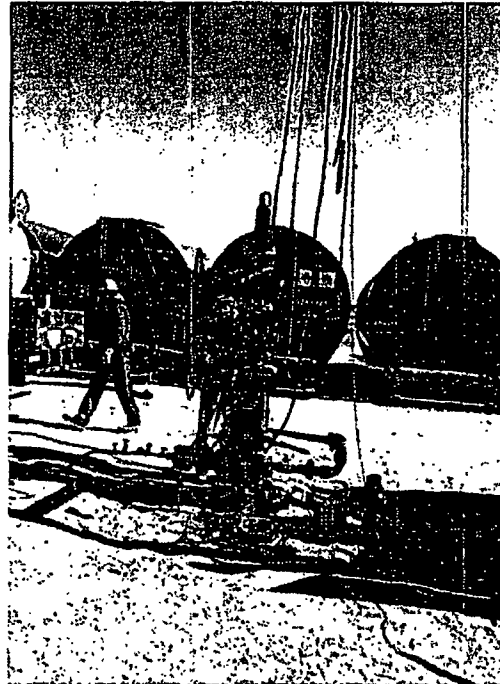


Image 4: Petroplex workers prepping wellhead for wire line tool entry.



Image 5: Petroplex employees laying pipe from pump truck to well head.

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
(Carl Chavez & Leonard Lowe- OCD)
November 15, 2006

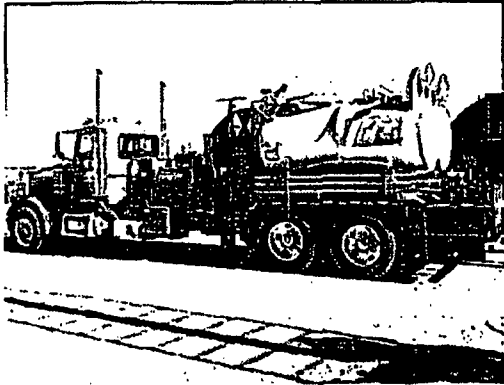


Image 6: Pump truck, Petroplex, for Brine water pumping only. No HCL used throughout process.

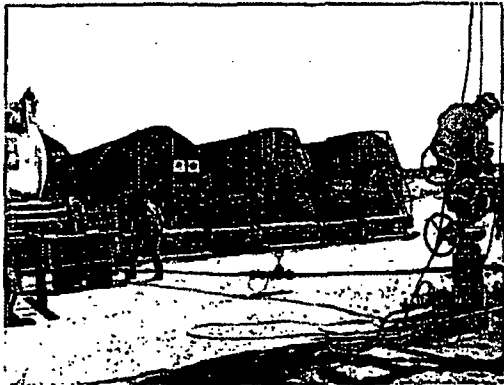


Image 7: Securing of the wire line to the wellhead.

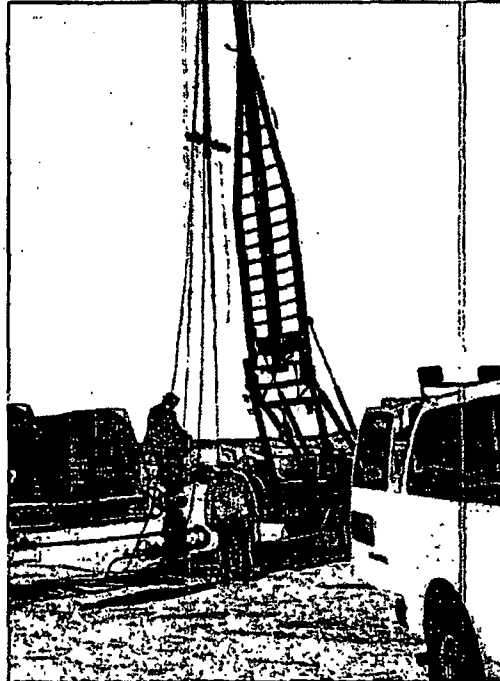


Image 8: Wood Group employee securing wellhead for tool entry.

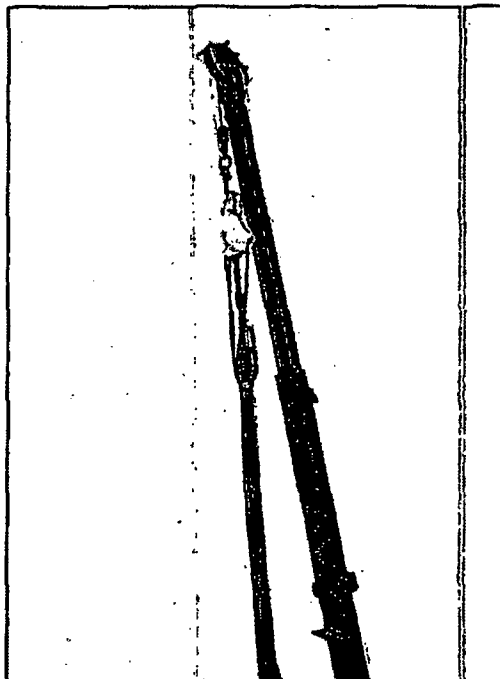


Image 9: Configuration at the top end of the boom.

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
(Carl Chavez & Leonard Lowe- OCD)
November 15, 2006

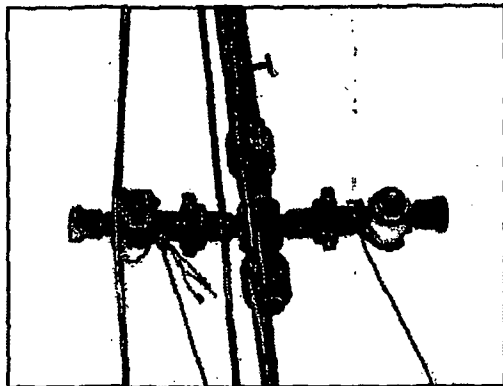


Image 10:

Image 12:

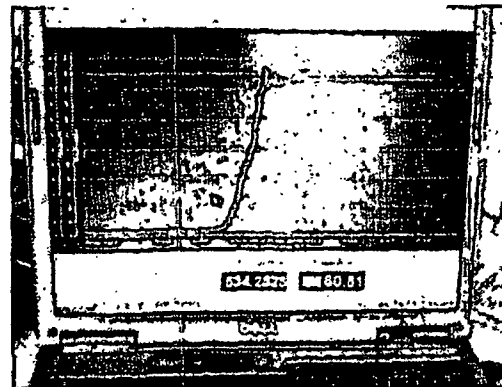


Image 13:



Image 11:

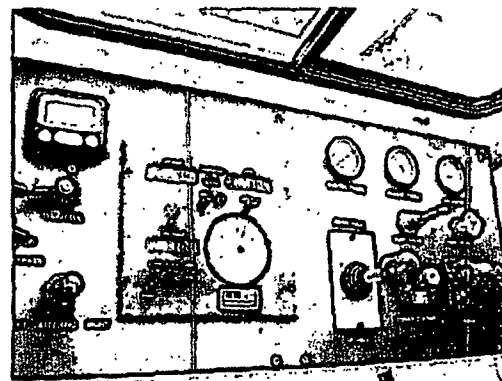


Image 14:

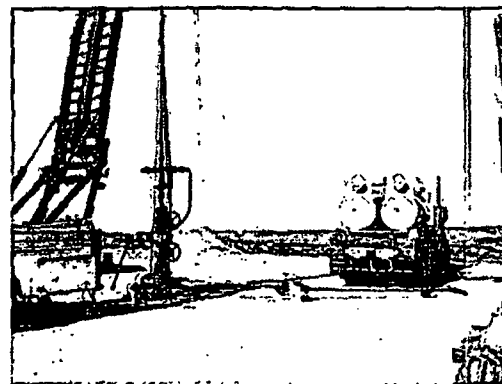
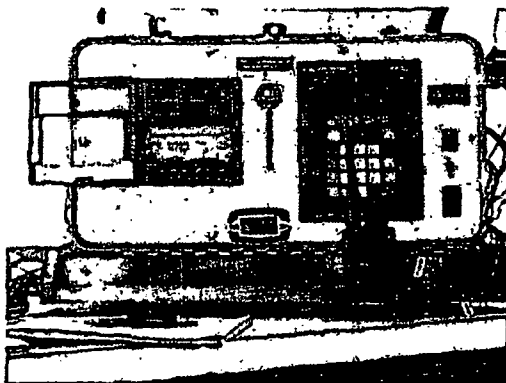


Image 15:



Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
(Carl Chavez & Leonard Lowe- OCD)
November 15, 2006

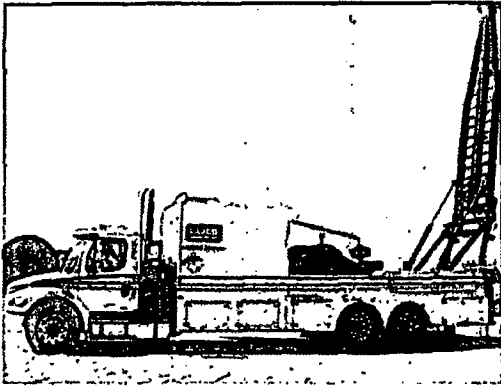


Image 16:

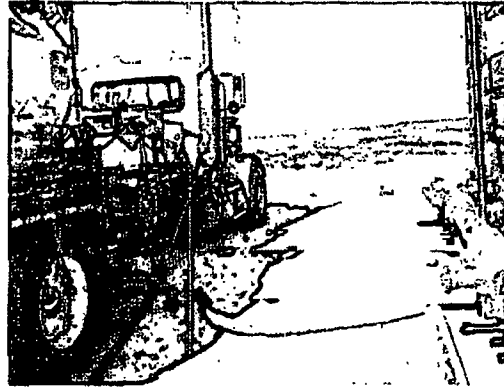


Image 19:

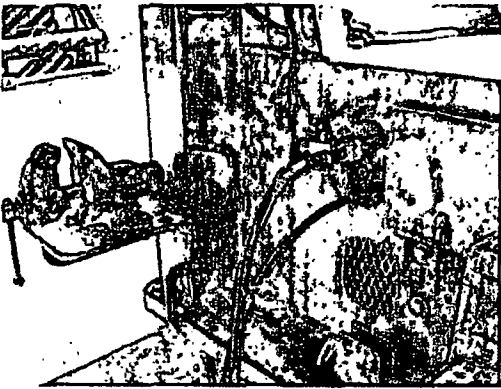


Image 17:

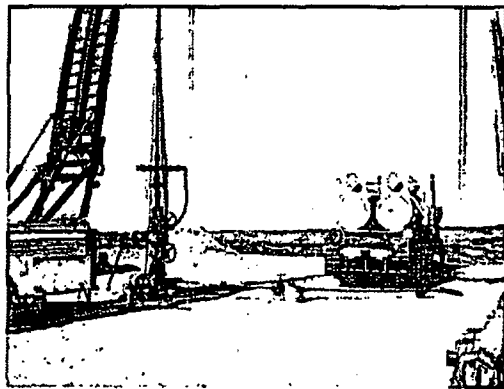


Image 20:

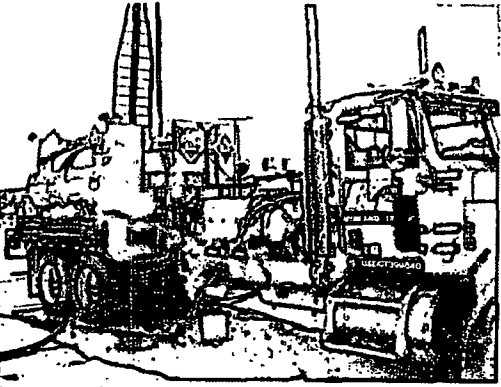


Image 18:

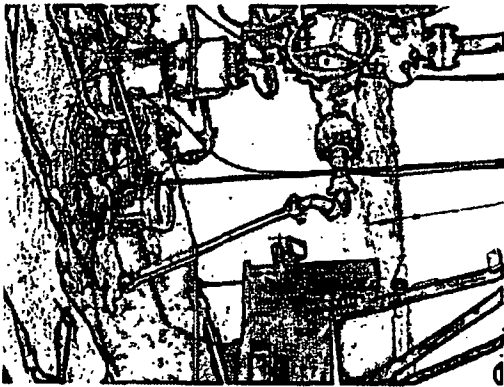
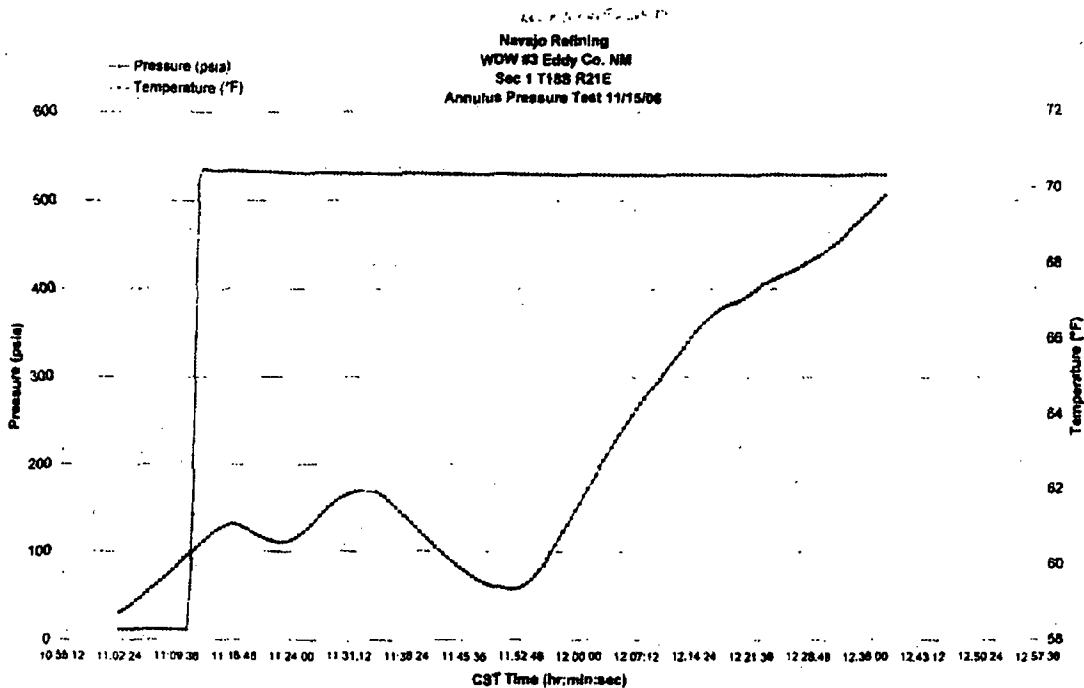
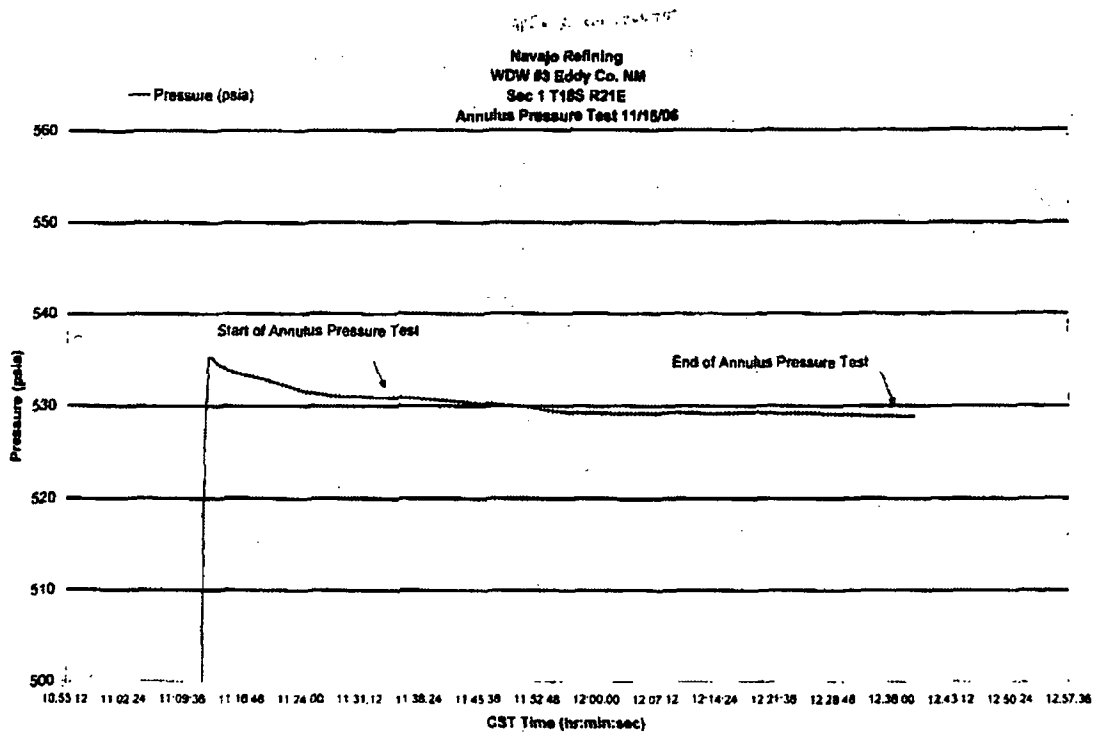


Image 21:

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
 (Carl Chavez & Leonard Lowe- OCD)
 November 15, 2006



District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-101
May 27, 2004

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit to appropriate District Office
 AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address NAVAJO RENING COMPANY		OGRID Number
		API Number 30-015-26575
Property Code	Property Name WDW	Well No. J
Proposed Pool 1 NAVAJO INJECTION; PERMO-PENN		Proposed Pool 2

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
	1	18S	27E		2250 FWL		750 FSL		EDDY

Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Additional Well Information

Work Type Code E	Well Type Code I	Cable/Rotary R	Lease Type Code	Ground Level Elevation 3609
Multiple NO	Proposed Depth 9051'	Formation CANYON	Contractor	Spud Date
Depth to Groundwater UNKNOWN		Distance from nearest fresh water well 1.25 MI TO 1828 7 330		Distance from nearest surface water 10 MILES
Pit: Liner: Synthetic <input type="checkbox"/> _____ mils thick Clay <input type="checkbox"/> Pit Volume: _____ bbls		Drilling Method: Fresh Water <input type="checkbox"/> Brine <input type="checkbox"/> Diesel/Oil-based <input checked="" type="checkbox"/> Gas/Air <input type="checkbox"/>		
Closed-Loop System <input type="checkbox"/>				

Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2"	13 3/8"	54.50#	400'	425 - CIRC	
12-1/4"	9 5/8"	36#	2604'	1025 - CIRC	
8-3/4"	7"	26# and 29#	9450'	1350 - CIRC	

²² Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

ORIGINAL WELL NAME WAS CHALK BLUFF FEDERAL COM. NO. 1
WELL WILL BE PLUGGED BACK AND COMPLETED AS A CLASS I INJECTION WELL AS FOLLOWS:
DRILL OUT BRIDGE PLUG AT 7010' AND CLEAN OUT TO 7208';
INJECTION-TEST PERFORATIONS AT 7050'-7102', 7262'-7278' TO PLAN SQUEEZE CEMENT JOB;
DRILL OUT BRIDGE PLUGS AT 7208' AND 7294'. CLEAN OUT HOLE THROUGH PERFS AT 7304'-7314';
SQUEEZE CEMENT PERFORATIONS AT 7050'-7102', 7262'-7278', AND 7304'-7314';
DRILL OUT BRIDGE PLUG AT 7600' AND CLEAN OUT TO TOP OF LINER AT 9051';
RUN CBL/VDL AND CALIPER FROM 9051' TO SURFACE;
PERFORATE 8540'-8620' AND 7660'-8450';
RUN INJECTIVITY TEST, AND ACIDIZE IF NECESSARY;
RUN INJECTION/FALLOFF TEST;
RUN DIFFERENTIAL TEMPERATURE SURVEY;
RUN RADIOACTIVE TRACER SURVEY;
INSTALL INJECTION TUBING AND PACKER TO APPROX. 7600'; AND
INSTALL WELL ANNULUS MONITORING EQUIPMENT, AND PREPARE FOR WELL INJECTION.

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOC guidelines , a general permit , or an (attached) alternative OCD-approved plan .

OIL CONSERVATION DIVISION

Approved by: *Wayne Price*

Printed name: *Darrell Moore*

Title:

Title: *Env. Mgr. for Water & Waste*

Approval Date: *8/11/06*

Expiration Date: *8/11/07*

E-mail Address: *darrell.moore@navajo-reining.com*

Date: *6/29/06*

Phone: *505-746-5201*

Conditions of Approval Attached

DISTRICT OFFICE MUST APPROVE CASING PROGRAM.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
301 W. Grand Avenue, Artesia, NM 88210
District III
100 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised June 10, 2003
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 APT Number 30 - 015 -26575		2 Pool Code		3 Pool Name Navajo Injection; Permo-Penn	
4 Property Code		5 Property Name WDW			6 Well Number 3
7 OGRID No.		8 Operator Name Navajo Refining Company			9 Elevation 3609' GL; 3625' KB

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	1	18S	27E		790	South	2250	West	Eddy

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	17 OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</i> Signature: <i>Darrell Moore</i> Printed Name: Darrell Moore Title and E-mail Address: Env. Mgr. for Water Waste darrell@navajo-refining.com Date: 9/17/03		
	18 SURVEYOR CERTIFICATION <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i> Date of Survey: Signature and Seal of Professional Surveyor:		
	Certificate Number		

REENTRY PROCEDURE

NAVAJO REFINING COMPANY'S WDW-3 (PROPOSED)

790' FSL and 2250' FWL, Section 1, T18S, R27E
Eddy County, New Mexico
Chalk Bluff Federal Com. No. 1, API No. 30-015-26575

All depths are in feet below well's original kelly bushing height (RKB) of 16 feet above ground level. The original KB elevation is 3625 feet above mean sea level. The ground level elevation is 3609 feet above mean sea level.

Tops of Geologic Formations (from RKB)

The base of the lowermost USDW is at 420 feet.

San Andres	1976 feet	Lower Wolfcamp	7303 feet
Yeso	4030 feet	Cisco	7650 feet
Abo	5380 feet	Canyon	8390 feet
Wolfcamp	6745 feet	Strawn	8894 feet

Depth of Plugs

7010 feet in 7-inch casing above perforations 7050 feet to 7102 feet

7208 feet in 7-inch casing above perforations 7262 feet to 7278 feet

7294 feet in 7-inch casing above perforations 7304 feet to 7314 feet

7600 feet in 7-inch casing above perforations 7676 feet to 7678 and
7826 feet to 7830 feet

9800 feet in 4-1/2-inch liner above perforations 9861 feet to 9967 feet

Anticipated Formation Pressure

The expected bottom-hole pressure is 3448 pounds per square inch absolute (psia) at 9000 feet, for a gradient of 0.383 pounds per square inch (psi) per foot, or an equivalent


mud weight of 7.36 pounds per gallon (ppg). The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-2, or 2813 psia, at 7570 feet. Navajo's WDW-2 is completed in the same interval proposed for WDW-3 and is located in 12-T18S-R27E, 3200 feet southwest of proposed WDW-3. The average specific gravity of the fluid in the Cisco and Canyon Formations is expected to be 1.025, which is the specific gravity of the fluid swabbed from WDW-2 in June 1999 from the interval between 7826 feet and 8399 feet. The expected bottom-hole pressure at 9000 feet in proposed WDW-3 is calculated below:

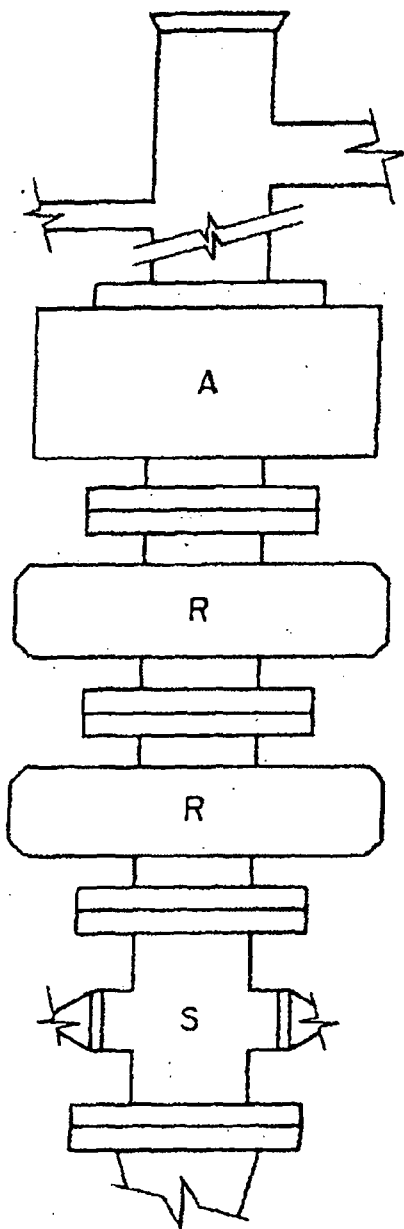
$$\begin{aligned} \text{BHP (9000 feet)} &= 2813 \text{ psia} + (9000 \text{ feet} - 7570 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.025 \\ &= 3448 \text{ psia} \end{aligned}$$

Reentry Procedure

1. Level location to accommodate a workover rig, pump, tanks, and ancillary equipment. Build a small working pit approximately 30 feet square and 3 feet deep with a plastic lining. Move in the rig, tank, shale shaker, and work string.
2. Install a 7-1/16-inch, 3000-psi double hydraulic blowout preventer (BOP) and a 7-1/16-inch, 3000-psi annular BOP (see Exhibit A for schematic). Pressure test the BOP stack and casing to 1500 psi for 30 minutes. Pick up a 6-1/8-inch bit, and sufficient 4-3/4-inch drill collars to drill out the cement plugs, on a 2-7/8-inch work string. Mix a tank of 8.5-ppg sodium chloride brine water for circulating fluid.
3. Run the bit to 7000 feet and circulate the wellbore fluid out of the casing into a frac tank for disposal. Drill out the cast iron bridge plug (CIBP), cement at 7010 feet, and clean out to the CIBP at 7208 feet. Circulate the hole clean and pump into the perforations from 7050 feet to 7102 feet to establish a rate and pressure for a pending squeeze cement job.
4. Drill out the CIBP at 7208 feet and clean out past the perforations from 7262 feet to 7278 feet and drill out the third CIBP at 7294 feet. Clean out below the perforations from 7304 feet to 7314 feet. Run a second injection test for injection rate and pressure comparison.

5. Pull the bit and run a retrievable squeeze packer on the work string. Set the packer at 7150 feet and test for communication between the perforations. Squeeze the perforations from 7262 feet to 7278 feet and 7304 feet to 7314 feet with approximately 100 sacks of neat cement (actual squeeze cement volume to be determined by the injection rate established previously), attempting to reach 1500 psi to 2000 psi squeeze pressure. Release the packer and reverse out any excess cement, then re-test the perforations to the squeeze pressure.
6. Re-set the packer at 6900 feet and squeeze the perforations from 7050 feet to 7102 feet as before.
7. Lay down the squeeze packer and drill out the cement to the CIBP at 7600 feet. Conduct a pressure test to 500 psi for 12 hours to confirm the squeeze cement will contain the annular fluid pressure required during injection operations.
8. Drill out the CIBP at 7600 feet and circulate to the top of the liner at 9051 feet. Circulate the casing clean with 8.5-ppg brine water. Pull the bit and lay down the drill collars.
9. Run a cement bond log with variable density (CBL/VDL) from the liner top to the surface, followed by a baseline multi-finger caliper log from the liner top to the surface.
10. Perforate the intervals 8540 feet to 8620 feet and 7660 feet to 8450 feet with 2 JSPF, using hollow steel carrier perforating guns.
11. Run the work string and retrievable packer to 7600 feet. Swab, or backflow, the perforated interval to recover a representative sample of the formation water for laboratory analysis. Monitor the recovered fluid for hydrogen sulfide.
12. Conduct a short injectivity test with 8.5-ppg brine water to determine the need for stimulation. If required, stimulate the perforations with acid (type and amount to be determined from injectivity results), followed by 500 barrels of 8.5-ppg brine water.

- 
13. Pull the work string and lay it down. Run a surface readout pressure gauge, with memory backup, to 7600 feet. Conduct an injection test down the casing at 420 gallons per minute for 12 hours (7200 barrels). Shut the well in and record the pressure falloff for a minimum of 12 hours.
 14. Pull the gauges and run a differential temperature survey from surface to 9100 feet. Run a radioactive tracer survey to demonstrate mechanical integrity.
 15. Run a tubing conveyed injection packer on 4-1/2-inch, 11.60 lb/ft, K-55, LT&C, 8rd injection tubing. Set the packer at approximately 7600 feet. Fill the annular space with 8.5-ppg brine water containing oxygen scavenger and corrosion inhibitor. Land the injection tubing in the wellhead and install the upper section.
 16. Pressure test the annulus as required by New Mexico regulations.
 17. Install well annulus monitoring equipment and prepare the well for injection.



A = ANNULAR BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

R = RAM TYPE BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

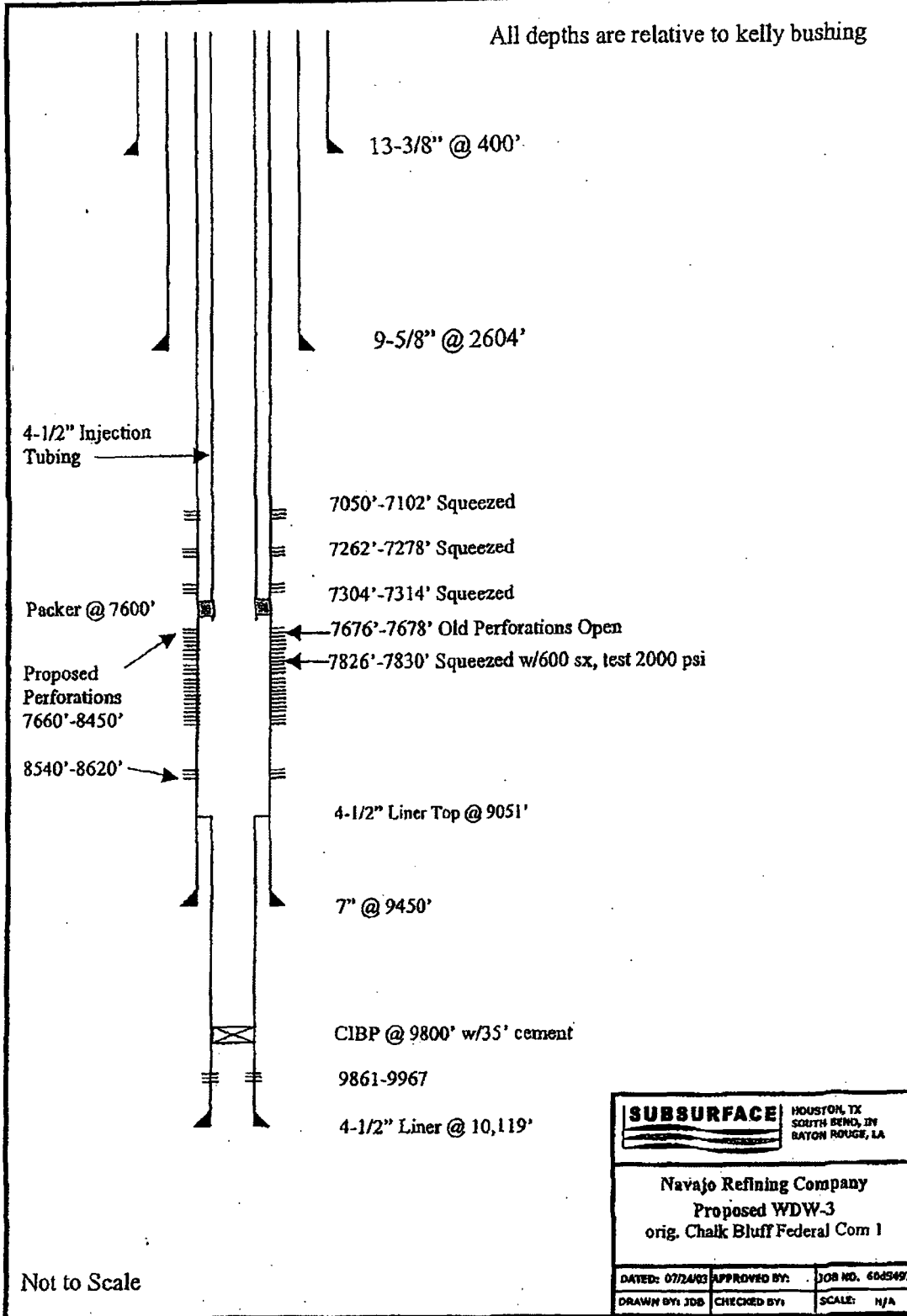
S = DRILLING SPOOL WITH SIDE OUTLETS
7-1/16", 3000 psi working pressure

Manual Choke Manifold 2", 3000 psi working pressure

SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
Exhibit A Blowout Preventer Minimum Requirements		
DATED: 07/24/03	APPROVED BY:	JOB NO. 6825487
DRAWN BY: JDB	CHECKED BY:	SCALE: N/A

Source: API RP 53, Recommended Practices
for Blowout Prevention Equipment Systems

All depths are relative to kelly bushing



Not to Scale

SUBSURFACE		HOUSTON, TX SOUTH BEND, IN BAYON ROUGE, LA
Navajo Refining Company Proposed WDW-3 orig. Chalk Bluff Federal Com 1		
DATED: 07/24/03	APPROVED BY:	JOB NO. 6085497
DRAWN BY: JDB	CHECKED BY:	SCALE: N/A

SURFACE USE PLAN

NAVAJO REFINING COMPANY
PROPOSED WDW-3
790' FSL, 2250' FWL, 1-T 18S-R27E
EDDY COUNTY, NEW MEXICO

1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.
2. Access Roads To Be Constructed: No new access road is proposed.
3. Location of Existing Wells: Existing wells within one mile of proposed WDW-3 are shown on Exhibit B.
4. Location of Proposed Facilities If Well Is Completed: The well will be shut in after completion and testing.
5. Location and Type of Water Supply: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.
6. Source of Construction Materials: No construction materials will be required.
7. Methods of Handling Waste Disposal:
 - A. Drill cuttings will be disposed of in the drilling pits.
 - B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.
 - C. Water produced during tests will be disposed of in the drilling pits.
 - D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind.
 - E. All trash and debris will be buried or removed from the wellsite after finishing drilling and/or completion operations.

8. Ancillary Facilities: None anticipated.

9. Wellsite Layout:

- A. The existing well pad will be leveled to accommodate a workover rig, pump, tanks, and ancillary equipment.
- B. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the uphill end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.
- C. The well pad will be surfaced with material found in place.
- D. A small working pit will be constructed to hold drilling fluids and cuttings. The approximate dimensions of the pit will be 30 feet x 30 feet x 3 feet.
- E. The working pit for drilling fluids and cuttings will be lined with 6-mil plastic.

10. Plans for Restoration of Surface:

- A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.
- B. Any unguarded pits containing fluids will be fenced until they are filled.
- C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.
- D. The stockpiled topsoil will be spread over the surface of the location.

11. Surface Ownership: U.S. Department of Interior, Bureau of Land Management.

12. Archaeological Survey: Navajo Refining Company is conducting an archeological survey. The report of the survey will be submitted by Navajo under separate cover.

13. Operator's Representatives: Representatives responsible for assuring compliance with the approved Surface Use Plan:

Mr. Darrell Moore
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505/748-3311

Mr. Jim Bundy
Subsurface Technology, Inc.
7020 Portwest Drive, Suite 100
Houston, Texas 77024
713/880-4640

Exhibits

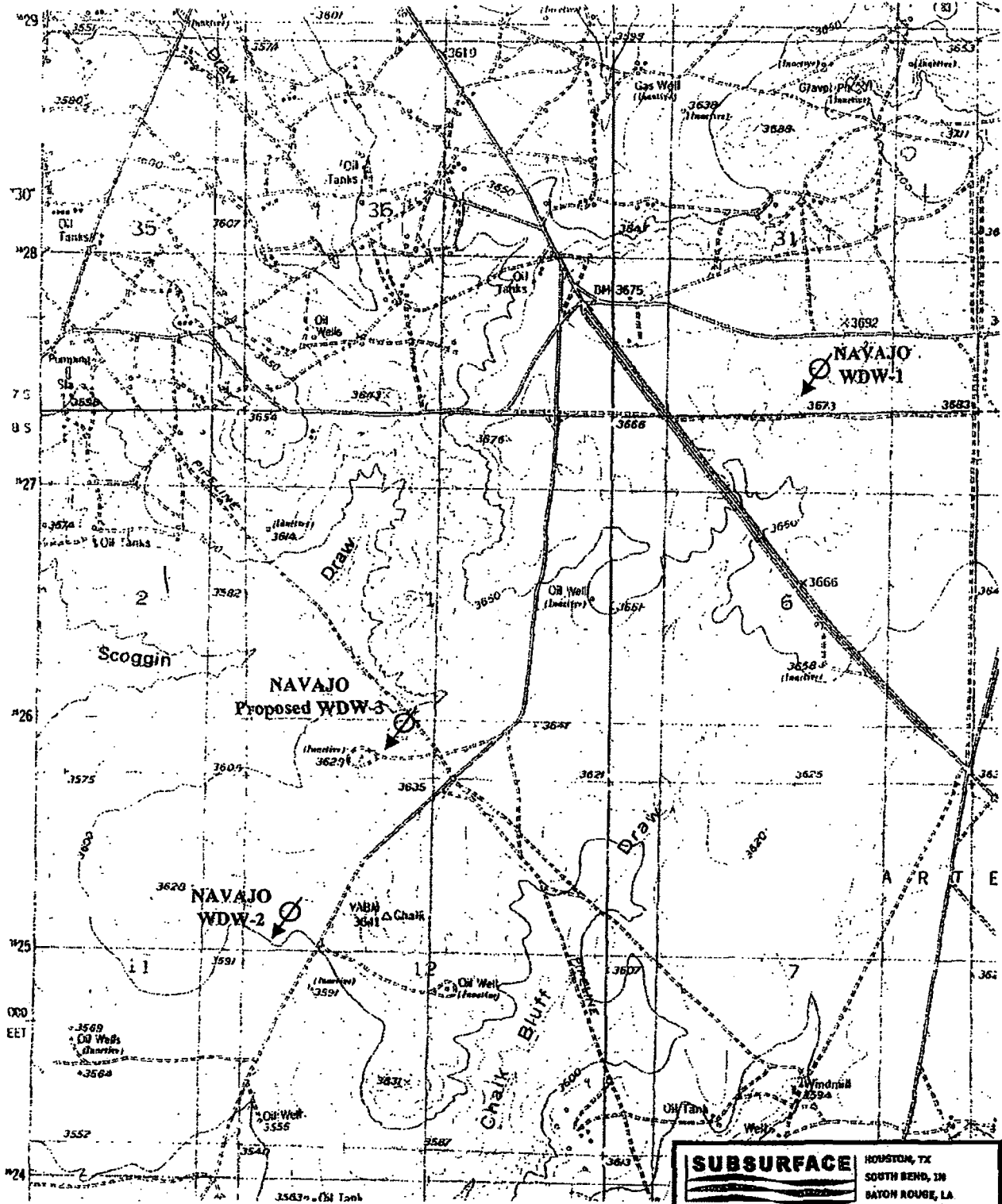
- A. Topographic Map
- B. Oil and Gas Map

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

9/17/03
Date

Darrell Moore
Signature
Darrell Moore
Name
Env. Mgr. for Water Waste
Title
Navajo Refining Company
Company



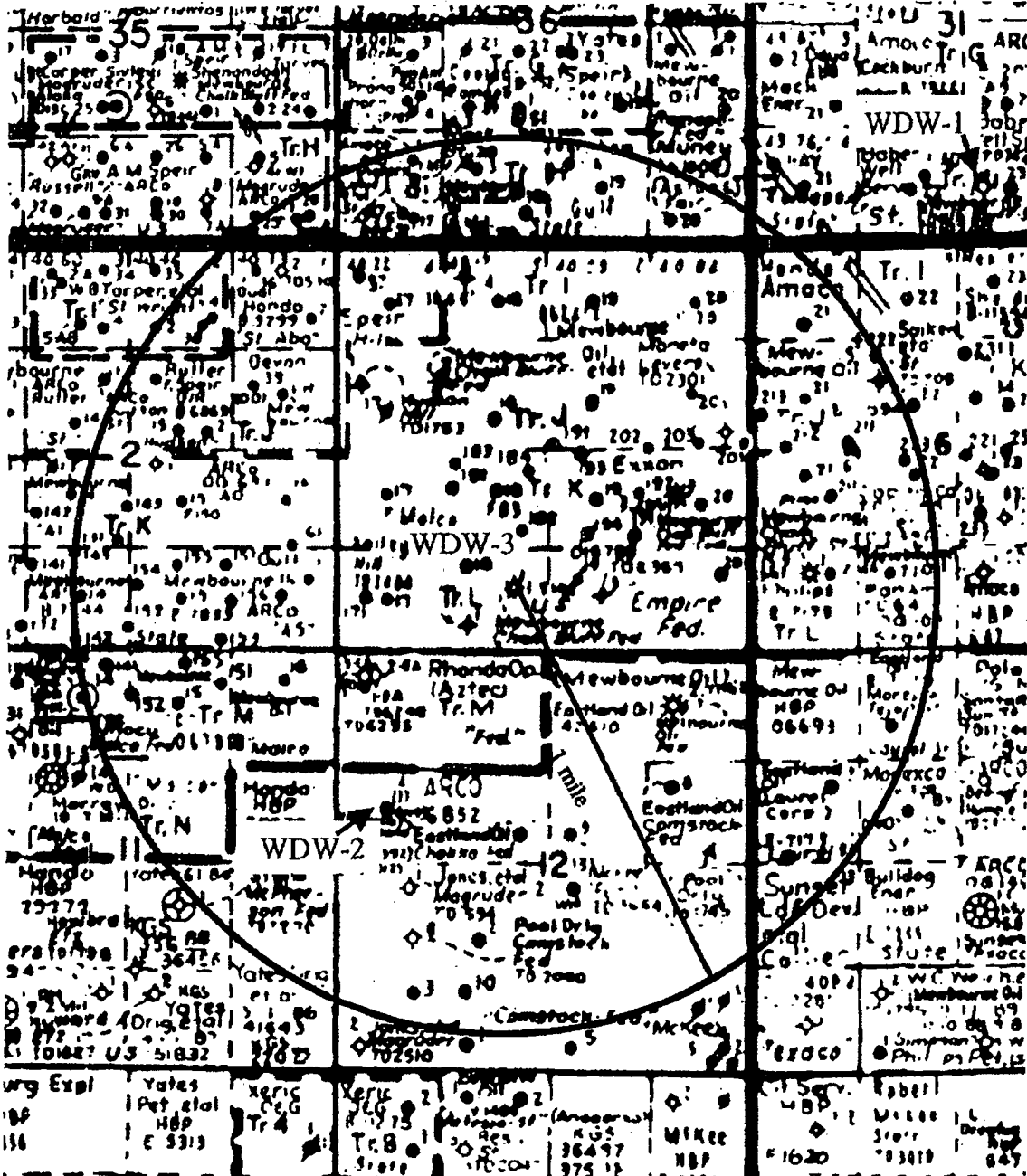
USGS Topographic Map
 Red Lake Quadrangle, Eddy County, NM

Section corners marked with +

SUBSURFACE		HOUSTON, TX
		SOUTH BEND, IN
		BATON ROUGE, LA
EXHIBIT A		
NAVAJO REFINING COMPANY		
PROPOSED WDW-3		
790' FSL, 2250' FWL 1-18S-27E		
DATE: 7/28/03	APPROVED BY: M.N.	JOB NO: 6005497
DRAWN BY:	CHECKED BY:	SCALE 1"=2000'

T17S - R27E

T17S - R28E



T18S - R27E
 EDDY COUNTY, NM

SUBSURFACE		HOUSTON, TX
		SOUTH BEND, IN
		BATON ROUGE, LA
EXHIBIT B		
WELLS WITHIN 1 MILE OF		
NAVAJO REFINING COMPANY		
PROPOSED WDW-3		
DATE: 7/28/03	APPROVED BY: NLS	JOB NO. 6005407
DRAWN BY:	CHECKED BY:	SCALE: 1/4"

Map courtesy of Midland Map Company

Submit 3 Copies To Appropriate District Office
 District I
 1625 N. French Dr., Hobbs, NM 88240
 District II
 1301 W. Grand Ave., Artesia, NM 88210
 District III
 00 Rio Brazos Rd., Aztec, NM 87410
 District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 May 27, 2004

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

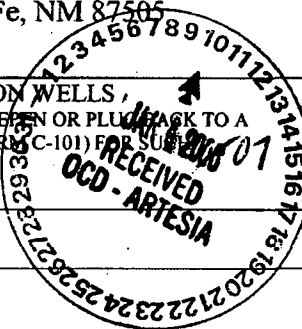
WELL API NO. 30 - 015 - 26575
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. NM-0557371
7. Lease Name or Unit Agreement Name WDW - 3
8. Well Number 3
9. OGRID Number
10. Pool name or Wildcat

SUNDRY NOTICES AND REPORTS ON WELLS,
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG A WELL OR TO ASK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well Gas Well Other

2. Name of Operator
NAVAJO REFINING COMPANY

3. Address of Operator
P.O. BOX 159, ARTESIA, NM 88211



4. Well Location
 Unit Letter _____ : 790 feet from the SOUTH line and 2250 feet from the WEST line
 Section 1 Township 18 south Range 27 East NMPM County Eddy

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
 GR 3609', RKB 3625'

Pit or Below-grade Tank Application or Closure

Pit type N/A Depth to Groundwater 100 FT Distance from nearest fresh water well 1 MILE Distance from nearest surface water 6 MILES
 Pit Liner Thickness: N/A mil Below-Grade Tank: Volume N/A bbls; Construction Material N/A

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: To complete a Class 1 non-hazardous waste well <input checked="" type="checkbox"/>		OTHER: Well completion report to follow <input checked="" type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

See attached well summary document and well schematic.

*MIT Witnessed by Carl Chavez
 No chart Submitted*

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit or an (attached) alternative OCD-approved plan .

SIGNATURE Daniel Moore TITLE Env. Mgr. for Water & Waste DATE 1/2/07

Type or print name or State Use Only E-mail address: Telephone No.

*Accepted for record
 NMOCD/0.*

APPROVED BY: TITLE DATE

Conditions of Approval (if any):

Submit To Appropriate District Office
 State Lease - 6 copies
 Fee Lease - 5 copies
 District I
 1625 N. French Dr., Hobbs, NM 88240
 District II
 W. Grand Avenue, Artesia, NM 88210
 District III
 Rio Brazos Rd., Aztec, NM 87410
 District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources
 Oil Conservation Division
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

Form C-105
 Revised June 10, 2003

WELL API NO.
 30 - 015 - 26575

5. Indicate Type of Lease
 STATE X FEE
 State Oil & Gas Lease No.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:
 OIL WELL GAS WELL DRY OTHER Non-hazardous Waste Disposal Well
 b. Type of Completion:
 NEW WORK X DEEPEN PLUG DUMP
 WELL OVER BACK

7. Lease Name or Unit Agreement Name
 Waste Disposal Well / WDW - 3

2. Name of Operator
 NAVAJO REFINING COMPANY

8. Well No. 3

3. Address of Operator
 P.O. BOX 159, ARTESIA, NM 88211

9. Pool name or Wildcat

4. Well Location
 Unit Letter _____ : 790 Feet From The SOUTH Line and 2250 Feet From The WEST Line
 Section 1 Township 18 South Range 27 East NMPM County Eddy, NM

10. Date Spudded 12/22/90	11. Date T.D. Reached 1/29/91	12. Date Compl. (Ready to Prod.) Injection 1/15/07	13. Elevations (DF& RKB, RT, GR, etc.) DF 3616 ft / GR 3609 ft	14. Elev. Casinghead 3609 ft
15. Total Depth 10,119 ft	16. Plug Back T.D. 9020 ft	17. If Multiple Compl. How Many Zones? 2	18. Intervals Drilled By Rotary Tools (Recentry Drill out CIBP Plugs with Swivel)	Cable Tools
19. Producing Interval(s), of this completion - Top, Bottom, Name Injection Interval 7660 ft to 8450 ft Cisco & 8540 ft to 8620 ft Canyon				20. Was Directional Survey Made No
21. Type Electric and Other Logs Run CBL/VDL, Temperature, Caliper, Radioactive Tracer, Pressure			22. Was Well Cored No	

23. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	54.50	400'	17 1/2"	425-CIRC	NONE
9 5/8"	36	2604'	12 1/4"	1025-CIRC	NONE
7"	29 & 26	9450'	8 3/4"	1350-CIRC	NONE

24. LINER RECORD				25. TUBING RECORD			
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
4 1/2"	9051'	10,119'	175	NONE	4 1/2"	7567'	7575'

26. Perforation record (interval, size, and number) 7660' TO 8450' / 0.5" / 2 JSPF / 60" 8540' TO 8620' / 0.5" / 2 JSPF / 60"	27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.	
	DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
	7050' TO 7102'	80 SKS PREM 14.8 PPG CMT SQZ PERF
	7262' TO 7278'	100 SKS PREM 14.8 PPG CMT SQZ PERF
	7304' TO 7314'	80 SKS PREM 14.8 PPG CMT SQZ PERF

28. PRODUCTION

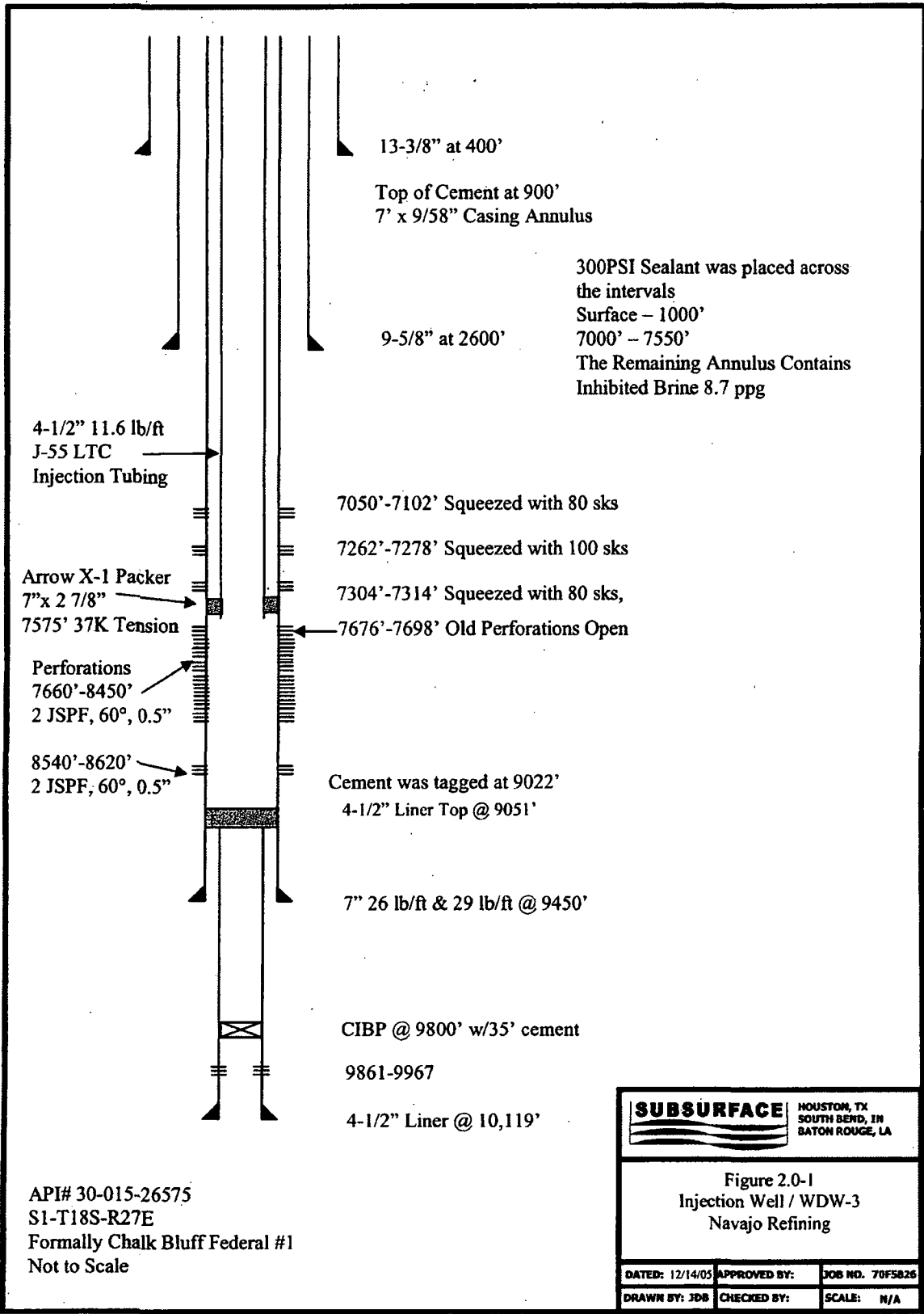
Date First Production (INJECTION WELL)		Production Method (Flowing, gas lift, pumping - Size and type pump) (INJECTION PUMP)			Well Status (Prod. or Shut-in) (SHUT-IN)		
Date of Test	Hours Tested	Choke Size NO CHOKE INJECT TEST	Prod'n For Test Period N/A	Oil - Bbl N/A	Gas - MCF N/A	Water - Bbl. N/A	Gas - Oil Ratio N/A
Flow Tubing Press. MAX INJECT 1450 PSI	Casing Pressure 750 PSI	Calculated 24-Hour Rate 8 BPM	Oil - Bbl. N/A	Gas - MCF N/A	Water - Bbl. N/A	Oil Gravity - API - (Corr.) N/A	

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
 NO GAS
 Test Witnessed By

30. List Attachments
 WELL SUMMARY OF EVENTS, WELL WAS CONVERTED TO A CLASS I NON-HAZARDOUS WATER WASTE DISPOSAL WELL. A FULL REPORT WILL FOLLOW AT A LATER DATE.

31. I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief

Signature: *Darrell Moore* Printed Name: *Darrell Moore* Title: *Env. Mgr.* Date: *1/8/07*
 mail Address: *darrell.moore@navajo-refining.com*



API# 30-015-26575
 S1-T18S-R27E
 Formally Chalk Bluff Federal #1
 Not to Scale

SUBSURFACE

HOUSTON, TX
 SOUTH BEND, IN
 BATON ROUGE, LA

Figure 2.0-1
 Injection Well / WDW-3
 Navajo Refining

DATED: 12/14/03	APPROVED BY:	JOB NO. 70F5826
DRAWN BY: JDB	CHECKED BY:	SCALE: N/A

Well Summary

Navajo Refining Company (Navajo) contracted Subsurface Technology, Inc. (Subsurface), to prepare an application for permit and to reenter a plugged and abandoned (P&A) oil and gas well. The Application for Permit to Drill or Reenter and the Sundry Notices and Reports on Wells was submitted to the Department of the Interior, Bureau of Land Management (BLM), on June 29, 2006 and approved. The Application for Permit to Drill, Re-enter, Deepen, Plug Back, or add a Zone was submitted to the State of New Mexico Oil Conservation Commission (OCD) on June 29, 2006 and approved.

Subsurface prepared an engineering plan to reenter the P&A'ed oil and gas well formally owned by Mewbourne Oil Company. The original well name was Caulk Bluff Federal #1 (API number 30-015-26575), and a Change of Operator application was submitted to the OCD on December 5, 2000 and approved under the well name of WDW-3. Under contract to Navajo, Subsurface commenced field operations on September 25, 2006. The existing location was cleared and prepared for reentry operations. An earthen lined reserve pit was dug to catch returns. All depths unless stated are referenced to rig floor at six feet to seven feet above ground level. The rig floor was moved from six feet to seven feet after drilling out the cast iron bridge plugs.

A workover rig and reverse unit was placed on location and the existing wellhead was removed. The first cast iron bridge plug (CIBP) at 7010 feet was drilled and the perforated interval from 7050 feet to 7102 feet was squeezed off with neat cement and successfully pressured tested to six hundred eighty pounds per square inch gauge pressure (680 psig). The second and third CIBP at 7190 feet and 7279 feet was drilled. There appeared to be ten feet of cement on top of the third CIBP. The perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314 feet was squeezed with neat cement. The squeezed interval was pressure tested to 920 psig and would not hold. A second cement squeeze was performed across the perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314. The interval was pressured tested to 630 psig and continued to lose pressure at a rate of two pounds per square inch every thirty minutes (2 psi/30 min). The fourth CIBP at 7595 feet was drilled and at 7838 feet a cement plug was encountered and drilled through. Cement was tagged twenty nine (29) feet above the top of the liner at 9022 feet. The hole was circulated clean and prepared for logging.

A Cement Bond Log (CBL), Variable Density Log (VDL), caliper log, and temperature survey were performed. The CBL/VDL showed that the top of the cement (TOC) behind the 7-inch casing was located 900 feet from the surface. The OCD was notified and approved the existing well condition. The casing was perforated from 7660 feet to 8450 feet and from 8540 feet to 8620 feet at 2-JSPF on sixty degree (60°) phasing.

A packer was set at 7546 feet with 2 7/8-inch PH-6 tubing, the well was swabbed back and samples of the formation fluid were recovered. It was estimated that two hundred twenty six barrels (226 bbls) of formation fluid was returned to the surface. A pressure test on the annulus between the 7-inch and 2 7/8-inch was performed at 660 psig with the annulus losing pressure at a rate of 8 psi/hr.

An injection test was performed on the well down the 2 7/8-inch tubing with the annulus open to the bottom of the well. The open annulus will allow for the calculation of the bottom hole pressure while pumping down the 2 7/8-inch tubing with out the influence of tubing friction pressure on the bottom hole calculations. The injection rates were from two barrels per minute (2 bpm) to ten barrels per minute (10 bpm). From the data collected during the injection test it appears that the well will be able to accept an injection rate up to 10 bpm at the permitted pressure of 1550 psig with 4 1/2-inch, 11.6 pound per foot (11.6 lb/ft) tubing in the wellbore.

At the request of the OCD, Subsurface went back into the wellbore with a retrievable bridge plug (RBP) to test the casing and isolate any leaks to within 1000 feet. The RBP was set at 7550 feet and the packer was set at 6985 feet to isolate the squeezed interval from 7050 feet to 7314 feet. The squeezed interval was pressure tested to 490 psig and the annulus to 632 psig. The squeezed interval was losing pressure at a rate of 6 psi/hr and the annulus was gaining pressure due to thermal affects. The RBP was moved up the wellbore to 1255 feet and casing pressure tested to 569 psig. The casing above 1255 feet was losing pressure at a rate of 2 psi/hr. The casing leaks were isolated to the squeezed interval from 7050 feet to 7314 feet and in the interval from surface to 1255 feet. The OCD was called and approved the 300PSI sealing application to stop the casing leaks across the two intervals.

The 4 1/2-inch tubing was run into the wellbore and the Arrow X-1 packer was set at 7575.73 feet with 37,000 lbs of tension. Prior to running the 4 1/2-inch tubing a new Superior hanging spool was installed. Prior to setting the tubing packer, the annulus between the 4 1/2-inch tubing and the 7-inch casing was filled with inhibited brine, with the 300psi sealant across the squeezed perforations and across the upper section of the 7-inch casing. Once the packer was set and casing hung off in the spool a new Superior wellhead was installed and the P-seals were pressure tested to 3000 psig. After the wellhead was assembled the annulus was squeezed at 545 psig for four hours (4 hrs) as specified by the sealant manufacture representative on site. The annulus was then pressure tested to 480 psig overnight with no pressure loss. Workover rig was disassembled and moved off location with all associated equipment.

A 12 hr pump in and falloff test was performed down the 4 1/2-inch tubing. To maintain a surface injection pressure that was below the permitted pressure of 1550 psi the injection rate was lowered to 9 bpm at the end of the pump in procedure. The BHP gauge was placed at 8630 feet for 14 hrs to monitor BHP, when the gauge was pulled five minute (5 min) gradient stops were made every 1000 feet with the first stop at 7000 feet. The analysis of the data showed interference from the adjacent injection wells, which skewed the results for determination of the skin and possibly the permeability. The equipment used to perform the falloff testing was moved off location to prepare for mechanical integrity testing (MIT).

The MIT was performed and witnessed by the OCD. The MIT consisted of an annulus pressure test, and a radioactive tracer survey. The temperature survey was performed during the CBL/VDL logging event and will be used as a baseline for any future temperature surveys. The annulus pressure test was performed at 530 psia and lost 2.5 psi over a one hour period, which was within the OCD requirements of five percent (5%)

over a 30 min time interval. The radioactive tracer survey showed no signs of fluid flow out of the permitted interval above 7650 feet. The OCD witnessed the annular pressure test and the first half of the radioactive tracer survey.

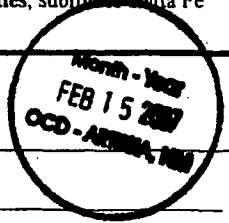
The annulus monitoring system was installed and tested. The well was turned over to Navajo for injection.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
S Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
June 1, 2004

For drilling and production facilities, submit to appropriate NMOCD District Office.
For downstream facilities, submit to Santa Fe office



Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes No

Type of action: Registration of a pit or below-grade tank Closure of a pit or below-grade tank

Operator: Navajo Refining Company Telephone: (505) 748-3311 e-mail address: _____
Address: 501 East Main Street Artesia NM 88210
Facility or well name: WDW #3 API #: 30-015-26575 U/L or Qtr/Qtr: _____ Sec 1 T 18 S R 27 E
County: Eddy Latitude _____ Longitude _____ NAD: 1927 1983
Surface Owner: Federal State Private Indian

Pit	Below-grade tank	
Type: Drilling <input checked="" type="checkbox"/> Production <input type="checkbox"/> Disposal <input type="checkbox"/> Workover <input type="checkbox"/> Emergency <input type="checkbox"/> Lined <input checked="" type="checkbox"/> Unlined <input type="checkbox"/> Liner type: Synthetic <input checked="" type="checkbox"/> Thickness <u>12</u> mil Clay <input type="checkbox"/> Pit Volume _____ bbl	Volume: _____ bbl Type of fluid: _____ Construction material: _____ Double-walled, with leak detection? Yes <input type="checkbox"/> If not, explain why not. _____	
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.)	Less than 50 feet (20 points) <u>50 feet or more, but less than 100 feet</u> (10 points) 100 feet or more (0 points)	<u>10</u>
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes (20 points) <u>No</u> (0 points)	<u>0</u>
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)	Less than 200 feet (20 points) 200 feet or more, but less than 1000 feet (10 points) <u>1000 feet or more</u> (0 points)	<u>0</u>
	Ranking Score (Total Points)	<u>10</u>

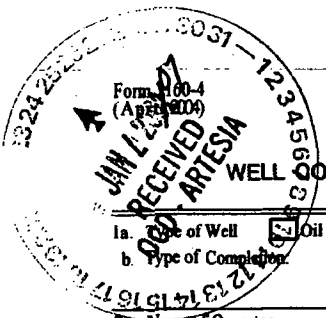
If this is a pit closure: (1) Attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if you are burying in place) onsite offsite If offsite, name of facility CRI. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No Yes If yes, show depth below ground surface _____ ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments: Navajo Refining Company plans to close drilling pit on the WDW #3 as per New Mexico Oil Conservation Division rule 50 in the pit and below grade tank guidelines. Navajo plans to remove all fluids and drill cuttings. All cuttings will be taken to a NM.O.G.D. approved site for disposal and backfill with onsite stockpiled soils. We will notify O.C.D 48 hours prior to beginning work.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit , or an (attached) alternative OCD-approved plan .

Date: 2/14/06
Printed Name/Title: Chris Milligan/Agent Signature: Chris Milligan
Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Approval: Jim W. Green Signature: _____ Date: 2/12/07
District II Supervisor



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

FORM APPROVED
OMB NO. 1004-0137
Expires: March 31, 2007

1a. Type of Well Oil Well Gas Well Dry Other
 b. Type of Completion New Well Work Over Deepen Plug Back Diff. Resvr.,
 Other _____

2. Name of Operator **NAVAJO REFINING COMPANY**

3. Address **P.O. BOX 159, ARTESIA, NM 88211**

3a. Phone No. (include area code)

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface **790' FROM THE SOUTH LINE AND 2250' FROM THE WEST LINE**

At top prod. interval reported below **7650' AT THE SAME LOCATION AS ABOVE**

At total depth **PLUG BACK 10,119' AT THE SAME LOCATION AS ABOVE**

14. Date Spudded
12/22/1990

15. Date T.D. Reached
01/29/1991

16. Date Completed
 D & A Ready to Prod.

17. Elevations (DF, RKB, RT, GL)*
3609'

18. Total Depth: MD **10,119'**
TVD **10,119'**

19. Plug Back T.D.: MD **9022'**
TVD **9022'**

20. Depth Bridge Plug Set MD **CMT 9051'-9022'**
TVD **CMT 9051'-9022'**

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CBL/VDL, MULTI-ARM CALIPER, TEMP, RADIOACTIVE TRACER (2006)

22. Was well cored? No Yes (Submit analysis)
 Was DST run? No Yes (Submit report)
 Directional Survey? No Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17 1/2"	13 3/8"	54.5	SURF	400'	400'	425 CLASS C		SURF	NONE
12 1/4"	9 5/8"	36	SURF	2604'	2604'	1025 "C"		SURF	NONE
8 3/4"	7"	29 & 26	SURF	9450'	9450'	1350 "H"		900'	NONE
6 1/4"	4 1/2"		9051'	10,119'	10,119'	175 CLASS H		9051'-TOL	NONE

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4 1/2"	7567'	7567'						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf Status
A) CISCO	7650'	8450'	7660' - 8450'	0.5"	1580	2 JSPP / 60"
B) CANYON	8540'	8620'	8540' - 8620'	0.5"	160	2 JSPP / 60"
C)						
D)						

26. Perforation Record

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
7050' - 7102'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7262' - 7278'	100 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7304' - 7314'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATIONS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						NON-HAZAROUS CLASS I WELL
Choke Size	Thg. Pres. Flwg. SI	Cog. Pres.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						WAITING ON STATE APPROVAL TO INJECT

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						NON-HAZAROUS CLASS I WELL
Choke Size	Thg. Pres. Flwg. SI	Cog. Pres.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						WAITING ON STATE APPROVAL TO INJECT

* (See instructions and spaces for additional data on page 2)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

N/A (NON-HAZARDOUS CLASS I WELL)

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top
					Meas. Depth

32. Additional remarks (include plugging procedure):

THE PLUGGED AND ABANDONED WELL WAS ACQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM. THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH CEMENT AT 7056' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'. A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'. MIT WAS WITNESSED BY OCD.

(SEE ATTACHED WELL SUMMARY FOR MORE DETAILS)

33. Indicate which items have been attached by placing a check in the appropriate boxes:

- Electrical/Mechanical Logs (1 full set req'd.)
 Geologic Report
 DST Report
 Directional Survey
 Sundry Notice for plugging and cement verification
 Core Analysis
 Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (please print) Darrell Moore Title Env. Mgr for Water n Waste
 Signature Darrell Moore Date 1/24/07

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

FORM APPROVED
OMB NO. 1004-0137
Expires: March 31, 2007

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well Oil Well Gas Well Dry Other _____
 b. Type of Completion New Well Work Over Deepen Plug Back Diff. Resvr.,
 Other _____

2. Name of Operator **NAVAJO REFINING COMPANY**

3. Address **P.O. BOX 159, ARTESIA, NM 88211** 3a. Phone No. (include area code) _____

4. Location of Well (Report location clearly and in accordance with Federal requirements)*
 At surface **790' FROM THE SOUTH LINE AND 2250' FROM THE WEST LINE**
 At top prod. interval reported below **7650' AT THE SAME LOCATION AS ABOVE**
 At total depth **PLUG BACK 10,119' AT THE SAME LOCATION AS ABOVE**

5. Lease Serial No.
NM - 0557371

6. If Indian, Allottee or Tribe Name
N/A

7. Unit or CA Agreement Name and No.

8. Lease Name and Well No.
WDW - 3

9. AFI Well No.
30 - 015 - 26575

10. Field and Pool, or Exploratory

11. Sec., T., R., M., on Block and Survey or Area **S1 - T18S - R27E**

12. County or Parish **EDDY** 13. State **NM**

14. Date Spudded **12/22/1990** 15. Date T.D. Reached **01/29/1991** 16. Date Completed D & A Ready to Prod.

18. Total Depth: MD **10,119'** 19. Plug Back T.D.: MD **9022'** 20. Depth Bridge Plug Set: MD **CMT 9051'-9022'**
 TVD **10,119'** TVD **9022'** TVD **CMT 9051'-9022'**

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CBL/VDL, MULTI-ARM CALIPER, TEMP, RADIOACTIVE TRACER (2006)

22. Was well cored? No Yes (Submit analysis)
 Was DST run? No Yes (Submit report)
 Directional Survey? No Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Shurry Vol. (FEEL)	Cement Top*	Amount Pulled
17 1/2"	13 3/8"	54.5	SURF	400'	400'	425 CLASS C		SURF	NONE
12 1/4"	9 5/8"	36	SURF	2604'	2604'	1025 "C"		SURF	NONE
8 3/4"	7"	29 & 26	SURF	9450'	9450'	1350 "H"		900'	NONE
6 1/4"	4 1/2"		9051'	10,119'	10,119'	175 CLASS H		9051'-TOL	NONE

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4 1/2"	7567'	7567'						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) CISCO	7650'	8450'	7660' - 8450'	0.5"	1590	2 JSPP / 60"
B) CANYON	8540'	8620'	8540' - 8620'	0.5"	160	2 JSPP / 60"
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
7050' - 7102'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7262' - 7278'	100 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7304' - 7314'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATIONS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						NON-HAZARDOUS CLASS I WELL
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						WAITING ON STATE APPROVAL TO INJECT

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						NON-HAZARDOUS CLASS I WELL
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						WAITING ON STATE APPROVAL TO INJECT

* (See instructions and spaces for additional data on page 2)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tub. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tub. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

N/A (NON-HAZARDOUS CLASS I WELL)

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top
					Meas. Depth

32. Additional remarks (include plugging procedure):

THE PLUGGED AND ABANDONED WELL WAS ACQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM. THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH CEMENT AT 7059' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'. A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'. MIT WAS WITNESSED BY OCD.

(SEE ATTACHED WELL SUMMARY FOR MORE DETAILS)

33. Indicate which items have been attached by placing a check in the appropriate boxes:

- Electrical/Mechanical Logs (1 full set req'd.)
 Geologic Report
 DST Report
 Directional Survey
 Sundry Notice for plugging and cement verification
 Core Analysis
 Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (please print) Darrell Moore Title Env. Mgr for Water & Waste
 Signature Darrell Moore Date 1/24/07

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

OCD-ARTESIA

Form 3160-5
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: March 31, 2007

4th - Year
MAR - 5 2007
OCD - ARTESIA, NM

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE- Other instructions on reverse side.

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator NAVAJO REFINING COMPANY

3a. Address
P.O. BOX 159, ARTESIA, NM 88211

3b. Phone No. (include area code)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
S1 - T18S - R27E ; 790' FROM THE SOUTH LINE AND 2250' FROM THE WEST LINE

5. Lease Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name
N/A

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
WDW-3

9. API Well No.
30 - 015 - 26575

10. Field and Pool, or Exploratory Area

11. County or Parish, State
EDDY

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION				
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off	
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input checked="" type="checkbox"/> Well Integrity	
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other	
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	NON-HAZARDOUS	
	<input checked="" type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	CLASS I WELL	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

THE PLUGGED AND ABANDONED WELL WAS ACQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM.

10/1/06 - THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH NEAT CEMENT AT 7950' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'.

10/13/06 - RAN CBL/VDL AND TEMPERATURE SURVEY, PERFORATED INTERVAL FROM 7650' TO 8450' AND FROM 8540' TO 8620'.

10/24/06 - A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'.

11/4/06 - PERFORMED AN INJECTION/FALLOFF TEST ON THE WELL AT 9 TO 10 BPM.

11/15/06 - MECHANICALLY INTEGRITY TEST WERE PERFORMED AND WITNESSED BY THE OCD. THE MECHANICALLY INTEGRITY TEST CONSISTED OF RADIOACTIVE TRACER TEST AND AN ANNULUS PRESSURE TEST. SUBJECT TO LIKE APPROVAL BY STATE (SEE THE ATTACHED WELL SUMMARY FOR MORE DETAILS.)

14. I hereby certify that the foregoing is true and correct

Name (Printed/Typed)
Darrell Moore

Title Env. Mgr. for Water & Waste

Signature
Darrell Moore

Date 1/24/07

THIS SPACE FOR FEDERAL OR STATE OFFICE USE ACCEPTED FOR RECORD

Approved by

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title

Office

Date

FEB 28 2007

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

FREDERICK W. W. OF THE United
PETROLEUM ENGINEER

(Instructions on page 2)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this

form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13 - Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or

present productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

This information is being collected to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer, (WO-630), Mail Stop 401 LS, 1849 C St., N.W., Washington D.C. 20240

SUNDRY NOTICE SPECIAL STIPULATIONS

1. **Approval is granted for the water disposal method presented in the sundry subject to the following conditions:**
2. The operator must provide a water analysis of the water to be injected, together with a copy of the disposal permit granted by the state.

****** Approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.**

Engineering
can be reached at 505-706-2779 for any variances that might be necessary.

F Wright 2/28/07

OCD-ARTESIA

Form 3160-4
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

FORM APPROVED
OMB NO. 1004-0137
Expires: March 31, 2007

Month - Year
- 5 - 2007
ARTESIA, NM

a. Type of Well Oil Well Gas Well Dry Other
b. Type of Completion: New Well Work Over Deepen Plug Back Diff. Resrv.,
Other _____

5. Lease Serial No.
NM - 0557371

6. If Indian, Allottee or Tribe Name
N/A

7. Unit or CA Agreement Name and No.

8. Lease Name and Well No.
WDW - 3

9. AFI Well No.
30 - 015 - 26575

10. Field and Pool, or Exploratory

11. Sec., T., R., M., on Block and Survey or Area
SI - T18S - R27E

12. County or Parish EDDY B. State NM

17. Elevations (DF, RKB, RT, GL)*
3609'

2. Name of Operator **NAVAJO REFINING COMPANY**

3. Address **P.O. BOX 159, ARTESIA, NM 88211** 3a. Phone No. (include area code)

4. Location of Well (Report location clearly and in accordance with Federal requirements)*
At surface **790° FROM THE SOUTH LINE AND 2250° FROM THE WEST LINE**
At top prod. interval reported below **7650° AT THE SAME LOCATION AS ABOVE**
At total depth **PLUG BACK 10,119° AT THE SAME LOCATION AS ABOVE**

14. Date Spudded **12/22/1990** 15. Date T.D. Reached **01/29/1991** 16. Date Completed D & A Ready to Prod.

18. Total Depth: MD **10,119°** TVD **10,119°** 19. Plug Back T.D.: MD **9022°** TVD **9022°** 20. Depth Bridge Plug Set: MD **CMT 9051°-9022°** TVD **CMT 9051°-9022°**

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CBL/VDL, MULTI-ARM CALIPER, TEMP, RADIOACTIVE TRACER (2006)

22. Was well cured? No Yes (Submit analysis)
Was DST run? No Yes (Submit report)
Directional Survey? No Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Shurry Vol. (EEL)	Cement Top*	Amount Pulled
17 1/2"	13 3/8"	54.5	SURF	400'	400'	425 CLASS C		SURF	NONE
12 1/4"	9 5/8"	36	SURF	2604'	2604'	1025 "C"		SURF	NONE
8 3/4"	7"	29 & 26	SURF	9450'	9450'	1350 "H"		900'	NONE
6 1/4"	4 1/2"		9051'	10,119'	10,119'	175 CLASS H		9051'-TOL	NONE

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4 1/2"	7567'	7567'						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) CISCO	7650'	8450'	7660' - 8450'	0.5"	1580	2 JSPPF / 60°
B) CANYON	8540'	8620'	8540' - 8620'	0.5"	160	2 JSPPF / 60°
C)						
D)						

26. Perforation Record

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
7650' - 7182'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7262' - 7278'	100 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7304' - 7314'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATIONS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						NON-HAZAROUS CLASS I WELL
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						WAITING ON STATE APPROVAL TO INJECT

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						NON-HAZAROUS CLASS I WELL
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						WAITING ON STATE APPROVAL TO INJECT

* (See instructions and spaces for additional data on page 2)

ACCEPTED FOR RECORD

FEB 28 2007

FREDERICK WRIGHT
PETROLEUM ENGINEER

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

N/A (NON-HAZARDOUS CLASS I WELL)

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top
					Meas. Depth

32. Additional remarks (include plugging procedure):

THE PLUGGED AND ABANDONED WELL WAS ACQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM. THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH CEMENT AT 7050' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'. A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'. MIT WAS WITNESSED BY OCD.

(SEE ATTACHED WELL SUMMARY FOR MORE DETAILS)

33. Indicate which items have been attached by placing a check in the appropriate boxes:

- Electrical/Mechanical Logs (1 full set req'd.)
 Geologic Report
 DST Report
 Directional Survey
 Sundry Notice for plugging and cement verification
 Core Analysis
 Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (please print) Darrell Moore Title Env. Mgr for Water & Waste
 Signature Darrell Moore Date 1/24/07

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

INSTRUCTIONS

GENERAL: This form is designed for submitting a complete and correct well completion/recompletion report and log on all types of wells on Federal and Indian leases to a Federal agency, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal office.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, and all types electric), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal laws and regulations. All attachments should be listed on this form, see item 33.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal office for specific instructions.

ITEM 17: Indicate which reported elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

ITEM 23: Show how reported top(s) of cement were determined, i.e. circulated (CIR), or calculated (CAL), or cement bond log (CBL), or temperature survey (TS).

PRIVACY ACT

The Privacy Act of 1974 and the regulation in 43 CFR 2.48 (d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. et seq.; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is to be used to evaluate the actual operations performed in the drilling, completing and testing of a well on a Federal or Indian lease.

ROUTINE USES: (1) Evaluate the equipment and procedures used during the drilling and completing/recompleting of a well. (2) The review of geologic zones and formation encountered during drilling. (3) Analyze future applications to drill in light of data obtained and methods used. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this report and disclosure of the information is mandatory once a well drilled on a Federal or Indian lease is completed/recompleted.

The Paperwork Reduction Act of 1995 requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling and completing/recompleting wells on Federal and Indian oil and gas leases.

This information will be used to analyze operations and to compare equipment and procedures actually used with those proposed and approved.

Response to this request is mandatory only if the operator elects to initiate drilling and completing/recompleting operations on an oil and gas lease.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 60 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer, (WO-630), MS 401 LS, 1849 C Street, N.W., Washington, D.C. 20240.

Well Summary

Navajo Refining Company (Navajo) contracted Subsurface Technology, Inc. (Subsurface), to prepare an application for permit and to reenter a plugged and abandoned (P&A) oil and gas well. The Application for Permit to Drill or Reenter and the Sundry Notices and Reports on Wells was submitted to the Department of the Interior, Bureau of Land Management (BLM), on June 29, 2006 and approved. The Application for Permit to Drill, Re-enter, Deepen, Plug Back, or add a Zone was submitted to the State of New Mexico Oil Conservation Commission (OCD) on June 29, 2006 and approved.

Subsurface prepared an engineering plan to reenter the P&A'ed oil and gas well formally owned by Mewbourne Oil Company. The original well name was Caulk Bluff Federal #1 (API number 30-015-26575), and a Change of Operator application was submitted to the OCD on December 5, 2000 and approved under the well name of WDW-3. Under contract to Navajo, Subsurface commenced field operations on September 25, 2006. The existing location was cleared and prepared for reentry operations. An earthen lined reserve pit was dug to catch returns. All depths unless stated are referenced to rig floor at six feet to seven feet above ground level. The rig floor was moved from six feet to seven feet after drilling out the cast iron bridge plugs.

A workover rig and reverse unit was placed on location and the existing wellhead was removed. The first cast iron bridge plug (CIBP) at 7010 feet was drilled and the perforated interval from 7050 feet to 7102 feet was squeezed off with neat cement and successfully pressured tested to six hundred eighty pounds per square inch gauge pressure (680 psig). The second and third CIBP at 7190 feet and 7279 feet was drilled. There appeared to be ten feet of cement on top of the third CIBP. The perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314 feet was squeezed with neat cement. The squeezed interval was pressure tested to 920 psig and would not hold. A second cement squeeze was performed across the perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314. The interval was pressured tested to 630 psig and continued to lose pressure at a rate of two pounds per square inch every thirty minutes (2 psi/30 min). The fourth CIBP at 7595 feet was drilled and at 7838 feet a cement plug was encountered and drilled through. Cement was tagged twenty nine (29) feet above the top of the liner at 9022 feet. The hole was circulated clean and prepared for logging.

A Cement Bond Log (CBL), Variable Density Log (VDL), caliper log, and temperature survey were performed. The CBL/VDL showed that the top of the cement (TOC) behind the 7-inch casing was located 900 feet from the surface. The OCD was notified and approved the existing well condition. The casing was perforated from 7660 feet to 8450 feet and from 8540 feet to 8620 feet at 2-JSPF on sixty degree (60°) phasing.

A packer was set at 7546 feet with 2 7/8-inch PH-6 tubing, the well was swabbed back and samples of the formation fluid were recovered. It was estimated that two hundred twenty six barrels (226 bbls) of formation fluid was returned to the surface. A pressure test on the annulus between the 7-inch and 2 7/8-inch was performed at 660 psig with the annulus losing pressure at a rate of 8 psi/hr.

An injection test was performed on the well down the 2 7/8-inch tubing with the annulus open to the bottom of the well. The open annulus will allow for the calculation of the bottom hole pressure while pumping down the 2 7/8-inch tubing with out the influence of tubing friction pressure on the bottom hole calculations. The injection rates were from two barrels per minute (2 bpm) to ten barrels per minute (10 bpm). From the data collected during the injection test it appears that the well will be able to accept an injection rate up to 10 bpm at the permitted pressure of 1550 psig with 4 1/2-inch, 11.6 pound per foot (11.6 lb/ft) tubing in the wellbore.

At the request of the OCD, Subsurface went back into the wellbore with a retrievable bridge plug (RBP) to test the casing and isolate any leaks to within 1000 feet. The RBP was set at 7550 feet and the packer was set at 6985 feet to isolate the squeezed interval from 7050 feet to 7314 feet. The squeezed interval was pressure tested to 490 psig and the annulus to 632 psig. The squeezed interval was losing pressure at a rate of 6 psi/hr and the annulus was gaining pressure due to thermal affects. The RBP was moved up the wellbore to 1255 feet and casing pressure tested to 569 psig. The casing above 1255 feet was losing pressure at a rate of 2 psi/hr. The casing leaks were isolated to the squeezed interval from 7050 feet to 7314 feet and in the interval from surface to 1255 feet. The OCD was called and approved the 300PSI sealing application to stop the casing leaks across the two intervals.

The 4 1/2-inch tubing was run into the wellbore and the Arrow X-1 packer was set at 7575.73 feet with 37,000 lbs of tension. Prior to running the 4 1/2-inch tubing a new Superior hanging spool was installed. Prior to setting the tubing packer, the annulus between the 4 1/2-inch tubing and the 7-inch casing was filled with inhibited brine, with the 300psi sealant across the squeezed perforations and across the upper section of the 7-inch casing. Once the packer was set and casing hung off in the spool a new Superior wellhead was installed and the P-seals were pressure tested to 3000 psig. After the wellhead was assembled the annulus was squeezed at 545 psig for four hours (4 hrs) as specified by the sealant manufacture representative on site. The annulus was then pressure tested to 480 psig overnight with no pressure loss. Workover rig was disassembled and moved off location with all associated equipment.

A 12 hr pump in and falloff test was performed down the 4 1/2-inch tubing. To maintain a surface injection pressure that was below the permitted pressure of 1550 psi the injection rate was lowered to 9 bpm at the end of the pump in procedure. The BHP gauge was placed at 8630 feet for 14 hrs to monitor BHP, when the gauge was pulled five minute (5 min) gradient stops were made every 1000 feet with the first stop at 7000 feet. The analysis of the data showed interference from the adjacent injection wells, which skewed the results for determination of the skin and possibly the permeability. The equipment used to perform the falloff testing was moved off location to prepare for mechanical integrity testing (MIT).

The MIT was performed and witnessed by the OCD. The MIT consisted of an annulus pressure test, and a radioactive tracer survey. The temperature survey was performed during the CBL/VDL logging event and will be used as a baseline for any future temperature surveys. The annulus pressure test was performed at 530 psia and lost 2.5 psi over a one hour period, which was within the OCD requirements of five percent (5%)

over a 30 min time interval. The radioactive tracer survey showed no signs of fluid flow out of the permitted interval above 7650 feet. The OCD witnessed the annular pressure test and the first half of the radioactive tracer survey.

The annulus monitoring system was installed and tested. The well was turned over to Navajo for injection.



**LOGGING
SERVICES**

R/A TRACER LOG INTERPRETATION

11/27/2006

PLANT: NAVAJO REFINING CO.

C/O: SUBSURFACE TECHNOLOGY

WELL NAME: CHALK BLUFF FEDERAL # 1 WDW # 3

RE: Radioactive Tubing & Packer Survey ran on 11/18/2006

A Pre Base Log was run from 9020' to 7350' to detect and record background gamma counts.

Iodine 131 was then ejected at a depth of 7375' and pumped down the tubing and into the permitted interval. Overlapping logging passes tracked the R/A tracer material as it moved down in the wellbore. The R/A material was seen traveling down the tubing, past the packer, and exiting the permitted injection interval.

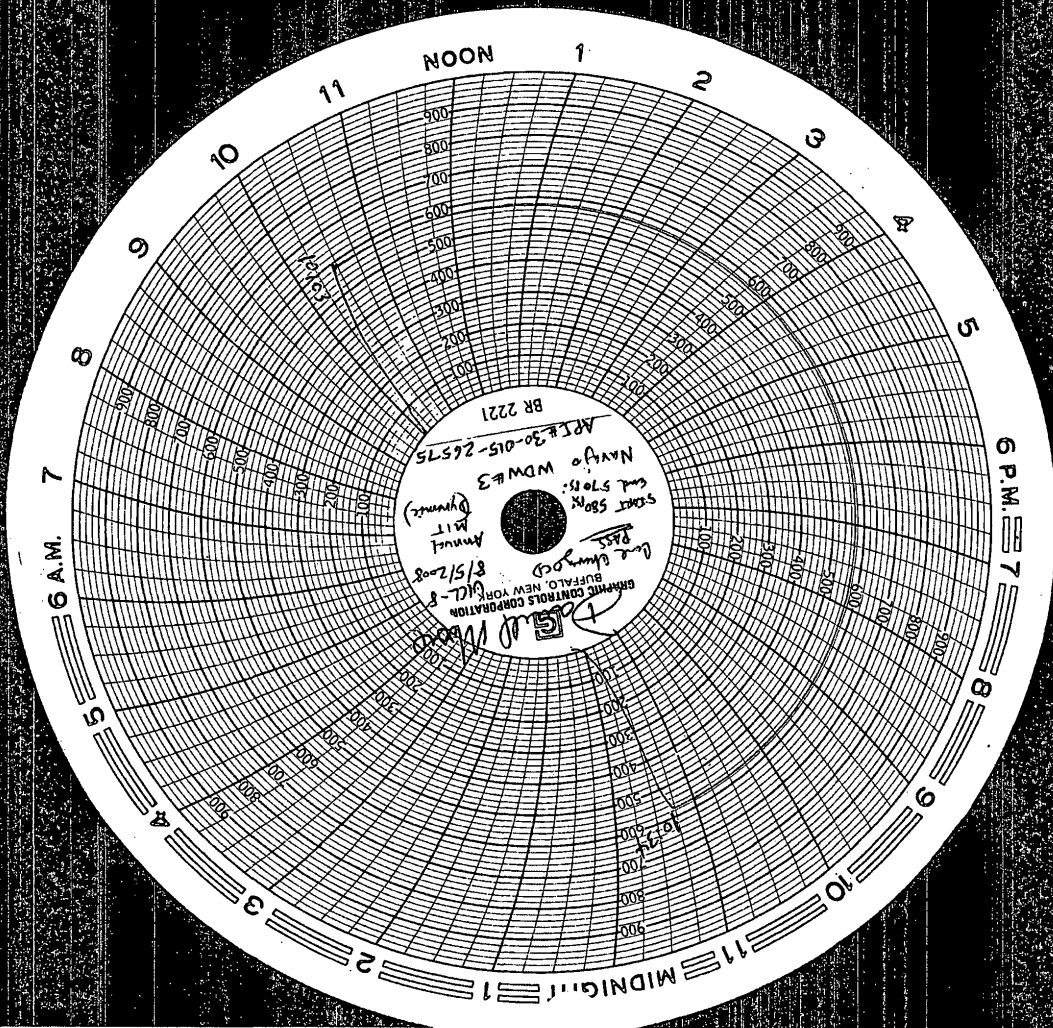
The flow profile log was then repeated and this survey also showed R/A material going out into the permitted interval.

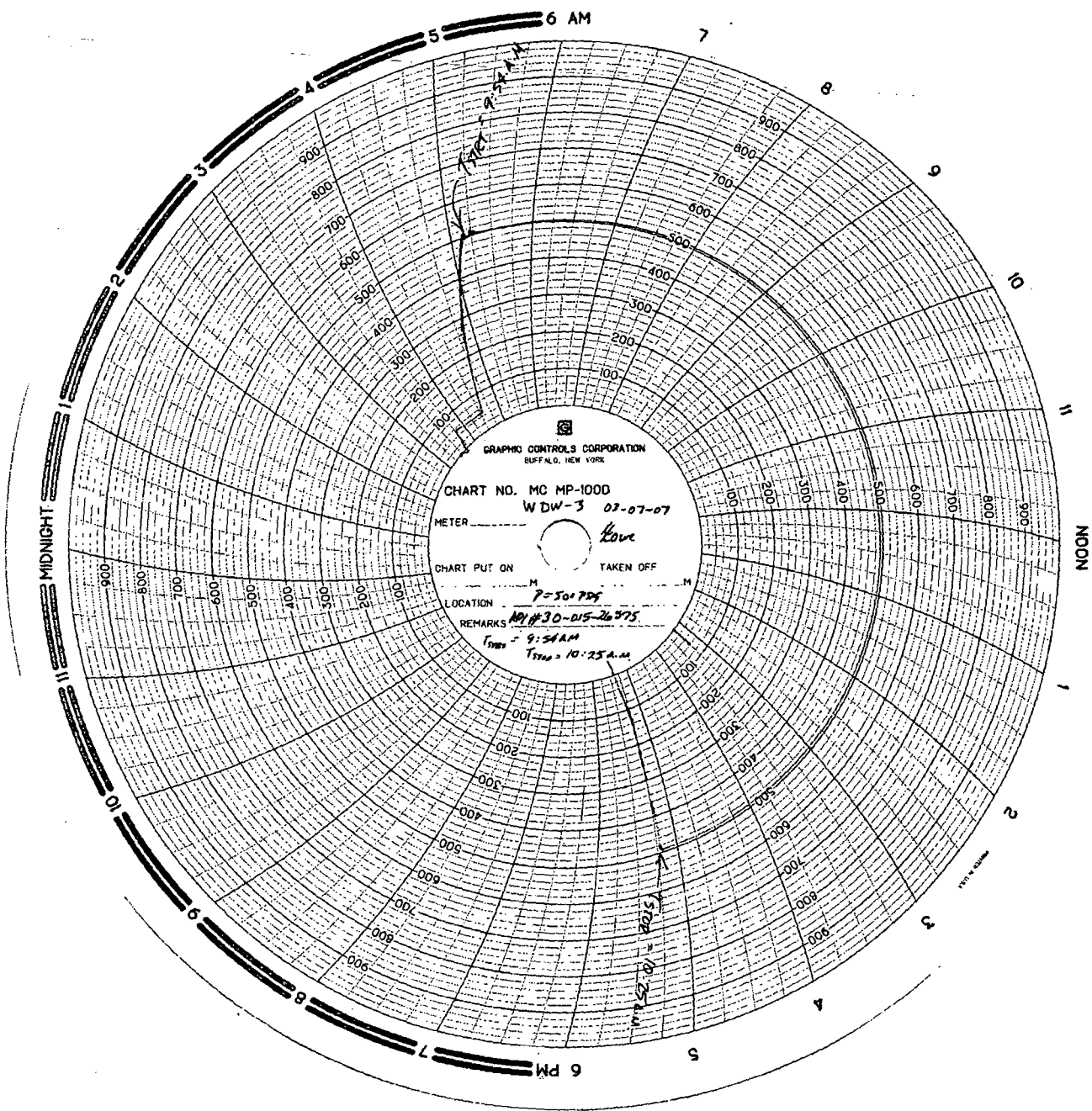
Two Stationary Time Drive surveys were run with the tool at 7640'. No indications of upward migration were recorded.

A Post Base log was then run from 9016' to 7342' and noted that all R/A material was flushed out of the wellbore into the permitted interval.

A handwritten signature in cursive script that reads 'John Croce'.

John Croce





GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK

CHART NO. MC MP-1000
WDW-3 01-07-07

METER *None*

CHART PUT ON _____ M TAKEN OFF _____ M

LOCATION *P=501705*

REMARKS *NO. #30-015-26975*
T_{STOP} = 9:54 AM
T_{STOP} = 10:25 A.M.

MIDNIGHT

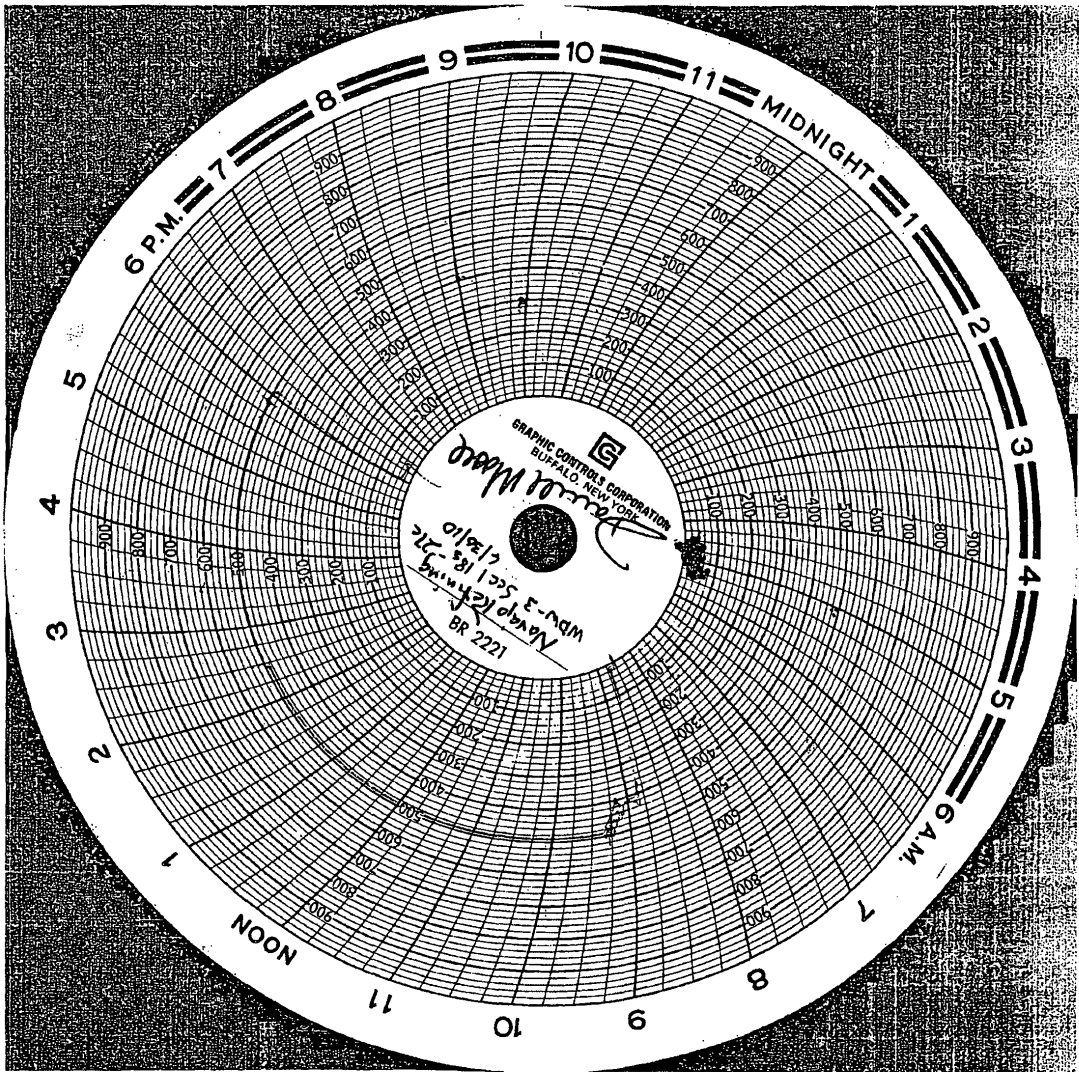
NOON

11 10 9 8 7 6 PM

11 10 9 8 7 6 5 4 3 2 1

900
800
700
600
500
400
300
200
100

STOP - 10:25 A.M.



Chavez, Carl J, EMNRD

From: Moore, Darrell [Darrell.Moore@hollycorp.com]
Sent: Friday, March 05, 2010 8:51 AM
To: Chavez, Carl J, EMNRD
Subject: WDW-3 Qtrl MIT

Carl

Attached, please find the chart for the MIT we did on our WDW-3 on February 24, 2010. We also opened the did a bradenhead test and there was no sustained pressure. There was a slight puff but it dissipated quickly and can be attributed to temperature changes.

If there are any questions concerning this submission, please call me at 575-746-5281.

Darrell Moore

Environmental Manager for Water and Waste

Navajo Refining Company, LLC

Phone Number 575-746-5281

Cell Number 575-703-5058

Fax Number 575-746-5451

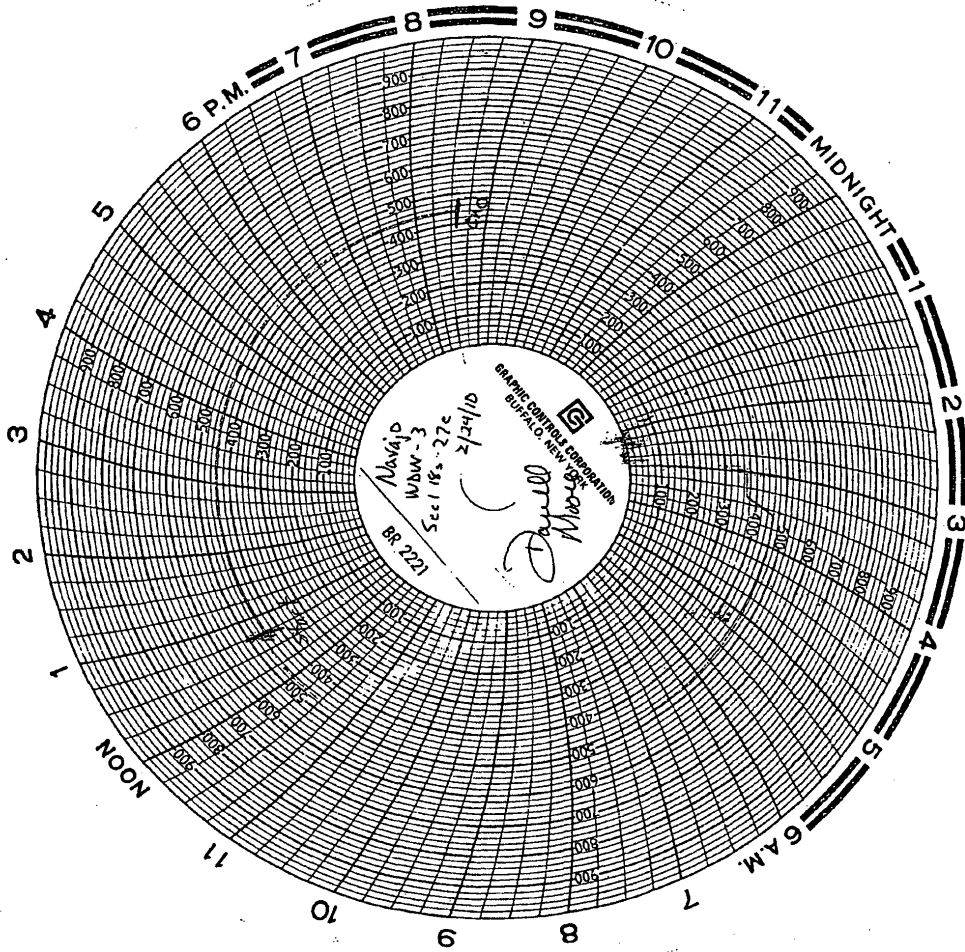
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GRAPHIC CONTROL CORPORATION
BUFFALO, NEW YORK

Navajo
INDIAN - 3
Sec 183-27c
2/24/10
BR 2221

[Signature]

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, July 06, 2010 9:04 AM
To: 'Moore, Darrell'
Subject: RE: Sewer Testing

Darrell:

Thanks for the notification.

Also, the OCD needs Navajo to complete the quarterly Bradenhead information on the form provided to you last week for our records. Let me know if you have any questions. Staff in Artesia questioned the 30 minutes in the form, and I determine that Navajo just needs to use the form to document compliance with our quarterly Bradenhead testing requirement for WDW-3. The MITs for Class I Wells need to be completed by 9/30/2010 along with Annual Fall-Off Test. OCD can use the MIT pressure chart for WDW-3 to satisfy the MIT requirement this season.

Please contact me if you have questions. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Moore, Darrell [<mailto:Darrell.Moore@hollycorp.com>]
Sent: Tuesday, July 06, 2010 7:24 AM
To: Chavez, Carl J, EMNRD
Subject: Sewer Testing

Carl

We will be testing sewers in the Vacuum Unit at the Artesia Refinery on Friday July 9, 2010 starting at 8 am. If OCD would like to witness let me know.

Darrell Moore
Environmental Manager for Water and Waste
Navajo Refining Company, LLC
Phone Number 575-746-5281
Cell Number 575-703-5058
Fax Number 575-746-5451

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Oil Conservation Division, Environmental Bureau

C/O: Carl Chavez

1220 South St. Francis Drive

Santa Fe, New Mexico 87505

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test June 30, 2010 Operator Navajo Refining API #30-015-26575

Property Name WDW Well No. 3 Location: Unit 0 Section 1 Township 185 Range 27e
Injecting

Well Status (Shut-In or Producing) Tubing Intermediate Casing Bradenhead

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

TIME	PRESSURES:			BRADENHEAD FLOWED	INTERMEDIATE FLOWED
	BRADENHEAD	INTERMEDIATE	CASING		
5 minutes	0	0		Steady Flow	N/A
10 minutes	N/A	N/A		Surges	N/A
15 minutes	N/A	N/A		Down to Nothing	immediately
20 minutes	N/A	N/A		Nothing	X
25 minutes	N/A	N/A		Gas	N/A
30 minutes	N/A	N/A		Gas & Water	N/A
				Water	N/A

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR ___ FRESH ___ SALTY ___ SULFUR ___ BLACK ___

5 MINUTE SHUT-IN BRADENHEAD 0 INTERMEDIATE 0

REMARKS:

Both the surface and intermediate bradenheads were opened one at a time. Both had a puff of air upon opening the valve (from heat build-up) and then nothing. No flow. No pressure.

By Darrell Moore *Darrell Moore* Witness

Env. Mgr. for Water & Waste Navajo Refining
(Position)

E-mail address darrell.moore@hollycorp.com

Chavez, Carl J, EMNRD

From: Moore, Darrell [Darrell.Moore@hollycorp.com]
Sent: Wednesday, June 30, 2010 1:47 PM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD
Subject: FW:
Attachments: WDW-3.pdf

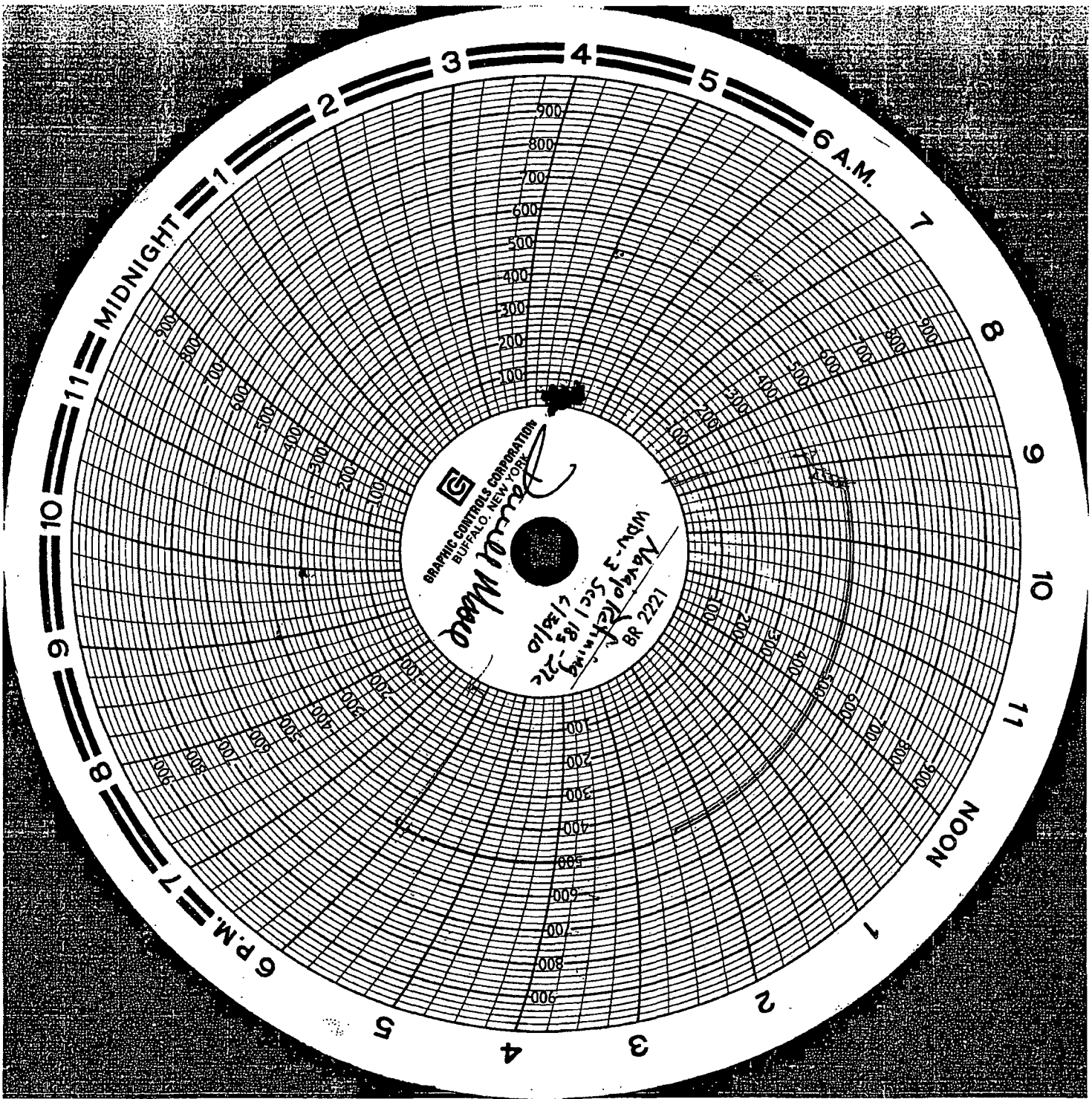
Gentlemen,

Attached, please find the quarterly MIT for Navajo's WDW-3 Injection well located in Sec 1, 18 south 27 east. If there are any questions concerning this submission, please call me at 575-746-5281.

From: Hernandez, Carrie
Sent: Wednesday, June 30, 2010 1:44 PM
To: Moore, Darrell
Subject:

Carrie Hernandez
Environmental Administrative Assistant
Navajo Refining Co. LLC
Direct Line 575-748-6733
Direct Fax 575-746-5451
Life is a Journey. Roll down the Windows and Enjoy the Breeze

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District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
300 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-015-26575
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. NM-0557371
7. Lease Name or Unit Agreement Name Gaines WDW-3
8. Well Number WDW-3
9. OGRID Number
10. Pool name or Wildcat: Navajo Permo-Penn

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well Gas Well Other Injection Well

2. Name of Operator
Navajo Refining Company

3. Address of Operator
Post Office Box 159, Artesia, New Mexico 88211

4. Well Location
Unit Letter: N : 790 feet from the South line and 2250 feet from the West line
Section 01 Township 18S Range 27E NMPM County Eddy

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3609' GL, ' RKB

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

<p>NOTICE OF INTENTION TO:</p> <p>PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/></p> <p>TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/></p> <p>PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/></p> <p>DOWNHOLE COMMINGLE <input type="checkbox"/></p> <p>OTHER: PERFORM PRESSURE FALLOFF TEST <input checked="" type="checkbox"/></p>	<p>SUBSEQUENT REPORT OF:</p> <p>REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/></p> <p>COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input type="checkbox"/></p> <p>CASING/CEMENT JOB <input type="checkbox"/></p> <p>OTHER: <input type="checkbox"/></p>
---	--

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

December 12, 2011 - Install bottomhole gauges into WDW-1, WDW-2, and WDW-3 by 11:45am. Continue injection into all three wells.

December 13, 2011 - Continue injection into all three wells.

December 14, 2011 - At 12:15pm, the offset wells WDW-1 and WDW-2 will be shut-in. A constant injection rate will be established for WDW-3 and continue for a 30 hour injection period. Do not exceed 1000 psig wellhead pressure.

December 15, 2011 - At 7:00pm, WDW-3 will be shut in for a 30-hour falloff period. WDW-1 and WDW-2 will remain shut-in.

December 16, 2011 - All three wells will continue to be shut in while monitoring falloff pressure in all three wells.

December 17, 2011 - At 7:00am, acquire downhole pressure gauges from all three wells. Tag bottom of fill and come out of hole very slowly, making 7-minute gradient stops while coming out of WDW-3 every 1000 feet (7000 ft, 6000 ft, 5000 ft, 4000 ft, 3000 ft, 2000 ft, 1000 ft, surface). Run in hole with a temperature tool and conduct temperature survey from the surface to the top of the fill. Turn the wells back to Navajo personnel.

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011
Type or print name Timothy Jones E-mail address: tjones@subsurfacegroup.com PHONE: 713-880-4640
or State Use Only

APPROVED BY: Carl J. Whaley TITLE Environmental Engineer DATE 10/19/2011
Conditions of Approval (if any):

See e-mail conditions dated 10/19/2011 attached to WDW-1.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, October 19, 2011 4:06 PM
To: 'Moore, Darrell'
Cc: Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject: Navajo Refining Company UIC Class I (NH) Injection Wells WDWs 1, 2 & 3 (UICI-008) Fall Off Test Plan (August 2011)

Darrell:

The New Mexico Oil Conservation Division (OCD) is in receipt of your above subject test plan. OCD has already approved the Fall-Off Test (FOT) Plan with conditions on July 28, 2009. The OCD notes that it is also in the process of reviewing C-103s Sundry Notices for the upcoming FOTs.

OCD observes some changes in this FOT Plan submittal that are not acceptable to the OCD. For example, Exhibit 1 is not an acceptable exhibit to the OCD for reasons specified in the 2010 FOT report review and later during the May 2011 meeting in Santa Fe. However, the operator continues to submit exhibits with certain assumptions that have not been accepted or approved by the OCD, i.e., that the injection wells are show interconnection with the injection zone during past FOTs. Perhaps the operator can conduct the 2011 FOT with the information and exhibits needed to prove the interconnection of injection wells with the injection zone? The Certified PE should provide the exhibits in the 2011 FOT Report with the analysis and conclusions supporting any claims for the OCD to review and consider before approving. This is apparently a FOT frequency per well issue that the operator is attempting to prove.

The OCD provides the following comments, observations, and/or recommendations on the above subject plan below.

Comments:

- The OCD approved the original Fall-Off Test (FOT) Plan based on OCD Guidance dated December 3, 2007. There should not be any significant changes to this FOT Plan because it is flexible where needed to allow operators to implement it on each injection well.
- OCD likes to be notified to witness the installation of bottom hole gauges and to be present at least one hour before injection shut-off and commencement of FOT monitoring.
- OCD is concerned about the Section VI No. 1(e) WDW-3 Cement Bond Log quality being poor from 900 ft. to 1200 ft- especially at the depths: 2662 – 2160; 4876 – 5372; and 6750 – 7600 ft. micro annulus scenario.

Observations:

- Section V No. 2: The objective of the FOT is NOT to achieve or limit a 100 psig pressure differential before vs. after FOT injection vs. shut-off, but it is a minimum pressure differential that OCD stipulates in its guidance for a successful FOT and injection zone that may still continue to be utilized for disposal, i.e., not too pressured up and subject to continued fracturing under daily allowed maximum surface injection pressure operational limits.
- Section V No. 7 and Exhibit 1: OCD observes a bottom hole pressure chart for WDWs 1, 2 and 3 at 7660 feet that the operator presented in the 2010 FOT and again during a May 2011 meeting in Santa Fe, New Mexico to show the interconnection between injection wells and the injection formation. The OCD had commented that there was no explanation or conclusion provided from the Certified PE who conducted and completed the 2010 FOT report that supports the operator's claim that all injection wells are interconnected based on Exhibit 1.

Furthermore, the OCD requested a statement or information supporting the operator's claim by the Certified PE, but never received one. At the meeting, the OCD explained that based on Exhibit 1, there was no support for the claim. In order to make the interconnection determination, during each FOT at each well and off-set injection wells (WDWs not being FOT'd) before and throughout the FOT would need bottom hole pressures monitored in tandem at each well location to establish the interconnectivity of the injection wells with the receiving injection formation under a uniform time scale. This would be a chart that could be plotted that would show during the test the interconnectivity of the wells for each FOT. The OCD doubts that the operator can make the case for interconnectivity between injection wells and injection formation because of the significant distance between the injection wells and fact that sedimentation in formation varies laterally and uniformity in sedimentation, saturated porosity and permeability due to variation in sedimentation would by chance make the injection formation aerially extensive and uniform over a 3 to 5 mile radius from each injection well. Also, even if by chance there was

- uniformity over the mileage specified, the distance between injection wells and corresponding pressure would likely not be observed.
- Exhibit 6: OCD observes in Section B a proposed MIT once every 5 years. OCD's UIC Program requires annual MITs and/or after down hole work is performed on a well.

Recommendations:

- Operator is running survey logs to the bottom of fill or below USDW (fresh water) zones, which excludes an evaluation of casing in the fresh water zone. Please run logs up to surface.
- Be sure to also record and provide injection flow rate and pressure leading up to shut-off and monitoring throughout the FOT monitoring period. OCD needs to confirm that a pseudo steady-state condition was achieved before shut-off. This data is also needed for software modeling of the FOT.
- Please provide electronic data from the FOTs at each well in order for the OCD to run its software model to confirm the results in the report.
- Section V No. 13: Surface pressure monitoring and Horner Plot during injection should be used to confirm radial flow condition is achieved instead of waiting a set period if operator wishes to reduce the injection period.

Disclaimer: Please be advised that OCD has already approved with conditions Navajo Refining Company's Fall-Off Test (FOT) Plan on July 28, 2009, and is not providing approval of this FOT Plan; however, comments, observations and recommendations herein should help Navajo Refining Company understand the OCD's concerns based on the submittal.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
 New Mexico Energy, Minerals & Natural Resources Dept.
 Oil Conservation Division, Environmental Bureau
 1220 South St. Francis Dr., Santa Fe, New Mexico 87505
 Office: (505) 476-3490
 Fax: (505) 476-3462
 E-mail: CarlJ.Chavez@state.nm.us
 Website: <http://www.emnrd.state.nm.us/ocd/>

Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at: <http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental>)

Submit 1 Copy To Appropriate District Office

District I - (575) 393-6161
1625 N French Dr, Hobbs, NM 88240
District II - (575) 748-1283
811 S First St, Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd, Aztec, NM 87410
District IV - (505) 476-3460
1220 S St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised August 1, 2011

WELL API NO. 30-015-26575
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. NM-0557371
7. Lease Name or Unit Agreement Name Gaines WDW-3
8. Well Number WDW-3
9. OGRID Number
10. Pool name or Wildcat: Navajo Permo-Penn
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3609' GL, RKB

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

1. Type of Well: Oil Well Gas Well Other Injection Well

2. Name of Operator
Navajo Refining Company

3. Address of Operator
Post Office Box 159, Artesia, New Mexico 88211

4. Well Location
Unit Letter N : 790 feet from the South line and 2250 feet from the West line
Section 01 Township 18S Range 27E NMPM County Eddy

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

<p>NOTICE OF INTENTION TO:</p> <p>PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/></p> <p>TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/></p> <p>PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/></p> <p>DOWNHOLE COMMINGLE <input type="checkbox"/></p> <p>OTHER: PERFORM PRESSURE FALLOFF TEST <input checked="" type="checkbox"/></p>	<p>SUBSEQUENT REPORT OF:</p> <p>REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/></p> <p>COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input type="checkbox"/></p> <p>CASING/CEMENT JOB <input type="checkbox"/></p> <p>OTHER: <input type="checkbox"/></p>
---	--

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

December 12, 2011 - Install bottomhole gauges into WDW-1, WDW-2, and WDW-3 by 11:45am. Continue injection into all three wells.

December 13, 2011 - Continue injection into all three wells.

December 14, 2011 - At 12:15pm, the offset wells WDW-1 and WDW-2 will be shut-in. A constant injection rate will be established for WDW-3 and continue for a 30 hour injection period. Do not exceed 1000 psig wellhead pressure.

December 15, 2011 - At 7:00pm, WDW-3 will be shut in for a 30-hour falloff period. WDW-1 and WDW-2 will remain shut-in.

December 16, 2011 - All three wells will continue to be shut in while monitoring falloff pressure in all three wells.

December 17, 2011 - At 7:00am, acquire downhole pressure gauges from all three wells. Tag bottom of fill and come out of hole very slowly, making 7-minute gradient stops while coming out of WDW-3 every 1000 feet (7000 ft, 6000 ft, 5000 ft, 4000 ft, 3000 ft, 2000 ft, 1000 ft, surface). Run in hole with a temperature tool and conduct temperature survey from the surface to the top of the fill. Turn the wells back to Navajo personnel.

RDade 10/11/11
Accepted for record
NMOCD

RECEIVED
OCT 07 2011
NMOCD ARTESIA

Spud Date:

[Empty box for Spud Date]

Rig Release Date:

[Empty box for Rig Release Date]

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011
Type or print name Timothy Jones E-mail address: tjones@subsurfacegroup.com PHONE: 713-880-4640
or State Use Only

APPROVED BY: _____ TITLE _____ DATE _____
Conditions of Approval (if any):

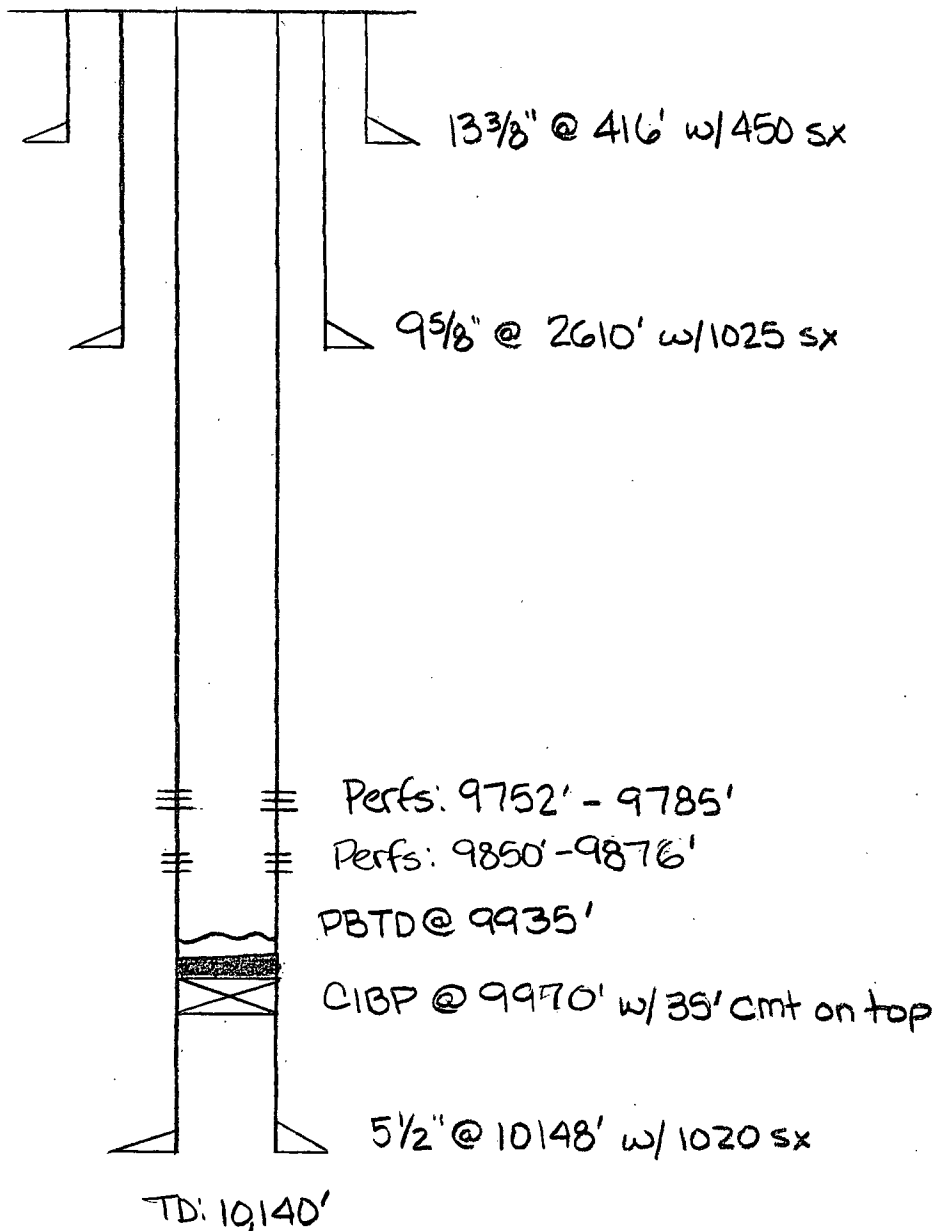
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 97
Artificial Penetration Review

OPERATOR Mewbourne Oil Co.
LEASE Chalk Bluff Fed. Com
WELL NUMBER #002
DRILLED 8/24/91
PLUGGED N/A

STATUS Active
LOCATION Sec. 1 -T18S-R27E
MUD FILLED BOREHOLE N/A
TOP INJECTION ZONE -3591'
API NO. 30-015-26741

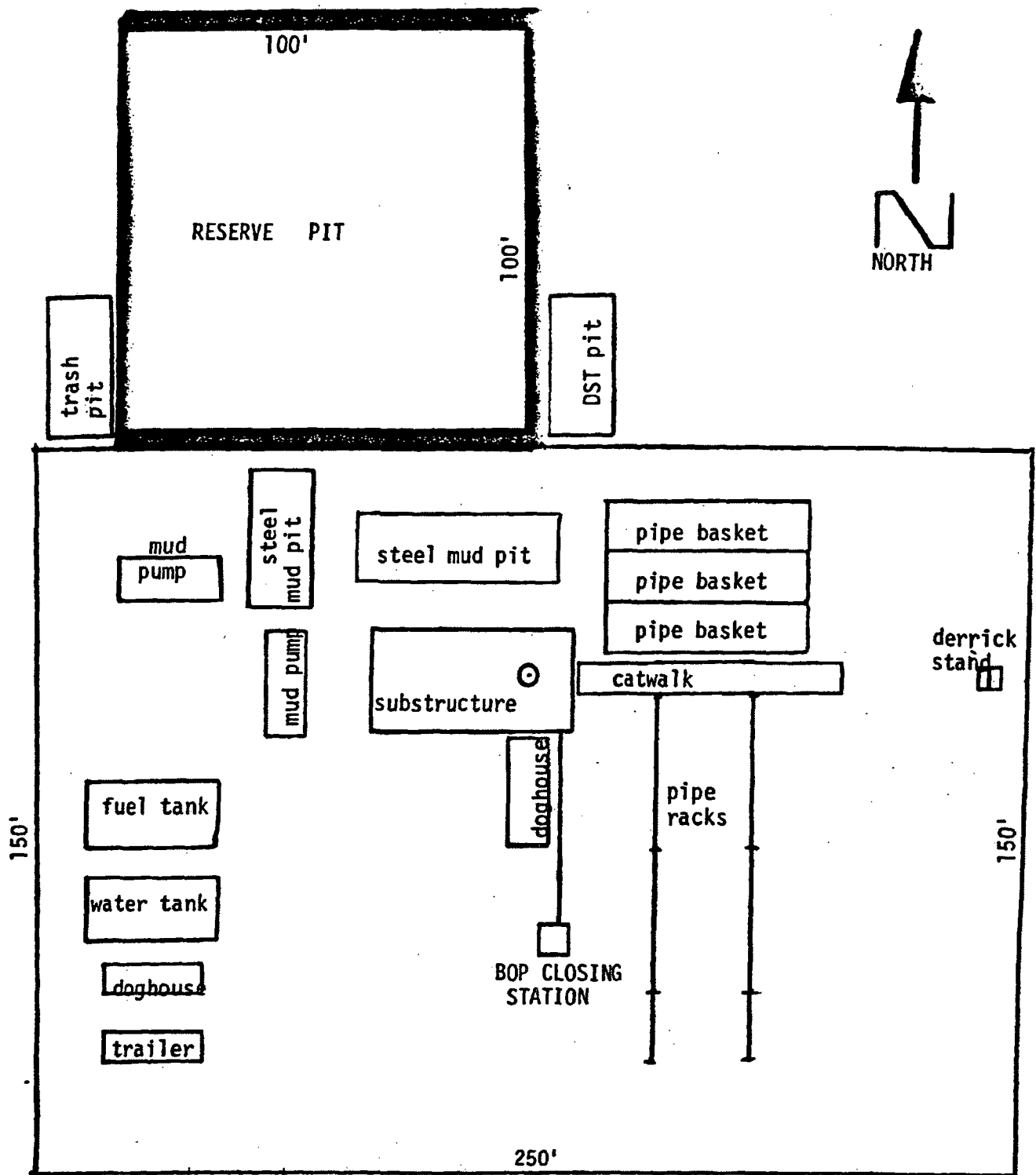
REMARKS:



MAP ID NO. 97

**MEWBOURNE OIL CO.
CHALK BLUFF FEDERAL COM NO. 002**

API NO. 30-015-26741



Access
Road

Exhibit "C"

Mewbourne Oil Company
 Chalk Bluff Federal #2
 Lease # NM-0557371
 1350' FWL & 1650' FNL
 Sec. 1-T18S-R27E
 Eddy County, New Mexico

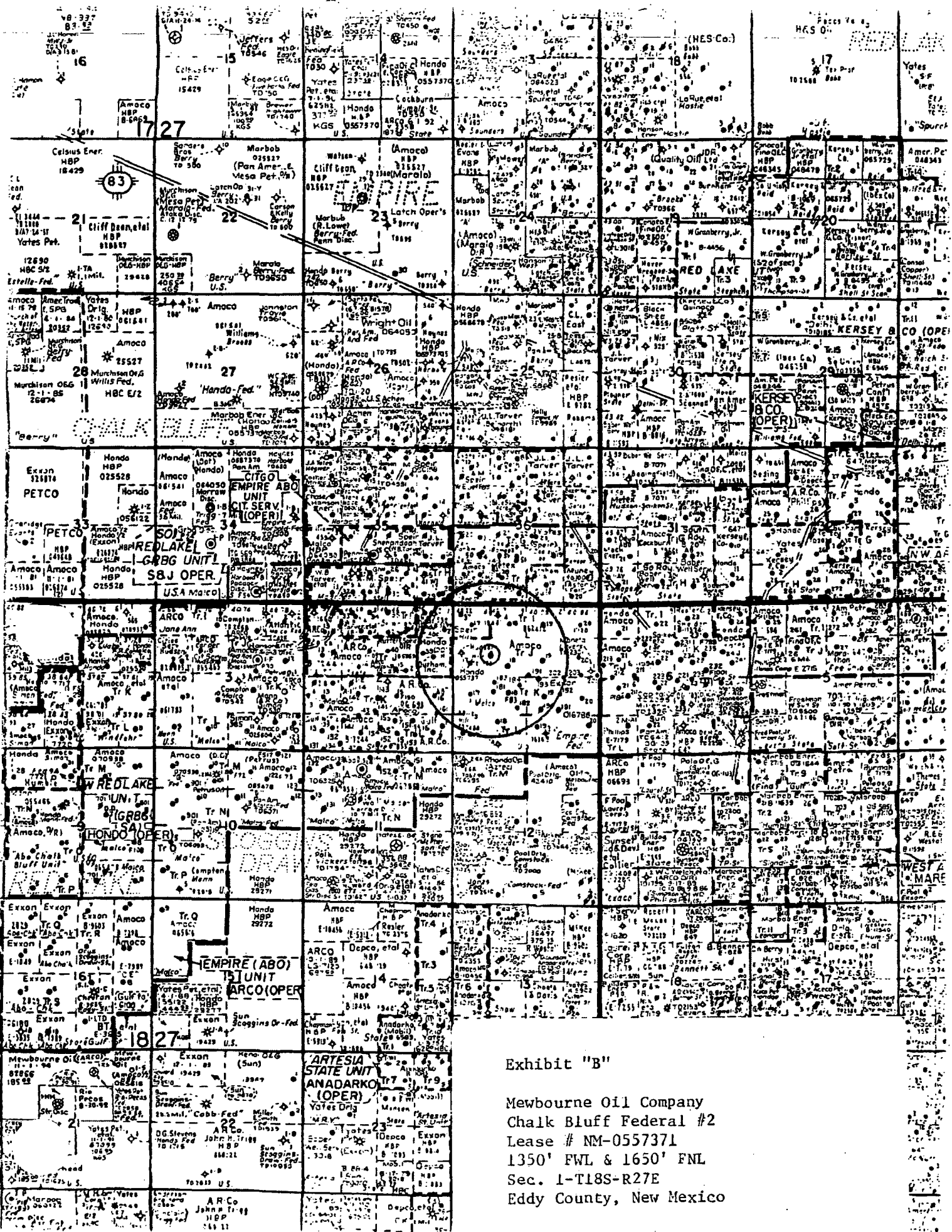


Exhibit "B"

Mewbourne Oil Company
 Chalk Bluff Federal #2
 Lease # NM-0557371
 1350' FWL & 1650' FNL
 Sec. 1-T18S-R27E
 Eddy County, New Mexico

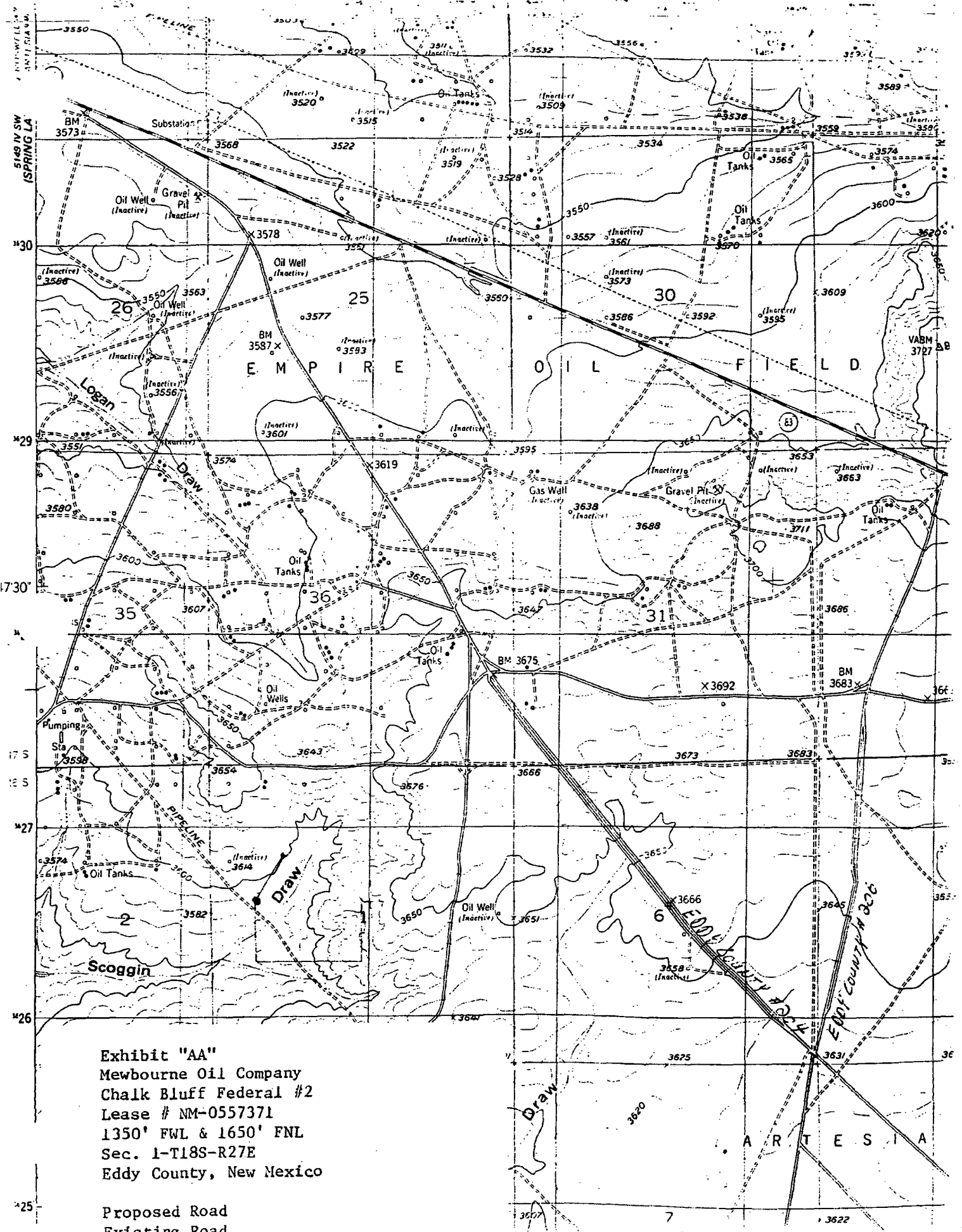


Exhibit "AA"
 Mewbourne Oil Company
 Chalk Bluff Federal #2
 Lease # NM-0557371
 1350' FWL & 1650' FNL
 Sec. 1-T18S-R27E
 Eddy County, New Mexico

Proposed Road
 Existing Road

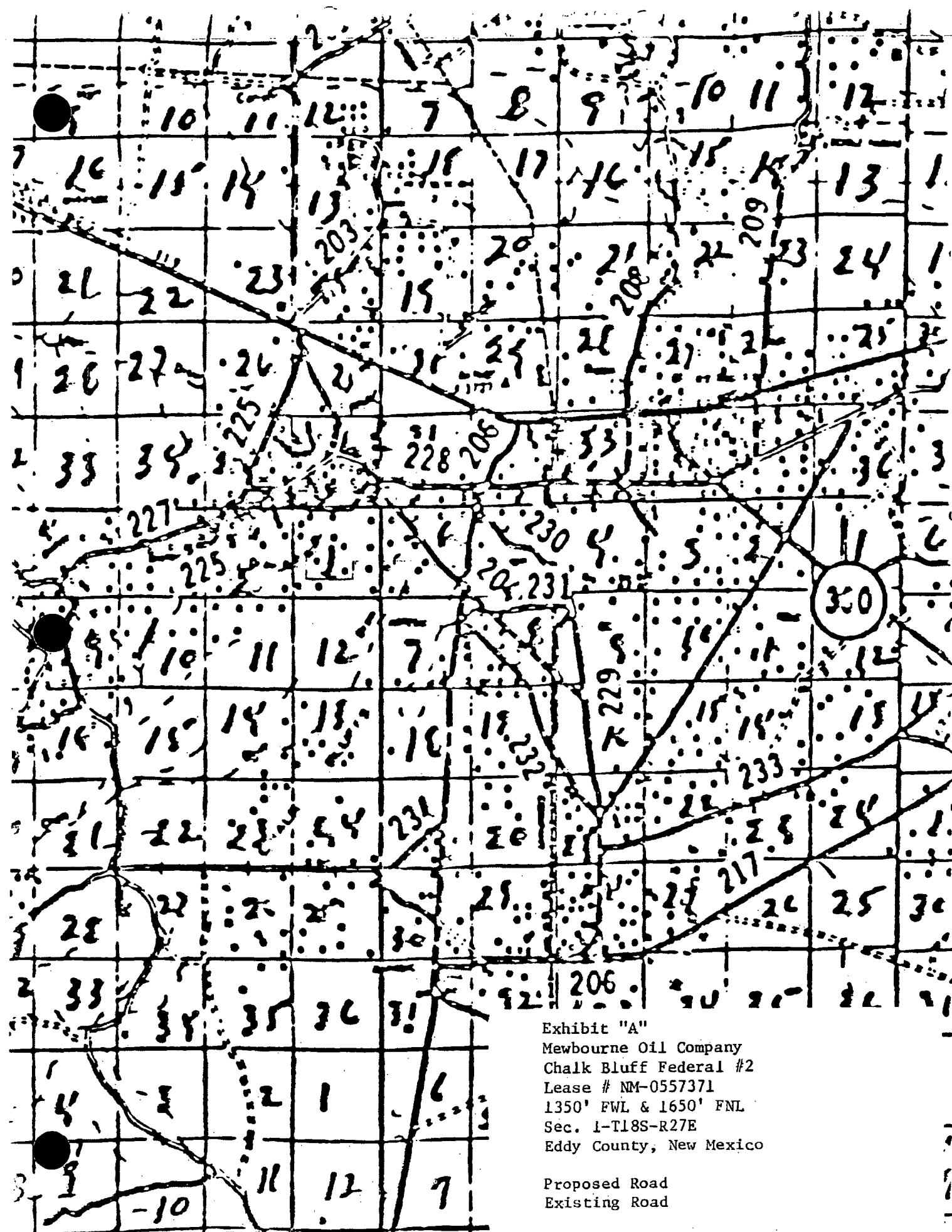


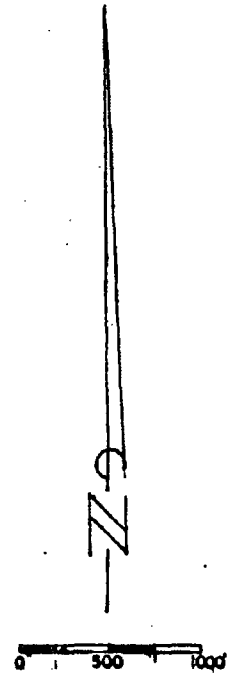
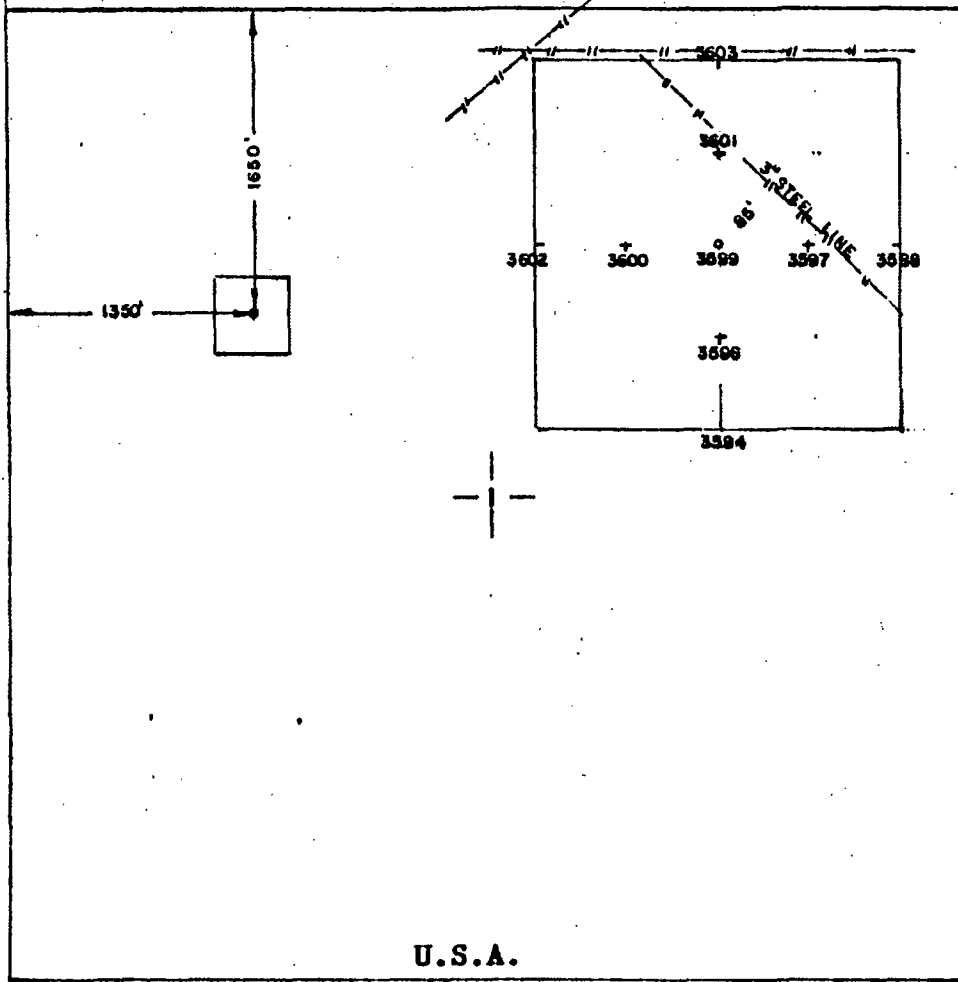
Exhibit "A"
 Mewbourne Oil Company
 Chalk Bluff Federal #2
 Lease # NM-0557371
 1350' FWL & 1650' FNL
 Sec. 1-T18S-R27E
 Eddy County, New Mexico

Proposed Road
 Existing Road

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM,
EDDY COUNTY, NEW MEXICO.

JOB No.

R. 27 E.

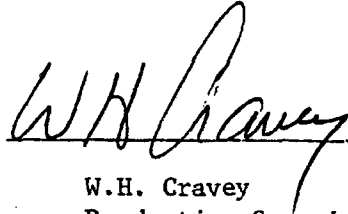


12. CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Mewbourne Oil Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

April 2, 1991

Date

A handwritten signature in cursive script, appearing to read "W.H. Cravey", written over a horizontal line.

W.H. Cravey
Production Superintendent
Mewbourne Oil Company

10. OTHER INFORMATION:

A. The geologic surface formation is hard clay interspersed with sand and chert outcroppings. Vegetative cover is generally sparse and consist mostly of greasewood and bear grass.

B. The estimated tops of geologic markers are as follows:

Queen	1260' ✓	Cisco	7740'
San Andres	2100' ✓	Canyon	8350'
Glorieta	3720'	Strawn	8900'
Tubb	4930	Atoka	9500'
Abo	5900' ✓	Morrow	✓9600'
Wolfcamp	6900' ✓	Mississippian	10100'

C. The estimated depths at which anticipated water, oil or gas are expected to be encountered:

Water: Possible surface water between 100'-300'.

Oil: Penrose @ 1520'.

Gas: Wolfcamp @ 6900'.

D. Proposed Casing Program: See Form 9-331C.

E. Pressure Control Equipment: See Form 9-331C and Exhibit "D".

F. Mud Program: See Form 9-331C.

G. Auxiliary Equipment: Mud-gas seperator and PVT system from 6,000'-T.D.

H. Testing and Coring Program: Possibility of 4 DST's in the following zones:
Wolfcamp, Cisco, Strawn,
Morrow. No cores are planned at this time.

Logging: Gamma Ray - Spectral
Density - Dual Spaced Neutron Log; T.D. to surface
Gamma Ray - Dual Latero Log
Microguard Log; T.D. to Intermediate casing.

I. No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered the proposed mud program will be modified to increase the weight.

J. Anticipated Starting Date: As soon as possible after BLM approval.

11. OPERATOR'S REPRESENTATIVE:

The field representatives responsible for assuring compliance with the approved surface use and operations plan are as follows:

W.H. Cravey	(505) 393-5905	701 S. Cecil
Erick W. Nelson	24 Hrs. Svc.	Hobbs, N.M.

5. SOURCE OF CONSTRUCTION MATERIALS:

- A. Caliche will be taken from a BLM pit located in the NE4/NW4 of Section 12-T18S-R27E which would be BLM pit # 18271203. This pit also extends into the SE4/SW4 of Section 1-T18S-R27E which would be BLM pit # 18270114. An alternate pit which may be used in the event BLM pit # 18271203 contains unsuitable material would be a BLM pit located in the SW4/NE4 of Section 1-T18S-R27E which would be BLM pit # 18270107.

6. METHODS OF HANDLING WASTE DISPOSAL:

- A. Drill cuttings will be disposed of in the drilling pits.
- B. Drilling fluids will be allowed to evaporate in the drilling pits until pits are dry.
- C. Water produced during tests will be disposed of in the drilling pits. Oil produced during tests will be stored in test tanks until sold.
- D. Current laws and regulations pertaining to the disposal of human water will be complied with.
- E. All trash, junk and other waste material will be contained to prevent scattering and will be removed and deposited in an approved sanitary landfill.
- F. All trash and debris will be buried or removed from the wellsite within 30 days after finishing drilling and/or completion operations.

7. ANCILLIARY FACILITIES:

- A. None required.

8. WELLSITE LAYOUT:

- A. Exhibit "C" shows the relative location and dimensions of the well pad, mud pits, reserve pit, trash pit and location of major rig components.
- B. The pad and pit area has been staked and flagged.

9. PLANS AND RESTORATION OF THE SURFACE

- A. After completion of drilling and/or completion operations all equipment and other material not needed for operations will be removed. Pits will be filled and location cleaned of all trash and junk to leave the wellsite in an aesthetically pleasing condition as possible.

MULTI-POINT SURFACE USE AND OPERATING PLAN

MEWBOURNE OIL COMPANY

CHALK BLUFF FEDERAL WELL NO. 2

1350' FWL & 1650' FNL OF SEC. 1-T18S-R27E

EDDY COUNTY, NEW MEXICO

NEW MEXICO LEASE NO. NM-0557371

This plan is submitted with the Application for Permit to Drill (APD) the above described well. The purpose of the plan is to describe the location of the proposed well, the proposed construction activities and operations plan and the magnitude of necessary surface disturbance involved, so that a complete appraisal can be made of the environmental effects associated with the operation. The surface to be disturbed is privately owned and a surface use agreement has been signed with the land owner.

1. EXISTING ROADS:

- A. From the junction of U.S. 82 and U.S. 285 Highways in Artesia, proceed east on U.S. 82 for 12 miles. Turn right (South) on Eddy County #206 (Illinois Camp Road) and proceed south for 1.75 miles. Turn right on Eddy County Road #204 and proceed northwest for .75 miles. Turn left (West) and proceed for 1 mile. Turn left (south) and proceed for 1/4 mile. Turn right (west) and proceed for 1/3 mile. Turn right (north) and proceed for 1/4 mile. Turn right (northeast) and proceed for 1/4 mile into location.
- B. Culverts: None Required.
- C. Cuts and Fills: A three and half to four foot cut will be required for construction of the location.
- D. Turn-Outs: None required.
- E. Gates and Cattleguards: None required.

2. LOCATION OF EXISTING WELLS:

- A. Existing wells in a 1 mile radius are shown on Exhibit "B".

3. LOCATION OF PROPOSED FACILITIES:

- A. If the well is productive, all production facilities will be constructed on the existing pad and no additional surface disturbance will occur.

4. LOCATION AND TYPE OF WATER SUPPLY:

- A. Water will be purchased and trucked to the wellsite over the existing and proposed roads shown on Exhibits "A" and "AA".

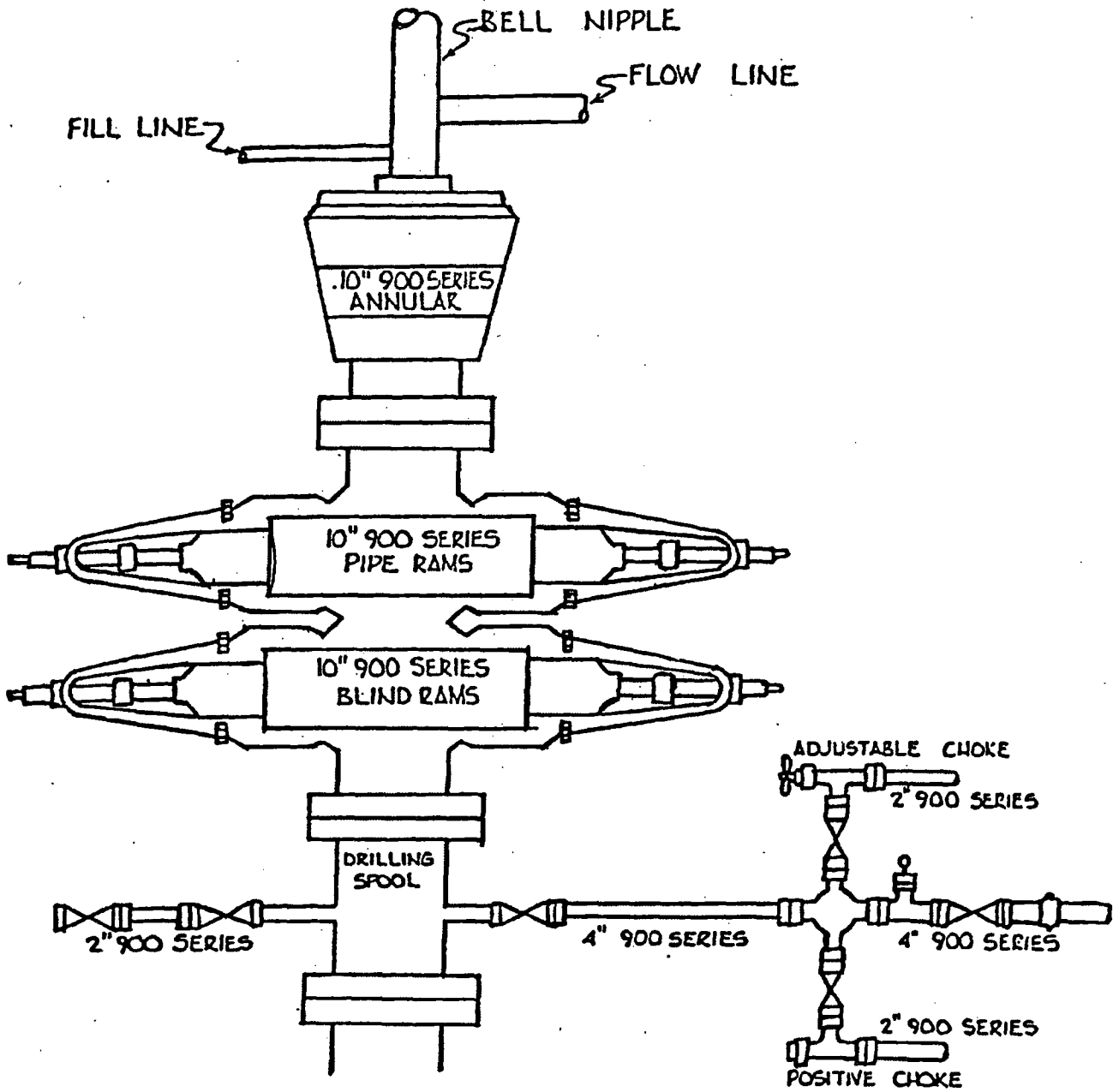


Exhibit "D"

Mewbourne Oil Company
 Chalk Bluff Federal #2
 Lease # NM-0557371
 1350' FWL & 1650' FNL
 Sec. 1-T18S-R27E
 Eddy County, New Mexico

to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

DISTRICT I
P.O. Box 1940, Hobbs, NM 88240

DISTRICT II
P.O. Drawer 210, Artes, NM 88210

DISTRICT III
1000 Rio Arriba Rd., Artes, NM 87410

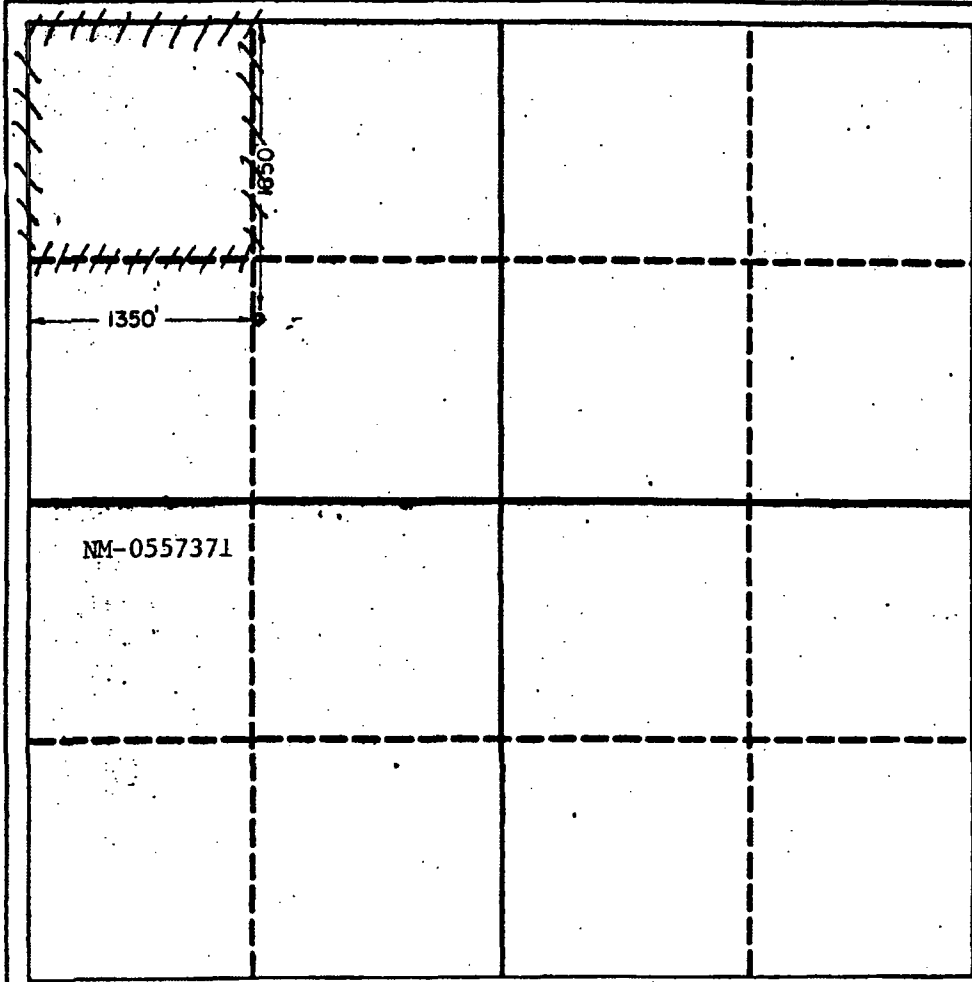
WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

SJS

Operator NEWBOURNE OIL COMPANY			Lease CHALK BLUFF FEDERAL Com.			Well No. 2		
Unit Letter F	Section 1	Township 18 SOUTH	Range 27 EAST	County NTM		EDDY		
Actual Surface Location of Well: 1350 feet from the WEST line and 1650 feet from the NORTH line								
Claimed land Area 3599		Producing Formation Morrow		Pool North Illinois Camp Morrow			Dedicated Acreage: 320 Acres	

- Outline the acreage dedicated to the subject well by colored pencil or leather marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by consolidation, unitization, lease-pooling, etc.?
 Yes No If answer is "yes" type of consolidation _____
 If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)
 No allowable will be assigned to the well until all interests have been consolidated (by consolidation, unitization, lease-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

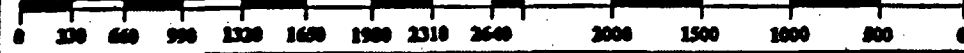
Signature: *W.H. Cravey*
 Printed Name: **W.H. Cravey**
 Position: **District Supt.**
 Company: **Mewbourne Oil Co.**
 Date: **April 2, 1991**

SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: **3/28/91**

Signature & Seal of Professional Surveyor:

HERSCHEL L. JONES
 License No. **3640**



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK
 DRILL DEEPEN PLUG BACK

b. TYPE OF WELL
 OIL WELL GAS WELL OTHER SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
 Mewbourne Oil Company

3. ADDRESS OF OPERATOR
 P.O. Box 5270 Hobbs, New Mexico 88241

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
 At surface: 1350' FWL & 1650' FNL
 At proposed prod. zone: Same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE
 7 miles Southeast of Artesia, New Mexico

16. NO. OF ACRES IN LEASE: 320
 17. NO. OF ACRES ASSIGNED TO THIS WELL: 320

18. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 1350'

19. PROPOSED DEPTH: 10,200'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3599' GR

22. APPROX. DATE WORK WILL START: Upon BLM approval

5. LEASE DESIGNATION AND SERIAL NO.
 NM-0557371

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
 Chalk Bluff Federal Com.

9. WELL NO.
 2

10. FIELD AND POOL, OR WILDCAT
 North Illinois Camp Mor.

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
 Sec. 1-T18S-R27E

12. COUNTY OR PARISH
 Eddy

13. STATE
 N.M.

RECEIVED
MAY - 8 1991

W.F.

505

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	13-3/8"	61#	400'	450 sks. Class "C" circulated
12 1/4"	9-5/8"	36#	2,600'	800 sks. Class "C" Tie back into surface
8 3/4"	5-1/2"	17# & 20#	10,200'	600 sks. Class "H" (600' above Wolfcamp)

Mud Program:

- 0' - 400' Spud mud with fresh water gel and lime. LCM as needed.
- 400' - 2,600' Fresh water gel and lime. LCM as needed.
- 2,600' - 8,500' Cut brine with lime for pH control. Wt. 9.2-9.6 ppg, WL - NC. LCM as needed.
- 8,500' - 10,200' Cut brine with Drispac, salt gel, lime, soda ash, and starch. Wt. 9.2-9.6 ppg. WL 10 cc or less. Raise weight accordingly if abnormal pressures are encountered.

BOP Program

900 series BOP and Hydril on 13-3/8" surface casing and on 9 5/8" intermediate casing.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout Preventer program, if any.

24. SIGNED: W.H. Liang TITLE: District Superintendent DATE: April 2, 1991

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY: _____ TITLE: _____ DATE: 5-7-91

CONDITIONS OF APPROVAL, IF ANY:
 APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS

*See Instructions On Reverse Side

N.O.S. 3-12-91

1958-1960

1958-1960
1958-1960
1958-1960

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JUN 20 1991

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.

NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Federal Com #2

9. API Well No.

30-015-26741

10. Field and Pool, or Exploratory Area

North Illinois Camp Morrow

11. County or Parish, State

Eddy, New Mexico

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

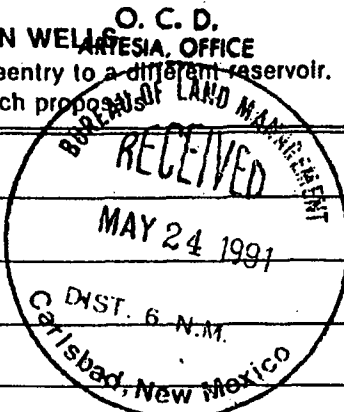
Mewbourne Oil Company

3. Address and Telephone No.

P. O. Box 7698, Tyler, Texas 75711

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1350' FWL & 1650' FNL of Sec. 1, T18S-R27E



12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- Notice of Intent
- Subsequent Report
- Final Abandonment Notice

TYPE OF ACTION

- Abandonment
- Recompletion
- Plugging Back
- Casing Repair
- Altering Casing
- Other Spud & set Pipe
- Change of Plans
- New Construction
- Non-Routine Fracturing
- Water Shut-Off
- Conversion to Injection
- Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

5/13/91 - Spud @ 8:00 PM 5/13/91.

5/15/91 - Ran 13 jts 13-3/8" 61# ST&C surface casing set at 416'. Cemented with 100 sxs Class "C" thixset w/1/2# flocele, 5# Gilsonite & 3% CaCl and 100 sxs Class "C" w/6% gel, 1/2# flocele, 5# Gilsonite and 250 sxs Class "C" w/3% CaCl. Plug down @ 9:45 AM. Did not circulate. WOC 6 hrs. Tagged with 1" at 82'. At 3:00 PM cemented w/100 sxs Class "C" w/3% CaCl. Job complete 3:15 PM. Circulated est. 25 sxs to pit. WOC 11 hrs. Pressure tested to 1000# - held okay.

5/20/91 - Ran 60 jts 9-5/8" 36# J-55 ST&C Intermediate casing set at 2610' K.B. Cemented w/825 sxs Class "C" + 6% gel + 5# Gilsonite + 1/2# flocele + 2% CaCl followed by 200 sxs Class "C" + 2% CaCl. PD at 5:45 AM. Pressure tested 1000-1500#. Float held. Circulated 125 sxs cement to pit. WOC 18 hrs.

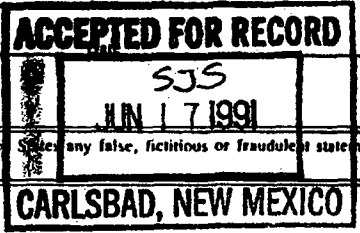
14. I hereby certify that the foregoing is true and correct

Signature: *[Signature]* Title: Engr. Oprns. Secretary Date: 5/20/91

(This space for Federal or State office use)

Approved by: _____ Title: _____

Conditions of approval, if any:



Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

C/SF

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Form 1160-5
(991)

RECEIVED

JUN 25 1991

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

JUN 21 11 25 AM '91

SUNDRY NOTICES AND REPORTS ON WELLS

O. C. D.
ARTESIA, OFFICE

5. Lease Designation and Serial No.
NM-0557371

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
 Oil Well Gas Well Other

8. Well Name and No.

Chalk Bluff Federal Com #2

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-26741

3. Address and Telephone No.
P. O. Box 7698, Tyler, Texas 75711

10. Field and Pool, or Exploratory Area

North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

11. County or Parish, State

Eddy, New Mexico

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Run 5-1/2" casing</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

6/16/91 - Ran 5-1/2" 17# & 20# N-80 casing set at 10,148'. DVT: 7606'. Circulated 30 mins. Cemented 1st stage with 260 sacks Hal-Lite Class "H" w/5# Gilsonite, + 1/4# Flocele + 3/10% CFR-3. Tailed in with 300 sacks Premium containing 5/10% Halad-22A + 3/10% CFR-3 + 3# Gilsonite + 5# KCL. Plug down with full returns. Pressure tested to 1000#. Held OK. Drop bomb open DVT. Circulated 6 hrs.

6/17/91 - Cemented 2nd stage with 260 sacks Hal-Lite Class "C" containing 3# Gilsonite + 1/4# Flocele. Tailed in with 200 sacks Prem H cement. Plug down 4:15 PM 6/16/91 with full returns. Closed DVT. WOC 18 hrs. Pressure tested to 1500#. Held OK.

14. I hereby certify that the foregoing is true and correct

Signed [Signature] Title Engr. Oprns. Secretary Date 6/18/91

(This space for Federal or State office use)

Approved by _____ Title _____
Conditions of approval, if any:

ACCEPTED FOR RECORD
Date 6/18/91
SJS
JUN 21 1991
CARLSBAD, NEW MEXICO

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c/5P

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AUG 27 1991

1160-5
490)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

O. C. D.
ARTESIA, OFFICE

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Chalk Bluff Federal Com #2

9. API Well No.
30-015-26741

10. Field and Pool, or Exploratory Area
North Illinois Camp Morrow

11. County or Parish, State
Eddy, New Mexico

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company ✓

3. Address and Telephone No.
P. O. Box 7698, Tyler, Texas 75711

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Perforate & Treat</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

7/10/91 - Made final cut-off on 5-1/2" casing. Installed tubinghead and tested to 3000#. Tagged cement on top of DV tool at 7414'. DV tool @ 7606'.

7/11/91 - Pressure tested casing to 1500#. Held OK. Drilled out 192' cement & DV tool. Tested casing to 1500#. TIH w/tubing and tagged cement @ 10,090'. Drilled out 24' to float collar at 10,114'. Tested casing to 1500#. Held OK.

8/12/91 - Perforated 9999'-10,024', 4 SPF, 101 holes. Acidized with 5000 gals 7-1/2% HCL. ISDP 7350#, 5 min 7100#, 10 min 6950#, 15 min 6800#. Max treating press 7500#. Avg treating press 8100#. Avg injection rate 4.4 BPM.

14. I hereby certify that the foregoing is true and correct.

Signed Raymond Thompson Title Engr. Oprns. Secretary Date 8/16/91

(This space for Federal or State office use)
Approved by _____ Title _____
Reasons of approval, if any: _____

ACCEPTED FOR RECORD
Date SJS
7 3 1991

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c/sr

RECEIVED

Form 3160-5
(1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SEP 11 1991
O. C. D.
ARTESIA OFFICE

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
 Mewbourne Oil Company

3. Address and Telephone No.
 P. O. Box 7698, Tyler, Texas 75711

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
 1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

5. Lease Designation and Serial No.
 NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
 Chalk Bluff Federal Com #2

9. API Well No.
 30-015-26741

10. Field and Pool, or Exploratory Area
 North Illinois Camp Morrow

11. County or Parish, State
 Eddy, New Mexico

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

8/17/91 - Rigged up Western to acidize perms 9999-10,243' using 10,000 gals gelled 15% HCL with 10,000 gals CO₂ containing 2 gal I-22, 1 gal Clay Master 4, 1 gal FS-2, 2 gal Nine-40, 6 gal Acigel & 5 gal citric acid liquid per 1000 gals acid. Pumped as follows:

20,000 Gals Acid/CO₂ 6 BPM - total rate @ 9200#. Spotting 5 Ball Sealers; 6 Bbls Foam.

60 Bbls 2% KCL water/CO₂ flush 6 BPM - Total rate @ 9150#.

Tubing loaded with 38 bbls pumped away. Had good ball action throughout but swabbed no noticeable break in treating pressures. Min Press: 8500#. Max Press: 9500#. Avg Press: 9200#. Avg Rate: 6 BPM. ISDP: 6600# (5 Min=6400#; 10 Min=6200#; 15 Min=6150#). Rigged down Western. Started flowing well to pit on 24/64" choke.

14. I hereby certify that the foregoing is true and correct

Signed: *Deborah Thompson* Title: Engr. Oprns. Secretary Date: 9/03/91

(This space for Federal or State office use)

Approved by: _____ Title: _____

Conditions of approval, if any: _____

ACCEPTED WITH _____

Date: 9/3/91

SEP 11 1991

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

45F

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other _____
 b. TYPE OF COMPLETION: NEW WELL WORK OVER DEEP-EN PLUG BACK DIFF. RESER. Other _____

2. NAME OF OPERATOR
Mewbourne Oil Company

3. ADDRESS OF OPERATOR
P. O. Box 7698, Tyler, Texas 75711

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
 At surface 1350' FWL & 1650' FNL
 At top prod. interval reported below
 At total depth Same

14. PERMIT NO. DATE ISSUED
API #30-015-26741

CONFIDENTIAL

RECEIVED
OCT 16 1992
O. C. D.
ARTESIA OFFICE

5. LEASE DESIGNATION AND SERIAL NO.
NM-0557371

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Chalk Bluff Federal Com

9. WELL NO.
2

10. FIELD AND POOL, OR WILDCAT
N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
Sec. 1, T18S-R27E

12. COUNTY OR PARISH
Eddy

13. STATE
N.M.

15. DATE SPUNDED 5/13/91 16. DATE T.D. REACHED 6/12/91 17. DATE COMPL. (Ready to prod.) 8/24/91 18. ELEVATIONS (DF, HKB, RT, OB, ETC.)* KB 3615', DF 3613', GL 3599'

20. TOTAL DEPTH, MD & TVD 10,140' 21. PLUG, BACK T.D., MD & TVD 10,125' 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY ROTARY TOOLS X CABLE TOOLS

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* 9,999'-10,024' - Morrow 25. WAS DIRECTIONAL SURVEY MADE Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN Dual Spaced Neutron/CBL 27. WAS WELL CORED No

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	61#	416'	17-1/2"	450 - Circulated	None
9-5/8"	36#	2,610'	12-1/4"	1025 - Circulated	None
5-1/2"	17# & 20#	10,148'	8-3/4"	1020 - Circulated	None

29. LINER RECORD					30. TUBING RECORD		
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
					2-7/8"	9939'	9939'

31. PERFORATION RECORD (Interval, size and number)	32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.						
9999'-10,024' - 4 SPF, 101 holes	<table border="1"> <thead> <tr> <th>DEPTH INTERVAL (MD)</th> <th>AMOUNT AND KIND OF MATERIAL USED</th> </tr> </thead> <tbody> <tr> <td>9999-10,024'</td> <td>Acidized w/5000 gals 7 1/2% HCL.</td> </tr> <tr> <td></td> <td>Acidized w/20,000 gals acid/CO₂</td> </tr> </tbody> </table>	DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED	9999-10,024'	Acidized w/5000 gals 7 1/2% HCL.		Acidized w/20,000 gals acid/CO ₂
DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED						
9999-10,024'	Acidized w/5000 gals 7 1/2% HCL.						
	Acidized w/20,000 gals acid/CO ₂						

33.* PRODUCTION							
DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)				WELL STATUS (Producing or shut-in)	
8/26/91		Flowing				Producing	
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
8/29/91	24 hrs.	16/64"	→	0	118	0	—
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)	
410#	—	→	0	118	0	—	

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Sold TEST WITNESSED BY Bill Pierce

35. LIST OF ATTACHMENTS
Logs
I hereby certify that the foregoing and attached information is complete and correct as determined from all available records
 SIGNED Raymond Thompson TITLE Engr. Opns. Secretary DATE 9/03/91

*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
Middle Morrow	9752'	9785'	Sandstone	Yates	370'	
Lower Morrow	9808'	9878'	Sandstone	Queen	1,034'	
Basal Morrow	9999'	10024'	Detrital Limestone	Grayburg	1,346'	
				San Andres	1,833'	
				Glorietta	3,178'	
				Tubb	4,130'	
				Drinkard	5,076'	
				Abo	5,380'	
				Wolfcamp	6,644'	
				Cisco	7,602'	
				Canyon	8,326'	
				Strawn	8,808'	
				Morrow	9,496'	
				Morrow Clastics	9,696'	
				Chester	10,056'	

Submit in duplicate to
state district office
401 & Rule 1121

OIL CONSERVATION DIVISION

P.O. Box 1038
Santa Fe, New Mexico 87504-1038

NO. 10011 AND ONE POINT BARREL PRESSURE TEST FOR GAS WELL

Operator MPWPC/REMI	Company COMPASS	Owner or Unit Name CHALK BLUFF FLD
Type Test Initial	Well No. 2	Section 1-18-27
Completion Date 9-1-91	County Sandoval	Formation Morrow
Csg. Size 5 1/2	Set At 10145	Connection Prover
Tag Size 2 7/8	Set At 9911	Meter Run 3.068
Type Well - Single - Braconhead	9 Mobile	Tap FLG

Producing thru TRG	Reservoir Temp 174°	Non Annual 60	Prover	Meter Run 3.068	Tap FLG
L	H	% CO ₂			

NO.	Prover Line Size	Gauge Size	LUBING DATA		CASING DATA		Duration of Flow
			Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	
1.	3 X .375		77	PKR			72 hr.
2.	3 X .375		77	"			1 hr.
	3 X .375		77	"			1 hr.
	3 X .375		77	"			1 hr.

NO.	COEFFICIENT (24 HOUR)	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1.	6677	1.172	1.022	95
2.	6677	1.172	1.040	108
3.	6677	1.172	1.065	170
4.	6677	1.172	1.058	168

NO.	Time	Dry Gas Mcf/abl	Dev	XXXXXXXXXX
1.	21	44	74	
2.	42	54	77	
3.	65	317	78	
4.	65	380	80	

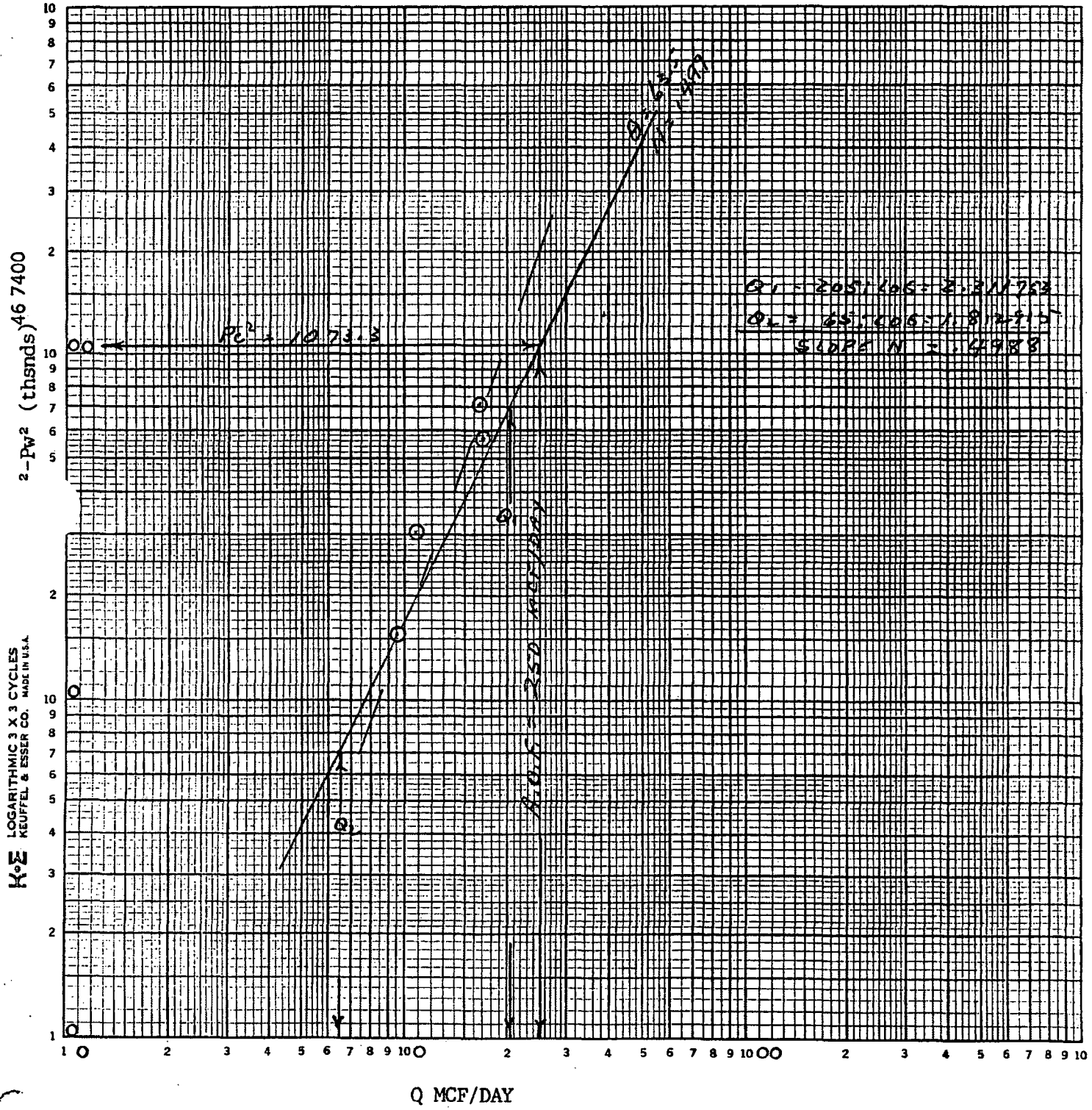
NO.	P _w	P _c	[P _c ² / P _w ²]	h = 2.631
1.	8.0	10.0		
2.	8.0	10.0		
3.	8.0	10.0		
4.	8.0	10.0		

Approve Open Hole
Slope = 0.25
Slope = 0.491

NO. FLUID PRODUCED

Checked by

MEWBOURNE OIL COMPANY
 Chalk Bluff Fed., Well 2
 1-18-27
 Eddy County, New Mexico
 2-25-92



Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

SEP - 5 1991

O. C. D.
ARTESIA OFFICE

REQUEST FOR ALLOWABLE AND AUTHORIZATION
TO TRANSPORT OIL AND NATURAL GAS

Operator MEWBOURNE OIL COMPANY /	Well API No. 30-015-26741
Address P. O. Box 7698, Tyler, Texas 75711	
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)	
New Well <input checked="" type="checkbox"/>	Change in Transporter of: <input type="checkbox"/>
Recompletion <input type="checkbox"/>	Oil <input type="checkbox"/> Dry Gas <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/> Condensate <input type="checkbox"/>
If change of operator give name and address of previous operator _____	

II. DESCRIPTION OF WELL AND LEASE

Lease Name CHALK BLUFF FEDERAL	Well No. 2	Pool Name, including Formation N. Illinois Camp-Morrow Gas	Kind of Lease State, Federal or Fee	Lease No. NM-0557371
Location Unit Letter <u>F</u> : <u>1350</u> Feet From The <u>West</u> Line and <u>1650</u> Feet From The <u>North</u> Line Section <u>1</u> Township <u>28</u> South Range <u>27</u> East, NMPM, Eddy County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input type="checkbox"/> or Condensate <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent)
Amoco Pipeline Intercorporate Trucking	Oil Tender Dept., Box 702068, Tulsa, Ok 74170-2068
Name of Authorized Transporter of Casinghead Gas <input type="checkbox"/> or Dry Gas <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent)
Transwestern Pipeline Company	P.O. Box 1188, Houston, Texas 77251-1188
If well produces oil or liquids, give location of tanks.	Is gas actually connected? When?
Unit <u>F</u> Sec. <u>1</u> Twp. <u>18S</u> Rgs. <u>27E</u>	Yes <u>8/13/91</u>

If this production is commingled with that from any other lease or pool, give commingling order number: No

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					
Date Spudded 5/13/91	Date Compl. Ready to Prod. 8/24/91	Total Depth 10,140'	P.B.T.D. 10,125'					
Elevations (DF, RKB, RT, GR, etc.) KB 3615', DF 3613', GL 3599'	Name of Producing Formation Morrow	Top Oil/Gas Pay 9,999'	Tubing Depth 9,939'					
Perforations 9999'-10,024'		Depth Casing Shoe						
TUBING, CASING AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT					
17-1/2"	13-3/8"	416'	450 - Circulated					
12-1/4"	9-5/8"	2,610'	1025 - Circulated					
8-3/4"	5-1/2"	10,148'	1020 - Circulated					

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)
		Post ID-2 5-1-92 Comp + BK
Length of Test	Tubing Pressure	Casing Pressure
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.
		Gas-MCF

GAS WELL

Actual Prod. Test - MCF/D 118	Length of Test 24 hours	Bbls. Condensate/MMCF 0	Gravty of Condensate 0
Testing Method (pilot, back pr.) Back Pressure	Tubing Pressure (Shut-in) 410#	Casing Pressure (Shut-in) —	Choke Size 16/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gaylon Thompson
Signature
Gaylon Thompson, Engr. Opeas. Secretary
Printed Name
9/03/91
Date
(903) 561-2900
Telephone No.

OIL CONSERVATION DIVISION

Date Approved APR 23 1992

By ORIGINAL SIGNED BY
MIKE WILLIAMS
Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

45F

RECEIVED

OCT 16 1992

11 3160-5
: 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

O. C. D.
ARTERIA

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed Com #2

9. API Well No.

30-015-26741

10. Field and Pool, or Exploratory Area

North Illinois Camp Morrow

11. County or Parish, State

Eddy, New Mexico

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P. O. Box 7698, Tyler, Texas 75711 (903) 561-2900

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- Notice of Intent
- Subsequent Report
- Final Abandonment Notice

TYPE OF ACTION

- Abandonment
- Recompletion
- Plugging Back
- Casing Repair
- Altering Casing
- Other
- Change of Plans
- New Construction
- Non-Routine Fracturing
- Water Shut-Off
- Conversion to Injection
- Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

9/10/92 - Killed well. Pulled tbg & pkr. Ran in hole w/CIBP set at 9970'. Dumped 35' cement on top. PBD @ 9935'.

9/11/92 - RIH w/tbg & pkr set at 9731'. Tested to 8000#. Set pkr w/15 pts compression. Tested annulus to 2000#. Held OK. Tested tbg to 2500#. Held OK. Swabbed well down.

9/12/92 - Perf Lower Morrow 9850-9876' w/2 SPF, 22' net, 46 holes.

9/13/92 - Acidized perfs w/2800 gals 7 1/2% HCL acid + additives containing 1000 SCF/Bbl nitrogen + 60 ball sealers. Flushed w/2% KCL containing 1000 SCF/bbl nitrogen. Pressure tested annulus to 1500# and pumped acid.

9/17/92 - Frac perfs w/40,000 gals Binary foam + 30,000# 20/40 Interprop. ISDP 5400#, 5 mins 4600#, 10 mins 4350#, 15 mins 4150#. AR 12 BPM. AP 8100#. MR 12 BPM. MP 8400#. Opened well and left flowing to pit.

9/19/92 - Well flowing thru test unit. Put well down sales line @ 5:00 PM 9/19/92.

AR

15 1992

14. I hereby certify that the foregoing is true and correct

Signed *Raymond Thompson* Title **Engr. Oprns. Secretary**

Date **9/30/92**

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See instruction on Reverse Side

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Form 3160-5
(1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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AUG 6 9 58 AM '92

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen a well entry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.

NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed. Com.

9. API Well No.

2

10. Field and Pool, or Exploratory Area
North Illinois

Camp Morrow

11. County or Parish, State

Eddy County, N.M.

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1350' FWL & 1650' FNL
Sec. 1-T18S-R27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

TYPE OF ACTION

- Notice of Intent
- Subsequent Report
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- Abandonment
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- Change of Plans
- New Construction
- Non-Routine Fracturing
- Water Shut-Off
- Conversion to Injection
- Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Well is currently producing from Basal Morrow perforations at 9999' - 10,024' and has reached it's economical limit. Plans are to recomplete into lower Morrow Sands.

1. Set CIBP at 9950'. Cap with 50' cement.
2. Perforate Lower Morrow (9850'-9860'; 9864'-9878'; 9752'-9762'; 9764'-9774'; 9778'-9785')
3. Stimulate well as necessary and evaluate.
4. Restore well to production.

Will commence operations upon BLM approval.

AUG 12 1992

Q.C.D.
ARTIFICAL OFFICE

14. I hereby certify that the foregoing is true and correct

Signed E. W. Nelson

Title Engineer

Date August 3, 1992

(This space for Federal or State office use)

Approved by _____
Conditions of approval, if any:

Title _____

Date 8/11/92

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*See instruction on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

REC. ED
NOV 18 1992
O. C. D.
ARIZONA

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other	5. Lease Designation and Serial No. NM-0557371
2. Name of Operator Mewbourne Oil Company	6. If Indian, Allottee or Tribe Name
3. Address and Telephone No. P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905	7. If Unit or CA, Agreement Designation
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Wt. F 1350' FWL & 1650' FNL 1-288-27E	8. Well Name and No. Chalk Bluff Fed. Com. #2
	9. API Well No.
	10. Field and Pool, or Exploratory Area N. Illinois Camp Morrow
	11. County or Parish, State Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input checked="" type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

- 9-09-92 Set CIBP @ 9970'. Dumped 35' cement on CIBP.
- 9-11-92 Perforated Morrow formation (9850'-9860' & 9864'-9876') with 2 SPF for a total of 46 holes.
- 9-12-92 Acidized Morrow perforations with 2800 gal. 7 1/2% HCL and 1000 SCF/bbl. N2.
- 9-16-92 Fraced Morrow perforations with 40,000 gal. binary foam carrying 30,000# 20/40 sand.

RECEIVED
NOV 29 9 25 AM '92
O. C. D.
ARIZONA

FOR RECORD
2 1992
NEW MEXICO

14. I hereby certify that the foregoing is true and correct

Signed [Signature] Title District Supt. Date Oct. 27, 1992

(This space for Federal or State Office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:



Laboratory Services

1331 Tasker Drive

Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Pro Well Testing & Wireline
Attention: Mr. Ray Gallagher
P. O. Box 791
Hobbs, New Mexico 88240

SAMPLE IDENTIFICATION: Chaulk Bluff Fed. #2
COMPANY: Mewbourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA:	DATE SAMPLED:	11/5/92 3:15PM	GAS (XX)	LIQUID ()
	ANALYSIS DATE:	11-05-92	SAMPLED BY:	Gallagher-Pro Well
	PRESSURE - PSIG	540.00	ANALYSIS BY:	Rolland Perry
	SAMPLE TEMP. °F	78.00		
	ATMOS. TEMP. °F	48.00		

REMARKS:

COMPONENT ANALYSIS

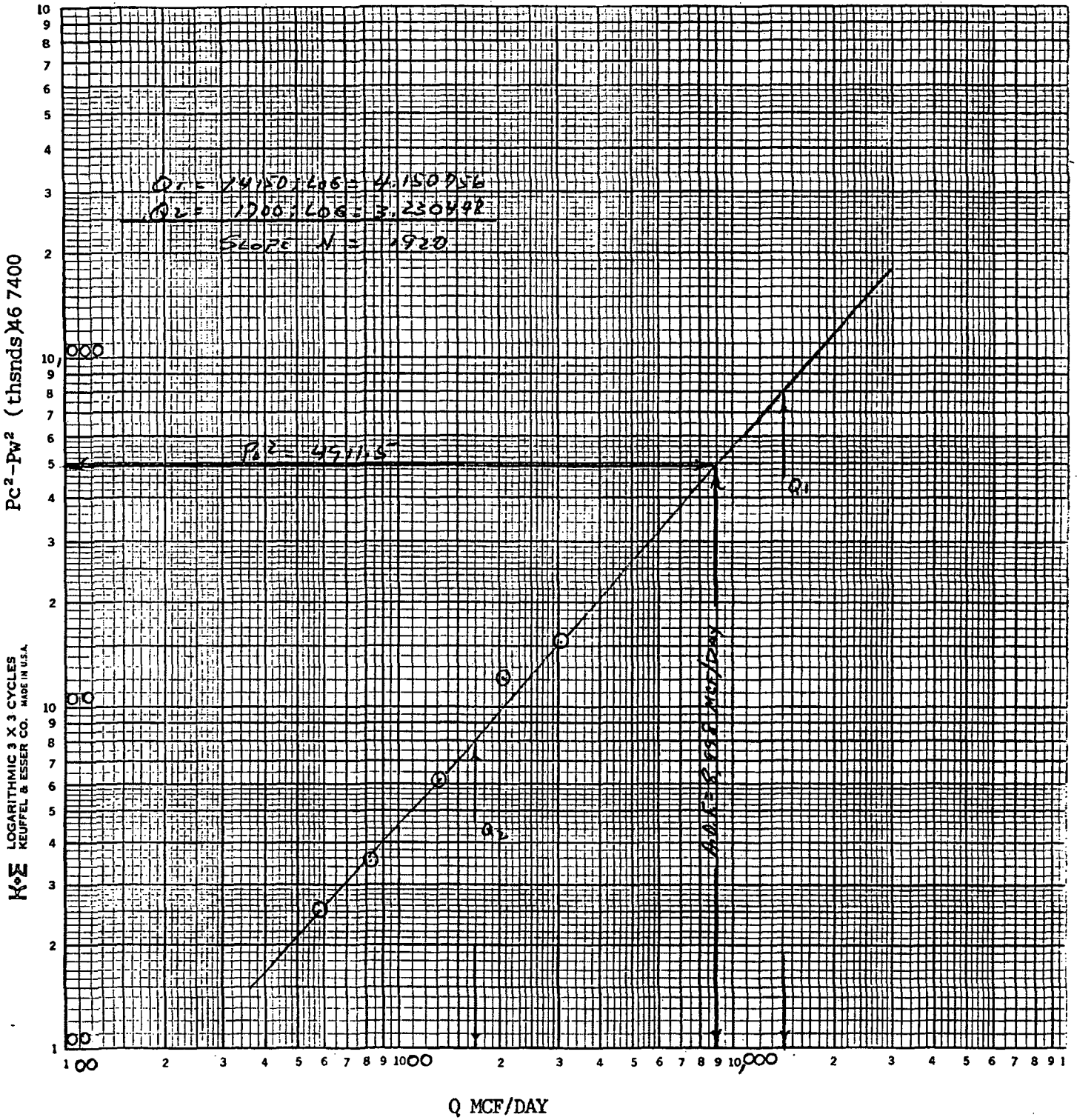
COMPONENT		MOL PERCENT	GPM	
Oxygen	(O2)			
Hydrogen Sulfide	(H2S)			
Nitrogen	(N2)	0.40		
Carbon Dioxide	(CO2)	0.59		
Methane	(C1)	88.27		
Ethane	(C2)	7.05	1.881	
Propane	(C3)	2.37	0.652	
I-Butane	(IC4)	0.29	0.095	
N-Butane	(NC4)	0.52	0.164	
I-Pentane	(IC5)	0.15	0.055	
N-Pentane	(NC5)	0.10	0.036	
Hexane	(C6+)	0.26	0.107	
Heptanes Plus	(C7)	0.00	0.000	
		<u>100.00</u>	<u>2.990</u>	
BTU/CU.FT. - DRY		1125	MOLECULAR WT	18.5705
AT 14.650 DRY		1121		
AT 14.650 WET		1102	26# GASOLINE -	0.253
AT 15.025 DRY		1150		
AT 15.025 WET		1130		
SPECIFIC GRAVITY -				
CALCULATED		0.541		
MEASURED		0.000		

SUGGESTED FIELD DATA SHEET (Not Required To File)

Test	<input checked="" type="checkbox"/> INITIAL	<input type="checkbox"/> ANNUAL	<input type="checkbox"/> SPECIAL	Test Date 11-5-92	Lease No. or Serial No.
Company	MEWBOURNE OIL COMPANY			Connection	Allytee
Field	Reservoir MORROW	Location			Unit
Completion Date	Total Depth	Plug Back TD 9935	Elevation		Form or Lease Name Chalk Bluff
Csg. Size	5 1/2	Wt. d	Set At 9935	Perforation From To 9850 9876	Well No. 2
Tbg. Size	2 7/8	Wt. d	Set At 9731	Perforation: From To	Sec. 1 Top-dk. 18 Age. 27
Type Completion (Describe)	single			Packer Set At 9731	County or Parish Eddy
Producing thru	Reservoir Temp. F	Mean Annual Temp. F	Baro. Press. - P _g	State	
tbg		60	13.2	New Mexico	
L	H	G _g	% CO ₂	% N ₂	% H ₂ S
9731	9731	.641	.59	.40	
				Prover	Meter Run 3.068 Flg.

DATE	ELAP TIME Hrs.	Wellhead Working Pressure			METER OR PROVER				REMARKS (Include liquid Production data Type-A, P.I. Gravity-Amount)
		Tbg. Psig.	Csg. Psig.	Temp. F	Pressure Psig.	Diff.	Temp. F	Orifice	
	72	2203	PKR.						
1st	1	2145	"		530	3.00	78	1.500	
2nd	30min.	2120	"		530	6.00	84	1.500	
3rd	45m	2055	"		540	15.00	78	1.500	
4th	1	1900	"		540	36.00	70	1.500	
5th	30m	1805	"		545	78.00	66	1.500	
NO FLUID - DRY GAS									

MEWBOURNE OIL COMPANY
 Chalk Bluff Well #2
 1-18-27
 Eddy County, New Mexico
 11-5-92



K&E LOGARITHMIC 3 X 3 CYCLES
 KEUFFEL & ESSER CO. MADE IN U.S.A.

Submit in duplicate to appropriate district office
See Rule 401 & Rule 1122

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

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DEC 3 1992

clsf
file

OIL CONSERVATION DIVISION
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MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator Mewbourne				Lease or Unit Name Chalk Bluff			
Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special				Test Date 11-5-92		Well No. 2	
Completion Date		Total Depth		Plug Back TD 9935		Elevation	
Csg. Size 5 1/2		Wt. d		Set At 9935		Perforations: From: 9850 To: 9876	
Tbg. Size 2 7/8		Wt. d 6.5 2.441		Set At 9731		Perforations: From: To:	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple single				Packer Set At 9731		Formation Morrow	
Producing Thru tbg.		Reservoir Temp. °F 171 @ 9731		Mean Annual Temp. °F 60		Baro. Press - P _a 13.2	
L 9731		H 9731		G _g .641 % CO ₂ .59 % N ₂ .40 % H ₂ S		Prover Meter Run 3.068	

FLOW DATA					TUBING DATA			CASING DATA		Duration of Flow
NO.	Prover Line Size	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI						2203		PRK		72 hr.
1.	3 X 1.500		530	3.00	78	2145		"		1 hr.
2.	3 X 1.500		530	6.00	84	2120		"		30 min.
3.	3 X 1.500		540	15.00	78	2055		"		45 min.
4.	3 X 1.500		540	36.00	70	1900		"		1 hr.
5.	3 X 1.500		545	78.00	66	1805		"		30 min.

RATE OF FLOW CALCULATIONS							
NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1.	11.13	40.37	543.2	.9831	1.249	1.055	582
2.	11.13	57.09	543.2	.9777	1.249	1.049	832
3.	11.13	91.09	553.2	.9831	1.249	1.056	1315
4.	11.13	141.12	553.2	.9905	1.249	1.056	2052
5.	11.13	208.66	558.2	.9943	1.249	1.057	3049

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1.	.81	538	1.44	.898	Dry	1.055	582
2.	.81	544	1.46	.909	A.P.L. Gravity of Liquid Hydrocarbons .641	1.049	832
3.	.82	538	1.44	.897	Specific Gravity Separator Gas	1.056	1315
4.	.82	530	1.42	.897	Specific Gravity Flowing Fluid	1.056	2052
5.	.83	526	1.41	.895	Critical Pressure 670 P.S.I.A.	1.057	3049

NO.	P _i ²	P _w	P _w ²	P _c ² - P _w ²	1) $\frac{P_c^2}{P_c^2 - P_w^2} = 3.242$	2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.951$
1.		2159.0	4661.1	250.4		
2.		2134.8	4557.3	354.3		
3.		2073.3	4294.3	617.3		
4.		1923.9	3701.3	1210.2		
5.		1843.0	3396.6	1514.9		

Absolute Open Flow 8,998 Mcfd @ 15.025 Angle of Slope θ 47.4 Slope, n .920

Remarks: No Fluid Produced during Test

Approved By Division	Conducted By: PRO WELL TESTERS	Calculated By: BM	Checked By: BM
----------------------	-----------------------------------	----------------------	-------------------

SITE FACILITY DIAGRAM

MEWBOURNE OIL COMPANY

CHALK BLUFF FEDERAL #2

LEASE # NM-0557371

1650'FNL & 1350'FWL, SEC:1 ,T18-S,R27-E

EDDY COUNTY, NEW MEXICO

PRODUCTION SYSTEM OPEN

OIL SALES BY TANK GAUGE TO TRUCK

SEAL REQUIREMENTS

PRODUCTION PHASE

VALVES 2&4 SEALED CLOSED

SALES PHASE

VALVES 1 2 &4 SEALED CLOSED

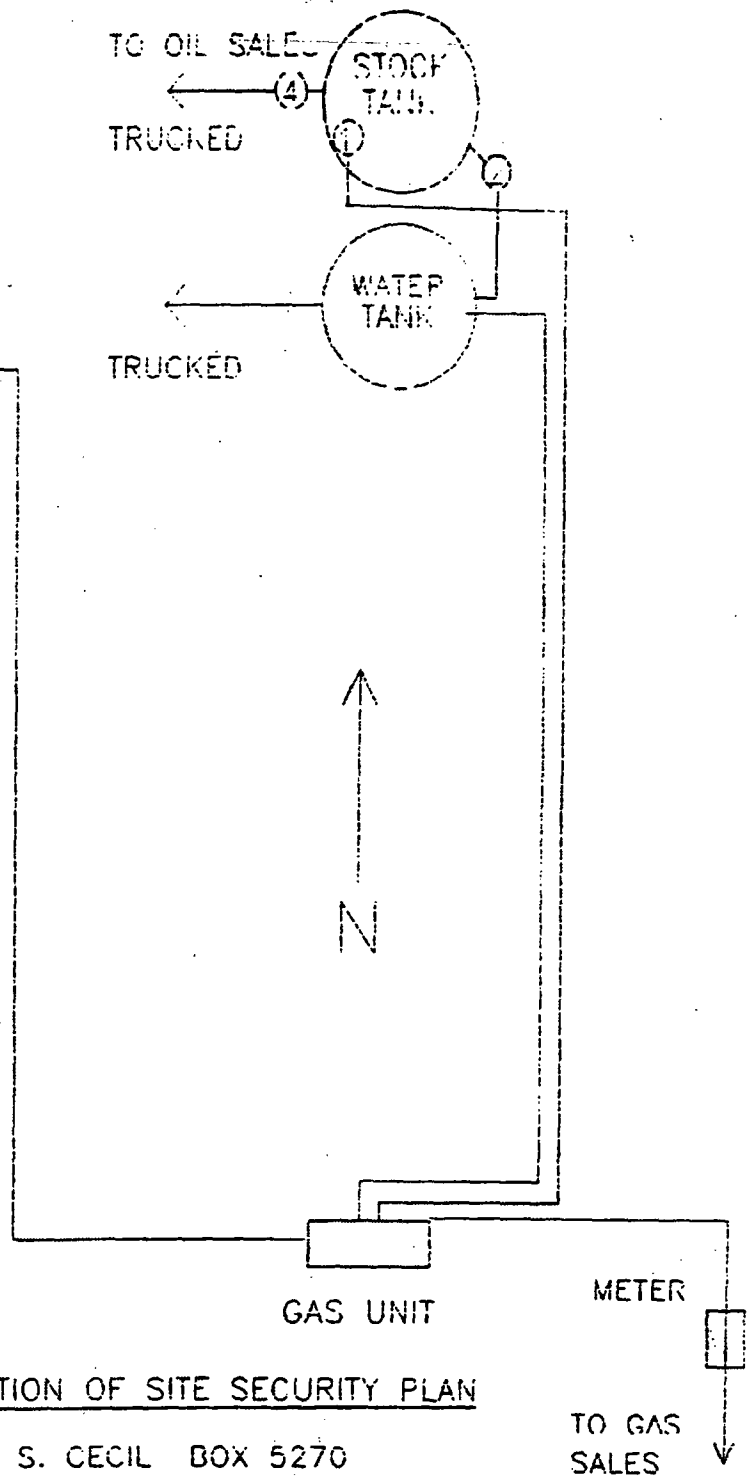
LOCATION OF SITE SECURITY PLAN

701 S. CECIL BOX 5270

HOBBS, NEW MEXICO

LEGEND

- | | | | |
|-------|--------------|-------|----------------|
| _____ | GAS SALES | _____ | WATER DUMPLINE |
| _____ | OIL DUMPLINE | _____ | WATER DRAIN |



JUN 15 10 29 AM '71
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Continued:

The proposed operation is described in detail on the attached diagrams.

A map is enclosed showing the lease numbers and location of all leases and wells that will contribute production to the proposed commingling/common storage facility. All unitized/communitized areas, producing zones/pools are also clearly illustrated.

A schematic diagram is also attached which clearly identifies all equipment that will be utilized.

The storage and measuring facility is located at NM -1/4, Sec. 1, T 18 S, R 27 E, on lease No. 0557371, Eddy County, New Mexico. BLM will be notified if there is any future change in the facility location.

Details of the proposed method for allocating production to contributing sources is as follows:

Gas will be measured at the individual leases and a percentage of contribution will be calculated and applied to the integrated sales volume. There is currently 6 wells producing into the system.

The working interest owners have been notified of the proposal.

The proposed commingling of production is in the interest of conservation and will not result in reduced royalty or improper measurement of production.

The proposed commingling is necessary for continued operation of the above referenced Federal leases.

We understand that the requested approval will not constitute the granting of any right-of-way or construction rights not granted by the lease instrument. And, we will submit within 30 days an application for right-of-way approval to the BLM's Realty Section in your office if we have not already done so.

Additional wells require additional commingling approvals.

Signature: 

Name: Gregory Milner

Title: Engineer

Date: 6/06/95

CRA BLM FORMAT

APPLICATION FOR SURFACE COMMINGLING,
OFF LEASE STORAGE AND MEASUREMENT APPROVAL

This Format Should Be Attached To A Sundry Notice

To: Bureau of Land Management
P. O. Box 1778
Carlsbad, New Mexico 88221-1778

Newbourne Oil Company (Operator's Name) is requesting approval for surface commingling and off-lease storage and measurement of hydrocarbon production from the following formation(s) and well(s) on Federal Lease No. NM-0557371 ; Lease Name: Chalk Bluff Federal

<u>Well No.</u>	<u>Loc.</u>	<u>Sec.</u>	<u>Twp.</u>	<u>Rng.</u>	<u>Formation</u>
<u>#2</u>	<u>F</u>	<u>1</u>	<u>18S</u>	<u>27E</u>	<u>Morrow</u>
<u>#3</u>	<u>I</u>	<u>1</u>	<u>18S</u>	<u>27E</u>	<u>Morrow</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

with hydrocarbon production from the following formation(s) and well(s) on State lease No. E-7179 ; Lease Name: Chalk Bluff "6"
E-647 Illinois Camp 17
E-1313 Illinois Camp 20

<u>Well No.</u>	<u>Loc.</u>	<u>Sec.</u>	<u>Twp.</u>	<u>Rng.</u>	<u>Formation</u>
<u>Chalk Bluff 6 St. #1</u>	<u>M</u>	<u>6</u>	<u>18S</u>	<u>28E</u>	<u>Morrow</u>
<u>Illinois Camp 17 St. #1</u>	<u>F</u>	<u>17</u>	<u>18S</u>	<u>28E</u>	<u>Morrow</u>
<u>Illinois Camp 17 St. #2</u>	<u>J</u>	<u>17</u>	<u>18S</u>	<u>28E</u>	<u>Morrow</u>
<u>Illinois Camp 20 St. #1</u>	<u>C</u>	<u>20</u>	<u>18S</u>	<u>28E</u>	<u>Morrow</u>

Production from the wells involved is as follows:

<u>Well Name and No.</u>	<u>BOPD</u>	<u>Oil Gravity</u>	<u>MCFPD</u>
<u>Chalk Bluff Fed. #2</u>	<u>N/A</u>	<u>N/A</u>	<u>80</u>
<u>Chalk Bluff Fed. #3</u>	<u>N/A</u>	<u>N/A</u>	<u>54</u>
<u>Chalk Bluff 6 St. #1</u>	<u>N/A</u>	<u>N/A</u>	<u>166</u>
<u>Illinois Camp 17 St. #1</u>	<u>N/A</u>	<u>N/A</u>	<u>1200</u>
<u>Illinois Camp 17 St. #2</u>	<u>N/A</u>	<u>N/A</u>	<u>744</u>
<u>Illinois Camp 20 St. #1</u>	<u>N/A</u>	<u>N/A</u>	<u>118</u>

* Only gas will be comingled off lease

Continued ...

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS COMMISSION
FORM APPROVED
Drawer DD, Budget Bureau No. 1004-0135
Artesia, NM, Expires March 31, 1993

CISF

SUNDRY NOTICES AND REPORTS ON WELLS

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Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
**1350' FWL & 1650' FNL
 Sec. 1-T18S-R27E**

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Chalk Bluff Fed. Com. #2

9. API Well No.
30-015-26741

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other Application for Measurement Approval
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

See Attached Forms & Diagrams.

RECEIVED
 JUN 10 1995
 OIL & GAS DIV.
 DIST. 2

JUN 10 1995
 OIL & GAS DIV.
 DIST. 2

14. I hereby certify that the foregoing is true and correct.

Signed [Signature] Title Engineer Date 6/06/95

(This space for Federal or State office use)

Approved by Orig. Signed by Adnan Salameh Title Petroleum Engineer Date 10/5/95

Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See instruction on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

C/SF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

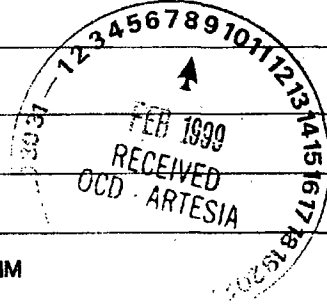
Mewbourne Oil Company

3. Address and Telephone No.

P. O. Box 5270, Hobbs, NM 88241 (505)393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1650' FNL & 1350' FWL of Section 1, T18S, R27E, Eddy County, NM



5. Lease Designation and Serial No.

NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed #2

9. API Well No.

30-015-26741

10. Field and Pool, or Exploratory Area

North Illinois Camp Morrow

11. County or Parish, State

Eddy, NM

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Subsequent Report	<input checked="" type="checkbox"/> Recompletion	<input type="checkbox"/> New Construction
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Altering Casing	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Other	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

cribe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is sectionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Set cast iron bridge plug to abandon Morrow Sand perforations 9850-9860' and 9864-9876'. Perforate Morrow Sands 9764-74' and 9778-85' and test

14. I hereby certify that the foregoing is true and correct

Signed [Signature]

Title District Manager

Date 01/11/99

(This space for Federal or State office use)

APPROVED BY (ORIG. SGD.) GARY GOURLEY

Title PETROLEUM ENGINEER

Date JAN 29 1999

Approved by Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See instruction on Reverse Side



NEW MEXICO ENERGY, MINERALS and
NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Mark E. Fesmire, P.E.

Director

Oil Conservation Division

*Oil Conservation Division
"Preserving the Integrity of the Environment"*

29-Jul-05

MEWBOURNE OIL CO

PO Box 5270

Hobbs NM 88241

NOTICE OF VIOLATION - Inspection

Dear Operator:

The following inspection(s) indicate that the well, equipment, location or operational status of the well(s) failed to meet standards of the New Mexico Oil Conservation Division as described in the detail section below. To comply with standards imposed by Rules and Regulations of the Division, corrective action must be taken immediately and the situation brought into compliance. The detail section indicates preliminary findings and/or probable nature of the violation. This determination is based on an inspection of your well or facility by an inspector employed by the Oil Conservation Division on the date(s) indicated.

Please notify the proper district office of the Division, in writing, of the date corrective actions are scheduled to be made so that arrangements can be made to reinspect the well and/or facility.

INSPECTION DETAIL SECTION

CHALK BLUFF FEDERAL COM No.002

F-1-18S-27E

30-015-26741-00-00

Inspection Date	Type Inspection	Inspector	Violation?	*Significant Non-Compliance?	Corrective Action Due By:	Inspection No.
07/29/2005	Routine/Periodic	Chris Beadle	Yes	No	8/29/2005	ICLB0521034161
Violations Absent Well Identification Signs (Rule 103)						
Comments on Inspection: Well sign not visible for distance required by Rule 103. Well sign is hidden inside bush grown up around the sign.						

In the event that a satisfactory response is not received to this letter of direction by the "Corrective Action Due By:" date shown above, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

Sincerely,



Artesia OCD District Office

Note: Information in Detail Section comes directly from field inspector data entries - not all blanks will contain data.
*Significant Non-Compliance events are reported directly to the EPA, Region VI, Dallas, Texas.

SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.

Map ID No. 95

Artificial Penetration Review

OPERATOR Apache Corp.
LEASE Federal T
WELL NUMBER 001
DRILLED 9/13/90
PLUGGED NA

STATUS Active
LOCATION Sec. 12 -T18S-R27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE -3731'
API NO. 30-015-26404

REMARKS:

MAP ID NO. 95

**APACHE CORPORATION
FEDERAL T NO. 001**

API NO. 30-015-26404

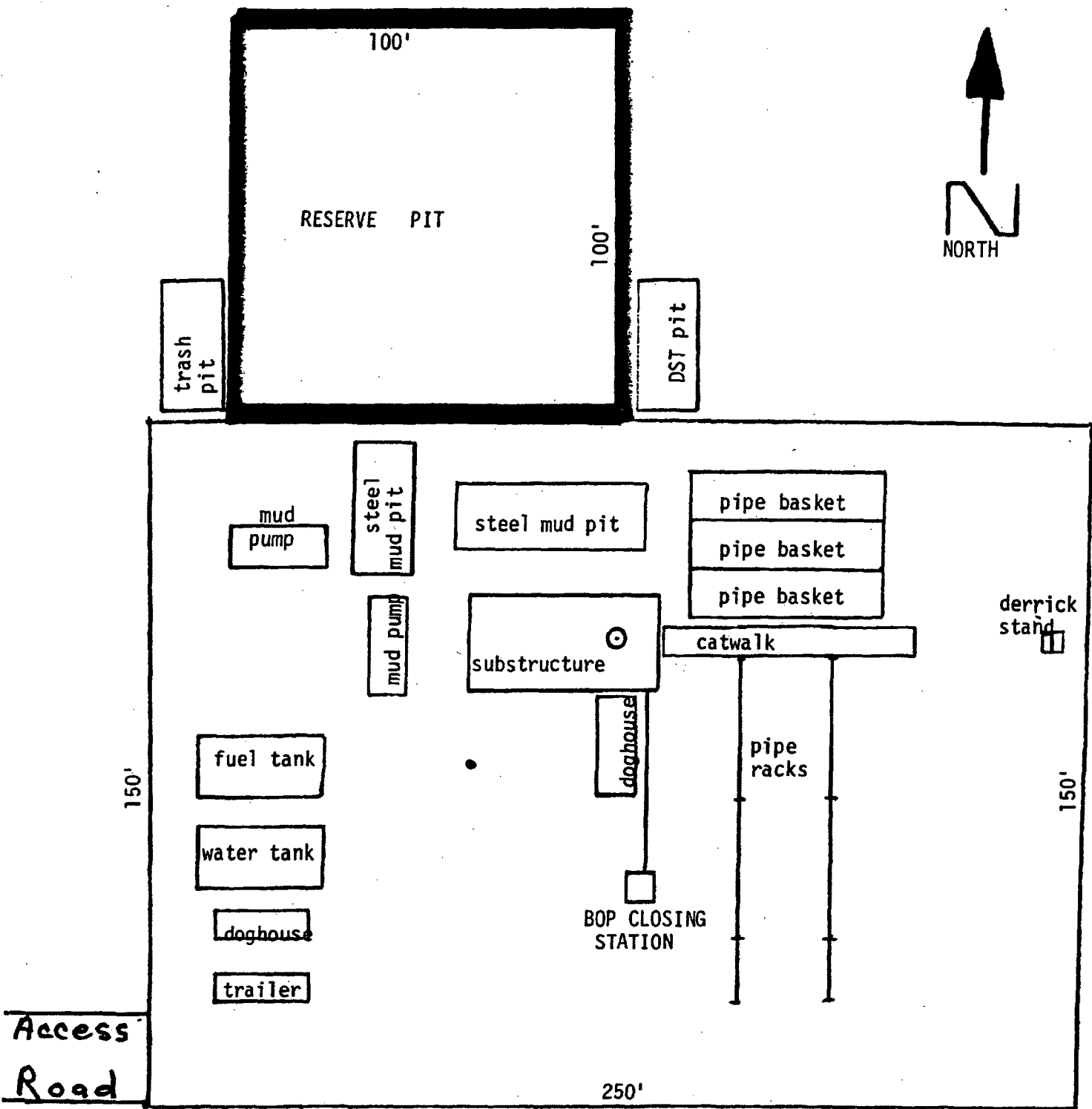


EXHIBIT "C"

MEWBOURNE OIL COMPANY
 FEDERAL "T" # 1
 LEASE # NM-42410
 990' FEL & 660' FNL
 SEC. 12-T18S-R27E
 EDDY COUNTY, NEW MEXICO

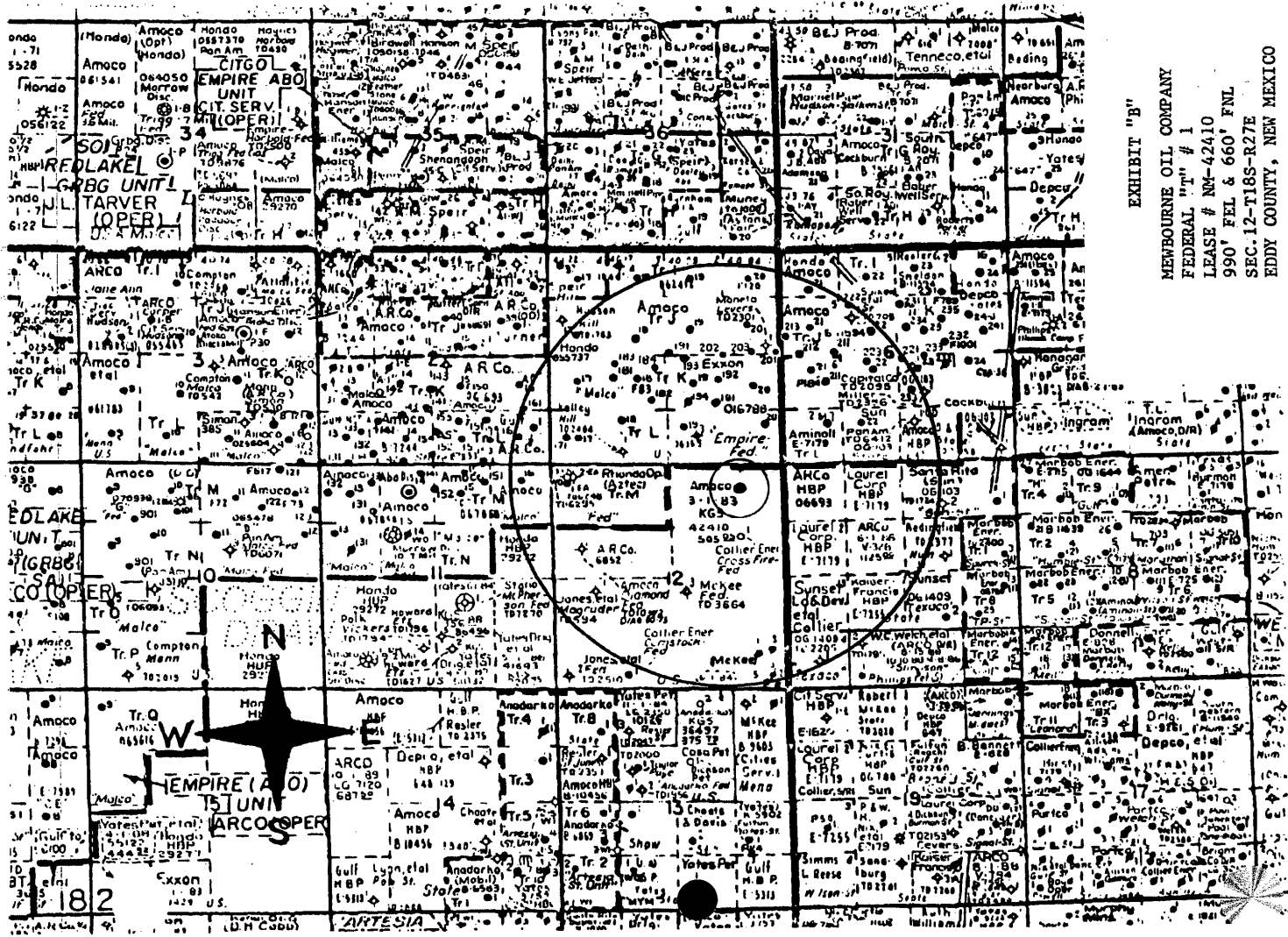
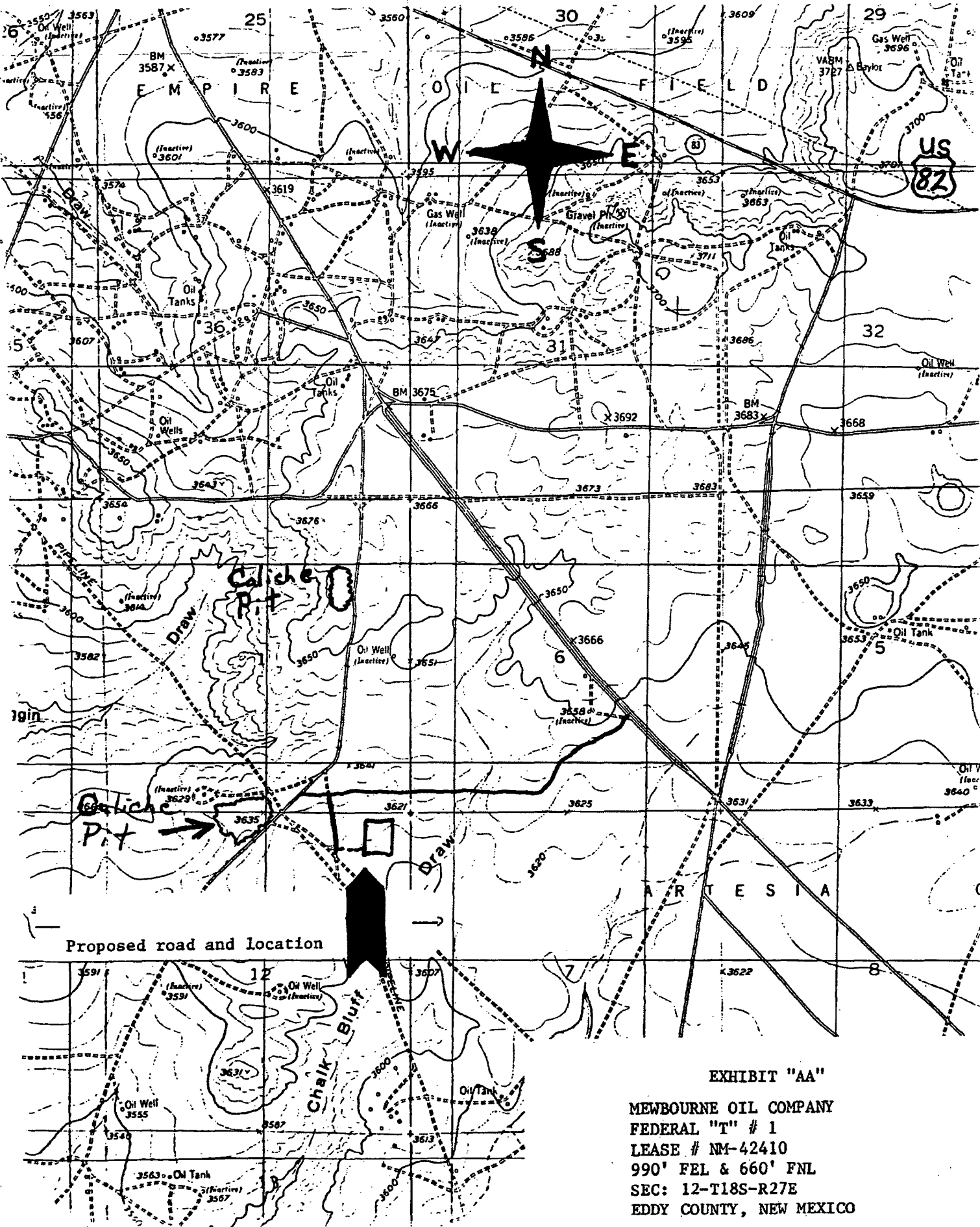


EXHIBIT "B"

MEMBOURNE OIL COMPANY
 FEDERAL "T" # 1
 LEASE # NM-42410
 990' FEL & 660' FML
 SEC. 12-T18S-R27E
 EDDY COUNTY, NEW MEXICO



Proposed road and location

EXHIBIT "AA"

MEWBOURNE OIL COMPANY
 FEDERAL "T" # 1
 LEASE # NM-42410
 990' FEL & 660' FNL
 SEC: 12-T18S-R27E
 EDDY COUNTY, NEW MEXICO

Existing Roads

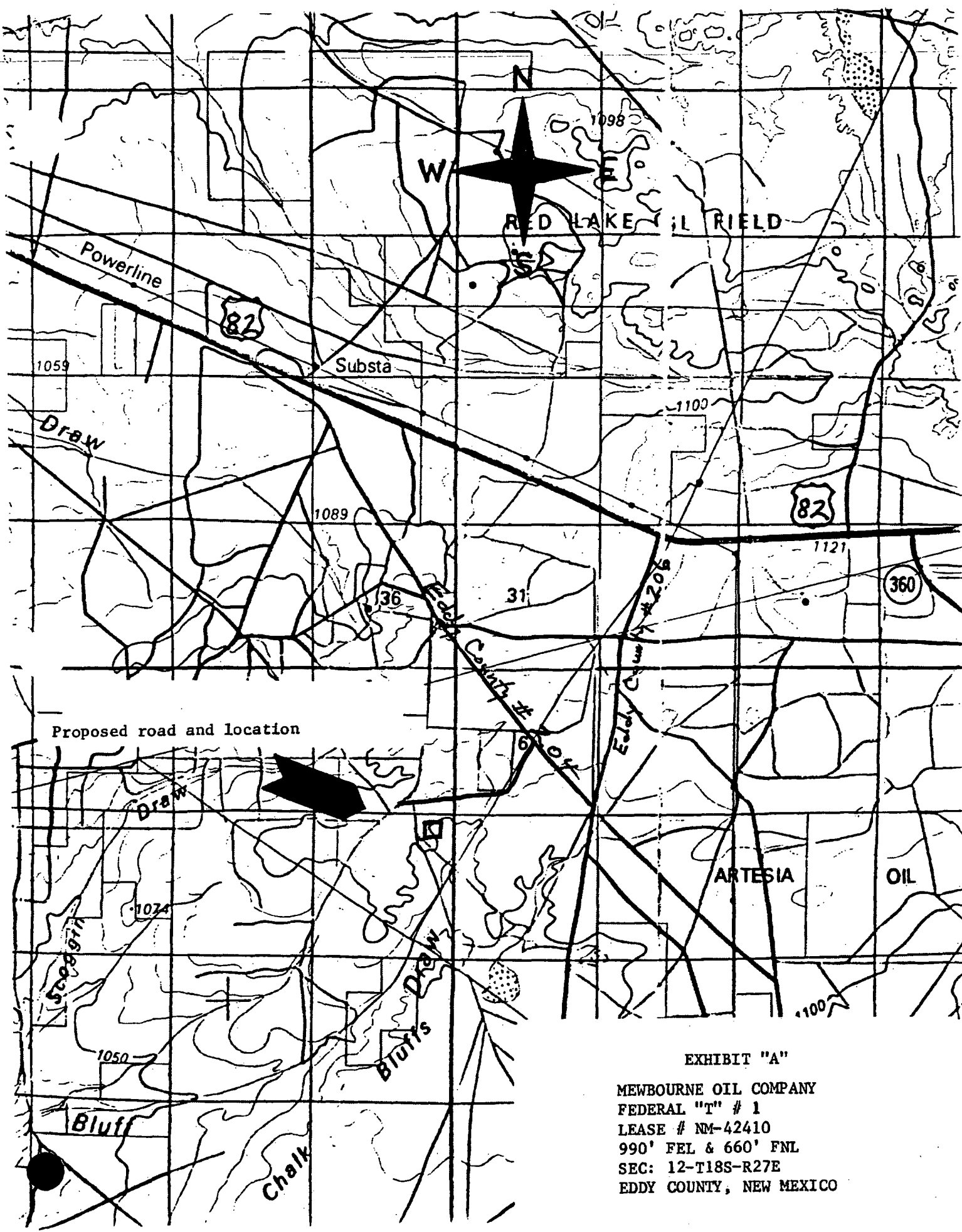


EXHIBIT "A"

MEWBOURNE OIL COMPANY
 FEDERAL "T" # 1
 LEASE # NM-42410
 990' FEL & 660' FNL
 SEC: 12-T18S-R27E
 EDDY COUNTY, NEW MEXICO



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

May 3, 1990

Mewbourne Oil Company
c/c Hinkle, Cox, Eaton, Coffield & Hensley
500 Marquette, NW
Suite 800
Albuquerque, NM 87102-2121

Attention: James Bruce

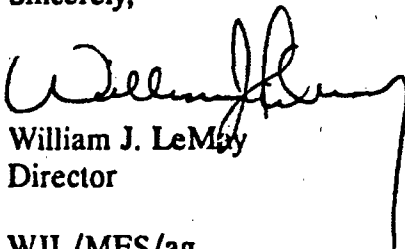
Administrative Order NSL-2785

Dear Mr. Bruce:

Reference is made to your application on behalf of Mewbourne Oil Company dated April 12, 1990 for a non-standard gas well location for your Federal "T" Well No. 1 to be located 660 feet from the North line and 990 feet from the East line (Unit A) of Section 12, Township 18 South, Range 27 East, NMPM, Undesignated North Illinois Camp Morrow Gas Pool, Eddy County, New Mexico. The N/2 of said Section 12 shall be dedicated to the well forming a standard 320-acre gas spacing and proration unit for said pool.

By the authority granted me under the provisions of General Rule 104 (II) the above-described unorthodox gas well location is hereby approved.

Sincerely,



William J. LeMay
Director

WJL/MES/ag

cc: Oil Conservation Division - Artesia
US Bureau of Land Management - Carlsbad

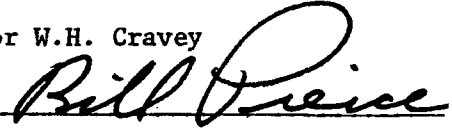
12. CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Mewbourne Oil Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

May 18, 1990

Date

For W.H. Cravey

A handwritten signature in cursive script that reads "Bill Price". The signature is written in black ink and is positioned above a horizontal line.

W.H. Cravey
Production Superintendent
Mewbourne Oil Company

10. OTHER INFORMATION:

A. The geologic surface formation is hard clay interspersed with sand and chert outcroppings. Vegetative cover is generally sparse and consist mostly of greasewood and bear grass.

B. The estimated tops of geologic markers are as follows:

Queen	1260'	Cisco	7740'
San Anres	2100'	Canyon	8350'
Glorieta	3720'	Strawn	8900'
Tubb	4930'	Atoka	9500'
Abo	5900'	Morrow	9600'
Wolfcamp	6900'	Mississippian	10,100'

C. The estimated depths at which anticipated water, oil, or gas are expected to be encountered:

Water: Possible surface water between 100-300'.

Oil: Penrose @ 1520'.

Gas: Wolfcamp @ 6900'.

D. Proposed Casing Program: See Form 9-331C.

E. Pressure Control Equipment: See Form 9-331C and Exhibit "D".

F. Mud Program: See Form 9-331C.

G. Auxiliary Equipment: Mud-gas seperator and PVT aystem from 6,000' - T.D.

H. Testing and Coring Program: Possibility of 6 DST's in the following zones; Wolfcamp, Cisco, Canyon, Strawn, Atoka, and Morrow. No cores are planned at this time.

Logging: Gamma Ray - Spectral
Density - Dual Spaced Neutron Log; T.D. to surface.
Gamma Ray - Dual Latero Log
Microguard Log; T.D. to Intermediate casing.

I. No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered the proposed mud program will be modified to increase the weight.

J. Anticipated Starting Date: As soon as possible after BLM approval.

11. OPERATOR'S REPRESENTATIVE

The field representatives responsible for assuring compliance with the approved surface use and operations plan are as follows:

W.H. Cravey
Erick W. Nelson
Bill Pierce
701 South Cecil Street
Hobbs, New Mexico
Phone: (505) 393-5905

5. SOURCE OF CONSTRUCTION MATERIALS:

- A. Caliche for surfacing the road and location hopefully will come from the construction site. In the event that unsuitable material is encountered, caliche will be taken from a BLM pit located in the NE4/NW4 of section 12-T18S-R27E, which would be BLM pit # 18271203. This pit also extends into the SE4/SW4 of section 1-T18S-R27E which would be BLM pit # 18270114. An alternate pit which may be used in the event BLM pit # 18271203 contains unsuitable material would be a BLM pit located in the SW4/NE4 of section 1-T18S-R27E, which would be BLM pit # 18270107.

6. METHODS OF HANDLING WASTE DISPOSAL:

- A. Drill cuttings will be disposed of in the drilling pits.
- B. Drilling fluids will be allowed to evaporate in the drilling pits until pits are dry.
- C. Water produced during tests will be disposed of in the drilling pits. Oil produced during tests will be stored in test tanks until sold.
- D. Current laws and regulations pertaining to the disposal of human water will be complied with.
- E. All trash, junk and other waste material will be contained to prevent scattering and will be removed and deposited in an approved sanitary landfill.
- F. All trash and debris will be buried or removed from the wellsite within 30 days after finishing drilling and/or completion operations.

7. ANCILLIARY FACILITIES:

- A. None required.

8. WELLSITE LAYOUT:

- A. Exhibit "C" shows the relative location and dimensions of the well pad, mud pits, reserve pit, trash pit, and location of major rig components.
- B. The pad and pit area has been staked and flagged.

9. PLANS AND RESTORATION OF THE SURFACE:

- A. After completion of drilling and/or completion operations all equipment and other material not needed for operations will be removed. Pits will be filled and location cleaned of all trash and junk to leave the wellsite in an aesthetically pleasing condition as possible.

MULTI-POINT SURFACE USE AND OPERATING PLAN

MEWBOURNE OIL COMPANY

FEDERAL "T" WELL NO. 1

990' FEL & 660' FNL OF SEC. 12-T18S-R27E

EDDY COUNTY, NEW MEXICO

NEW MEXICO LEASE NO. NM-42410

This plan is submitted with the Application for Permit to Drill (APD) the above described well. The purpose of the plan is to describe the location of the proposed well, the proposed construction activities and operations plan and the magnitude of necessary surface disturbance involved, so that a complete appraisal can be made of the environmental effects associated with the operation. The surface to be disturbed is privately owned and a surface use agreement has been signed with the land owner.

1. EXISTING ROADS:

- A. Exhibit "A" is a portion of a BLM map, 30 x 60 minute quadrangle; Artesia, New Mexico, showing the location of the proposed well as staked. From the junction of U.S. 82 and U.S. 285 Highways in Artesia, proceed east on U.S. 82 for 12 miles. Turn right (south) on Eddy County Road #206 (Illinois Camp Road) and proceed south for 1 3/4 miles. Turn right (west) on Eddy County Road #204 and proceed west for 3/10 of a mile. Turn left (south) on an existing caliche lease road and follow southwest for 7/8 of a mile. Turn left (south) and proceed 1/4 mile, turn left (east) into location.
- B. Culverts: None required.
- C. Cuts and Fills: A three foot cut will be required for construction of the location.
- D. Turn-Outs: None required.
- E. Gates and Cattleguards: None required.

2. LOCATION OF EXISTING WELLS:

- A. Existing wells in a 1 mile radius are shown of Exhibit "B".

3. LOCATION OF PROPOSED FACILITIES:

- A. If the well is productive, all production facilities will be constructed on the existing pad and no additional surface disturbance will occur.

4. LOCATION AND TYPE OF WATER SUPPLY:

- A. Water will be purchased and trucked to the wellsite over the existing and proposed roads shown on Exhibits "A" and "AA".

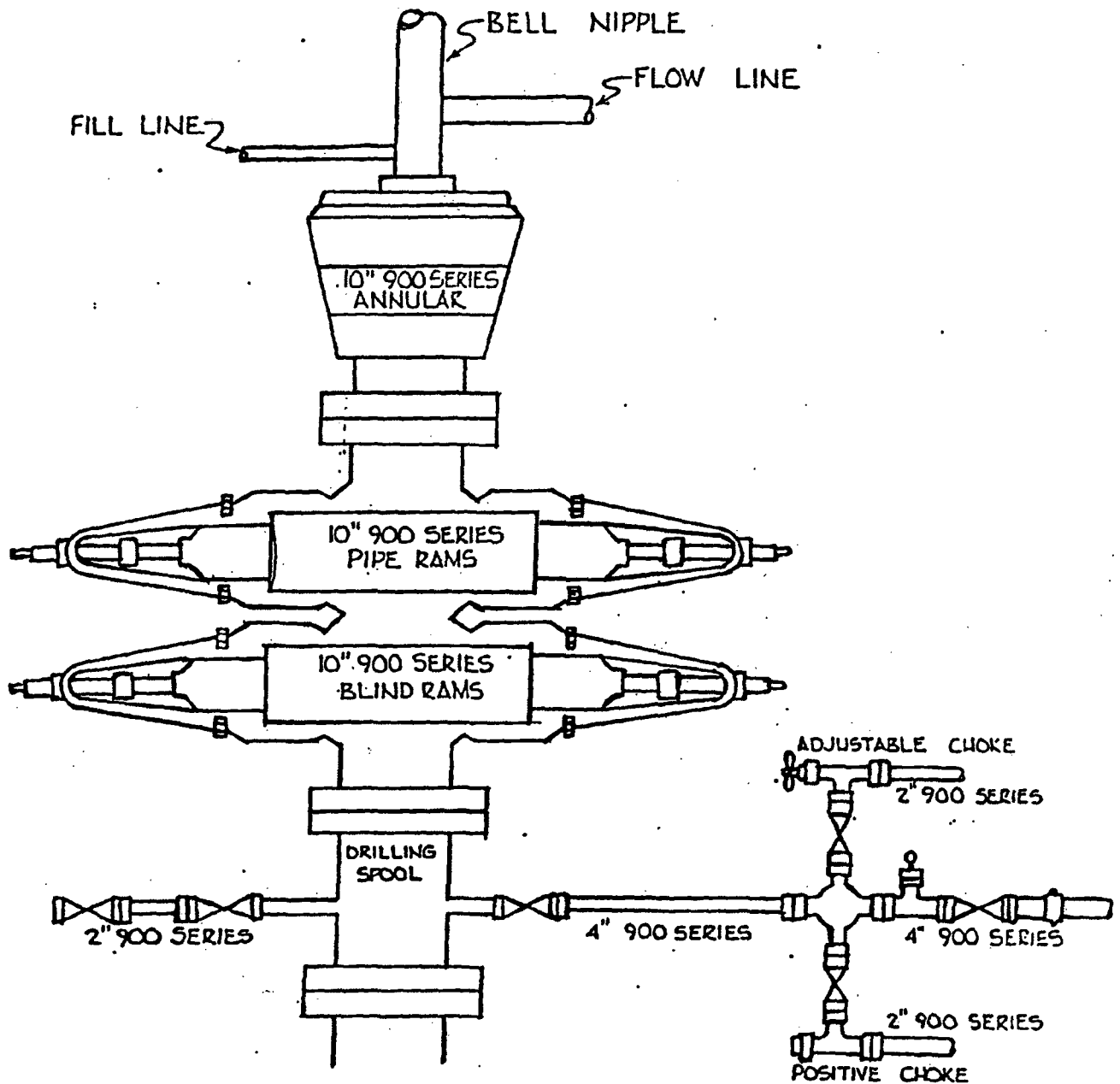


EXHIBIT "D"

MEWBOURNE OIL COMPANY
 FEDERAL "T" # 1
 LEASE # NM-42410
 990' FEL & 660' FNL
 SEC. 12-T18S-R27E
 EDDY COUNTY, NEW MEXICO

Submit to Appropriate District Office
 State Leases - 4 copies
 Fee Leases - 3 copies

State of New Mexico
 Energy, Minerals and Natural Resources Dept

Form C-102
 Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

RECEIVED

JUN 15 '90

O. C. D.
 ARTESIA, OFFICE

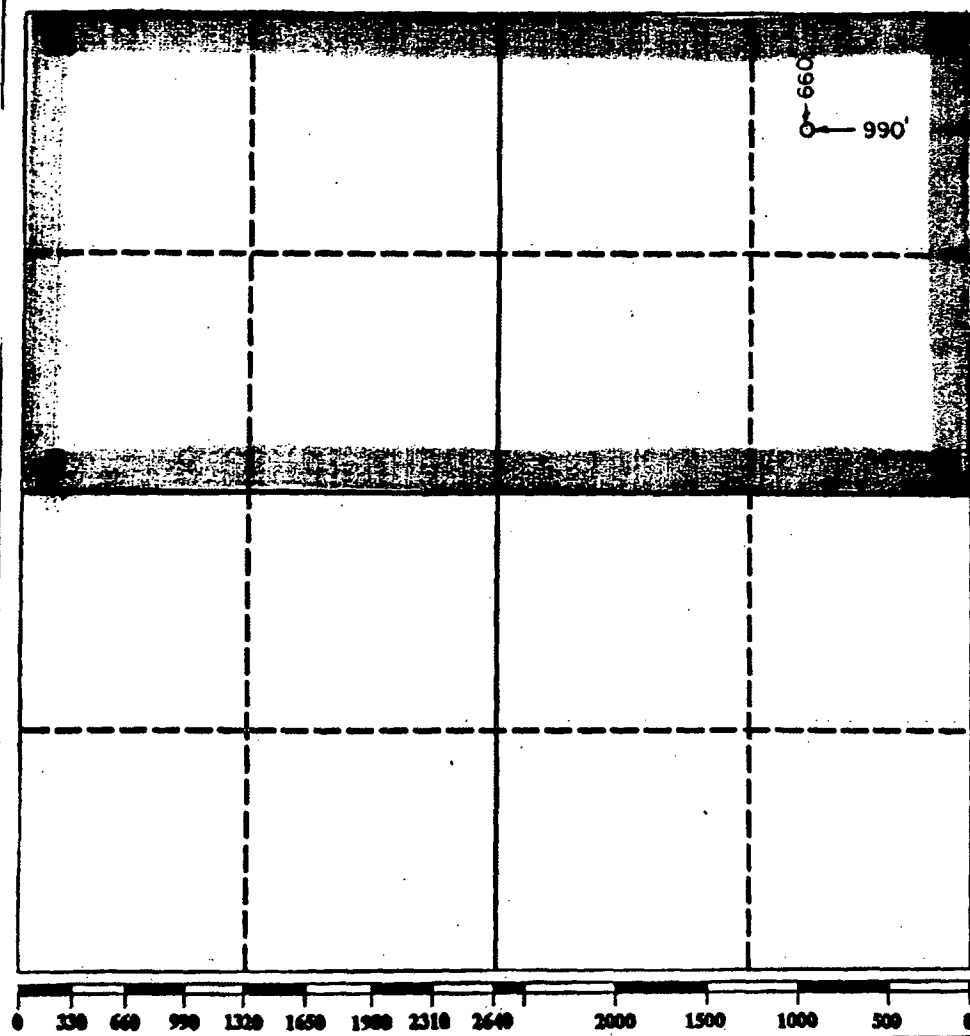
DISTRICT I
 P.O. Box 1900, Hobbs, NM 88240

DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT
 All Distances must be from the outer boundaries of the section

Operator MEWBOURNE OIL COMPANY			Lease FEDERAL "T"			Well No. 1		
Unit Letter A	Section 12	Township 18 South	Range 27 East	County NMPM	Eddy			
Actual Postage Location of Well: 660 feet from the North line and 990 feet from the East line								
Ground level Elev. 3618.9		Producing Formation Morrow			Pool North Illinois Camp Morrow		Dedicated Acreage: 320 Acres	
<p>1. Outline the acreage dedicated to the subject well by colored pencil or hectare marks on the plat below.</p> <p>2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).</p> <p>3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.? <input type="checkbox"/> Yes <input type="checkbox"/> No If answer is "yes" type of consolidation _____</p> <p>If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)</p> <p>No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, force-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.</p>								



OPERATOR CERTIFICATION
 I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: *W.H. Cravey*
 Printed Name: **W.H. Cravey**
 Position: **District Supt.**
 Company: **Mewbourne Oil Company**
 Date: **April 12, 1990**

SURVEYOR CERTIFICATION
 I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: **4/7/90**
 Signature & Seal of Professional Surveyor:
Herschel
HERSCHER
 Certificate No. **3680**
REGISTERED LAND SURVEYOR

30-015-26407

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK
 DRILL DEEPEN PLUG BACK

b. TYPE OF WELL
 OIL WELL GAS WELL OTHER SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
 MEWBOURNE OIL COMPANY

3. ADDRESS OF OPERATOR
 Box 5270; Hobbs, New Mexico 88241

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
 At surface: 660' FNL & 990' FEL
 At proposed prod. zone: SAME

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE
 8 miles southeast of Artesia, New Mexico

16. NO. OF ACRES IN LEASE: 320

17. NO. OF ACRES ASSIGNED TO THIS WELL: 320

18. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 660'

19. PROPOSED DEPTH: 10,300'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3618.9' GR

22. APPROX. DATE WORK WILL START: Upon BLM approval

5. LEASE DESIGNATION AND SERIAL NO.
 NM 42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
 FEDERAL "T"

9. WELL NO.
 1

10. FIELD AND POOL, OR WILDCAT
 North Illinois Camp Morrow

11. SEC., T. R. M., OR BLM. AND SURVEY OR AREA
 12-T18S-R27E

12. COUNTY OR PARISH
 EDDY

13. STATE
 N. MEX.

RECEIVED

JUN 15 '90

C. C. D. ARTESIA OFFICE

wt. A

RECEIVED
 JUN 18 9 55 AM '90

RECEIVED
 JUN 18 9 55 AM '90

Post ID-1
 6-12-90

New Loc + API

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	13 3/8"	61#	450' ±	450 sks. Class C Circulated
11"	8 5/8"	24# & 32#	2600' ±	700 sks. Class C Plug back into surf.
7 7/8"	5 1/2"	17# & 20#	10,300' ±	600 sks. Class H

Mud Program:

0 - 450' Spud mud with fresh water gel and lime. LCM as needed.
 450' - 2600' Fresh water gel and lime. LCM as needed.
 2600' - 8500' Cut brine with lime for pH control. WT. 9.2 - 9.6ppg, WL - NG LCM as needed.
 8500' - 10,300' Cut brine with Drispac, salt gel, lime, soda ash, and starch. WT. 9.2 - 9.6 ppg. WL 10 cc's or less. Raise weight accordingly if abnormal pressures are encountered.

BOP PROGRAM:

900 series BOP and Hydril on 13 3/8" surface casing and on 8 5/8" intermediate casing.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. For W.H. Cravey
 SIGNED: Bill Pierce TITLE: District Superintendent DATE: 5/18/90

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY: Richard L. Magallon TITLE: _____ DATE: 6-13-90

APPROVAL SUBJECT TO
 GENERAL REQUIREMENTS AND
 SPECIAL STIPULATIONS
 ATTACHED

756-2785 Appr. 5-3-90

*See Instructions On Reverse Side

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated, on all types of lands and leases for appropriate action by either a Federal or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable State or Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on this reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal or State agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective production zone.

ITEM 22: Consult applicable Federal or State regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR Part 3160.

PRINCIPAL PURPOSE: The information is to be used to process and evaluate your application for permit to drill, deepen, or plug back an oil or gas well.

ROUTINE USES: (1) The analysis of the applicant's proposal to discover and extract the Federal or Indian resources encountered. (2) The review of procedures and equipment and the projected impact on the land involved. (3) The evaluation of the effects of proposed operation on surface and subsurface water and other environmental impacts. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions, as well as routine regulatory responsibility.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if the lessee elects to initiate drilling operation on an oil and gas lease.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq) requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases.

This information will be used to analyze and approve applications.

Response to this request is mandatory only if the lessee elects to initiate drilling operations on an oil and gas lease.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN THIS CATEGORY
(Other instructions on reverse side)

Form approved. 95P
Budget Bureau No. 1004-C-2
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different depth. Use "APPLICATION FOR PERMIT" for such proposals.)

RECEIVED

5. LEASE DESIGNATION AND SERIAL NO.
NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
FEDERAL "T"

9. WELL NO.
1

10. FIELD AND POOL, OR WILDCAT
N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLM. AND SURVEY OR ARMA
12-18S-27E

12. COUNTY OR PARISH 13. STATE
Eddy N.M.

1. OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR SEP 13 '90

Mewbourne Oil Company

3. ADDRESS OF OPERATOR O. C. D.
ARTESIA, OFFICE

P. O. Box 7698, Tyler, Texas 75711

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface

660' FNL & 990' FEL

14. PERMIT NO.
API #30-015-26404

15. ELEVATIONS (Show whether BP, WT, GK, etc.)
3618.9' FR

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANE

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

8/12/90 - Ran 5-1/2" casing as follows: 237 jts N-80, 17#, LT&C Used Casing set at 9473', cemented with 430 sxs Class "H" + .7 CF-14 + 5# salt + 1/4# Celloseal. Overdisplaced 1 bbl without bumping plug. No back flow or vacuum.

8/27/90 - Ran 4" liner set at 10,140' with top of liner at 9055'. Pumped 500 gallons Sure Bone, followed by 5 bbl fresh water. Spaced and cemented with 80 sacks Class "H" with 1% CF-14. Liner wiper plug down at 11:30 AM.

RECEIVED
SEP 10 10 31 AM '90

18. I hereby certify that the foregoing is true and correct

SIGNED

TITLE Engr. Oprns. Secretary

DATE 9/06/90

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instruction on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

45F

RECEIVED

5. LEASE DESIGNATION AND SERIAL NO

NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

OCT 9 10 41 AM '90
RECEIVED

CARL...
AREA...

OCT 17 '90

C. D.
ARTESA OFFICE

UNIT AGREEMENT NAME

FARM OR LEASE NAME

FEDERAL "T"

7. WELL NO.

1

10. FIELD AND POOL, OR WILDCAT

N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLM. AND SURVEY OR AREA

12-18S-27E

12. COUNTY OR PARISH 13. STATE

Eddy

N.M.

1. OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR
Mewbourne Oil Company

3. ADDRESS OF OPERATOR
P. O. Box 7698, Tyler, Texas 75711

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface

660' FNL & 990' FEL

14. PERMIT NO.
API #30-015-26404

15. ELEVATIONS (Show whether DF, RT, GR, etc.)
3618.9' GR

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF
FRACTURE TREAT
SHOOT OR ACIDIZE
REPAIR WELL
(Other)

PULL OR ALTER CASING
MULTIPLE COMPLETION
ABANDON*
CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF
FRACTURE TREATMENT
SHOOTING OR ACIDIZING
(Other)

REPAIRING WELL
ALTERING CASING
ABANDONMENT*

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

- 9/14/90 - Perforated Morrow 10,008-014', 12 holes; 10,038-054', 36 holes. Total 48 holes 24'.
- 9/15/90 - Halliburton broke down perfs with 2000 gals 7 1/2% Morflo B.C. acid containing 1000 SCF/Bbl N₂ carrying 96 ball sealers and flushed with 23 bbls 2% KCL water containing 1000 SCF/Bbl N₂. Pressured casing to 1000#. Had good ball action. ISDP 5050#. In 5 mins., 4580#, In 10 mins, 4300#, In 15 mins, 4130#. Max 6000#. Max Rate 3.7 BPM. Avg 5850#. Avg Rate 3.4 BPM. 71 Bbls load to recover.
- 9/26/90 - Halliburton frac'd Morrow perfs with 8900 gals gelled 2% KCL water + 87 tons of CO₂ carrying 11,500# 20/40 Interprop. Pressured annulus to 2000#. ISDP 5340#. In 5 mins 5080#, in 10 mins 4950#, in 15 mins 4850#. Avg 9500#. Avg rate 6 BPM. Max 9800#. Max rate 6.7 BPM. 211 bbls load to recover.

As

18. I hereby certify that the foregoing is true and correct

SIGNED

[Signature]

TITLE Engr. Oprns. Secretary

DATE

10/02/90

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

45F

RECEIVED

5. LEASE DESIGNATION AND SERIAL NO

NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT" for such proposals.)

OCT 9 10 42 AM '90
RECEIVED
CARL...
AREA...
OCT 17 '90
C. D.
ARTESIAN OFFICE

1. OIL WELL GAS WELL OTHER

UNIT AGREEMENT NAME

2. NAME OF OPERATOR
Mewbourne Oil Company

FARM OR LEASE NAME
FEDERAL "T"

3. ADDRESS OF OPERATOR
P. O. Box 7698, Tyler, Texas 75711

9. WELL NO.
1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface
660' FNL & 990' FEL

10. FIELD AND POOL, OR WILDCAT
N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLM. AND SURVEY OR ARMA
12-18S-27E

14. PERMIT NO.
API #30-015-26404

15. ELEVATIONS (Show whether DP, RT, GR, etc.)
3618.9' GR

12. COUNTY OR PARISH | 13. STATE
Eddy | N.M.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF
FRACTURE TREAT
SHOOT OR ACIDIZE
REPAIR WELL
(Other)
PULL OR ALTER CASING
MULTIPLE COMPLETION
ABANDON*
CHANGE PLANS

WATER SHUT-OFF
FRACTURE TREATMENT
SHOOTING OR ACIDIZING
(Other)
REPAIRING WELL
ALTERING CASING
ABANDONMENT*

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

- 9/14/90 - Perforated Morrow 10,008-014', 12 holes; 10,038-054', 36 holes. Total 48 holes 24'.
- 9/15/90 - Halliburton broke down perfs with 2000 gals 7½% Morflo B.C. acid containing 1000 SCF/Bbl N₂ carrying 96 ball sealers and flushed with 23 bbls 2% KCL water containing 1000 SCF/Bbl N₂. Pressured casing to 1000#. Had good ball action. ISDP 5050#. In 5 mins., 4580#, In 10 mins, 4300#, In 15 mins, 4130#. Max 6000#. Max Rate 3.7 BPM. Avg 5850#. Avg Rate 3.4 BPM. 71 Bbls load to recover.
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18. I hereby certify that the foregoing is true and correct

SIGNED [Signature] TITLE Engr. Oprns. Secretary DATE 10/02/90

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

CONFIDENTIAL
 DEPARTMENT OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT

Form approved.
 Budget Bureau No. 1004-0137-
 Expires August 31, 1985

REPRODUCE IN DUPLICATE
 (See other instructions on reverse side)

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other

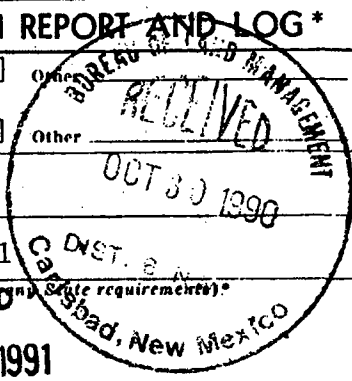
b. TYPE OF COMPLETION: NEW WELL WORK OVER REFINISH PLUG BACK DIFF. BEHR. Other

2. NAME OF OPERATOR
 Mewbourne Oil Company ✓

3. ADDRESS OF OPERATOR
 P. O. Box 7698, Tyler, Texas 75711

4. LOCATION OF WELL (Report location clearly and in accordance with State requirements)
 At surface 660' FNL & 990' FEL
 At top prod. interval reported below
 At total depth Same

O. C. D.
 ANTESIA OFFICE DATE ISSUED
 API #30-015-26404



5. LEASE DESIGNATION AND SERIAL NO.
 NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
 FEDERAL "T"

9. WELL NO.
 1

10. FIELD AND POOL, OR WILDCAT
 North Illinois Camp Morrow

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
 12-18S-27E

12. COUNTY OR PARISH
 Eddy

13. STATE
 N.M.

15. DATE SPUNDED 6/28/90 16. DATE T.D. REACHED 8/25/90 17. DATE COMPL. (Ready to prod.) 9/13/90 18. ELEVATIONS (DP, RKB, RT, OR, ETC.)* KB 3634', DF 3632', GL 3618'

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD 10,141' 21. PLUG BACK T.D., MD & TVD 10,100' 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY ROTARY TOOLS X CABLE TOOLS

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
 10,008-054' Morrow

25. WAS DIRECTIONAL SURVEY MADE Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN DLL-MGRD, SDL-DSN 27. WAS WELL CORED No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	68#	472'	17-1/2"	450 sacks - Circ	None
8-5/8"	32#	2589'	12-1/4"	900 sacks - Circ	None
5-1/2"	17#	9473'	7-7/8"	430 sacks - Circ	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
4"	9055'	10,141'	80	

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	9842'	8888'

31. PERFORATION RECORD (Interval, size and number)
 10,008-014', 12 holes)
 10,038-054', 36 holes) 24'

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
10,008-054'	2000 gals 7 1/2% acid. Frac'd w/ 8900 gals 2% KCL wtr + 87 tons CO ₂ + 11,500# 20/40 Interprop.

33. PRODUCTION

DATE FIRST PRODUCTION 9/15/90 PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) Flowing WELL STATUS (Producing or shut-in) Shut-in WOPL

DATE OF TEST	HOURS TESTED	CHOKER SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
10/03/90	24 hrs.	34/64"	→	1 BC	923	2	923:1

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
160#	0#	→	1 BC	923	2	58.0°

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Vented TEST WITNESSED BY Eric Nelson

35. LIST OF ATTACHMENTS
 Logs

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED *Raymond Thompson* TITLE Engr. Oprns. Secretary DATE 10/25/90

*(See instructions and spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
Penrose	1522'	1556'	Sandstone			
Atoka	9566'	9575'	Sandstone	Yates	476'	
Middle Morrow	9902'	9928'	Sandstone	Queen	1218'	
Lower Morrow	10008'	10054'	Sandstone	Grayburg	1572'	
				San Andres	2072'	
				Tubb	4824'	
				Abo	6016'	
DST #1 Drinkard	5749'	5850'	No cushion. Tool open 30 mins. IFP 88-45#, ISIP 296#. 62 mins. FFP 88-50#. FSIP 430#. 120 mins. Recovered 30' drilling fluid.	Wolfcamp	6716'	
				Cisco	7682'	
				Strawn	8912'	
				Atoka	9513'	
DST #2 Abo	6475'	6499'	No cushion. Tool open 30 mins. IFP 72-37#. ISIP 1953#. 60 mins. FFP 59-59# 60 mins. FSIP 1894#. 120 mins. Recovered 2' free oil, 122' drilling fluid.	Morrow	9628'	
				Morrow Clastics	9828'	
				Lower Morrow	9965'	
				Barnett	10104'	

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
JAN 31 1991

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

**REQUEST FOR ALLOWABLE AND AUTHORIZATION
TO TRANSPORT OIL AND NATURAL GAS**

O. C. D.
OFFICE

I.

Operator Mewbourne Oil Company ✓	Well Number 30-015-26404
Address P. O. Box 7698, Tyler, Texas 75711	
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)	
New Well <input checked="" type="checkbox"/>	Change in Transporter of: Oil <input type="checkbox"/> Dry Gas <input type="checkbox"/>
Recompletion <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/> Condensate <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	
If change of operator give name and address of previous operator	

II. DESCRIPTION OF WELL AND LEASE

Lease Name FEDERAL "T"	Well No. 1	Pool Name, Including Formation North Illinois Camp Morrow	Kind of Lease State, Federal or Leases	Lease No. NM-42410
Location Unit Letter <u>A</u> : <u>660</u> Feet From The <u>North</u> Line and <u>990</u> Feet From The <u>East</u> Line Section <u>12</u> Township <u>18S</u> Range <u>27E</u> NMPM. Eddy County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil Amoco Pipeline Inter-corporate Trucking	<input type="checkbox"/> or Condensate <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent) Oil Tender Dept., Box 702068, Tulsa, OK 74170-2068
Name of Authorized Transporter of Casinghead Gas Transwestern Pipeline Company	<input type="checkbox"/> or Dry Gas <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent) P. O. Box 1188, Houston, Texas 77251-1188
If well produces oil or liquids, give location of tanks.	Unit <u>A</u> Sec. <u>12</u> Twp. <u>18S</u> Rgn. <u>27E</u>	Is gas actually connected? <u>No</u> When? <u>February, 1991</u>

If this production is commingled with that from any other lease or pool, give commingling order number: No

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well <input type="checkbox"/>	Gas Well <input checked="" type="checkbox"/>	New Well <input checked="" type="checkbox"/>	Workover <input type="checkbox"/>	Deepen <input type="checkbox"/>	Plug Back <input type="checkbox"/>	Same Res'v <input type="checkbox"/>	Diff Res'v <input type="checkbox"/>
Date Spudded 6/28/90	Date Compl. Ready to Prod. 9/13/90	Total Depth 10,141'	P.B.T.D. 10,100'					
Elevations (DF, RKB, RT, GR, etc.) DF 3632', GL 3618'	Name of Producing Formation Morrow	Top Oil/Gas Pay 10,008'	Tubing Depth 9,842'					
Performances 10,008-054'	Depth Casing Shoe ---							
TUBING, CASING AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT					
17-1/2"	13-3/8"	472'	450					
12-1/4"	8-5/8"	2589'	900					
7-7/8"	5-1/2"	9473'	430					
5-1/2"	4" Liner	10140'	80					

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size <u>Post ID-2</u> <u>3-15-91</u> <u>comp & BK</u>
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas-MCF

GAS WELL

Actual Prod. Test - MCF/D 923	Length of Test 24 hours	Bbls. Condensate/MMCF 1	Gravity of Condensate 58°
Testing Method (pilot, back pr.) Back Pressure	Tubing Pressure (Shut-in) 2300#	Casing Pressure (Shut-in) ---	Choke Size 34/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gaylon Thompson
Signature
Gaylon Thompson, Engr., Oprns. Sec.
Printed Name
1/28/91 Date (903) 561-2900 Telephone No.

OIL CONSERVATION DIVISION

Date Approved MAR 12 1991
By M. A. Williams
Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

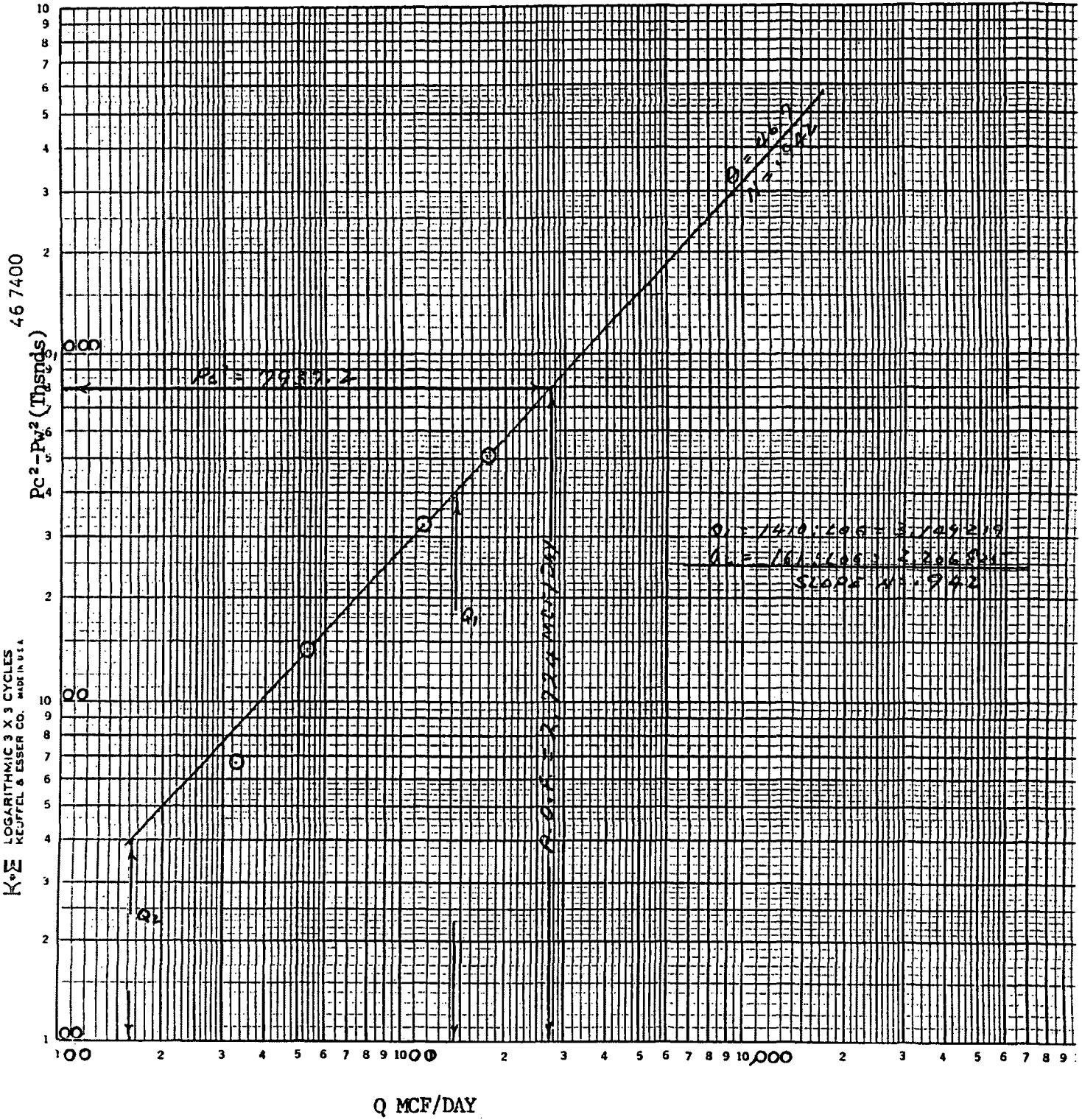
- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

cls File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special				Test Date 10-11-90		C. O. D.					
Company Mewbourne Oil Company			Connection Vented			OFFICE					
Pool North Illinois Comp Morrow			Formation MORROW			Unit A					
Completion Date 09-13-90		Total Depth 10141		Plug Back TD 10100		Elevation 3634 KB					
Form or Lease Name Federal T		Well No. 1		Well No. 1		Well No. 1					
Csg. Size 4"		Wt. 10.46		Set At 10141		Perforations From 10008 To 10054					
Tub. Size 2 3/8		Wt. 4.7		Set At 9842		Perforations From OPEN To END					
Type Well - Single - Borehole - G.C. or G.O. Multiple Single				Packer Set At 8888		County Eddy					
Producing thru TBC		Reservoir Temp. °F 174 @ 10031		Mean Annual Temp. °F 60		Base Press. - P _b 13.2					
State New Mexico		L 10031		H 10031		C _g .656					
% CO ₂ 2.293		% N ₂ .39		% H ₂ S ---		Proves 2.067					
Meter Run 2.067		Taps Flg.		Proves		Taps					
FLOW DATA				TUBING DATA				CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. In. H ₂ O	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							2745		PKR		72 hrs
1.	2	X	1.250	67	12.96	56	2590		PKR		1 hr.
2.	2	X	1.250	167	14.44	50	2470		PKR		1 hr.
3.	2	X	1.250	179	65.61	47	2110		PKR		1 hr.
4.	2	X	1.250	299	94.09	54	1630		PKR		1 hr.
5.											
RATE OF FLOW CALCULATIONS											
NO.	Coefficient (24 Hour)	$\sqrt{P_1 P_2}$	Pressure P ₁	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow O. Meid				
1.	8.120	32.24	80.2	1.004	1.235	1.010	328				
2.	8.120	51.01	180.2	1.010	1.235	1.020	527				
3.	8.120	112.30	192.2	1.013	1.235	1.021	1165				
4.	8.120	171.39	312.2	1.006	1.235	1.036	1791				
5.											
NO.	P ₁	Temp. °R	T ₁	Z	Gas Liquid Hydrocarbon Ratio 61.2 Mcf/bbl.						
1.	.12	516	1.38	.981	A.P.L. Gravity of Liquid Hydrocarbons 58.0 @ 60° Deg.						
2.	.26	510	1.37	.962	Specific Gravity Separator Gas .656 XXXXXXXXXXXXX						
3.	.28	507	1.36	.959	Specific Gravity Flowing Fluid XXXXX						
4.	.46	514	1.38	.932	Critical Pressure *678 P.S.I.A. P.S.I.A.						
5.					Critical Temperature *372 °R °R						
P _c 2817.3		P _c ² 7937.2									
NO.	P ₁ ²	P ₂	P ₂ ²	P ₂ ² - P ₁ ²	(1) $\frac{P_1^2}{P_2^2 - P_1^2} = 1.561$ (2) $\left[\frac{P_2^2}{P_2^2 - P_1^2} \right]^n = 1.521$						
1	2696.2	7269.5	667.7	AOF = 0 $\left[\frac{P_2^2}{P_2^2 - P_1^2} \right]^n = 2.724$							
2	2555.8	6532.1	1405.1								
3	2173.1	4722.4	3214.8								
4	1689.2	2853.4	5083.8								
5											
Absolute Open Flow 2,724				Maid @ 15.023				Angle of Slope @ 46.7		Slope, n .942	
Remarks: * = corrected to 2.293% CO ₂ & .39% N ₂ Well made 2.6 BBLs 58.0 API CONDENSATE during test & .5 BBL H ₂ O											
Approved By Division			Conducted By			Calculated By			Checked By		

Mewbourne Oil Company
 Federal T, Well #1
 Eddy County, New Mexico
 12 - 18S - 27E
 10-11-90



Submit 5 Copies
 Appropriate District Office
DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240
DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
 Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

Form C-104
 Revised 1-1-89
 See Instructions
 at Bottom of Page

151
 26
 100

**REQUEST FOR ALLOWABLE AND AUTHORIZATION
 TO TRANSPORT OIL AND NATURAL GAS**

I.

Operator Mewbourne Oil Company	Well API No. 30-015-26404
Address P.O. Box 5270 Hobbs, New Mexico	
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)	
New Well <input checked="" type="checkbox"/>	Change in Transporter of:
Recompletion <input type="checkbox"/>	Oil <input type="checkbox"/> Dry Gas <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/> Condensate <input type="checkbox"/>

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name Federal "T"	Well No. 1	Pool Name, including Formation North Illinois Camp Morrow	Kind of Lease Oil, Federal & State	Lease No. NM-42410
Location Unit Letter A : 660 Feet From The North Line and 990 Feet From The East Line Section 12 Township 18S Range 27E , NMPM , Eddy County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil Amoco Pipeline Inter-corporate Trucking	<input type="checkbox"/> or Condensate <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent) Oil Tender Dept. Box 702068 Tulsa, Ok 74170-2068
Name of Authorized Transporter of Casinghead Gas Transwestern Pipeline Company	<input type="checkbox"/> or Dry Gas <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent) P.O. Box 1188 Houston, Texas 77251-1188
If well produces oil or liquids, give location of tanks.	Unit | Sec. | Twp. | Rge. A | 12 | 18S | 27E	Is gas actually connected? | When? Yes | 02/07/91

If this production is commingled with that from any other lease or pool, give commingling order number: **No**

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
Date Spudded	Date Compl. Ready to Prod.		Total Depth			P.B.T.D.		
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation		Top Oil/Gas Pay			Tubing Depth		
Perforations						Depth Casing Shoe		
TUBING, CASING AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE		DEPTH SET			SACKS CEMENT		

V. TEST DATA AND REQUEST FOR ALLOWABLE OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas- MCF

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pilot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

W.H. Crawey
 Signature
 W.H. Crawey District Supt.
 Printed Name Title
 Date **02/18/91** (505) 393-5905 Telephone No.

OIL CONSERVATION DIVISION

Date Approved **MAR 12 1991**

By **ORIGINAL SIGNED BY**
MIKE WILLIAMS
 Title **SUPERVISOR, DISTRICT II**

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

BRUCE KING
GOVERNOR

OIL CONSERVATION DIVISION
ARTESIA DISTRICT OFFICE

P.O. DRAWER 00
ARTESIA, NEW MEXICO 88211
(505) 748-1283

Date: August 9, 1991

Mewbourne Oil Co.
P.O. Box 5270
Hobbs, N.M. 88241

Re: Wells placed in pools

Gentlemen:

As the result of Division Order R-9545 the following described well (s) ~~has~~ have) been placed in the pool ~~to~~ shown below. This change in nomenclature has been made in our files. Please change your records to reflect the proper pool name. All subsequent reports must show this nomenclature until further notice.

North Illinois Camp-Morrow Gas Pool-78890

Federal T #1 A-12-18-27

Chalk Bluff Fed. Com. #1 N-1-18-27

Transporters are advised, by copy of this letter, to change their records to reflect the pool name as established by this order, effective July 1, 1991.

Sincerely,

Darrell Moore

Darrell Moore
District Geologist

cc: Each Transporter Amoco Pipeline, Transwestern
Santa Fe
Mae
Well File ✓
Joe Chism
BLM

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Lodge Bureau No. 108-0130
Expires: March 31, 1993

458

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED

AUG - 2 1993

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other	7. If Unit or CA, Agreement Designation
2. Name of Operator <u>Mewbourne Oil Company</u>	8. Well Name and No. <u>Federal "T" No. 1</u>
3. Address and Telephone No. <u>P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905</u>	9. API Well No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) <u>660' FNL & 990' FEL Sec. 12-T18S-R27E</u>	10. Field and Pool, or Exploratory Area <u>Canyon</u>
	11. County or Parish, State <u>Eddy Co., N.M.</u>

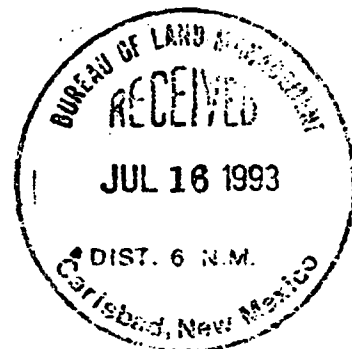
12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input checked="" type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

1. Plug back existing perforations (10,008'-10,054') with a CIBP @ 9950' and 9040'. Cap both plugs with 50' cement.
2. Perforate the Cisco formation @ 7700'-8050'.
3. Stimulate if necessary.



Procedure per conversation with Adam S. on June 23, 1993.

14. I hereby certify that the foregoing is true and correct

Signed [Signature] Title District Supt. Date July 14, 1993

(This space for Federal or State office use)

Approved by (ORIG. SGD.) DAVID R. GLASS Title Petroleum Engineer Date JUL 21 1993

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

RECEIVED

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS. COMMISSION

Drawer DD

Carlsbad, NM 88210

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

CISF

SEP 10 11 06 AM '93

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED

OCT - 6 1993

O. E. D.

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660' FNL & 990' FEL
Sec. 12-T18S-R27E

5. Lease Designation and Serial No.
NM-42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Federal "T" #1

9. API Well No.

30-015-26404

10. Field and Pool, or Exploratory Area

North Illinois Camp Morrow

11. County or Parish, State

Eddy Co. New Mexico

12. CHECK APPROPRIATE BOX(es) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

Notice of Intent
 Subsequent Report
 Final Abandonment Notice

TYPE OF ACTION

Abandonment
 Recompletion
 Plugging Back
 Casing Repair
 Altering Casing
 Other
 Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

* Verbal from Adam Salameh

- 08/14/93 Well pumping 1442 BW. 0 BO, 0 MCF from attempted completion in Cisco formation. MIRU well service rig.
- 08/15/93 Set CIBP @ 7595' over Cisco Perfs (7685'-7695'). Dump 4 sx. cmt. on plug. Perf. Wolfcamp formation (7330'-7360') (44 H)
- 08/16/93 Swabbed well down w/no entry.
- 08/17/93 Acidized Wolfcamp formation w/3000 gal 15% FE acid. Swabbed water w/no show of oil or gas.
- 08/18/93 Set CIBP @ 7300' over Wolfcamp formation (7330'-7360'). Dump 4 sx. cmt. on plug. Perf'd Wolfcamp formation (7092'-7146') (62H). Swabbed well down. No entry.
- 08/19/93 Acidized Wolfcamp formation (7092'-7146') w/3000 gal. 15% FE acid.
- 08/20/93 Swabbed well w/no show of oil or gas.
- 08/21/93 Set CIBP @ 7078' over Perfs (7092'-7146'). Perf'd Wolfcamp (6868'-7038') (80H)
- 08/22/93 Acidized Wolfcamp formation (6868'-7038') w/3000 gal. 15% FE acid.
- 08/24/93 Swabbing water w/trace of oil.
- 08/26/93 Acid frac'd Wolfcamp (6868'-7038') w/3000 gal. 20% FE acid & 15,000 gal. gel water. See attached page.

14. I hereby certify that the foregoing is true and correct

Signed [Signature]

Title Production Engineer

Date 09/08/93

(This space for Federal or State office use)

Approved by _____
Conditions of approval, if any:

Title _____

ACCEPTED FOR RECORD

[Signature]
OCT - 4 1993

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

CARLSBAD, NEW MEXICO

08/27/93 RIH w/pump & started pumping well
08/28/93 0 B0 276 BW 8 MCF
09/03/93 5 B0 30 BW 5 MCF
09/05/93 2 B0 25 BW 4 MCF

RECEIVED

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

FORM APPROVED Budget Bureau No. 1004-0135 Expires: March 31, 1993

AUG 24 11 03 AM '93

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No. NM-42410
6. If Indian, Allottee or Tribe Name
7. If Unit or CA, Agreement Designation
8. Well Name and No. Federal "T" #1
9. API Well No. 30-015-26404
10. Field and Pool, or Exploratory Area North Illinois Camp
11. County or Parish, State Morrow Eddy Co., N.M.

SUBMIT IN TRIPLICATE

RECEIVED SEP 8 1993

G.C.D.

1. Type of Well Oil Well Gas Well Other
2. Name of Operator Newbourne Oil Company
3. Address and Telephone No. P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 660' FNL & 990' FEL Sec. 12-T18S-R27E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

Table with 2 columns: TYPE OF SUBMISSION and TYPE OF ACTION. Includes checkboxes for Notice of Intent, Subsequent Report, Final Abandonment Notice, Abandonment, Recompletion, Plugging Back, Casing Repair, Altering Casing, Other, Change of Plans, New Construction, Non-Routine Fracturing, Water Shut-Off, Conversion to Injection, Dispose Water.

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

- 07/19/93 Set 4" CIBP @ 9950' over Morrow Perfs. (10,008'-10,054') Dump 2 sx. cmt. Verball from Adam - BLM.
07/21/93 Set 5-1/2" CIBP @ 9040' @ top of liner. Dumped 4 sx. cmt.
07/22/92 Perf. Cisco Formation (8034'-8042' w/2 SPF & 8055'-8060' w/2SPF. Swabbed tested all water.
07/24/93 Set cmt. retainer @ 8000'. Pumped 100 sx. cmt. into perfs. (8034'-8060')
07/25/93 Perf. Cisco Formation 7832'-7840' w/2 SPF. Swab tested all water.
07/27/93 Set cmt. retainer @ 7820'. Pumped 100 sx. cmt. into perfs. (7832'-7840')
07/28/93 Perf. Cisco Formation 7790'-7798' w/2 SPF. Swab tested all water.
07/29/93 Set cmt. retainer @ 7780'. Pumped 100 sx. cmt. into perfs. (7790'-7798')
07/30/93 Perf. Cisco Formation 7760'-7768' w/2 SPF. Swab tested all water.
07/31/93 Set cmt. retainer @ 7745'. Pumped 100 sx. cmt. into perfs. (7760'-7768')
08/01/93 Perf. Cisco Formation 7685'-7695' w/4 SPF. Swab tested water w/show of gas.
08/03/93 Acidized Cisco Formation (7685'-7695') w/3000 gal 15% FE acid.
08/04/93 RIH w/tbg. pump to 5033' & started pumping well.
08/05/93 1100 BWPD No oil.
08/06/93 1200 BWPD No oil.

14. I hereby certify that the foregoing is true and correct. Signed [Signature] Title Engineer Date August 20, 1993

Approved by _____ Title _____ Date _____

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Submit 5 Copies
 Appropriate District Office
DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240
DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-104
 Revised 1-1-89
 See Instructions
 at Bottom of Page

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

RECEIVED

OCT - 4 1993

**REQUEST FOR ALLOWABLE AND AUTHORIZATION
 TO TRANSPORT OIL AND NATURAL GAS**

O. L. D.

Operator MEWBOURNE OIL COMPANY		Well A/N No. 30-015-26404
Address P.O. BOX 5270, HOBBS, NM 88241		
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)		
New Well <input type="checkbox"/>	Change in Transporter of:	
Recompletion <input type="checkbox"/>	Oil <input type="checkbox"/>	Dry Gas <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	Casinghead Gas <input checked="" type="checkbox"/>	Condensate <input type="checkbox"/>
If change of operator give name and address of previous operator		

II. DESCRIPTION OF WELL AND LEASE

Lease Name FEDERAL "T"	Well No. 1	Pool Name, Including Formation NORTH ILLINOIS CAMP, HOLF CAMP	Kind of Lease State, Federal or Fee	Lease No. NM-42410
Location Unit Letter A : 660' Feet From The FNL Line and 990' Feet From The FEL Line Section 12 Township 18S Range 27E NMPM, EDDY County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input checked="" type="checkbox"/> or Condensate <input type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent) AMO					
Name of Authorized Transporter of Casinghead Gas <input checked="" type="checkbox"/> or Dry Gas <input type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent) GPM GAS CORPORATION BARTLESVILLE, OKLAHOMA 74004					
If well produces oil or liquids, give location of tanks	Unit	Sec.	Twp.	Rgn.	Is gas actually connected?	When?
		12	18S	27E	YES	8-1-93
If this production is commingled with that from any other lease or pool, give commingling order number:						

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
Date Spudded	Date Compl. Ready to Prod.		Total Depth			P.B.T.D.		
Elevations (DF, REB, RT, GR, etc.)	Name of Producing Formation		Top Oil/Gas Pay			Tubing Depth		
Perforations		Depth Casing Shoe						
TUBING, CASING AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE		DEPTH SET			SACKS CEMENT		

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas - MCF

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MCF	Gravity of Condensate
Testing Method (pilot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature
JAY PRUDHOMME PRODUCTION ENGINEER
 Printed Name Title
SEPT. 28, 1993 (505) 393-5905
 Date Telephone No.

OIL CONSERVATION DIVISION

Date Approved **OCT - 7 1993**

By **ORIGINAL SIGNED BY**
MIKE WILLIAMS
 Title **SUPERVISOR, DISTRICT II**

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL & GAS
Drawer DD
Altoia, NM 88210

FORM APPROVED
Energ. Envtl. No. 1004-013
Expires: March 31, 1993

C/5P

Designation and Serial No.
NM-42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Federal "T" #1

9. API Well No.
30-015-26404

10. Field and Pool, or Exploratory Area
North Illinois Camp Morrow

11. County or Parish, State
Eddy Co. N.M.

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE RECEIVED
OCT 20 1993

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
**660' FNL & 990' FEL
Sec. 12-T18S-R27F**

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other <u>Shut-in Status</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil Company hereby requests "shut-in" status pending further evaluation of the lease for the above well. The well was spudded 06/28/90. Attached is a copy of the stimulation report which charts the annulus pressure during a break down on the Wolfcamp recompletion.

RECEIVED
SEP 21 11 09 AM '93
O&G AREA

Approved For 12 Month Period
Ending 8/27/94

14. I hereby certify that the foregoing is true and correct

Signed [Signature] Title Production Engineer Date 09/21/93

(This space for Federal or State office use)

Approved by [Signature] Title Petroleum Engineer Date 10/16/93

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

HALLIBURTON SERVICES
ACQUIRE Version 1.52

CUSTOMER AND JOB INFORMATION

Customer	MEWBOURNE OIL	Date	21-Aug-1993
Contractor	X-PERT	County	EDDY
Lease	FED-T	Town	
Location	ARTESIA	Section	
Formation		Range	
Job Type	ACID	Permit No	
Country	USA	Well No	1
State	NM	Field Name	

Customer Representative BRENT THURMAP

Halliburton Operator TOMMY VAUGHN

Ticket No. 498331N0

STAGE DESCRIPTIONS

ST ACID
ST FLUSH

WELL CONFIGURATION INFORMATION

Packer Type COMP Depth 6765 ft
Bottom Hole Temp. 120.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	6868	6868	4.950	5.500	2.441	2.875

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	6868	7038	2

REMARKS ABOUT JOB

TREAT AS INST

NOTE: THIS REPORT IS BASED ON SOUND ENGINEERING PRACTICES, BUT BECAUSE OF VARIABLE WELL CONDITIONS AND OTHER INFORMATION WHICH MUST BE RELIED UPON, HALLIBURTON MAKES NO WARRANTY, EXPRESSED OR IMPLIED, AS TO THE ACCURACY OF THE DATA OR OF ANY CALCULATIONS OR OPINIONS EXPRESSED HEREIN. YOU AGREE THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DUE TO NEGLIGENCE

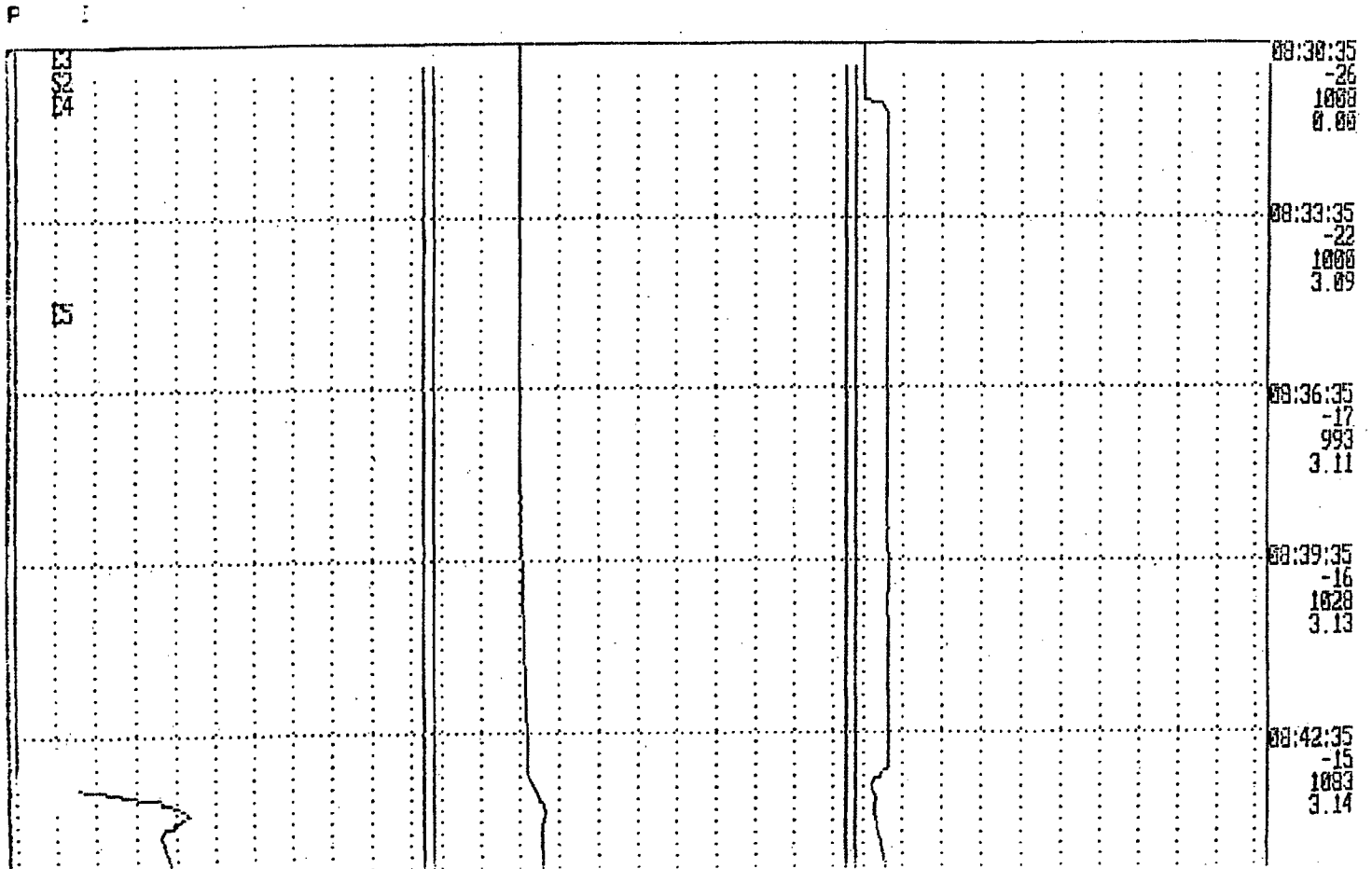
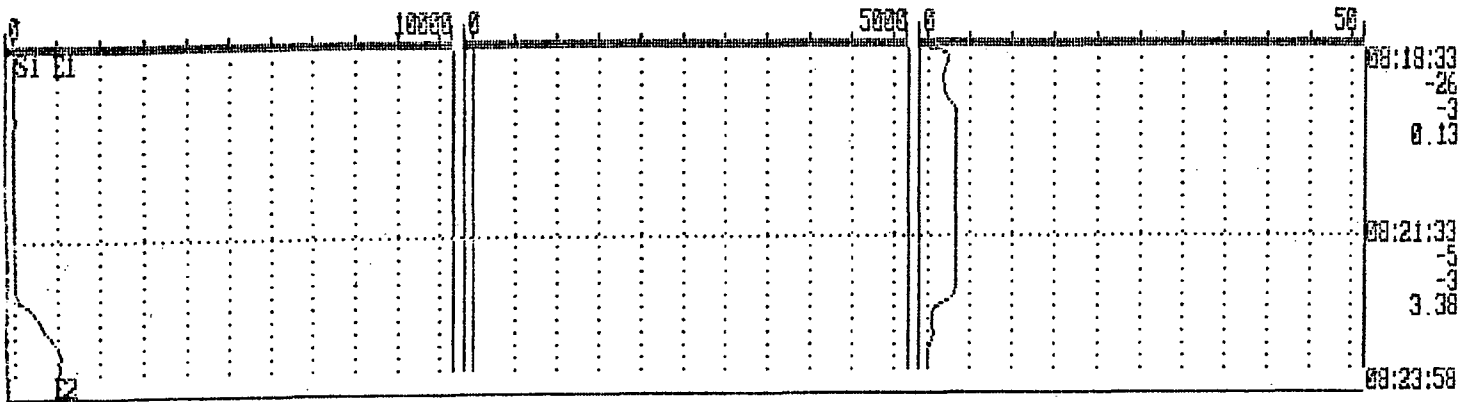
井井井井井井井井井井井井井井井井井
REALTIME STRIP CHART
 井井井井井井井井井井井井井井井井井

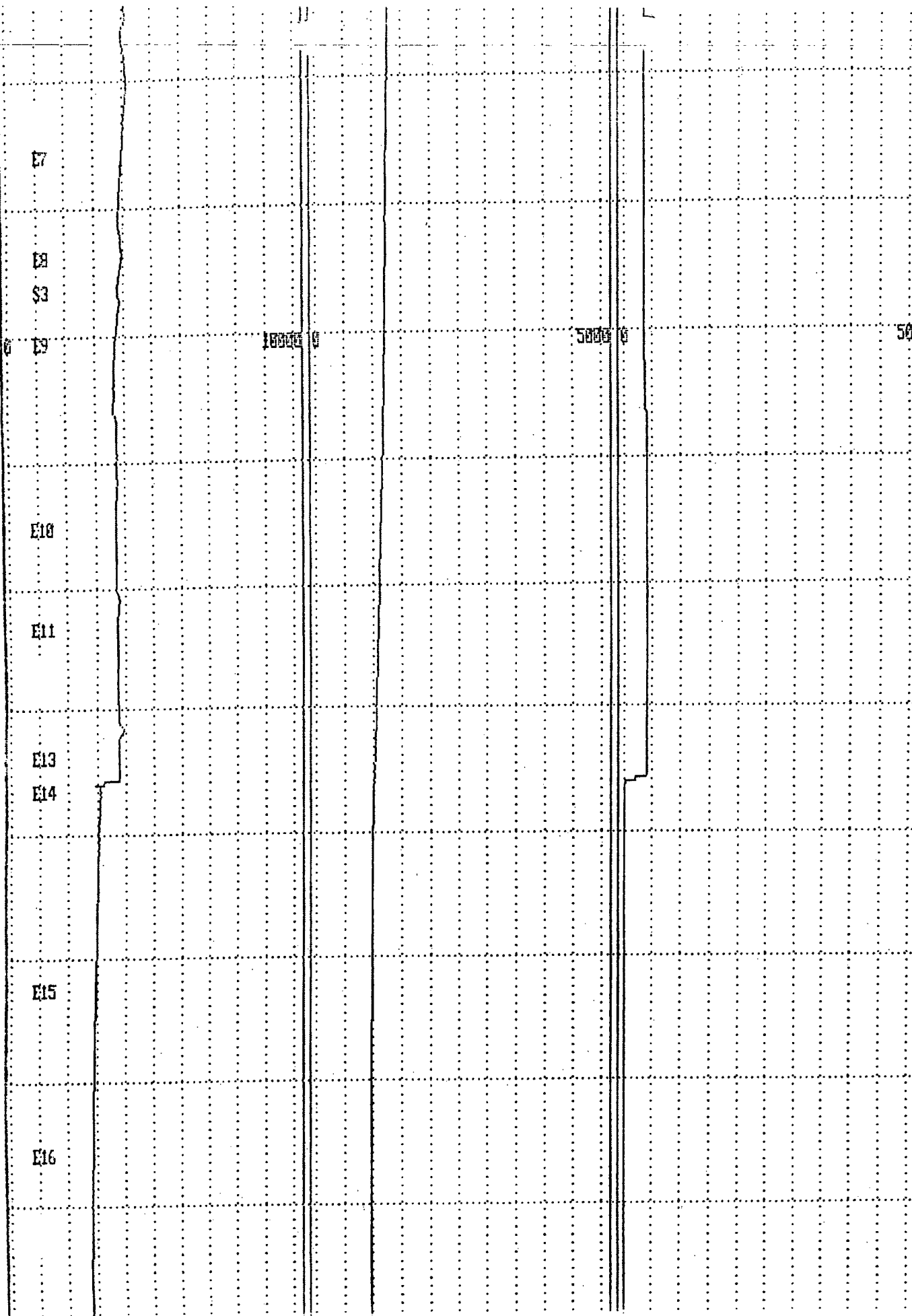
- 1. Tubing Press (psi)
- 2. Annulus Press (psi)
- 3. Clean Rate (bpm)

TUBING PRESS
psi

ANNULUS PRESS
psi

CLEAN RATE
bpm





08:48:35
4135
1268
3.52

08:51:35
3839
1225
3.59

50 08:54:35
3713
1210
3.62

08:57:35
3725
1167
4.05

09:00:35
3676
1103
4.05

09:03:35
3766
1051
4.03

09:06:35
3837
990
0.00

09:09:35
2946
978
0.00

09:12:35
2879
969
0.00

09:15:35
2822
963
0.00

E7

E8
E9

E9

E10

E11

E13
E14

E15

E16

10000

5000

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS COMMISSION
FORM APPROVED
Budget Bureau No. 1004-0135
March 31, 1993

CISF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
 Mewbourne Oil Company

3. Address and Telephone No.
 P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
 660' FNL & 990' FEL
 Sec. 12-T18S-R27E
 Unit A

5. Lease Designation and Serial No.
 NM 42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
 Federal T #1

9. API Well No.
 30-015-26404

10. Field and Pool, or Exploratory Area
 N. Illinois Camp Morrow

11. County or Parish, State
 Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other Casing Integrity Test
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

- Loaded casing with 80 bbls. water and tested to 1,000#. Lost 10# in 30 minutes. Casing integrity test witnessed and approved by BLM representative on 5/23/95.
- Had no pressure on 5-1/2" - 8-5/8" Annulus or 8-5/8" - 13-3/8" Annulus

RECEIVED

JUL 10 1995

ACCEPTED FOR RECORD OIL CON. DIV.
 CARLSBAD, NEW MEXICO
 J. Lara
 - 7 1995
 DIST. JUN 2 10 49 AM '95
 RECEIVED

14. I hereby certify that the foregoing is true and correct.
 Signed: *[Signature]* Title: Engineer Date: 5/24/95

(This space for Federal or State office use)
 Approved by _____ Title _____ Date _____
 Conditions of approval, if any

NM OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

[Redacted] *clsf*

Form 3160-5
nc 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.

NM 42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Federal "T" #1

9. API Well No.

30-015-26404

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy Co. N.M.

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660' FNL & 990' FEL
Sec. 12-T18S-R27E

Unit A

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion	<input type="checkbox"/> New Construction
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Altering Casing	<input type="checkbox"/> Conversion to Injection
	<input checked="" type="checkbox"/> Other <u>Temporary Abandonment</u>	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil requests temporary abandonment status for the above referenced well for the purpose of evaluating further behind pipe potential. This well passed the casing integrity test as noted on the attached sundry notice.

AUG 7 8 59 AM '95
RECEIVED
CALIFORNIA AREA OFFICE

TH APPROVED FOR 12 MONTH PERIOD
ENDING 5/23/96
RECEIVED
AUG 30 1995

OIL CON. DIV.
DIST. 2

14. I hereby certify that the foregoing is true and correct

Signed [Signature] Title Engineer Date Aug. 3, 1995

(This space for Federal or State Office Use)
Approved by JOE G. LARA Title PETROLEUM ENGINEER Date 8/28/95
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT N.M. Oil Cons. Division

FORM APPROVED
Budget Bureau No 1004-0135
Expires March 31, 1993

CLSF

811 S. 1st Street
Artesia, NM 88210-2834

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

Lease Designation and Serial No

NM 42410

6. If Indian Allotment or Tribe Name

7. If Unit or CA, Agreement Designation

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

DEC 05 '96

2. Name of Operator

Mewbourne Oil Company

O. C. D.
ARTESIA OFFICE

3. Address and Telephone No

P.O. Box 5270, Hobbs, NM 88241 (505) 393-5905

4. Location of Well (Footage: Sec., T., R., M., or Survey Description)

660' FNL & 990' FEL
Sec. 12-T18S-R27E

8. Well Name and No.

Federal T #1

9. API Well No.

30-015-26404

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy Co., NM

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Temporary Abandonment</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Mewbourne Oil Company requests an extension of Temporary Abandonment Status for the above referenced well for the purpose of evaluating further behind pipe potential. This well passed the casing integrity test on 05/23/95 and indicates no additional tests should be needed.

NOV 21 9 50 AM '96
RECEIVED

14. I hereby certify that the foregoing is true and correct

Signed Robert C. Jones

Title Engineer

Date 11/25/96

(This space for Federal or State official use)

Approved by _____

Title _____

Date _____

Conditions of approval, if any:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Oil Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

CIS F

FORM APPROVED
Bureau Form No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other
 2. Name of Operator
 Mewbourne Oil Company
 3. Address and Telephone No.
 PO Box 5270, Hobbs, NM 505-393-5905
 4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
 660' FNL & 990' FEL, Sec.12 T-18S R-27E

5. Lease Designation and Serial No.
 NM-42410
 6. If Indian, Allottee or Tribe Name
 7. If Unit or CA, Agreement Designation
 8. Well Name and No.
 Federal T #1
 9. API Well No.
 30-015-26404
 10. Field and Pool, or Exploratory Area
 N. Illinois Camp Morrow
 11. County or Parish, State
 Eddy, NM

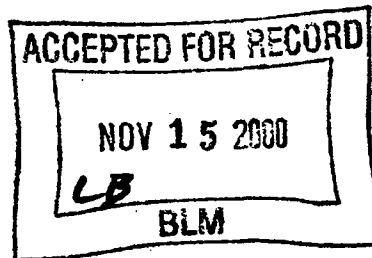
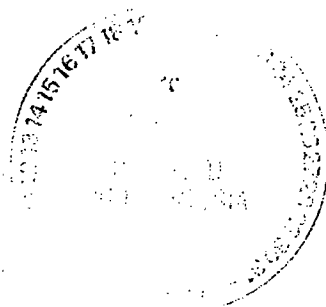
12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other MIT.
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The above caption well was successfully MIT'ed on 10/25/2000. (520 psi for 30 mins.)
 The pressure chart is enclosed.
 If any question, please call.



14. I hereby certify that the foregoing is true and correct

Signed [Signature] Title N.M. Young District Manager Date 11/01/00

(This space for Federal or State office use)

Approved by Record Only Title _____ Date _____
 Conditions of approval, if any.

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

OCD - Artesia

C/SF

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

PO Box 5270, Hobbs, NM 505-393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660' FNL & 990' FEL, Sec.12 T-18S R-27E

5. Lease Designation and Serial No.
NM-42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Federal T #1

9. API Well No.

30-015-26404

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy, NM

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>CIT & Extend T/A.</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The above caption well is currently under T/A status. Mewbourne Oil Company would like to extend this status. The well has a 5 1/2" CIBP above all perms @ 6800". We are considering converting this well into a SWD. At this time, Mewbourne would like to schedule a CIT (500 psi) & after passing, extend T/A status for an additional time.

If any question, please call.



TA extended for 12 month period
Expire 10/25/2001

BUREAU OF LAND MGMT
CARLSBAD RESOURCE AREA

2000 OCT 10 1 P 2:34

RECEIVED

14. I hereby certify that the foregoing is true and correct

Signed *[Signature]*

Title N.M. Young District Manager

Date 10/06/00

(This space for Federal or State office use)

Approved by (FORM 990) JOE G. LARA

Title Petroleum Engineer

Date 11/6/2000

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See instruction on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

CISE

OCD - Artesia

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

13 14 15 16 17

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
PO Box 5270, Hobbs, NM 505-393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
660' FNL & 990' FEL, Sec.12 T-18S R-27E

RECEIVED
OCD - ARTESIA

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

5. Lease Designation and Serial No.
NM-42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Federal T #1

9. API Well No.
30-015-26404

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

11. County or Parish, State
Eddy, NM

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other CIT & Extend T/A.
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The above caption well is currently under T/A status. Mewbourne Oil Company would like to extend this status. The well has a 5 1/2" CIBP above all perms @ 6800". We are considering converting this well into a SWD. At this time, Mewbourne would like to schedule a CIT (500 psi) & after passing, extend T/A status for an additional time.

If any question, please call.

TA Approved For 12 Month Period
Ending 10/25/2001

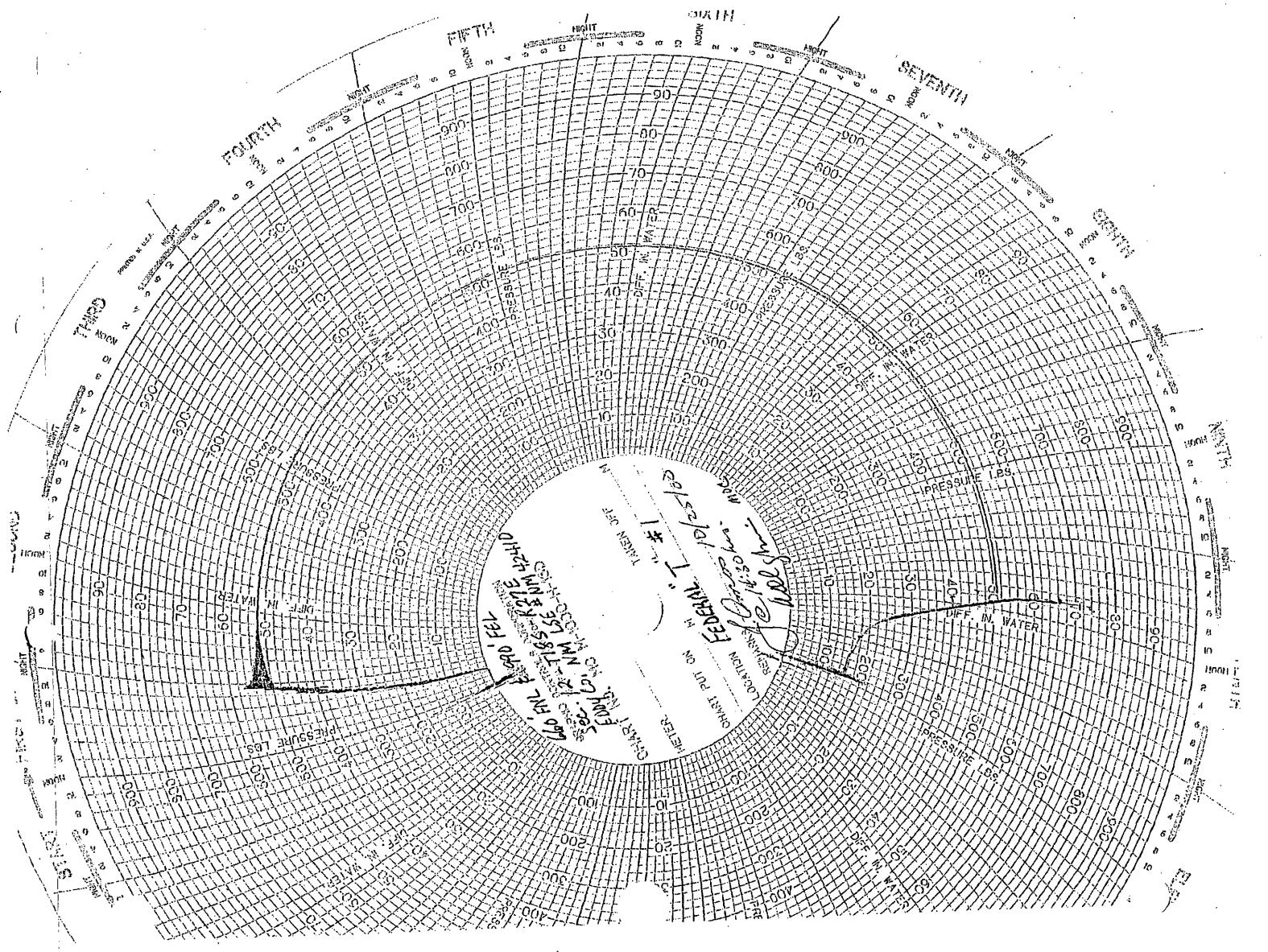
Note to Operator:
Please submit a copy of pressure test chart. Rec'd a copy on 11/19/2000.

RECEIVED
2000 OCT 10 1 P 2:34
BUREAU OF LAND MANAGEMENT
CANYONLAND RESOURCE AREA

14. I hereby certify that the foregoing is true and correct
Signed [Signature] Title N.M. Young District Manager Date 10/06/00

(This space for Federal or State office use)
Approved by [Signature] Title Patrolman Date 11/6/2000
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



FEDERAL T. #1
10/23/82
WATER
DIFF. IN WATER
PRESSURE LBS
TEMP. °F
TEMP. °C
GAS
LIQUID
VAPOR
SOLID
MELT
FREEZE
BOIL
CONDENSE
SUBLIME
DEPOSE
DEPOSIT
SUBLIMATION
CONDENSATION
DEPOSITION
MELTING
FREEZING
BOILING
CONDENSING
SUBLIMATING
DEPOSITING

FOURTH

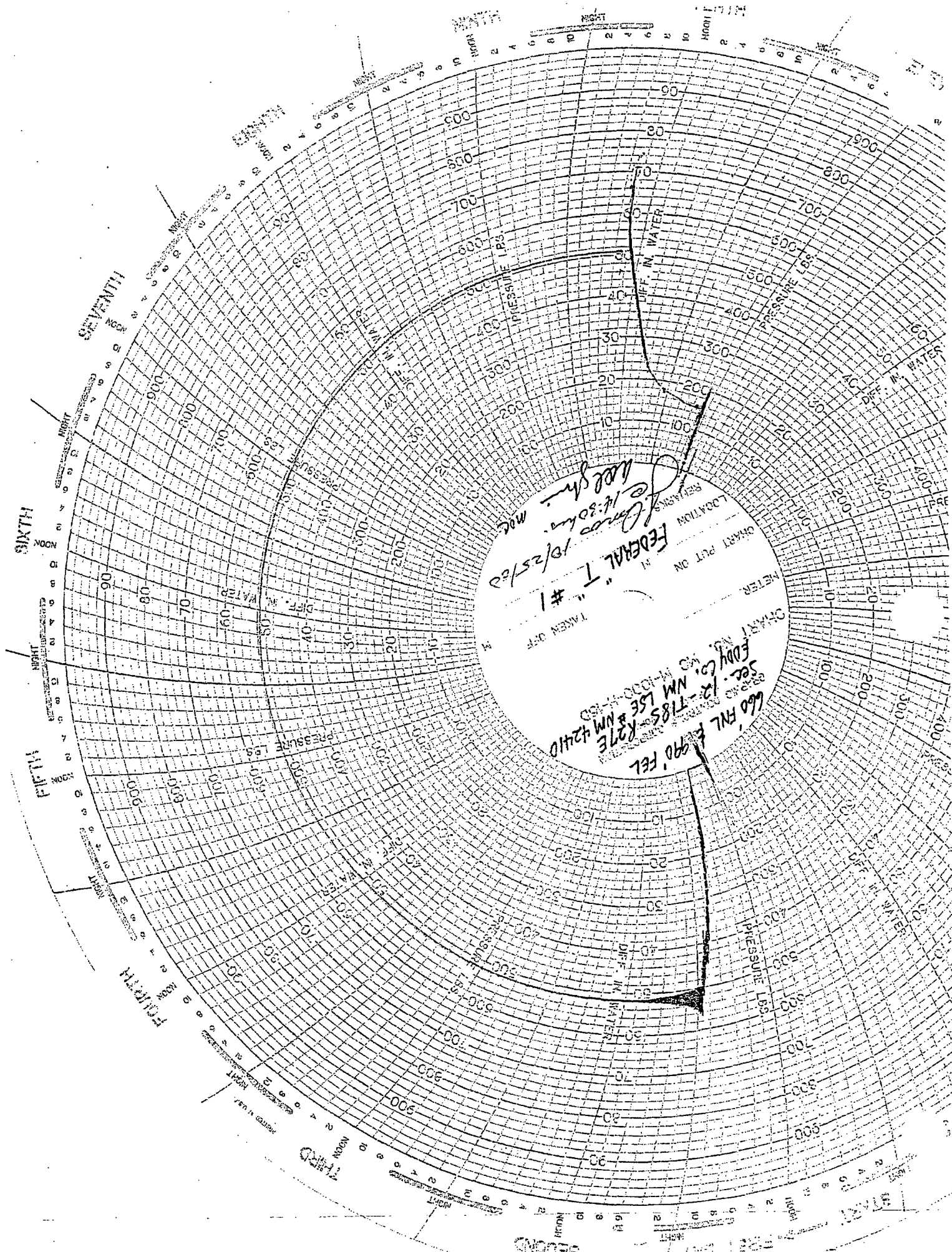
SEVENTH

SIXTH

FIFTH

THIRD

SECOND





**NEW MEXICO ENERGY, MINERALS and
NATURAL RESOURCES DEPARTMENT**

BILL RICHARDSON

Governor

Joanna Prukop
Cabinet Secretary

Lori Wrotenbery

Director

Oil Conservation Division

Field Inspection Program
"Preserving the Integrity of Our Environment"

05-Dec-03

MEWBOURNE OIL CO
PO BOX 7698
TYLER, TX 75711-0000

NOTICE OF VIOLATION - Inspection

Dear Operator:

The following inspection(s) indicate that the well, equipment, location or operational status of the well(s) failed to meet standards of the New Mexico Oil Conservation Division as described in the detail section below. To comply with standards imposed by Rules and Regulations of the Division, corrective action must be taken immediately and the situation brought into compliance. The detail section indicates preliminary findings and/or probable nature of the violation. This determination is based on an inspection of your well or facility by an inspector employed by the Oil Conservation Division on the date(s) indicated.

Please notify the proper district office of the Division, in writing, of the date corrective actions are scheduled to be made so that arrangements can be made to reinspect the well and/or facility.

INSPECTION DETAIL SECTION

FEDERAL T 001		A-12-18S-27E	30-015-26404-00-00			
Inspection Date	Type Inspection	Inspector	Violation?	*Significant Non-Compliance?	Corrective Action Due By:	Inspection No.
12/05/2003	Routine/Periodic	Mike Bratcher	Yes	No	3/9/2004	iMLB0333931134
Comments on Inspection:		TA status for this well expired 10/25/01. Last production reported was 7/93. Well is in violation of Rule 201. (Idle Well)				

In the event that a satisfactory response is not received to this letter of direction by the "Corrective Action Due By:" date shown above, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

Sincerely,



Artesia OCD District Office

Note: nformation in Detail Section comes directly from field inspector data entries - not all blanks will contain data.
*Significant Non-Compliance events are reported directly to the EPA, Region VI, Dallas, Texas.



NEW MEXICO ENERGY, MINERALS and
NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Lori Wrotenbery

Director

Oil Conservation Division

Field Inspection Program

"Preserving the Integrity of Our Environment"

05-Dec-03

MEWBOURNE OIL CO

PO BOX 7698

TYLER, TX 75711-0000

NOTICE OF VIOLATION - Inspection

Dear Operator:

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Please notify the proper district office of the Division, in writing, of the date corrective actions are scheduled to be made so that arrangements can be made to reinspect the well and/or facility.

INSPECTION DETAIL SECTION

FEDERAL T 001		A-12-18S-27E	30-015-26404-00-00			
Inspection Date	Type Inspection	Inspector	Violation?	*Significant Non-Compliance?	Corrective Action Due By:	Inspection No.
12/04/2003	Routine/Periodic	Mike Bratcher	Yes	No	3/9/2004	iMLB0333840462
Comments on Inspection:		Well sign is illegible and is not standing. Violation Rule 103.				

In the event that a satisfactory response is not received to this letter of direction by the "Corrective Action Due By:" date shown above, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

Sincerely,



Artesia OCD District Office

Note: nformation in Detail Section comes directly from field inspector data entries - not all blanks will contain data.
*Significant Non-Compliance events are reported directly to the EPA, Region VI, Dallas, Texas.



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

9 January 2004

MEWBOURNE OIL CO
PO Box 7698
Tyler TX 75711

RE: Federal T 001 A-12-18s-27e API 30-015-26404 Violation of Rule 103: Well sign violation

Dear Sirs:

This second directive is to notify you that these wells are still in violation of Rule 103

On December 4, 2003 a letter was sent notifying you on the violation of Rule 103. An inspection of the wells on January 6, 2004 found no action had been taken.

Rule 103 of the New Mexico Oil Conservation Division provides as follows:

103 SIGN ON WELLS

All wells and related facilities by the Division shall be identified by a sign, which sign shall remain in place until the well is plugged and abandoned and the related facilities are closed. For drilling wells, the sign shall be posted on the derrick or not more than 20 feet from the well. The sign shall be of durable construction and the lettering shall be legible and large enough to be read under normal conditions at a distance of 50 feet. The wells on each lease or property shall be numbered in non-repetitive, logical and distinctive sequence. An operator will have 90 days from the effective date of an operator name change to change the operator name on the well sign unless an extension of time, for good cause shown along with a schedule for making the changes, is granted. Each sign shall show the:

1. number of well;
2. name of property;
3. name of operator;
4. location by footage, quarter-quarter section, township and range (or Unit Letter can be substituted for the quarter-quarter section), and
5. API number.

In the event that a satisfactory response is not received to this letter of direction by February 6, 2004 further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of **CIVIL PENALTIES** for your violation of OCD rules.

Sincerely,

Mike Bratcher, Compliance Officer

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT **OCD-ARTESIA**

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

FORM APPROVED
OMB No. 1004-0135
Expires: January 31, 2004

5. Lease Serial No.
NM-42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
Federal T #1

9. API Well No.
30-015-26404

10. Field and Pool, or Exploratory Area
N Illinois Camp Morrow

11. County or Parish, State
Eddy Co NM

SUBMIT IN TRIPLICATE - Other instructions on reverse side

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Mewbourne Oil Company 14744

3a. Address
PO Box 5270 Hobbs, NM 88240

3b. Phone No. (include area code)
505-393-5905

4. Location of Well (Footage, Sec., T, R., M., or Survey Description)
660' FNL & 990' FEL, Sec 12-T18S-R27E

RECEIVED
APR 22 2004
OCD-ARTESIA

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other <u>MIT Test</u>
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

3. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

The above caption well was successfully MIT'ed on 01/26/04. (Pressured casing to 570#, held OK for 30 mins)
The pressure chart is enclosed.

Requesting extension of temporary abandon status.
5 1/2" CIBP set @ 6800'. No type of hardware in hole.

TA APPROVED FOR 12 MONTH PERIOD
ENDING 1/26/05

Accepted for record - NMOCD

14. I hereby certify that the foregoing is true and correct

Name (Printed/Typed) NM Young Title Hobbs District Manager

Signature [Signature] Date 01/27/04

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

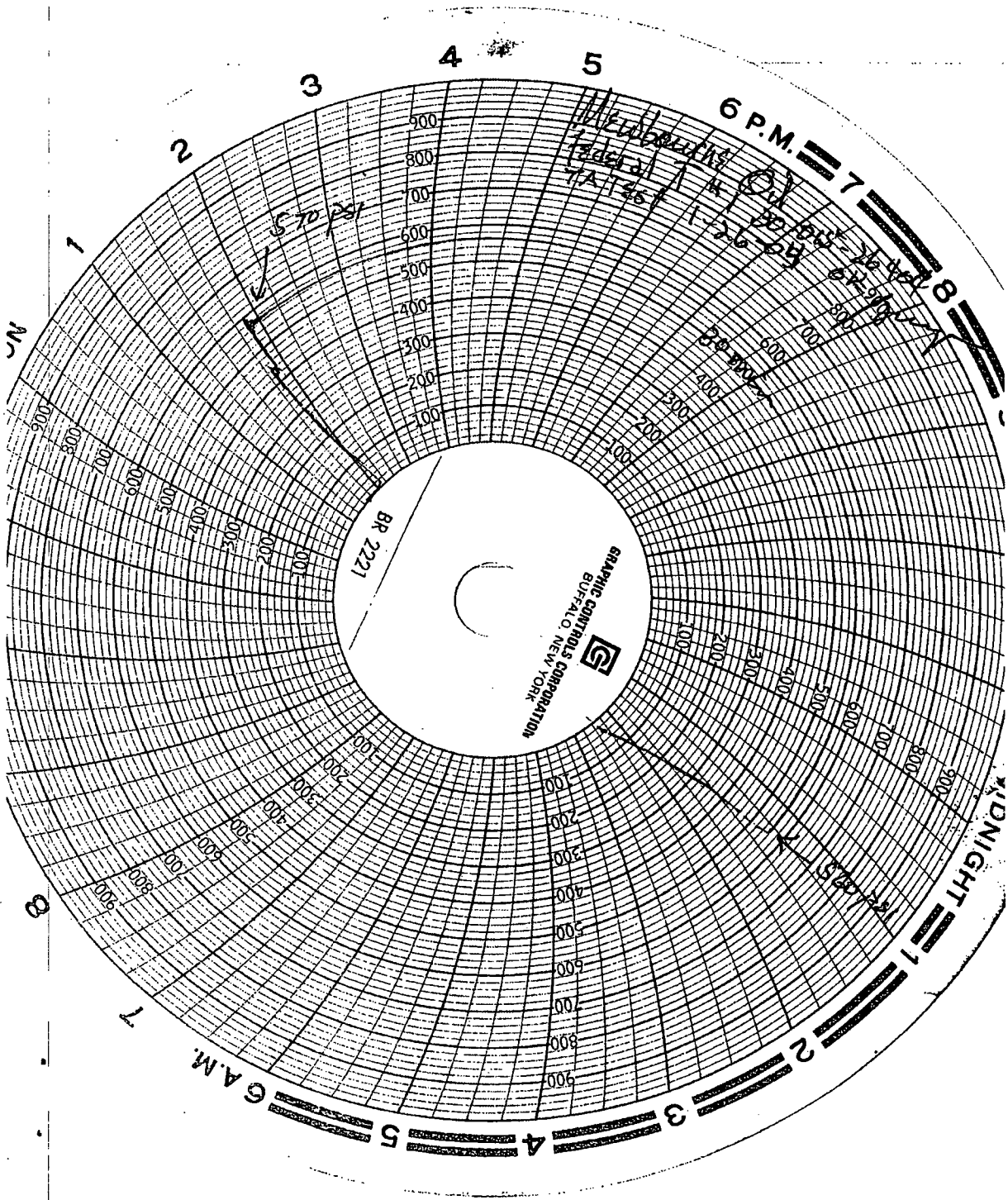
Approved by (Signature) /s/ Joe G. Lara Name (Printed/Typed) /s/ Joe G. Lara Title Pet. Engr.

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office CARLSBAD FIELD OFFICE Date 4/20/04

18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(continued on next page)



RECEIVED

APR 22 7004

000-ARTESIA

C104AReport

Page 1 of 1

District II
101 W. Grand Ave., Artesia, NM 88210
Tel:(505) 748-1283 Fax:(505) 748-9720

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-145
Permit 72521

Change of Operator

Previous Operator Information

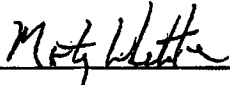
New Operator Information

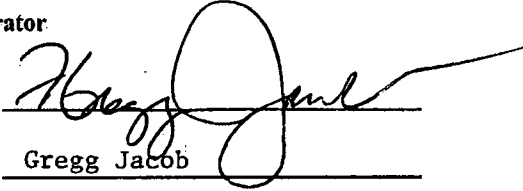
OGRID:	<u>14744</u>	OGRID:	<u>6137</u>
Name:	<u>MEWBOURNE OIL CO</u>	Name:	<u>DEVON ENERGY PRODUCTION COMPANY, LP</u>
Address:	<u>PO BOX 5270</u>	Address:	<u>20 N Broadway</u>
Address:	<u></u>	Address:	<u></u>
City, State, Zip:	<u>HOBBS , NM 88241</u>	City, State, Zip:	<u>Oklahoma City , OK 73102</u>

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the formation on this form and the certified list of wells is true to the best of my knowledge and belief.

Previous Operator

New Operator

Signature: 
Printed Name: Monty L. Whetstone

Signature: 
Printed Name: Gregg Jacob

Title: Vice-President Operations

Title: Western Operations Manager

Date: 4/4/08 Phone: (903) 561-2900

Date: 4/07/08 Phone: (405) 552-4591

NMOCD Approval
Electronic Signature: Carmen Reno, District 2
Date: April 07, 2008

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SUNDRY NOTICES AND REPORTS ON WELLS

S

OCD-ARTESIA

FORM APPROVED
OMB NO. 1004-0135
RES. NOVEMBER 30, 2000

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals

SUBMIT IN TRIPLICATE

1a Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other	JUL 21 2008 OCD-ARTESIA	5. Lease Serial No. NM-42410
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY, LP		6. If Indian, Allottee or Tribe Name
3. Address and Telephone No. 20 North Broadway, Oklahoma City, OK 73102 405-552-8198		7. Unit or CA Agreement Name and No.
4. Location of Well (Report location clearly and in accordance with Federal requirements) 660' FNL & 990' FEL Section 12 T18S R27E, Unit A		8. Well Name and No. Federal T 1
		9. API Well No. 30-015-26404
		10. Field and Pool, or Exploratory Wolfcamp
		12. County or Parish 13. State Eddy NM

CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon
	<input checked="" type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal
			<input type="checkbox"/> Water Shut-Off
			<input type="checkbox"/> Well Integrity
			<input type="checkbox"/> Other

13 Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work and approximate duration thereof. If the proposal deepens directionally or recompletes horizontally, give subsurface location and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirement, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Devon Energy Production Company, LP is preparing Form C108, Application for Authorization to Inject that will be filed with the Oil Conservation Division, Santa Fe, New Mexico office. Devon is proposing to convert the Federal T #1 well to SWD in the Lower Wolfcamp and Cisco zones from 7400' to 8200'. The BLM has been sent a copy of C108 application filed with the OCD.

1. RIH and drill out CIBP's at 6,800', 7,078', & 7,265'.
2. Perform injection step rate test in the Lower Wolfcamp.
3. Drill out CIBP at 7,560' and cement retainers at 7,745', 7,780', & 7,820', & 8,000'.
4. Perforate / Reperforate Cisco with casing gun, 0.42" EHD, 2 spf from 7,893'-7,899'; 7,902'-7,907'; 7,910'-7,916'; 7,919'-7,927'; 7,932'-7,959'; 7,965'-7,967'; 7,971'-7,972'; 7,976'-7,978'; 8,034'-8,042'; 8,055'-8,060'; 8160'-8164'.
5. Frac as recommended.
6. RIH with RBP and set at +/- 7,865'.
7. Perforate / Reperforate Cisco with casing gun, 0.42" EHD, 2 spf at 7,758'-7,768'; 7,790'-7,798'; 7,800'-7818'; 7,832'-7,840'.
8. Frac as per recommended.
9. POOH with RBP and RIH with tubing and packer. Set packer at 7,600'. Perform injection step rate test in Cisco.
10. Tie in disposal line routed from West Red Lake SWD Battery and establish injection.

* Either, return the well to active status by 11-16-08 or submit plans for abandonment.

14. I hereby certify that the foregoing is true and correct

Signed  Name Norvella Adams
Title Sr. Staff Engineering Technician

Date APPROVED 6/17/2008

(This space for Federal or State Office use)

Approved by JAMES A. AMOS Title SUPERVISOR EPG
Conditions of approval, if any:

Date JUL 16 2008

Section 1001 makes it a crime for any person knowingly and willfully to make any department or agency of the United States any false, fictitious or fraudulent statement or report which causes or may cause injury to the United States or any other person.

*See Instruction on Reverse Side

Accepted for record - NMOCD

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W Grand Ave., Artesia, NM 88210
District III
000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S St Francis Dr., Santa Fe, NM 87505

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-015-26404
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Federal T
8. Well Number 1
9. OGRID Number 6137
10. Pool name or Wildcat L. Wolfcamp and Cisco 96136

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

1. Type of Well: Oil Well Gas Well Other -Convert to SWD

2. Name of Operator
DEVON ENERGY PRODUCTION COMPANY, LP

3. Address of Operator
20 North Broadway, Oklahoma City, OK 73102 405-552-8198

4. Well Location
Unit Letter A : 660' feet from the NORTH line and 990' feet from the EAST line
Section 12 Township 18S Range 27E NMPM County Eddy

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3709' KB; 3697' GL

Pit or Below-grade Tank Application or Closure
Pit type _____ Depth to Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____
Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:
PERFORM REMEDIAL WORK PLUG AND ABANDON
TEMPORARILY ABANDON CHANGE PLANS
PULL OR ALTER CASING MULTIPLE COMPL

SUBSEQUENT REPORT OF:
REMEDIAL WORK ALTERING CASING
COMMENCE DRILLING OPNS. P AND A
CASING/CEMENT JOB


OTHER:

OTHER Convert to SWD, Admin. Order SWD-1135

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

- 8/04/08 RU unit. ND wellhead and NU BOP. TIH with bit and drill collars.
- 8/05/08 Drill CIBP at 6800' and 7078'.
- 8/06/08 Drilled through cement at 7525', CIBP at 7300' and cement at 7560' and CIBP at 7595'.
- 8/07/08 Ran step rate test; pumped 50 bbls at 1/2 bbl/min - 0# psi, pumped 50 bbls at 1 bbl/min -20# psi, pumped 50 bbls at 2 bbls/min - 75# psi, pumped 50 bbls at 3 bbls/min - 170# psi, pumped 50 bbls at 4 bbls/min - 250 psi.
- 8/08/08 Trucked in and established injection in the Wolfcamp at 150 BWPD at 170 psi.
- 8/11/08 Drilled cement retainers at 7745', and 7780'.
- 8/12/08 Drilled cement retainer at 7820' and 8000'. Circulate hole and TOH with tubing and bit.
- 8/13/08 Perforate Cisco from 7893' - 8060'; total 140 holes. TIH and set packer at 7688'. Frac with 5,040 gals 15% HCl + 120,372 gals Spectra Star 2500 + 167,552 # 20/40 White sand.
- 8/14/08 TIH with retrievable tool and latch onto packer. Release packer and TOOHS with packer and tubing. RU wireline and perforate Cisco from 7758'-7840'; 228 total holes.
- 8/15/08 TIH with packer and set at 7582'. NU frac valve.
- 8/16/08 Frac 7758'-8060' with 4500 gals 15% Spearhead acid + 119,255 gals Spectra 2500 + 106,750 # 20/40 100% White sand. RD.
- 8/18/08 Release packer. TOOHS with packer and tubing.
- 8/20/08 TIH with bailer and bailed sand. Bailed sand to 8460'. TOOHS with tubing. ND BOP and NU flange. Waiting on tubing.
- 9/15/08 TIH with packer and tubing. Set packer at 6789'. ND BOP and NU tree. Ran MIT test to 500# for 30 minutes - ok, notified Mike Bratcher with OCD. TOOHS with tubing. RIH with 3 1/2" IPC tubing and set at 6789'. Injection line installation in progress.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit or an (attached) alternative OCD-approved plan .

SIGNATURE  TITLE Sr. Staff Engineering Technician DATE 9/17/08
 Name or print name Norvella Adams E-mail address: norvella.adams@dvn.com Telephone No. 405-552-8198

or State Use Only

APPROVED BY: _____ TITLE Accepted for record DATE _____
 Conditions of Approval (if any): NMOCD

DEVON ENERGY PRODUCTION COMPANY LP

Well Name: FEDERAL T #1		Field: NORTH ILLINOIS CAMP MORROW	
Location: 660' FNL & 990' FEL; SEC 12-T18S-R27E		County: EDDY	State: NM
Elevation: 3634' KB; 3618' GL		Spud Date: 6/28/90	Compl Date: 9/13/90
API#: 30-015-26404	Prepared by: Norvella Adams	Date: 9/17/08	Rev:

Current Schematic
L. Wolfcamp and Cisco SWD

Formation Tops

Morrow 9,600' - 10,250'
 Atoka 9,230' - 9,700'
 Upper Wolfcamp 6,400' - 7,200'
 Abo 5,600' - 6,200'
 Yeso 3,300' - 3,900'
 San Andres 2,000' - 2,800'
 Queen 1,450' - 1,650'

17-1/2" Hole
13-3/8", 88#, LTC, @ 472'
 Cmt'd w/450 Sx. Circ to surface

12-1/4" Hole
8-5/8", J55, 32#, STC, @ 2,589'
 Cmt'd w/900 Sx. Circ to surface

3-1/2", 9.3 #, N80, Injection tubing @ 6789'

5-1/2" IPC Packer @ 6,789'

WOLFCAMP (8/21/93)
6,868' - 7,038'

WOLFCAMP (8/18/93)
7,092' - 7,097'; 7,120' - 7,146'

WOLFCAMP (8/16/93)
7,330' - 7,340'; 7,350' - 7,360'

SWD Perforations:
CISCO (8/1/93)
7,685' - 7,695'

CISCO (7/30/93)
7,760' - 7,768'

CISCO (7/28/93)
7,790' - 7,798'

CISCO (7/25/93)
7,932' - 7,940'

CISCO (7/22/93)
8,034' - 8,042'
8,055' - 8,060'

Frac 7788'-7840' with 4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 106,750 # 100% 20/40 White sand.

Frac 7893'-8060' with 5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% 20/40 White sand.

4" Liner top @ 9,055'

7-7/8" Hole
6-1/2", N80, 17#, LTC, @ 9,473'
 Cmt'd w/430 Sx

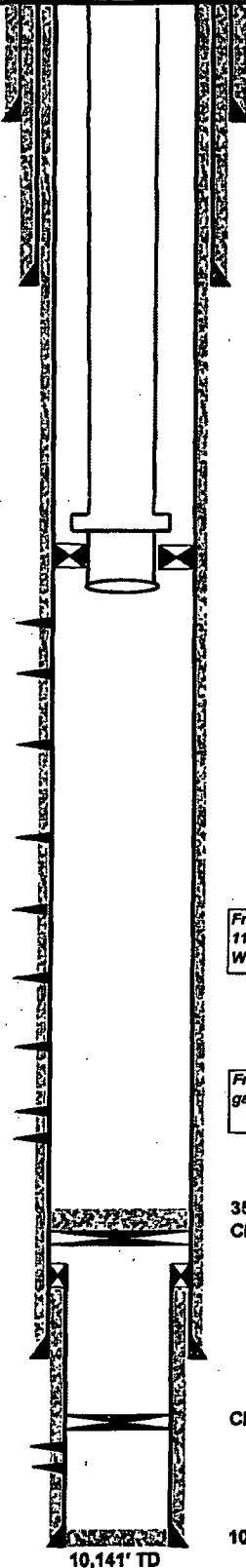
35' cement. 9,005' PBD
 CIBP @ 9,040' (7/21/93)

MORROW (9/14/90)
10,008' - 10,014'
10,038' - 10,064'

CIBP @ 9,950' (7/19/93)

4-3/4" Hole
4" 10.46#, L80 Liner @ 9,055' - 10,141'
 Cmt'd w/80 Sx

10,100' PBD



10,141' TD

New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson
Governor

Joanna Prukop
Cabinet Secretary
Reese Fullerton
Deputy Cabinet Secretary

OCT 07 2008

OCD-ARTESIA
OCT 08 2008
OCD-ARTESIA

Mark Fesmire
Division Director
Oil Conservation Division



Administrative Order SWD-1135
July 16, 2008

APPLICATION OF DEVON ENERGY PRODUCTION COMPANY, L.P. FOR
PRODUCED WATER DISPOSAL, EDDY COUNTY, NEW MEXICO

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Under the provisions of Rule 701(B), Devon Energy Production Company, L.P. (OGRID No. 6137) made application to the New Mexico Oil Conservation Division for permission to utilize for produced water disposal its Federal T Well No. 1 (API No. 30-015-26404) located 660 feet from the North line and 990 feet from the East line of Section 12, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of Rule 701(B) of the Division Rules. Satisfactory information has been provided that all offset operators and surface owners have been duly notified. The applicant has presented satisfactory evidence that all requirements prescribed in Rule 701 will be met and no objections have been received within the waiting period prescribed by said rule. The applicant is in compliance with Rule 40.

IT IS THEREFORE ORDERED THAT:

Devon Energy Production Company, L.P. ("operator") is hereby authorized to utilize its Federal T Well No. 1 (API No. 30-015-26404) located 660 feet from the North line and 990 feet from the East line of Section 12, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico, in such manner as to permit the injection of produced water for disposal purposes into the Lower Wolfcamp formation and the Cisco formation through perforations from 7,400 feet to 8,200 feet and through plastic-lined tubing set in a packer located within 100 feet of the top of the injection interval.

IT IS FURTHER ORDERED THAT:

Oil Conservation Division * 1220 South St. Francis Drive

* Santa Fe, New Mexico 87505

* Phone: (505) 476-3440 * Fax (505) 476-3462* <http://www.emnrd.state.nm.us>



The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

After installing injection tubing, the casing shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved *leak detection device* in order to determine leakage in the casing, tubing, or packer.

The injection well or system shall be equipped with a *pressure limiting device* in workable condition which shall, at all times, limit surface injection pressure to the maximum allowable pressure for this well. The wellhead injection pressure on the well shall be limited to **no more than 1480 psi**.

The Director of the Division may authorize an increase in the maximum injection pressure upon a proper showing by the operator that such higher pressure would not result in migration of the injected fluid from the injection formation. Such proper showing should be supported by a valid step rate test run in accordance with procedures acceptable to the Division.

The operator shall notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment and of any mechanical integrity test so that the same may be inspected and witnessed.

The operator shall immediately notify the supervisor of the Artesia district office of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

PROVIDED FURTHER THAT, jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh water or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, or without notice and hearing in event of an emergency subject to NMSA 1978 Section 70-2-23, terminate the injection authority granted herein.


The operator shall provide written notice of the date of commencement of injection and the initial reservoir pressure to the Artesia district office of the Division.

The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 706 and 1120.

The injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request by the operator

mailed prior to the expiration date, may grant an extension thereof for good cause shown.

This order does not relieve the operator of responsibility should its operations cause any actual damage or threat of damage to protectable fresh water, human health or the environment; nor does it relieve the operator of responsibility for complying with applicable Division rules or other state, federal, or local laws or regulations.


MARK E. FESMIRE, P.E.
Director

MEF/wvjj

cc: Oil Conservation Division – Artesia
Bureau of Land Management – Carlsbad

SEP 19 2008

S

Submit to Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
French Dr., Hobbs, NM 88240
Grand Avenue, Artesia, NM 88210
1000 Rio Brazos Rd, Aztec, NM 87410
District IV
1220 S St Francis Dr, Santa Fe, NM 97505

State of New Mexico
Energy, Minerals and Natural Resources

OCD-ARTESIA
Revised June 10, 2003

Form C-105

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Well API No. 30-015-28404
5. Indicate Type of Lease
STATE FEE
State Oil & gas Lease No

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a Type of Well
Oil Well Gas Well Dry Other Convert to SWD: Admin Order SWD-1135
b Type of Completion
New Well Work Over Deepen Plug Back Diff. Resvr., Other

7 Lease Name and Unit Agreement Name
Federal T 1

2 Name of Operator
DEVON ENERGY PRODUCTION COMPANY, LP

8. Well No.

3 Address of Operator
20 North Broadway, Oklahoma City, OK 73102

9 Pool name or Wildcat
L. Wolfcamp and Cisco 96/36

4 Well Location
Unit Letter A 660' feet from the NORTH line and 990' feet from the EAST line
Section 12 Township 18S Range 27E NMPM County Eddy

10. Date Spudded 6/28/1990
11. Date T D Reached 8/25/1990
12 Date Completed Orig 9/13/90 SWD 9/15/08
13 Elevations (DR, RKB, RT, GL)* 3634' KB; 3618' GL
14 Elev Casinghead

15. Total Depth MD 10,141
16 Plug Back T.D 9005'
17 If Multiple Compl How Many Zones No
18. Intervals Rotary Tools Cable Tools
Drilled BY X

19 Producing Intervals(s), of this completion - Top, Bottom, Name
L. Wolfcamp; 6,868' - 7,360' and Cisco; 7,758' - 8,060' (Salt Water Disposal Only)
20 Was Directional Survey Made. No

21. Type Electric and Other Logs Run
DLL-MGRD, SDL-DSN (original logs)
22 Was Well Cored No

23 CASING RECORD (Report all strings set in well)

Table with 6 columns: Casing Size, Weight LB /FT., Depth Set, Hole Size, Cementing Record, Amount Pulled. Rows include 13-3/8", 8-5/8", and 5-1/2" casing sizes.

Table with 8 columns: top, Bottom, Sacks Cement, Screen, Size, Tubing Record, Depth Set, Packer Set. Row includes 4" casing with 9055' top and 10141' bottom.

26 Perforation record (interval, size, and number)
Wolfcamp; 6868'-7038' (8/21/93)
Wolfcamp; 7092'-7097'; 7120'-7146' (8/18/93)
Wolfcamp; 7330'-7340'; 7350'-7360' (8/16/93)
Cisco; 7893'-8060'; (140 holes)
Cisco; 7758'-7840'; (228 holes)
Morrow; 10008'-10054'; (still under CIBP)
27. Acid, Shot, Fracture, Cement, Squeeze, ETC.
Depth Interval Amount and Kind Material Used
7893'-8060' Frac-5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% White 20/40 Sand.
7758'-7840' Frac-4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 106,750 # 100% White 20/40 Sand.

28 PRODUCTION

Date First Production NA
Production Method (Flowing, Gas lift, pumping - Size and type pump)
Well Status (Prod Or Shut-In) 9/16/08-Converted to SWD
Date of Test Hours Tested Choke Size Prod'n For Test Oil - Bbl Gas - MCF Water - Bbl Gas - Oil Ratio
Flowing Tubing Press Casing Pressure Calculated 24-Hour Rate Oil - Bbl Gas - MCF Water - Bbl Oil Gravity - API (Corr)

29. Disposition of Gas (Sold, used for fuel, vented, etc)
NA--Converted to SWD 9/16/08
Test Witnessed By

30. List Attachments
Wellbore schematic

31. I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief
Printed Name Norvella Adams Title Sr Staff Engineering Technician DATE 9/17/2008
E-mail Address. norvella.adams@dmv.com

Accepted for record
NMOCD



OCT 06 2008
OCD-ARTESIA

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

a. Type of Well Oil Well Gas Well Dry Other SWD- Order 1135
 b. Type of Completion New Well Work Over Deepen Plug Back Diff. Resrv.,
 Other

2 Name of Operator
DEVON ENERGY PRODUCTION COMPANY, LP

3 Address **20 North Broadway
Oklahoma City, OK 73102-8260** 3a Phone No (include area code)
405-552-8198

4 Location of Well (Report location clearly and in accordance with Federal requirements)*
At Surface **660 FNL 990 FEL**
At top prod Interval reported below
At total Depth

5. Lease Serial No
NM-42410

6 If Indian, Allottee or Tribe Name

7 Unit or CA Agreement Name and No

8 Lease Name and Well No
Federal T 1

9 API Well No.
30-015-26404-0052

10. Field and Pool, or Exploratory
L. Wolfcamp and Cisco 96136

11. Sec, T, R, M, on Block and Survey or Area
12 18S 27E

12. County or Parish **Eddy** 13. State **NM**

14 Date Spudded **6/28/1990** 15 Date T D Reached **8/25/1990** 16. Date Completed **9/15/08 - SWD**
9/13/90 orig cmpl
 D & A Ready to Prod.

17 Elevations (DR, RKB, RT, GL)*
3634' KB; 3618' GL

18. Total Depth: MD **7600'** 19. Plug Back T D. MD **6142'** 20 Depth Bridge Plug Set: MD **6177'**
TVI TVI

21. Type Electric & Other Mechanical Logs Run (Submit copy of each) 22 Was well cored? No Yes (Submit analysis)
Was DST run? No Yes (Submit report)
Directional Survey? No Yes (Submit copy)

23: Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt (#/ft)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No of Sks & Type Cement	Slurry Vol (BBL)	Cement Top*	Amount Pulled
17-1/2"	13-3/8"/LT&C	68		472'		450 Sx		Surf	
12 1/4"	8-5/8"/J55	32		2589'		900 Sx		Surf	
7-7/8"	5-1/2"/LT&C	17		9473'		430 Sx		Surf	
4 3/4"	4" / L80	10.46		10,141'		80 Sx		9055'	

24 Logging Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
1/2" IPC	6789'	6789'						

25 Producing Intervals			26 Perforation Record			
Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf Status
Wolfcamp	6868'	7360'	6868'-7360'		140	Open for SWD
Cisco	7893'	7840'	7893-7840'		228	Open for SWD
Morrow	10,008'	10,054'	10,008-10,054'			Abandoned

27 Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
7893-8060'	Frac - 5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% White 20/40 sand.
7758-7840'	Frac - 4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 106,750 # 100% White 20/40 sand.

28 Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
NA		24	→						
Choke Size	Tbg Press Fwgs SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio #DIV/0!	Well Status	
			→						

28a Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

ACCEPTED FOR RECORD
/s/ DAVID R. GLASS
SEP 29 2008
DAVID R. GLASS
PETROLEUM ENGINEER

Choke Size	Ibg. Press. Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status
------------	---------------------	-----------	------------	---------	---------	-----------	-----------------	-------------

(Instructions and spaces for additional data on reverse side)

28b Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Ibg. Press. Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status	

28c Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Ibg. Press. Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status	

(See instructions and spaces for additional data on reverse side)

29. Disposition of Gas (Sold, used for fuel, vented, etc)

30 Summary of Porous Zones (Include Aquifers).

Show all important zones of porosity and contents thereof, Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31 Formation (Log) Markers


Formation	Top	Bottom	Descriptions, Contents, etc	Name	Top
					Meas. Depth
				Yates	476'
				Queen	1218'
				Grayburg	1572'
				San Andres	2072'
				Tubb	4824'
				Abo	6016'
				Wolfcamp	7682'
				Cisco	8912'
				Strawn	9513'
				Atoka	9628'
				Morrow	9828'
				Morrow Clastics	9965'
				Lower Morrow	10104'

32. Additional remarks (include plugging procedure).

33 Indicate which items have been attached by placing a check in the appropriate box

- Electrical/Mechanical Logs (1 full set req'd)
 Geologic Report
 DST Report
 Directional Survey
 Sundry Notice for plugging and cement verification
 Core Analysis
 Other
Wellbore Schematic

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (Please Print) Norvella Adams Title Sr. Staff Engineering Technician
Signature  Date 9/17/2008

U.S.C. Section 1001 and Title 49 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other SWD conversion. Admin Order SWD-1135		5. Lease Serial No NM-42410
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY, LP		6. If Indian, Allottee or Tribe Name
3a. Address 20 North Broadway, Oklahoma City, OK 73102	3b. Phone No. (include area code) 405-552-8198	7. Unit or CA Agreement Name and No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 660 FNL 990 FEL A 12 18S 27E		8. Well Name and No Federal T 1
		9. API Well No 30-015-26404
		10. Field and Pool, or Exploratory Area L. Wolfcamp and Cisco
		11. County or Parish, State Eddy NM

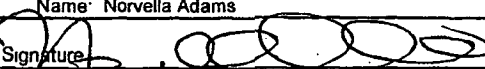
12. CHECK APPROPRIATE BOX(es) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input checked="" type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13 Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work and approximate duration thereof. If the proposal deepens directionally or recompletes horizontally, give subsurface location and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirement, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection)

Converted to SWD. Administrative Order SWD-1135
 8/04/08 RU unit. ND wellhead and NU BOP. TIH with bit and drill collars.
 8/05/08 Drill CIBP at 6800' and 7078'.
 8/05/08 Drilled through cement at 7525', CIBP at 7300' and cement at 7560' and CIBP at 7595'.
 8/08 Ran step rate test; pumped 50 bbls at 1/2 bbl/min - 0# psi, pumped 50 bbls at 1 bbl/min - 20# psi, pumped 50 bbls at 2 bbls/min - 75# psi, pumped 50 bbls at 4 bbls/min - 170# psi, pumped 50 bbls at 250 psi.
 8/08 Trucked in and established injection in the Wolfcamp at 150 BWPD at 170 psi.
 8/11/08 Drilled cement retainers at 7745', and 7780'.
 8/12/08 Drilled cement retainer at 7820' and 8000'. Circulate hole and TOH with tubing and bit.
 8/13/08 Perforate Cisco from 7893' - 8060', total 140 holes. TIH and set packer at 7688'. Frac with 5,040 gals 15% HCl + 120,372 gals Spectra Star 2500 + 167,552 # 20/40 White sand.
 8/14/08 TIH with retrievable tool and latch onto packer. Release packer and TOOH with packer and tubing. RU wireline and perforate Cisco from 7758'-7840'; 228 total holes
 8/15/08 TIH with packer and set at 7582'. NU frac valve.
 8/16/08 Frac 7758'-8060' with 4500 gals 15% Spearhead acid + 119,255 gals Spectra 2500 + 106,750 # 20/40 100% White sand. RD.
 8/18/08 Release packer. TOOH with packer and tubing
 8/20/08 TIH with bailer and bailed sand. Bailed sand to 8460'. TOOH with tubing. ND BOP and NU flange. Waiting on tubing.
 9/15/08 TIH with packer and tubing. Set packer at 6789'. ND BOP and NU tree Ran MIT test to 500 # for 30 minutes - ok, notified Mike Bratcher with OCD
 TOOH with tubing. RIH with 3 1/2" IPC tubing and set at 6789'. Injection line installation in progress.

14. I hereby certify that the foregoing is true and correct

Name: Norvella Adams	Title: Sr. Staff Engineering Technician
Signature: 	Date: 9/17/2008

ACCEPTED FOR RECORD THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by: /S/ DAVID R. GLASS	Title: PETROLEUM ENGINEER	Date: SEP 29 2008
Conditions of approval, if any are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those lands in the subject lease which would entitle the applicant to conduct operations thereon.		Office: Accepted for record NMOCD

DEVON ENERGY PRODUCTION COMPANY LP

Well Name: FEDERAL T #1		Field: NORTH ILLINOIS CAMP MORROW	
Location: 660' FNL & 990' FEL; SEC 12-T18S-R27E		County: EDDY	State: NM
Elevation: 3634' KB; 3618' GL		Spud Date: 6/28/90	Compl Date: 9/13/90
API#: 30-015-26404	Prepared by: Norvella Adams	Date: 9/17/08	Rev:

**Current Schematic
L. Wolfcamp and Cisco SWD**

Formation Tops

Morrow 9,600-10,250'
Atoka 9,230' - 9,700'
Upper Wolfcamp 6,400' - 7,200'
Abo 5,600' - 6,200'
Yeso 3,300' - 3,900'
San Andres 2,000' - 2,800'
Queen 1,450' - 1,650'

17-1/2" Hole
13-3/8", 68#, LTC, @ 472'
Cmt'd w/450 Sx. Circ to surface

12-1/4" Hole
8-5/8", J65, 32#, STC, @ 2,589'
Cmt'd w/900 Sx. Circ to surface

3-1/2", 9.3 #, N80, Injection tubing @ 6789'

5-1/2" IPC Packer @ 6,789'

WOLFCAMP (8/21/93)
6,868' - 7,038'

WOLFCAMP (8/18/93)
7,092' - 7,097'; 7,120' - 7,146'

WOLFCAMP (8/16/93)
7,330' - 7,340'; 7,350' - 7,360'

SWD Perforations:
CISCO (8/1/93)
7,685' - 7,695'

CISCO (7/30/93)
7,760' - 7,768'

CISCO (7/28/93)
7,790' - 7,798'

CISCO (7/25/93)
7,932' - 7,940'

CISCO (7/22/93)
8,034' - 8,042'
8,055' - 8,060'

Frac 7758'-7840' with 4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 108,750 # 100% 20/40 White sand.

Frac 7893'-8060' with 5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% 20/40 White sand.

4" Liner top @ 9,055'

7-7/8" Hole
5-1/2", N80, 17#, LTC, @ 9,473'
Cmt'd w/430 Sx

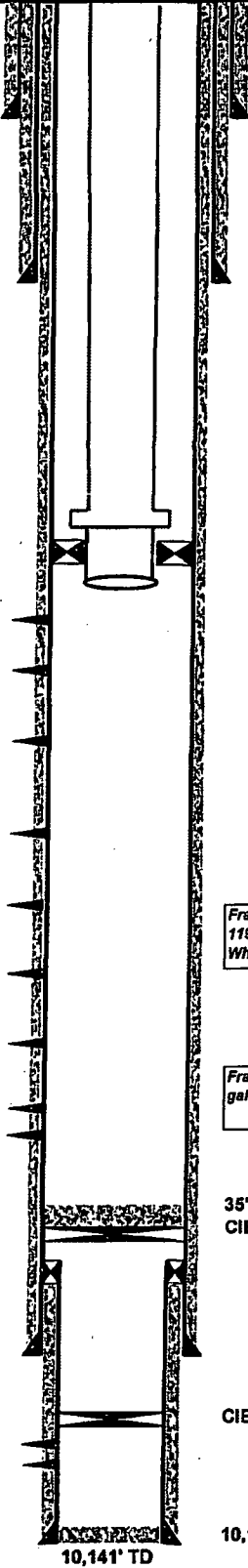
35' cement. 9,005' PBD
CIBP @ 9,040' (7/21/93)

MORROW (9/14/90)
10,008' - 10,014'
10,038' - 10,054'

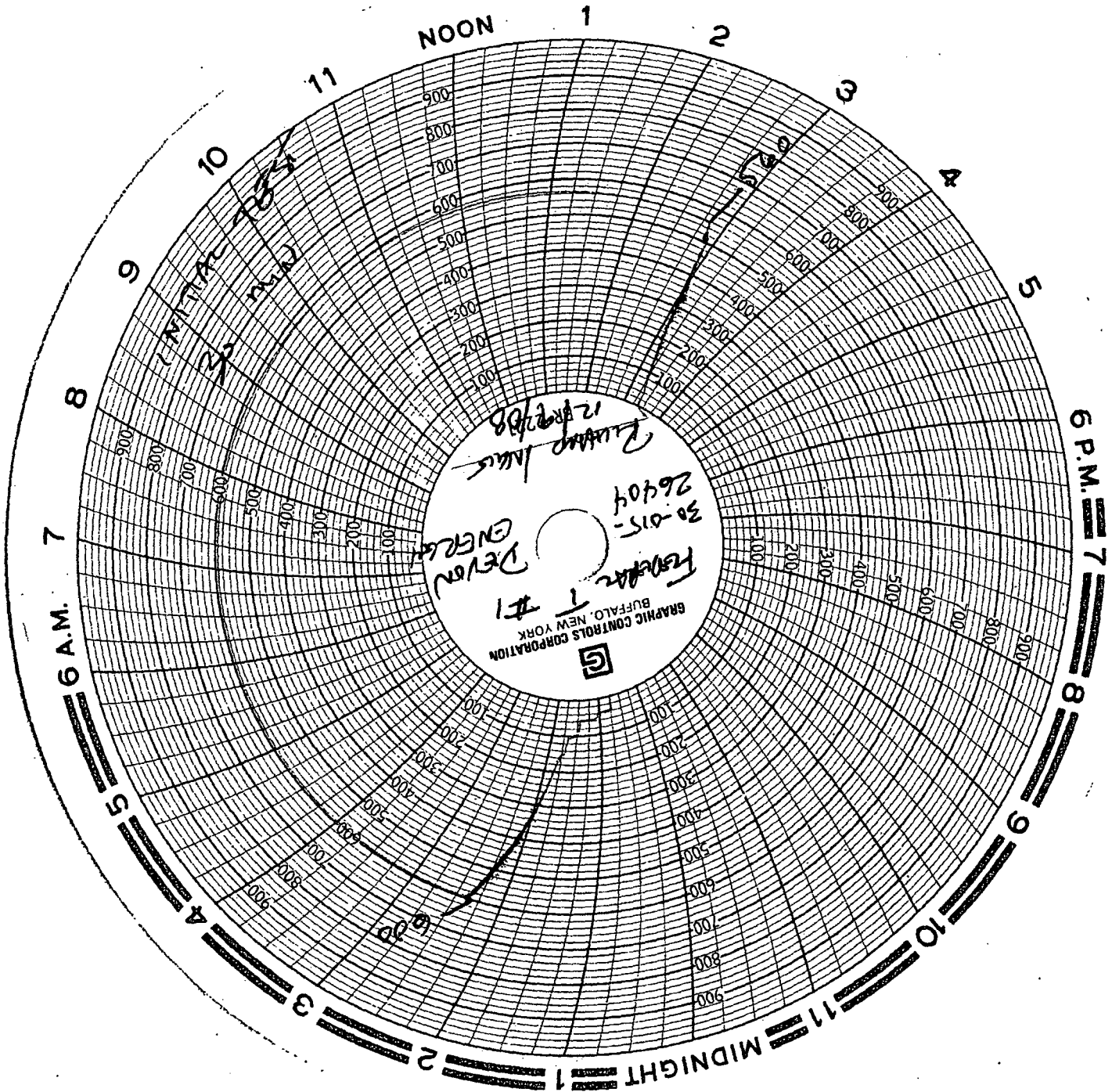
CIBP @ 9,950' (7/19/93)

4-3/4" Hole
4" 10.46#, L80 Liner @ 9,055' - 10,141'
Cmt'd w/80 Sx

10,100' PBD



10,141' TD



GRAPHIC CONTROLS CORPORATION
 BUFFALO, NEW YORK
 #1
 DEVEN
 ENGLER
 30-015-
 26404
 LUMINOUS
 12/2/88

12/2/88
 12/2/88

LIME ROCK RESOURCES II-A, L.P. certifies that all below-grade tanks constructed and installed prior to June 16, 2008 associated with the selected wells are in compliance with 19.15.17 NMAC, have been closed pursuant to 19.15.17.13 NMAC, or have been retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC.

LIME ROCK RESOURCES II-A, L.P. understands that the OCD's approval of this operator change:

1. constitutes approval of the transfer of the permit for any permitted pit, below-grade tank or closed-loop system associated with the selected wells; and
2. constitutes approval of the transfer of any below-grade tanks constructed and installed prior to June 16, 2008 associated with the selected wells, regardless of whether the transferor has disclosed the existence of those below-grade tanks to the transferee or to the OCD, and regardless of whether the below-grade tanks are in compliance with 19.15.17 NMAC.

As the operator of record of wells in New Mexico, LIME ROCK RESOURCES II-A, L.P. agrees to the following statements:

1. I am responsible for ensuring that the wells and related facilities comply with applicable statutes and rules, and am responsible for all regulatory filings with the OCD. I am responsible for knowing all applicable statutes and rules, not just the rules referenced in this list. I understand that the OCD's rules are available on the OCD website under "Rules," and that the Water Quality Control Commission rules are available on the OCD website on the "Publications" page.
2. I understand that if I acquire wells from another operator, the OCD must approve the operator change before I begin operating those wells. See 19.15.9.9.B NMAC. I understand that if I acquire wells or facilities subject to a compliance order addressing inactive wells or environmental cleanup, before the OCD will approve the operator change it may require me to enter into an enforceable agreement to return those wells to compliance. See 19.15.9.9.C(2) NMAC.
3. I must file a monthly C-115 report showing production for each non-plugged well completion for which the OCD has approved an allowable and authorization to transport, and injection for each injection well. See 19.15.7.24 NMAC. I understand that the OCD may cancel my authority to transport from or inject into all the wells I operate if I fail to file C-115 reports. See 19.15.7.24.C NMAC.
4. I understand that New Mexico requires wells that have been inactive for certain time periods to be plugged or placed on approved temporary abandonment. See 19.15.25.8 NMAC. I understand the requirements for plugging and approved temporary abandonment in 19.15.25 NMAC. I understand that I can check my compliance with the basic requirements of 19.15.25.8 NMAC by using the "Inactive Well List" on OCD's website.
5. I must keep current with financial assurances for well plugging. I understand that New Mexico requires each state or fee well that has been inactive for more than two years and has not been plugged and released to be covered by a single-well financial assurance, even if the well is also covered by a blanket financial assurance and even if the well is on approved temporary abandonment status. See 19.15.8.9.C NMAC. I understand that I can check my compliance with the single-well financial assurance requirement by using the "Inactive Well Additional Financial Assurance Report" on the OCD's website.
6. I am responsible for reporting releases as defined by 19.15.29 NMAC. I understand the OCD will look to me as the operator of record to take corrective action for releases at my wells and related facilities, including releases that occurred before I became operator of record.
7. I have read 19.15.5.9 NMAC, commonly known as "Part 5.9," and understand that to be in compliance with its requirements I must have the appropriate financial assurances in place, comply with orders requiring corrective action, pay penalties assessed by the courts or agreed to by me in a settlement agreement, and not have too many wells out of compliance with the inactive well rule (19.15.25.8 NMAC). If I am in violation of Part 5.9, I may not be allowed to drill, acquire or produce any additional wells, and will not be able to obtain any new injection permits. See 19.15.16.19 NMAC, 19.15.26.8 NMAC, 19.15.9.9 NMAC and 19.15.14.10 NMAC. If I am in violation of Part 5.9 the OCD may, after notice and hearing, revoke my existing injection permits. See 19.15.26.8 NMAC.
8. For injection wells, I understand that I must report injection on my monthly C-115 report and must operate my wells in compliance with 19.15.26 NMAC and the terms of my injection permit. I understand that I must conduct mechanical integrity tests on my injection wells at least once every five years. See

19.15.26.11 NMAC. I understand that when there is a continuous one-year period of non-injection into all wells in an injection or storage project or into a saltwater disposal well or special purpose injection well, authority for that injection automatically terminates. See 19.15.26.12 NMAC. I understand that if I transfer operation of an injection well to another operator, the OCD must approve the transfer of authority to inject, and the OCD may require me to demonstrate the well's mechanical integrity prior to approving that transfer. See 19.15.26.15 NMAC.

9. I am responsible for providing the OCD with my current address of record and emergency contact information, and I am responsible for updating that information when it changes. See 19.15.9.8.C NMAC. I understand that I can update that information on the OCD's website under "Electronic Permitting."
10. If I transfer well operations to another operator, the OCD must approve the change before the new operator can begin operations. See 19.15.9.9.B NMAC. I remain responsible for the wells and related facilities and all related regulatory filings until the OCD approves the operator change. I understand that the transfer will not relieve me of responsibility or liability for any act or omission which occurred while I operated the wells and related facilities.

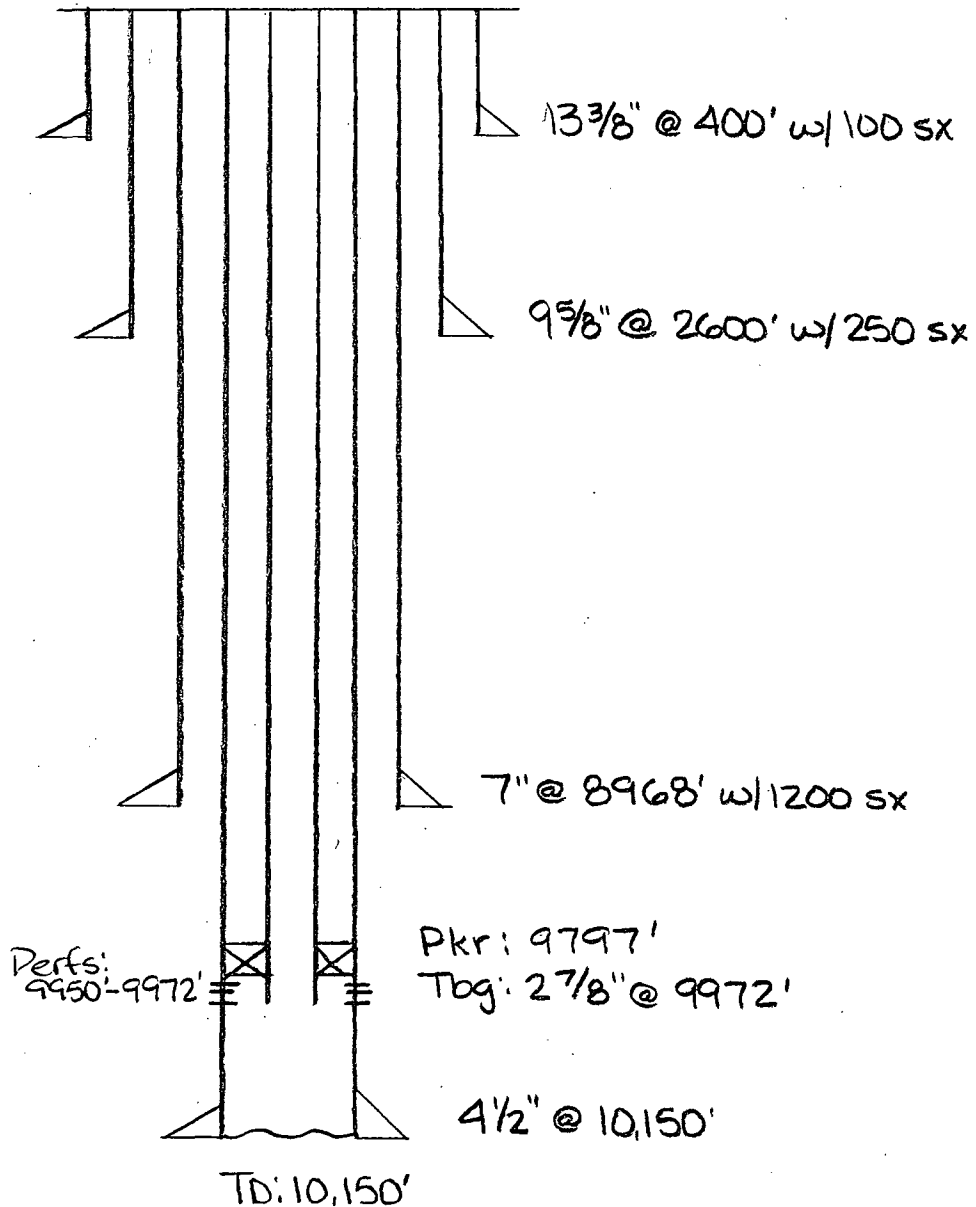
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 99
Artificial Penetration Review

OPERATOR Newbourne Oil
LEASE Chalk Bluff Federal
WELL NUMBER 3
DRILLED 1/16/93
PLUGGED NA

STATUS Active
LOCATION Sec. 1 -T18S-R27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE -3702'
API NO. 30-015-27163

REMARKS:



MAP ID NO. 99

**MEWBOURNE OIL CO.
CHALK BLUFF FEDERAL COM NO. 003**

API NO. 30-015-27163

APD ATTACHMENT

Mewbourne Oil Company Chalk Bluff Federal Comm. #3 NM-016788
1980' FSL & 990' FEL Sec. 1-T18S-R27E Eddy County, NM.

- 1.) Casing Design and Safety Factors (See schedule 1 for used casing design program.)

- 2.) Cement Program for Casing Strings.
Surface Casing:
250 sacks of Class "C" containing 2% CaCL₂ + 1/4#/sack of cellophane flakes followed by 200 sacks of Class "C" containing 3% CaCL₂.

Intermediate Casing:
700 sacks of Class "C" containing 6% gel + 2% CaCL₂ + 1/2#/sack of cellophane flakes + 5#/sack of Gilsonite followed by 200 sacks of Class "C" containing 3% CaCL₂.

Production Casing:
A cement diverter tool (D. V. Tool) will be run at a depth of approximately 7500' from surface.
1st Stage:
850 sacks of Class "H" containing 5#/sack KCL + .7% fluid loss additive + 5#/sack compressive strength extender.
2nd Stage:
900 sacks of Class "C" Lite containing 1/2#/sack cellophane flakes + 5#/sack Gilsonite + .4% fluid loss extender followed by 100 sacks of Class "H" containing .4% fluid loss additive + 5#/sack compressive strength extender.

- 3.) Drilling time will require approximately 35 - 40 days and drilling operations should begin approximately November 1, 1992.

- 4.) The possibility of encountering H₂S gas in this area remote. Mewbourne Oil Company has drilled offset wells to this proposed location and none of these wells have encountered any H₂S gas in the Pennsylvanian. In the event H₂S is encountered, the necessary H₂S safety equipment will be installed on location to provide for a safe working environment.

- 5.) Anticipated formation temperature and pressure in the Morrow zone will be approximately 155 degrees fahrenheit and 3,000# psi.

- 6.) This location is a non-standard location. A hearing is scheduled for October 15, 1992 in Santa Fe, New Mexico before the New Mexico Oil Conservation Division for an unorthodox location exception.

- 7.) The pressure rating on the BOP STACK (see exhibit "D" of the APD) is 3,000# psi. The correct pressure rating of ANSI 900 series is noted in the APD. The API standard for pressure ratings for flanged equipment is in ANSI series. ANSI 600 series is 2,000# psi working pressure test, ANSI 900 series is 3,000# psi working pressure, ANSI 1500 series is 5,000# psi work-pressure.

SCHEDULE ONE

LEASE NAME: CHALK BLUFF FEDERAL #3 **TYPE OF CSG STRING:** PRODUCTION
LEALS: SEC 1-18S-27E **DEPTH OF CSG:** 10,300

CASING MINIMUM PERFORMANCE PROPERTIES

CSG TYPE	K-FACTOR	COLLAPSE	BURST	TENSION
1 5 1/2" 20# N-80 LT&C	991,000	8830	9190	428000
2 5 1/2" 17# N-80 LT&C	844,000	6380	7740	348000
3 5 1/2" 20# N-80 LT&C	991,000	8830	9190	428000
4				
5				

GRADE OF CASING: 85 % OF NEW

CSG TYPE	COLLAPSE	BURST	TENSION
1 5 1/2" 20# N-80 LT&C	7506	7812	363800
2 5 1/2" 17# N-80 LT&C	5423	6579	295800
3 5 1/2" 20# N-80 LT&C	7506	7812	363800
4 0	0	0	0
5 0	0	0	0

SETTING DEPTH (WT. OF CSG IN AIR)		CASING	INTERVAL	INTERVAL	CUMMULATIVE
FROM	TO	WT. (LB/FT)	LGTH (FT.)	WT. (LBS)	WT. (LBS)
1 0	1,000	20	1000	20,000	181,100
2 1,000	9,300	17	8300	141,100	161,100
3 9,300	10,300	20	1000	20,000	20,000
4 0			0	0	0
5 0			0	0	0

WELLBORE CONDITIONS

MUD WEIGHT: 9.6 PPG
BOUYANCY FACTOR 0.853 (AIR = 1)
DISPLACEMENT FLUID WT: 8.5 PPG

DEPTH	ANNULAR HYDROSTATIC PRESSURE	COLLAPSE W/AXIAL LOADING	HOLE HYDROSTATIC PRESSURE	TENSION
0	0		0	154,478
1 1000	499	5982	442	137,418
2 9300	4643	5290	4111	17,060
3 10300	5142	7506	4553	0
4 0	0	ERR	0	0
5 0	0	ERR	0	0

FINIAL CASING DESIGN

SAFTEY FACTORS

	FROM	TO	LENGTH	COLLAPSE >1.125	BURST >1.00	TENSION >2.00
0	0	0	0	ERR	ERR	ERR
0	0	0	0	ERR	ERR	ERR
5 1/2" 20# N-80 LT&C	10,300	9,300	1000	1.460	1.716	21.325
5 1/2" 17# N-80 LT&C	9,300	1,000	8300	1.139	1.600	2.153
5 1/2" 20# N-80 LT&C	1,000	0	1000	11.983	17.673	2.355

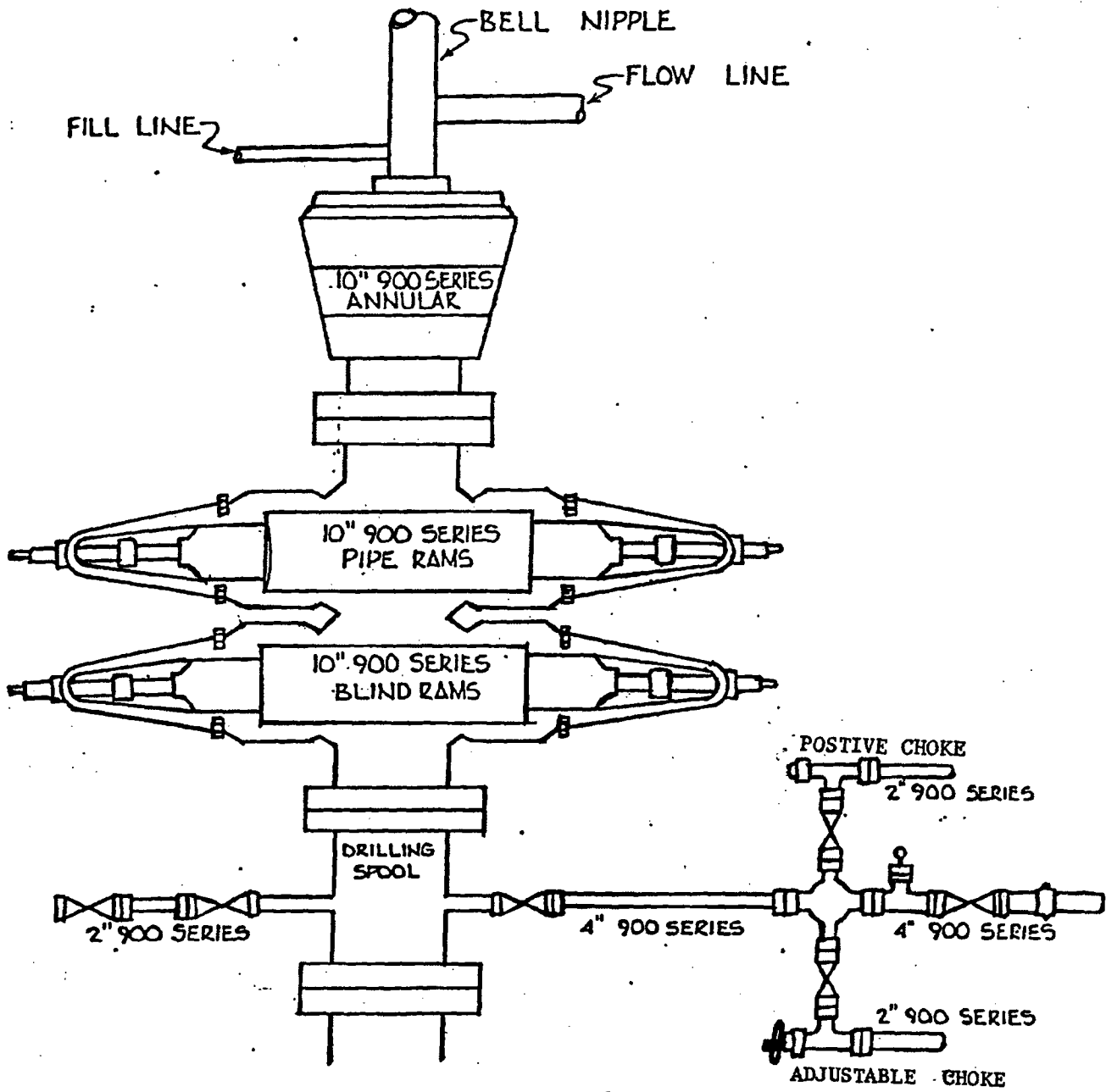
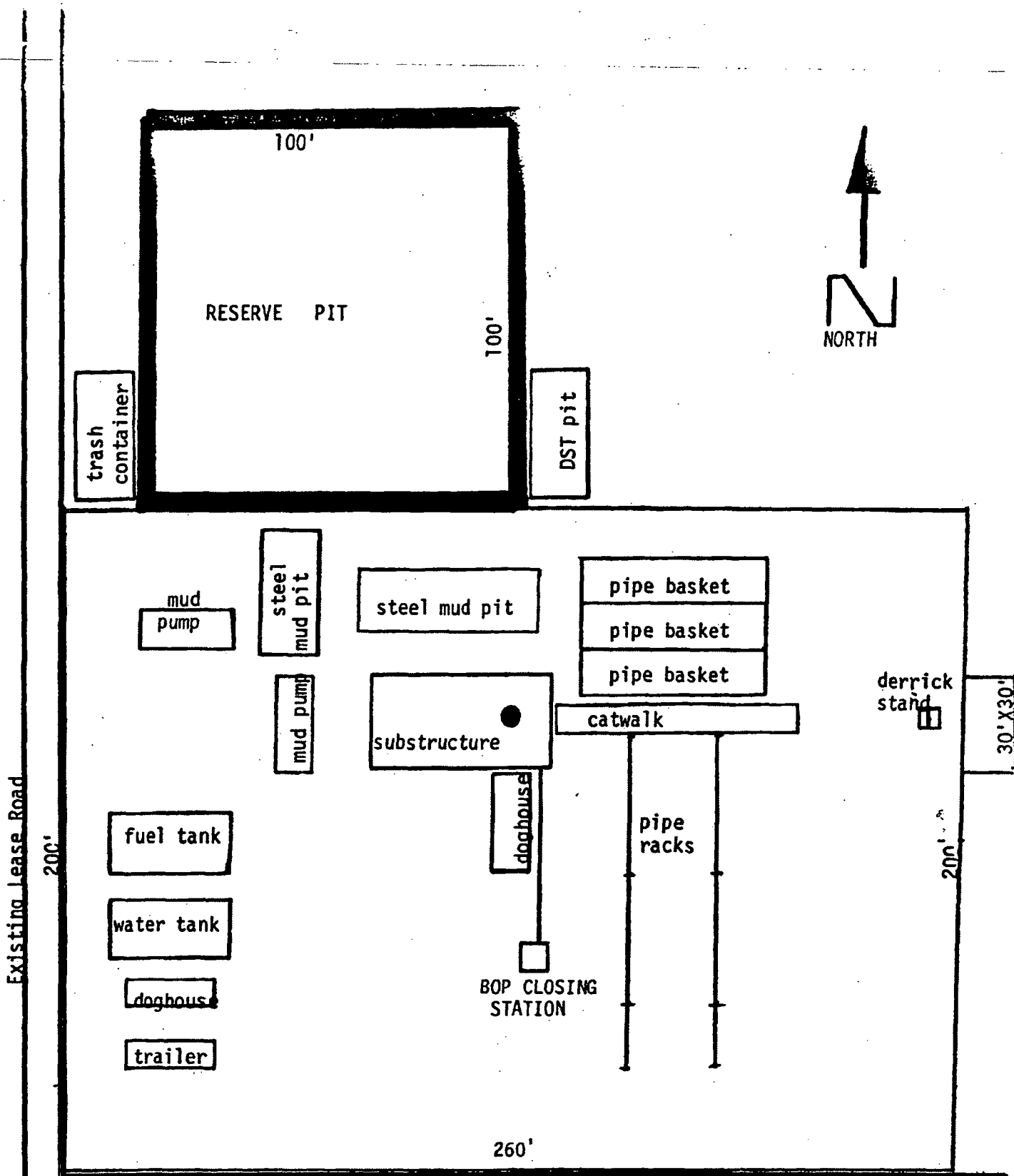


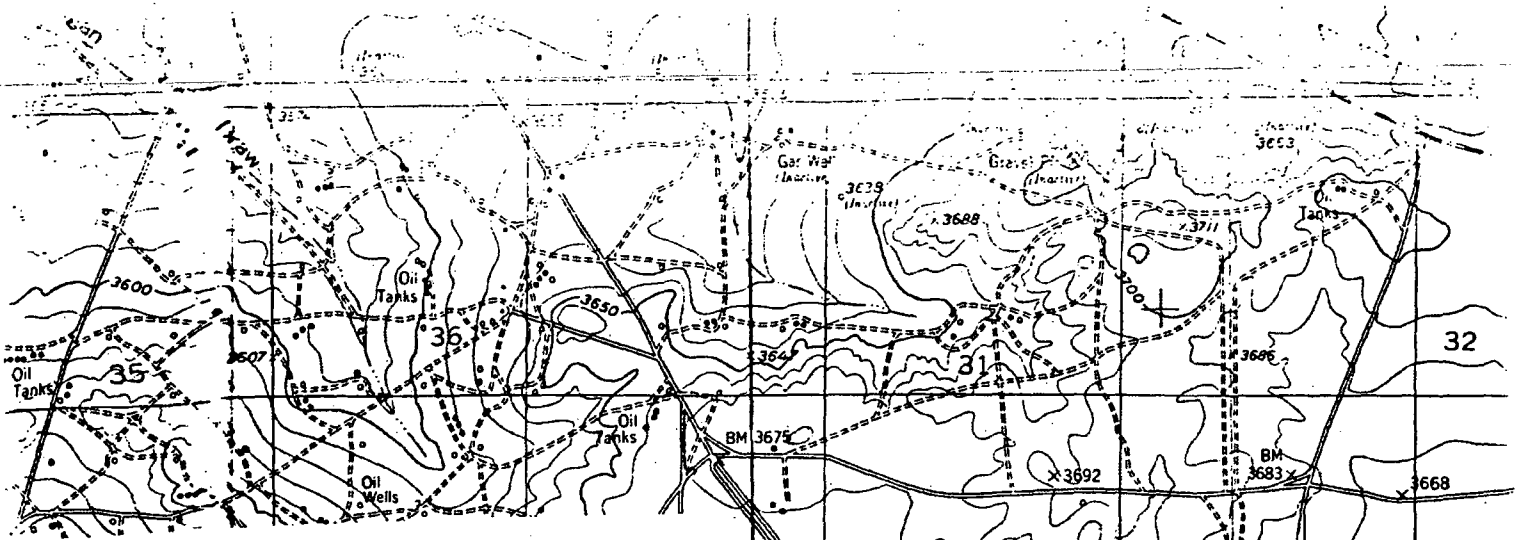
EXHIBIT "D"

Mewbourne Oil Company
 Chalk Bluff Federal #3
 1980' FSL & 990' FEL
 Section 1-T17S-R29E
 Eddy County, New Mexico



Existing lease road

Mewbourne Oil Company
 Chalk Bluff Federal #3
 1980' FSL & 990' FEL
 Section I-T17S-R29E
 Eddy County, New Mexico
 Proposed location with
 dimensions.



Proposed location and existing access roads.

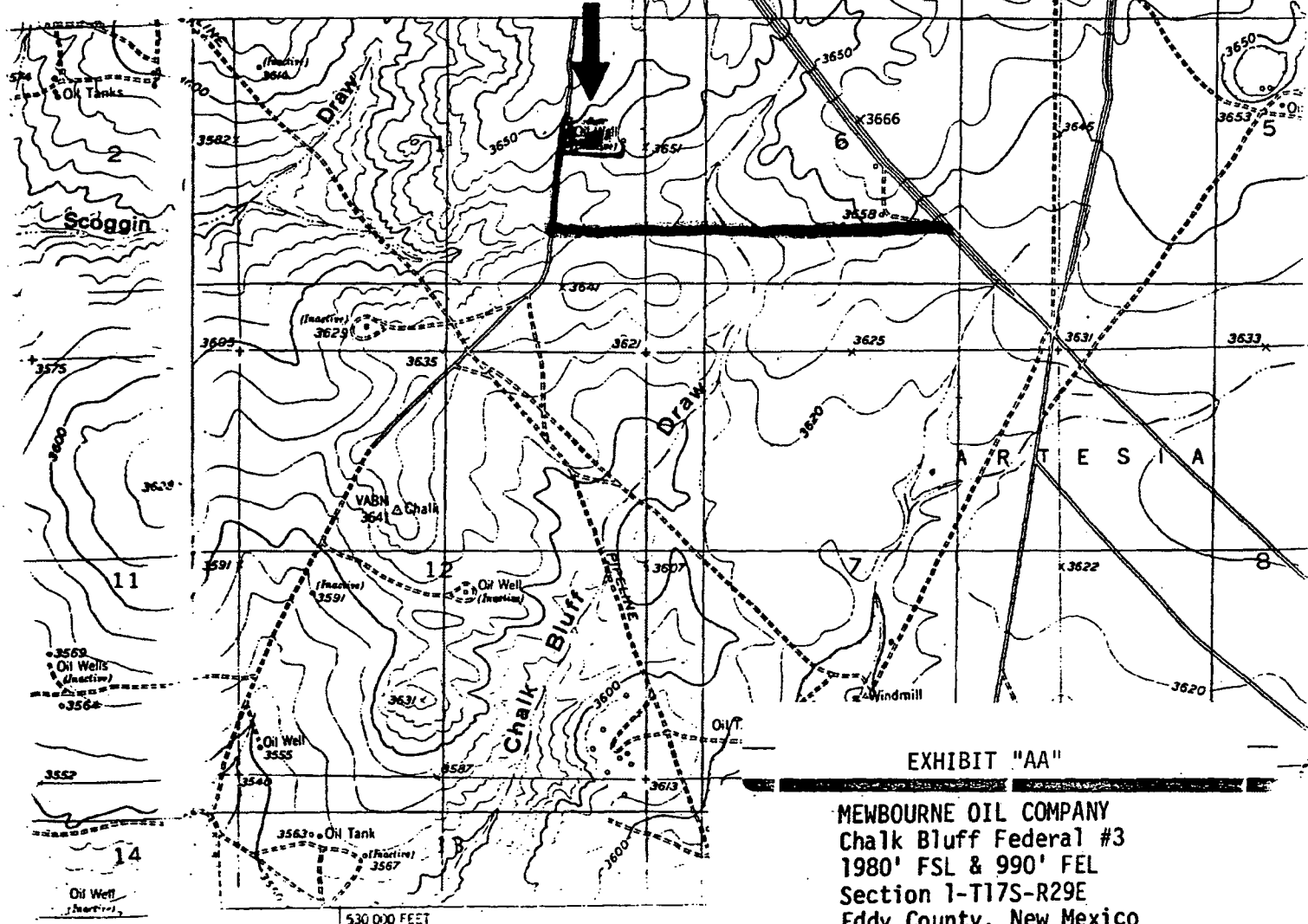


EXHIBIT "AA"

MEWBOURNE OIL COMPANY
 Chalk Bluff Federal #3
 1980' FSL & 990' FEL
 Section 1-T17S-R29E
 Eddy County, New Mexico
 Detail Map for road and location.

Existing Roads [REDACTED]

Proposed Location

Map prepared, edited and published by the Geological Survey
 USGS
 1:250,000 scale
 1945. Topographic map of the area, 1965

R271

1001

1001

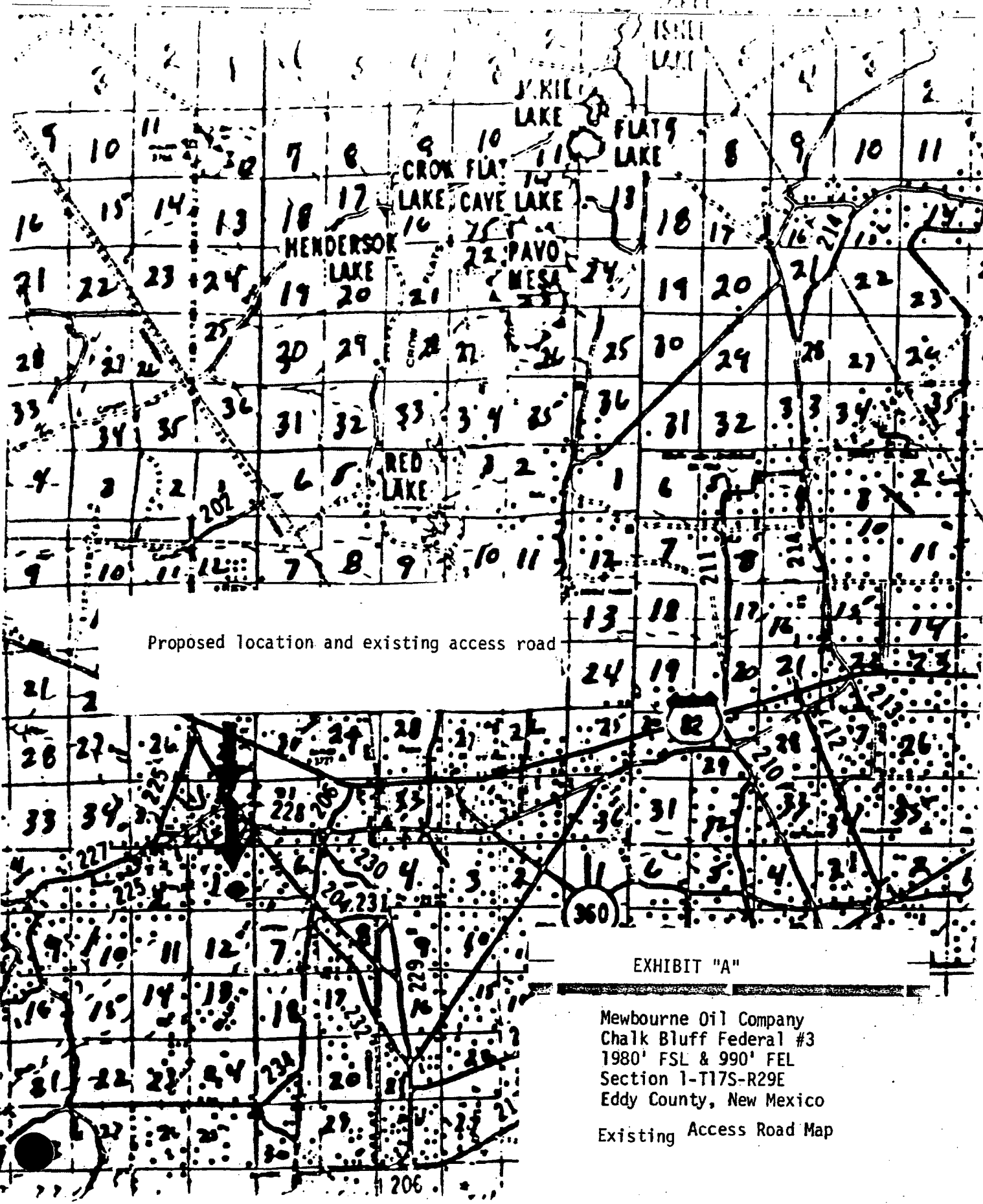


EXHIBIT "A"

Mewbourne Oil Company
 Chalk Bluff Federal #3
 1980' FSL & 990' FEL
 Section 1-T17S-R29E
 Eddy County, New Mexico

Existing Access Road Map

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

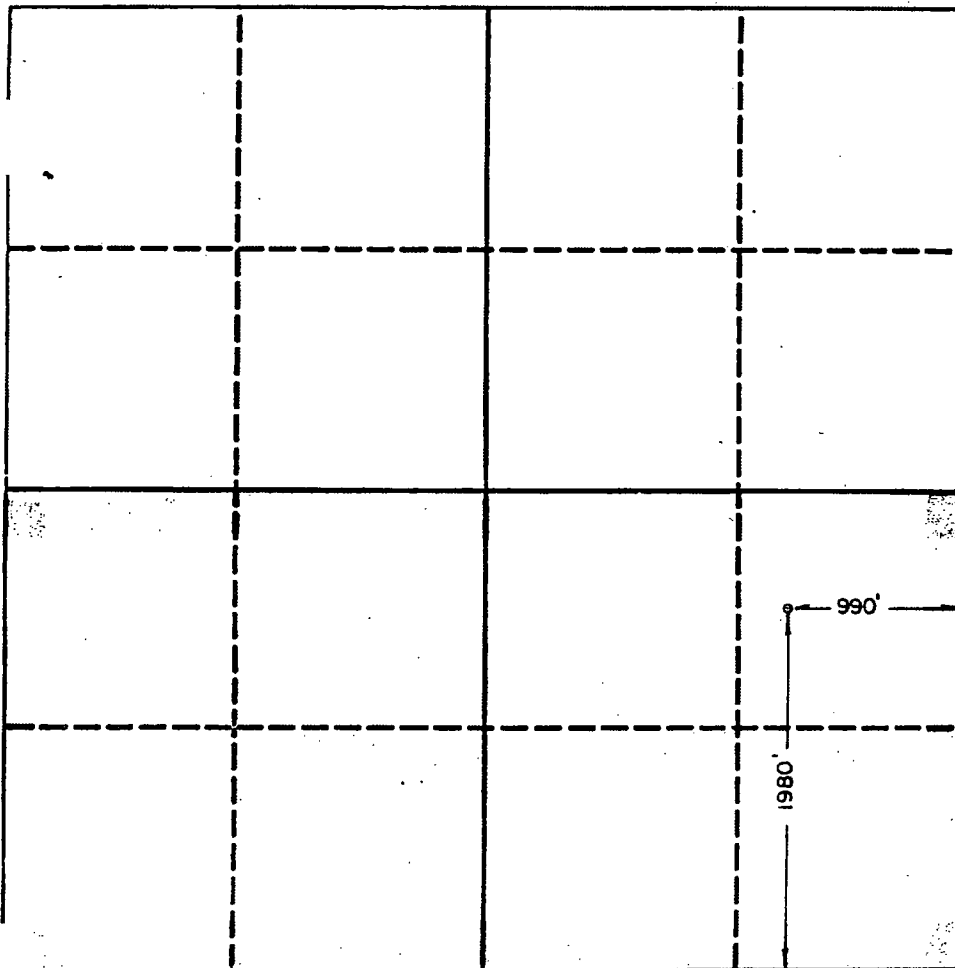
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator MEWBOURNE OIL COMPANY			Lease CHALK BLUFF FEDERAL			Well No. 3		
Unit Letter I	Section 1	Township 18 SOUTH	Range 27 EAST	County NMPM		EDDY		
Actual Footage Location of Well: 1980 feet from the SOUTH line and 990 feet from the EAST line								
Ground level Elev. 3628	Producing Formation Morrow			Pool North Illinois Camp Morrow		Dedicated Acreage: 320 Acres		

- Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?
 Yes No If answer is "yes" type of consolidation Communitization
 If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)
 No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



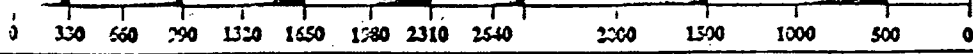
OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: *Bill Pierce*
Printed Name: **Bill Pierce**
Position: **Drilling Superintendent**
Company: **Mewbourne Oil Company**
Date: **August 31, 1992**

SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: **8/26/92**

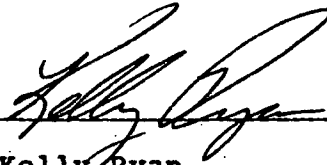
Signature & Title of Professional Surveyor:
Herschel L. Jones
Certificate No. **3640**



12. CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drilling site and necessary access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by MEWBOURNE OIL COMPANY and its' contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

September 9, 1992



Kelly Ryan
District Superintendent
MEWBOURNE OIL COMPANY

- C. The estimated depths at which anticipated water, oil or natural gas can be expected are:
- Water: Possible surface water between 100' - 300'.
 - Oil: Penrose @ 1520'
 - Gas: Wolfcamp @ 6900'
- D. Proposed Casing Program: See Form 3160-3
- E. Pressure Control Equipment: See Form 3160-3 and Exhibit "D".
- F. Mud Program: See Form 3160-3.
- G. Auxiliary Equipment: Mud-gas separator, PVT system, and Hydraulic choke from 6,000' to T.D.
- H. Testing and Coring Program: Possibility of 4 DST's in the following zones: Wolfcamp, Cisco, Strawn, Morrow. No cores are planned at this time.
- I. Logging: Gamma Ray - Spectral Density Dual Spaced Neutron Log from T.D. to surface.
Gamma Ray - Dual LaterLog - Micro Guard Log from T. D. to Intermediate casing.
- J. No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered the proposed mud program will be modified to accomodate the increased pressures.
- K. Anticipated Starting Date: As soon as possible after BLM approval.

11. OPERATOR'S REPRESENTATIVES:

The field representatives responsible for assuring compliance with the approved surface use and operations plan are as follows:

Kelly Ryan	(505) 393-5905	Box 5270
Bill Pierce	24. hour aswering	Hobbs, NM
Greg Milner	service.	88241

7. ANCILLARY FACILITIES:

A. None required.

8. WELLSITE LAYOUT:

A. Exhibit "C" shows the relative location and dimensions of the well pad, mud pits, reserve pits, trash container and location of major rig components.

B. A 400' X 400' area has been flagged surround-
the staked well.

9. PLANS AND RESTORATION OF THE SURFACE:

A. After completion of drilling and/or completion operations, all equipment not needed for producing operations will be removed. Pits will be filled in after all fluids have evaporated and the location cleaned of all trash and junk to leave the wellsite in an asthetically pleasing condition as reasonably possible. All production facilities left on location will be painted to conform with BLM painting regulations within 120 days of completion.

10. OTHER INFORMATION:

A. The geologic surface formation is hard clay interspersed with sand and chert outcroppings. Vegetative covering is generally sparse except in low-lying areas where grass is prevelant. Other vegetative covering consists mostly of greasewood and bear grass.

B. The estimated tops of geologic markers are as follows:

Queen	1260'	Cisco	7740'
✓ San Andres	2100'	Canyon	8350'
Glorieta	3720'	Strawn	8900'
✓ Tubb	4930'	✓ Atoka	9500'
✓ Abo	5900'	✓ Morrow	9600'
✓ Wolfcamp	6900'	Miss.	10,100'

4. LOCATION AND TYPE OF WATER SUPPLY:

- A. Water will be purchased from trucking companies servicing this area and will be trucked to the wellsite over existing and/or proposed roads shown on Exhibits "A" and "AA".

5. LOCATION OF CONSTRUCTION MATERIALS:

- A. Caliche for construction of the location and any needed road repairs hopefully will come from the location itself. If this is not possible, caliche will be taken from a BLM pit located in the NE4/NW4 of Sec. 12-T18S-R27E which is BLM pit #18271203. This pit also extends into the SE4/SW4 of Sec. 1-T18S-R27E which is BLM pit #18270114. An alternative pit which may be used in the event BLM pit #18271203 contains unsuitable material is a BLM pit located in the SW4/NE4 of Sec. 1-T18S-R27E which is BLM pit #18270107.

6. METHODS OF HANDLING WASTE DISPOSAL:

- A. Drill cuttings will be disposed of in the drilling pits.
- B. Drilling fluids will be allowed to evaporate in the drilling pits until pits are dry.
- C. Water used and produced during stimulation, production testing, squeezing operations etc. will be disposed of in the drilling pits. Oil produced during tests will be stored on site in steel test tanks until sold.
- D. Current laws and regulations pertaining to the disposal of human waste will be complied with.
- E. All trash, junk and other waste material will be contained in an appropriate container to prevent scattering and will be removed and deposited in an approved sanitary landfill.
- F. All trash and debris will be buried or removed from the wellsite within 90 days after drilling and/or completion operations have ceased.

MULTI-POINT SURFACE USE AND OPERATING PLAN
MEWBOURNE OIL COMPANY
CHALK BLUFF FEDERAL WELL NO. 3
1980' FSL & 990' FEL OF SEC. 1-T18S-R30E
EDDY COUNTY, NEW MEXICO
NEW MEXICO LEASE NO. NM-016788

This plan is submitted with the Application for Permit to Drill (APD) the above captioned well. The purpose of the plan is to describe the location of the proposed well, the proposed construction activities, operations plan and the magnitude of necessary surface disturbance involved, so that a complete, comprehensive appraisal can be made as to the environmental effects associated with this operation. The surface is owned by the Federal Government and is managed by the Bureau of Land Management.

1. **EXISTING ROADS:**

- A. From the junction of U. S. 82 and U. S. 285 Highways in Artesia, proceed east on U. S. 82 12 miles. Turn right (south) on Eddy County Road #206 (Illinois Camp Road) and proceed south for 1.75 miles. Turn right (northwest) on Eddy County Road #204 and proceed .75 miles. Turn left (west) on caliche lease road and proceed 1 mile. Turn right (north) 100 yards on caliche lease road and location will be on the right hand side of the lease road. (Exhibit "A" & "AA")
- B. Culverts: None required
- C. Cuts and Fills: A two foot cut will be required to construct the location.
- D. Turn-Outs: None required.
- E. Gates or Cattleguards: None required.

2. **LOCATION OF EXISTING WELLS**

- A. Existing wells in a 1 mile radius are shown on Exhibit "B".

3. **LOCATION OF PROPOSED ACTIVITIES:**

- A. If the well is productive, all production facilities will be constructed on the existing pad.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other ins. (ons on
revert (e)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

31-119-27163
NM-016788 0557371

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK
DRILL DEEPEN PLUG BACK

b. TYPE OF WELL
OIL WELL GAS WELL OTHER
SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
Mewbourne Oil Company

3. ADDRESS OF OPERATOR
Box 5270 Hobbs, New Mexico 88241

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
At surface: 1980' FSL and 990' FEL
At proposed prod. zone: Same
W. I.

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
12 miles southeast of Artesia, New Mexico

16. NO. OF ACRES IN LEASE: 320

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 2040'

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
3628' GR

23. PROPOSED CASING AND CEMENTING PROGRAM
No Water Basin

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	13 3/8"	61#	400' +	450 sks. Class C circulated
12 1/4"	9 5/8"	36#	2,600' +	800 sks. Tie back into surface.
8 3/4"	5 1/2"	17 & 20#	10,300' +	600 sks. of Class "H" - SEE STRIPS.

Mud Program:
0-400' Spud mud with fresh water gel and lime. LCM as needed.
400' - 2600' Fresh water gel and lime. LCM as needed.
2,600' - 8500' Cut brine with lime for pH control. Wt. 9.2 - 9.6# ppg, WL - NC. LCM as needed.
8,500 - 10,300' Cut brine with Drispac, salt gel, lime, soda ash, and starch. Wt. 9.2 - 9.6 ppg. WL 10 CC or less. Raise weight accordingly if abnormal pressures are encountered.

BOP PROGRAM:
900 series BOP and Hydrill on 13 3/8" surface casing and on 9 5/8" intermediate casing.

Gas is not dedicated.
IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED [Signature] TITLE District Superintendent DATE 09/09/1992

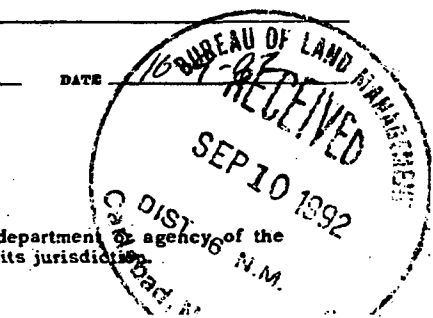
PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:
APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated, on all types of lands and leases for appropriate action by either a Federal or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable State or Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on this reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal or State agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective production zone.

ITEM 22: Consult applicable Federal or State regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR Part 3160.

PRINCIPAL PURPOSE: The information is to be used to process and evaluate your application for permit to drill, deepen, or plug back an oil or gas well.

ROUTINE USES: (1) The analysis of the applicant's proposal to discover and extract the Federal or Indian resources encountered. (2) The review of procedures and equipment and the projected impact on the land involved. (3) The evaluation of the effects of proposed operation on surface and subsurface water and other environmental impacts. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions, as well as routine regulatory responsibility.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if the lessee elects to initiate drilling operation on an oil and gas lease.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq) requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases.

This information will be used to analyze and approve applications.

Response to this request is mandatory only if the lessee elects to initiate drilling operations on an oil and gas lease.

RECEIVED

dsf

JAN 04 1993

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

O. C. D.
ADP 28-1-10848

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1980' FSL & 990' FEL
Sec. 1-T18S-R27E

5. Lease Designation and Serial No.

NM-0557377

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Federal
Comm. #3

9. API Well No.

3001527163

10. Field and Pool, or Exploratory Area

North Illinois Camp

11. County or Parish, State

Morrow

Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

Notice of Intent
 Subsequent Report
 Final Abandonment Notice

TYPE OF ACTION

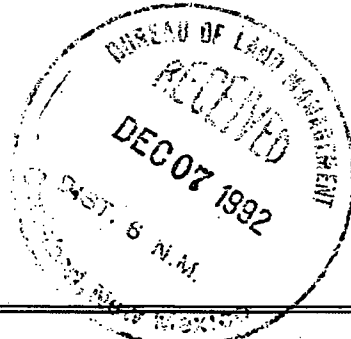
Abandonment
 Recompletion
 Plugging Back
 Casing Repair
 Altering Casing
 Other Spud well & cemented
13-3/8" surf. csg.

Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Spudded well @ 4:00 p.m. MST 11/24/92. Drilled 17-1/2" surface hole to 400' KB. Ran 10 joints of 13-3/8", 54.50#, New LS, ST&C casing and set @ 400' KB. Western cemented w/100 sks. Class "H" cement containing 12% Thixad + 3% CaCl2 followed by 265 sks. of Class "C" containing 6% Gel + 3% CaCl2 + 1/4 pps celloseal + 5 pps gilsonite followed by 150 sks. of Class "C" neat containing 3% CaCl2. Circulated 50 sks. of cement to the pit. Job complete @ 5:30 a.m. 11/25/92.



14. I hereby certify that the foregoing is true and correct

Signed Bill Pierce

Title Drilling Supt.

Date 12/02/92

(This space for Federal or State office use)

Approved by David A. Glass

Title _____

Date _____

Conditions of approval, if any:

1992

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated, on Federal and Indian lands pursuant to applicable Federal law and regulations, and, if approved or accepted by any State, on all lands in such State, pursuant to applicable State law and regulations. Any necessary special in-

structions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

SPECIFIC INSTRUCTIONS

Item 4—If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 13—Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by local Federal and/or State offices. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive

zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well; and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et. seq., 351 et. seq., 25 U.S.C. et. seq.; 43 CFR 3160.

PRINCIPAL PURPOSE — The information is to be used to evaluate, when appropriate, approve applications, and report completion of secondary well operations, on a Federal or Indian lease.

ROUTINE USES:

- (1) Evaluate the equipment and procedures used during the proposed or completed subsequent well operations.
- (2) Request and grant approval to perform those actions covered by 43 CFR 3162.3-2(2).
- (3) Analyze future applications to drill or modify operations in light of data obtained and methods used.
- (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION — Filing of this notice and report and disclosure of the information is mandatory once an oil or gas well is drilled.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501, et. seq.) requires us to inform you that:

This information is being collected in order to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

This information will be used to report subsequent operations once work is completed and when requested, to obtain approval for subsequent operations not previously authorized.

Response to this request is mandatory for the specific types of activities specified in 43 CFR Part 3160.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management, (Alternate) Bureau Clearance Officer, (WO-771), 18 and C Streets, N.W., Washington, D.C. 20240, and the Office of Management and Budget, Paperwork Reduction Project (1004-0135), Washington, D.C. 20503.

CISF

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JAN 04 1993

O. C. D.
APPROPRIATE

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1980' FSL & 1980' FEL
Sec. 1-T18S-R27E

5. Lease Designation and Serial No.

NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Federal

9. API Well No.

Comm. #3

3001527163

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy Co., New Mexico

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

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 Subsequent Report
 Final Abandonment Notice

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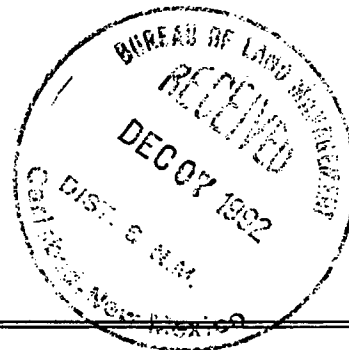
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Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled 12-1/4" Intermediate hole to 2600' KB. Ran 59 joints of 9-5/8", 36#, New LS, ST&C casing and set @ 2600' KB. Western cemented with 590 sacks of Class "C" lite containing 6% gel + 10 pps NaCl + 1/4 pps celloseal followed by 250 sacks of Class "C" containing 2% CaCl2. Circulated 50 sacks of cement to the pit. Job complete @ 11: 50 p.m. 11/29/92.



14. I hereby certify that the foregoing is true and correct

Signed Bill Pierce

Title Drilling Supt.

Date 12-02-92

(This space for Federal or State office use)

Approved by David A. Glass

Conditions of approval, if any: _____ Title _____ Date _____

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

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SPECIFIC INSTRUCTIONS

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Item 13—Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by local Federal and/or State offices. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive

zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well; and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

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AUTHORITY: 30 U.S.C. 181 et. seq., 351 et. seq., 25 U.S.C. et. seq.; 43 CFR 3160.

PRINCIPAL PURPOSE — The information is to be used to evaluate, when appropriate, approve applications, and report completion of secondary well operations, on a Federal or Indian lease.

ROUTINE USES:

- (1) Evaluate the equipment and procedures used during the proposed or completed subsequent well operations.
- (2) Request and grant approval to perform those actions covered by 43 CFR 3162.3-2(2).
- (3) Analyze future applications to drill or modify operations in light of data obtained and methods used.
- (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION — Filing of this notice and report and disclosure of the information is mandatory once an oil or gas well is drilled.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501, et. seq.) requires us to inform you that:

This information is being collected in order to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

This information will be used to report subsequent operations once work is completed and when requested, to obtain approval for subsequent operations not previously authorized.

Response to this request is mandatory for the specific types of activities specified in 43 CFR Part 3160.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management, (Alternate) Bureau Clearance Officer, (WO-771), 18 and C Streets, N.W., Washington, D.C. 20240, and the Office of Management and Budget, Paperwork Reduction Project (1004-0135), Washington, D.C. 20503.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

45F

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other	5. Lease Designation and Serial No. NM-0557371
2. Name of Operator Mewbourne Oil Company	6. If Indian, Allottee or Tribe Name
3. Address and Telephone No. P.O. Box 5270 Hobbs, New Mexico 88241	7. If Unit or CA, Agreement Designation
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 1980' FSL & 1980' FEL Sec. 1-T18S-R27E	8. Well Name and No. Chalk Bluff Fed. Comm. 3
	9. API Well No. 30-015-27163
	10. Field and Pool, or Exploratory Area N. Illinois Camp Morrow
	11. County or Parish, State Eddy

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other Cement 7" casing
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Lost complete returns @ 7683'. Dry drilled 8-3/4" hole to 8968'. Ran 226 Jts. of 7", 26# & 29#, N-80 & S-95 grade used API casing and set @ 8968'. Multiple stage cementer @ 6997' and external casing packer @ 7026'. Western cemented the first stage w/350 sks. of Class "H" containing 8 pps CSE + .75% CF-14 + 5 pps Gilsonite + .35% Thrifty Lite. Set ECP and opened DV tool. Cemented 2nd stage w/750 sks. of Class "C" containing 1 pps celloseal + 5 pps gilsonite + 3% salt followed by 100 sks. of Class "H" Neet. Plug down to 6997' @ 2:45 a.m. 12/26/92

ACCEPTED FOR RECORD
OR G. SGD) DAVID R. GLASS
FEB 4 1993
CARLSBAD, NEW MEXICO

RECEIVED
JAN 25 9 40 AM '93
CARLSBAD AREA RECORDERS

14. I hereby certify that the foregoing is true and correct

Signed Bill Pierce Title Drilling Superintendent Date 01/20/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

CSF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
 Mewbourne Oil Company

3. Address and Telephone No.
 P.O. Box 5270 Hobbs, New Mexico 88241

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
 1980' FSL & ~~1980'~~^{990'} FEL
 Sec. 1-T18S-R27E

5. Lease Designation and Serial No.
 NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
 Chalk Bluff Fed. Comm. #3

9. API Well No.
 30-015-27163

10. Field and Pool, or Exploratory Area
 N. Illinois Camp Morrow

11. County or Parish, State
 Eddy

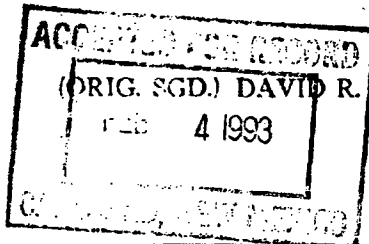
12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Run 4-1/2" Liner</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled well to a total depth of 10,150' w/6" hole, ran 45 jts. of 4-1/2", 11.6#, N-80, used API casing and hung liner from 8599' to 10,150'. Western cemented w/200 sks. of Class "H" containing 5 pps CSE + 20 pps SF-3 + .9% CF-14 + 1 gal./100 sacks of Klay-Treat. Plug down to 10,113' @ 5:00 a.m. 01/06/93. Released rig and moved off location. 01/08/93



RECEIVED
 JAN 25 9 40 AM '93
 CARROLL COUNTY RECORDS
 AREA

14. I hereby certify that the foregoing is true and correct

Signed Bill Pierce Title Drilling Superintendent Date 01/21/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
 Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

SEC 1 TWN 18 RGE 27

API # 30-015-27163

OPERATOR MEWBOURNE OIL CO

WELL NAME CHALK BLUFF FEO COM #3

STATE OCD TOPS AS PER MARK ASHLEY DATE 1-25-93

Southeastern New Mexico

Northwestern New Mexico

<u>Anhy</u>	<u>T. Canyon</u>	<u>T. Ojo Alamo</u>	<u>T. Penn. "B"</u>
<u>Salt</u>	<u>T. Strawn</u> 8972	<u>T. Kirland-Fruitland</u>	<u>T. Penn. "C"</u>
<u>Salt</u>	<u>T. Atoka</u> 9490	<u>T. Picured Cliffs</u>	<u>T. Penn. "D"</u>
<u>Yates</u> 450	<u>T. Miss</u>	<u>T. Cliff House</u>	<u>T. Leadville</u>
<u>7 Rivers</u> 565	<u>T. Devonian</u>	<u>T. Menefee</u>	<u>T. Madison</u>
<u>Queen</u> 1159	<u>T. Silurian</u>	<u>T. Point Lookout</u>	<u>T. Elbert</u>
<u>Grayburg</u> 1494	<u>T. Monroya</u>	<u>T. Mancos</u>	<u>T. McCracken</u>
<u>San Andres</u> 1485	<u>T. Simpson</u>	<u>T. Gallup</u>	<u>T. Ignacio Otze</u>
<u>G. [redacted]</u> 3535	<u>T. McKee</u>	<u>Base Greenhorn</u>	<u>T. Granite</u>
<u>Paddock</u>	<u>T. Ellenburger</u>	<u>T. Dakota</u>	<u>T.</u>
<u>Blinebry</u>	<u>T. Gr. Wash</u>	<u>T. Morrison</u>	<u>T.</u>
<u>Tubb</u> 4760	<u>T. Delaware Sand</u>	<u>T. Todilto</u>	<u>T.</u>
<u>Drinkard</u>	<u>T. Bone Springs</u>	<u>T. Entrada</u>	<u>T.</u>
<u>F. Abo</u> 5745	<u>T. Morrow LS</u> 9710	<u>T. Wingate</u>	<u>T.</u>
<u>F. Wolfcamp</u> 6475	<u>T.</u>	<u>T. Chinle</u>	<u>T.</u>
<u>F. Penn</u> 7970	<u>T.</u>	<u>T. Permian</u>	<u>T.</u>
<u>F. Cisco (Bough C)</u>	<u>T.</u>	<u>T. Penn "A"</u>	<u>T.</u>

OIL OR GAS SANDS OR ZONES

No. 1, from..... to..... No. 3, from..... to.....
No. 2, from..... to..... No. 4, from..... to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.
No. 1, from..... to..... feet
No. 2, from..... to..... feet
No. 3, from..... to..... feet

REMARKS:

Submit 5 Copies
 Appropriate District Office
 DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-104
 Revised 1-1-89
 See Instructions
 at Bottom of Page

OIL CONSERVATION DIVISION

P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

RECEIVED

DISTRICT II
 P.O. Drawer DD, Aztec, NM 88210

DISTRICT III
 1000 Rio Grande Rd., Aztec, NM 87410

**REQUEST FOR ALLOWABLE AND AUTHORIZATION
 TO TRANSPORT OIL AND NATURAL GAS**

JAN 2 1993

O. C. D.
 DISTRICT I

I.

Operator Mewbourne Oil Company	Well APN No. 30-015-27163
Address P.O. Box 5270 Hobbs, New Mexico 88241	
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)	
New Well <input checked="" type="checkbox"/>	Change in Transporter of: <input type="checkbox"/> Oil <input type="checkbox"/> Dry Gas <input type="checkbox"/>
Recompletion <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/> Condensate <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name Chalk Bluff Federal Comm.	Well No. 3	Pool Name, Including Formation North Illinois Camp Morrow	Kind of Lease XXX Federal or XXX	Lease No. NM-0557371
Location				
Unit Letter I	Range 1980	Foot From The South	Line and 990	Foot From The East
Section 1	Township 18S	Range 27E	NMPM	Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input type="checkbox"/> or Condensate <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent)
Amoco Pipeline IPC	502 N. West Ave. Levelland, Tx. 79336-3914
Name of Authorized Transporter of Casinghead Gas <input type="checkbox"/> or Dry Gas <input checked="" type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent)
Transwestern Pipeline Company	P.O. Box 1188 Houston, Texas 77251
If well produces oil or liquids, give location of tanks.	Is gas actually connected? When?
Unit Sec. Twp. Rgs. I 1 18S 27E	Yes 01/15/93

If this production is commingled with that from any other lease or pool, give commingling order number: None

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	DIT Res'v
		X	X					
Date Spudded 11/24/92	Date Compl. Ready to Prod. 01/16/93	Total Depth 10,150'		F.B.T.D. 10,102'				
Elevations (DF, RKB, RT, GR, etc.) KB 3643' DF 3641' GL 3628'	Name of Producing Formation Lower Morrow	Top Oil/Gas Pay 9950'		Tubing Depth 9972'		Depth Casing Shoe 10,150'		
Performances 9950'-9954' 9957'-9972'								

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8" 54.5#	400'	100 sacks <i>Per ID-2</i>
12-1/4"	9-5/8" 36#	2,600'	250 sacks <i>2-12-93</i>
8-3/4"	7" 26#	8,968'	1200 sacks <i>comp + B.I.</i>
6"	4-1/2" Liner 11.6#	8,600' to 10,150'	200 sacks

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)
Length of Test	Tubing Pressure	Casing Pressure
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.

GAS WELL

Actual Prod. Test - MCF/D 2000 MCF/D	Length of Test 24 Hrs.	Bbls. Condensate/MMCF 30 : 1	Gravity of Condensate N/A
Testing Method (pilot, back pr.) Back Pressure	Tubing Pressure (Shut-in) 2850	Casing Pressure (Shut-in) 0	Choke Size 10/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

R. G. Jones
 Signature Robert A Jones Engineer
 Printed Name Title
 Date 01/19/93 Telephone No. (505) 393-5905

OIL CONSERVATION DIVISION

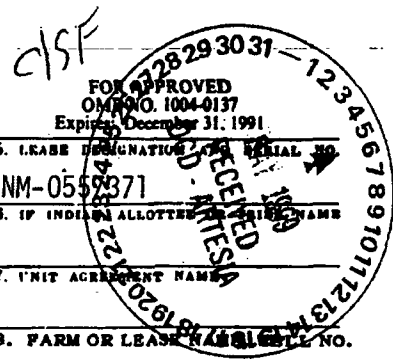
JAN 29 1993

Date Approved _____
 By ORIGINAL SIGNED BY MIKE WILLIAMS
 Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- All sections of this form must be filled out for allowable on new and recompleted wells.
- Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- Separate Form C-104 must be filed for each pool in multiply completed wells.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1. TYPE OF WELL: OIL WELL GAS WELL DRY Other

2. TYPE OF COMPLETION: NEW WELL WORK OVER DEEPEN PLUG BACK

3. NAME OF OPERATOR: Mewbourne Oil Company

4. ADDRESS AND TELEPHONE NO.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

5. LOCATION OF WELL (Report location clearly and in accordance with any State requirements):
At surface 1980' FSL & 990' FEL
At top prod. interval reported below
At total depth Same

14. PERMIT NO. _____ DATE ISSUED _____

15. DATE SPUDDED 11/24/92 16. DATE T.D. REACHED 01/06/93 17. DATE COMPL. (Ready to prod.) 01/16/93
18. ELEVATIONS (OF. RKB, ST, OR, ETC.)* KB 3643' DF 3641' GI 3628' 19. SLEV. CASINGHEAD 3628'

20. TOTAL DEPTH, MD & TVD 10,150' 21. PLUG BACK T.D., MD & TVD 10,102' 22. IF MULTIPLE COMPL., HOW MANY* _____ 23. INTERVALS DRILLED BY ROTARY TOOLS X CABLE TOOLS _____

24. PRODUCING INTERVAL(S) OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
9950'-9954', 9957'-9972' Lower Morrow Orange Sand

26. TYPE ELECTRIC AND OTHER LOGS RUN: SDL-DSN Dual-Latero-MFSL-GR Sonic CBL

CASING RECORD (Report all strings set in well)

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.5#	400'±	17-1/2"	100 sx. Class "H"	None
9-5/8"	36#	2,600'±	12-1/4"	250 sx. Class "C"	None
7"	26 & 29#	8,968'	8-3/4"	1200 sx. Class "C & H"	None

29. LINER RECORD				30. TUBING RECORD			
SIZE	TOP (MD)	BOTTOM (MD)	BACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
4-1/2"	8600'	10,150'	200 sxs.	None	2-7/8"	9972'	9797'
					2-3/8"		

31. PERFORATION RECORD (Interval, size and number)

9950'-9954' 9957'-9972'

4 SPF 19' 76 holes

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
<u>9950'-9954'</u>	<u>None</u>
<u>9957'-9972'</u>	<u>None</u>

33. PRODUCTION

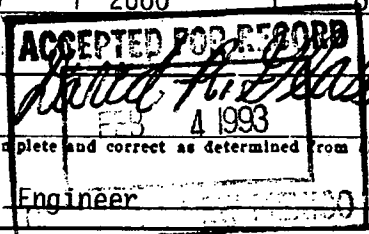
DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)					
<u>01/16/93</u>	<u>Flowing</u>	<u>Producing</u>					
DATE OF TEST	HOURS TESTED	CHOKES SIZE	PROD'N. FOR TEST PERIOD	OIL—BSL.	GAS—MCF.	WATER—BSL.	GAS-OIL RATIO
<u>01/16/93</u>	<u>24</u>	<u>10/64"</u>	<u>→</u>	<u>50</u>	<u>2000</u>	<u>0</u>	<u>40 MCF/BBL</u>
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BSL.	GAS—MCF.	WATER—BSL.	OIL GRAVITY-API (CORR.)	
<u>2720</u>	<u>0</u>	<u>→</u>	<u>60</u>	<u>2000</u>	<u>0</u>		

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.): Sold

35. LIST OF ATTACHMENTS: Logs- * Please hold in confidence

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

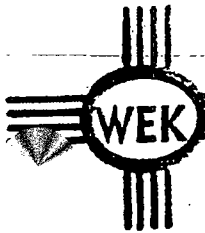
SIGNED: [Signature] TITLE: Engineer DATE: 01/21/93



27. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
M. Morrow	9950'	9972'	Sandstone	Yates	450'	
				7 Rivers	564'	
				Queen	1159'	
				Grayburg	1492'	
				San Andres	1985'	
				Glorieta	3536'	
				Tubb	4760'	
				Drinkard	5524'	
				Abo	5744'	
				Wolfcamp	6474'	
				Cisco	7686'	
				Canyon	8440'	
				Strawn	8932'	
				Atoka	9490'	
Morrow	9594'					
Morrow Clastic	9800'					
L. Morrow	9911'					



DRILLING CO., INC. - OIL WELL DRILLING CONTRACTORS

KEN REYNOLDS-PRESIDENT
ARNIE NEWKIRK-VICE-PRESIDENT

RECEIVED

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

JAN 27 10 52 AM '93

CARLE...
AREATE... OFFERS

January 06, 1993

Mewbourne Oil Company
P.O. Box 5270
Hobbs, N.M. 88240

RE: Chalk Bluff Federal #3

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

400' - 3/4°	5033' - 2 3/4°	5813' - 4°
887' - 1°	5096' - 3°	5875' - 4°
1359' - 1°	5158' - 3°	5967' - 3 3/4°
1864' - 2°	5222' - 3 1/4°	6094' - 3 3/4°
2336' - 1 1/2°	5283' - 3 3/4°	6217' - 3 1/4°
2600' - 3/4°	5346' - 3 3/4°	6720' - 3 1/2°
2792' - 1 1/4°	5409' - 4°	7213' - 3°
3086' - 1°	5464' - 4 1/4°	7685' - 2 1/2°
3580' - 1 1/3°	5555' - 4 1/4°	8155' - 2 1/4°
4079' - 1°	5587' - 4 1/4°	8654' - 2°
4358' - 1 3/4°	5650' - 4 1/4°	9003' - 2°
4846' - 2 3/4°	5719' - 4 1/2°	9509' - 1/4°
		9837' - 3/4°
		10150' - 1 3/4° TD

Sincerely,

Gary W. Chappell
Contracts Manager

STATE OF NEW MEXICO)
COUNTY OF CHAVES }

The foregoing was acknowledged before me this 06th day of January 1993 by Gary W. Chappell.

MY COMMISSION EXPIRES
October 07, 1996

NOTARY PUBLIC

RECEIVED JAN 07 1993

COMPANY : MEWBOURNE OIL LEASE : CHALK BLUFF FED. CONWELL NO. : 3 Pc = 2273.2 Pc2 = 5167.4 *
 UNIT : I SECTION : 1 TOWNSHIP : 13 Pt2 = 5031.9 Pw = 2244.7 *
 L : 9961 H : 9961 L/H : 1 G/GMIX : 0.849 DATE : 4810.1 2199.5 *
 KCO2 : 0.42 W2 : 0.33 H2S : RANGE : 27 4465.6 2132.7 *
 d : 2.279 Fr : 0.012892 GH : 3456.9 4053.0 2055.4 *

VOL 1 : 655 PSIA 1 : 2243.2 RESV. TEMP 173.6 Pc2-Pw2 = 128.6 Pw2 = 5033.8 *
 VOL 2 : 1310 PSIA 2 : 2193.2 329.8 4837.6 *
 VOL 3 : 2283 PSIA 3 : 2113.2 SHUT-IN PR = 2273.2 618.9 4548.6 *
 VOL 4 : 3294 PSIA 4 : 2013.2 942.6 4224.8 *
 PCR : 668 n = 0.884 *
 TCR : 401

LINE	RATE 1		RATE 2		RATE 3		RATE 4			
	'1ST	'2ND	'1ST	'2ND	'1ST	'2ND	'1ST	'2ND		
1	0.655	0.655	1.310	1.310	2.283	2.283	3.294	3.294		
2	FW	534	534	534	534	534	534	534	(Pc2/Pc2-Pw2)n = 26.181	
3	Ts	633.6	633.6	633.6	633.6	633.6	633.6	633.6	11.386	
4	T	583.8	583.8	583.8	583.8	583.8	583.8	583.8	6.528	
	PR (est)	3.36	3.28	3.16	3.01				4.500	
5	Z(est)	0.727	0.738	0.727	0.736	0.723	0.733	0.731	0.730	
6	TZ	424.5	430.8	424.6	429.5	425.2	427.7	426.5	426.0	AOF = Q 17.148
7	GH/TZ	19.924	19.629	19.918	19.691	19.891	19.774	19.829	19.852	14.915
8	eS	2.111	2.088	2.110	2.093	2.108	2.099	2.104	2.105	14.903
9	l-e-S	0.526	0.521	0.526	0.522	0.526	0.524	0.525	0.525	14.823
10	Pt	2243.2	2243.2	2193.2	2193.2	2113.2	2113.2	2013.2	2013.2	
11	Pc2 / 1000	5031.9	5031.9	4810.1	4810.1	4465.6	4465.6	4053.0	4053.0	
12	Fr	0.012892	0.012892	0.012892	0.012892	0.012892	0.012892	0.012892	0.0128924	
13	Fc=FrTZ	5.472	5.555	5.474	5.537	5.481	5.514	5.498	5.492	
14	FcG	3.58	3.64	7.17	7.25	12.51	12.59	13.11	18.09	
15	L/H(FcGm)	12.8	13.2	51.4	52.6	156.6	158.5	328.0	327.3	
16	Fw	5.761363	5.396563	27.05758	27.47157	52.30401	52.97298	172.0865	171.83059	
17	Pw2	5038.7	5038.8	4837.2	4837.6	4547.9	4548.6	4225.1	4224.8	
18	Pw2	10636.7	10519.8	10208.7	10123.1	9588.7	9547.9	8897.4	8894.3	
19	Ps	3261.4	3243.4	3195.1	3181.7	3096.6	3090.0	2981.2	2982.3	
20	P	2752.3	2743.3	2694.2	2687.4	2604.9	2601.6	2497.2	2497.8	
21	Pr	4.12	4.11	4.03	4.02	3.90	3.89	3.74	3.74	
22	Tc	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	
23	Z	0.733	0.733	0.736	0.733	0.733	0.732	0.730	0.730	



Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Newbourne Oil Co.
Attention: Mr. R. Jones
P. O. Box 5270
Hobbs, New Mexico 88240

SAMPLE IDENTIFICATION: Chalk Bluff #3
COMPANY: Newbourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA:	DATE SAMPLED:	3/4/93 12:30PM	GAS (XX)	LIQUID ()
	ANALYSIS DATE:	03-05-93	SAMPLED BY:	R. Jones
	PRESSURE - PSIG	530.0	ANALYSIS BY:	Rolland Perry
	SAMPLE TEMP. °F			
	ATMOS. TEMP. °F			

REMARKS:

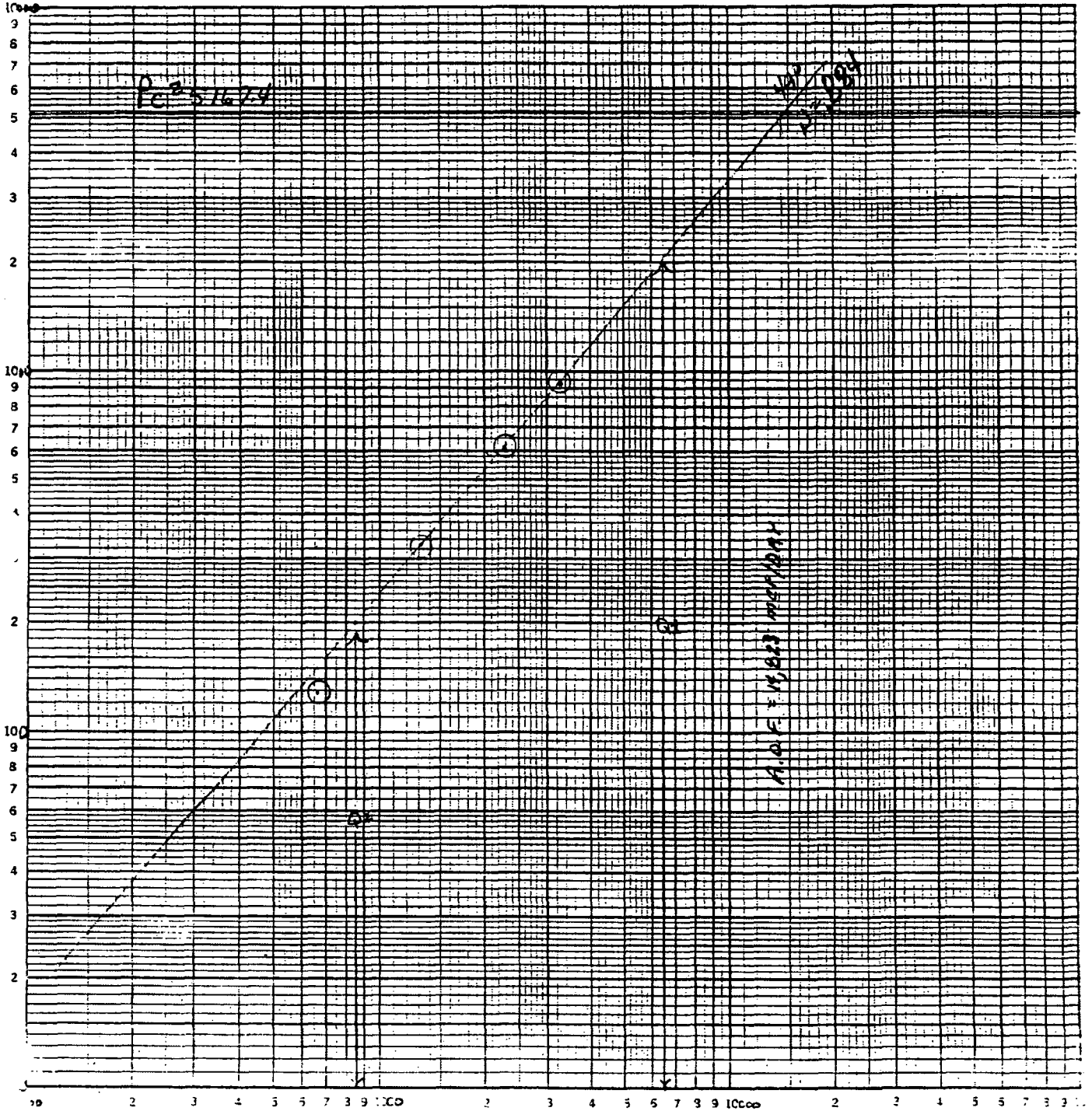
COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM	
Hydrogen Sulfide	(H2S)			
Nitrogen	(N2)	0.33		
Carbon Dioxide	(CO2)	0.42		
Methane	(C1)	83.10		
Ethane	(C2)	8.14	2.164	
Propane	(C3)	3.14	0.862	
I-Butane	(IC4)	0.40	0.130	
N-Butane	(NC4)	0.86	0.270	
I-Pentane	(IC5)	0.39	0.140	
N-Pentane	(NC5)	0.41	0.147	
Hexane	(C6)	2.81	1.214	
Heptanes Plus	(C7+)	0.00	0.000	
		<u>100.00</u>	<u>4.927</u>	
BTU/CU.FT. - DRY		1269	MOLECULAR WT.	21.1701
AT 14.650 DRY		1265		
AT 14.650 WET		1239	26# GASOLINE -	1.591
AT 15.025 DRY		1298		
AT 15.025 WET		1304		
SPECIFIC GRAVITY -				
CALCULATED		0.731		
MEASURED				

MENBOURNE OIL COMPANY
 Chalk Bluff Federal Com. Well #3
 1-18S-27E
 Eddy County, New Mexico
 3/4/93

$P_c^2 - P_w^2 (1500) 67400$

K_{FE} LOGARITHMIC 3 X 3 CYCLES
 KEUFFEL & ESSER CO. MADE IN U.S.A.



2000/200

$\log 2000 = 3.30103$

$\log 10000 = 4.00000$

0151
File

RECEIVED
Submit in duplicate to appropriate district office
Rule 401 & Rule 1122
NPR

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-122
Revised 4-1-91

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator MEWOURNE OIL COMPANY				Lease or Unit Name CHALK BLUFF FEDERAL COM.			
Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special				Test Date 3/4/93		Well No. 3	
Completion Date 1/16/93		Total Depth 10150		Plug Back TD 10102		Elevation GL 3628'	
Unit Lr. - Sec. - TWP - Rge. T 1 18S 27E		County EDDY		Pool MORROW		Formation NORTH ILLINOIS	
Csg. Size 4 1/2		Wt. 10.5		d 4.052		Set At 3600	
Perforations: From: 9950 To: 9954		Perforations: From: 9957 To: 9972		Packer Set At 9797		Connection Transwestern	
Producing Thru Tbg. 9950		Reservoir Temp. °F 133		Mean Annual Temp. °F 60		Baro. Press - P _a 13.2	
G _g .731		% CO ₂ .42		% N ₂ .33		% H ₂ S	
Prover 9950		Meter Run 3.068		Taps flg.			

FLOW DATA				TUBING DATA			CASING DATA		Duration of Flow
NO.	Prover Line Size	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	
SI						2260		Pkr.	48 hr.
1.	3 X 1.500		530	5	148	2230		"	1 hr.
2.	3 X 1.500		530	19	124	2180		"	1 hr.
3.	3 X 1.500		535	52	88	2100		"	1 hr.
4.	3 X 1.500		540	102	70	2000		"	1 hr.

RATE OF FLOW CALCULATIONS							
NO.	COEFFICIENT (24 HOUR)	$h_w P_m$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1.	11.13	52.12	543.2	.9248	1.170	1.043	655
2.	11.13	101.59	543.2	.9436	1.170	1.049	1310
3.	11.13	168.84	548.2	.9741	1.170	1.066	2283
4.	11.13	237.54	553.2	.9905	1.170	1.075	3294
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl
1.	.81	608	1.52	.919	23.63	
2.	.81	584	1.46	.909	57.0	
3.	.82	548	1.37	.880	.731	XXXXXXXXXX
4.	.83	530	1.32	.865	668	G Mix .849
5.					401	664 P.S.I.A. 441 R

NO.	P _i ²	P _w	P _w ²	P _c ² - P _w ²
1.	5031.9	2244.7	5038.8	128.6
2.	4810.1	2199.5	4837.6	329.8
3.	4465.6	2132.7	4548.6	618.9
4.	4053.9	2055.4	4224.8	942.6
5.				

Absolute Open Flow **14,823** Mcfd @ 15.025 Angle of Slope θ **49** Slope, n **.884**

Remarks: **13.3 BBLs CONDENSATE PRODUCED DURING TEST**

Approved By Division _____ Conducted By: **WELL TESTERS** Calculated By: **KS** Checked By: **KS**

THE WESTERN COMPANY OF AMERICA

WATER ANALYSIS

HOBBS, NEW MEXICO LAB ANALYSIS #: HE010251

GENERAL INFORMATION

OPERATOR: Mewbourne Oil Company	DEPTH: 0
WELL: Chalk Bluff Fed #3	DATE SAMPLED:
FIELD:	DATE RECEIVED: 02/24/93
FORMATION:	SUBMITTED BY: Leonard Pounds
COUNTY: Eddy	WORKED BY: M Keith
STATE: NM	PHONE #: 505-392-5556

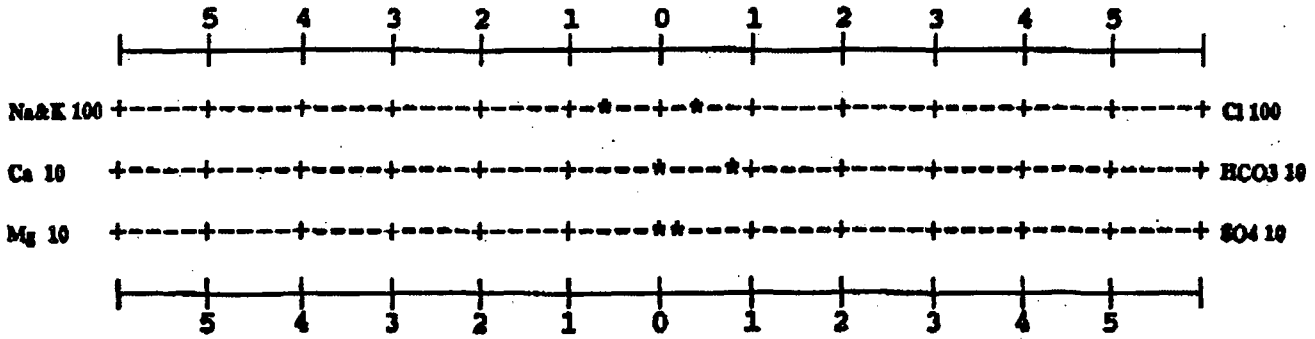
SAMPLE DESCRIPTION: all water

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY: 1.003 @ 70 °F	PH: 6.75
RESISTIVITY (MEASURED): 3 OHMS @ 0 °F	
IRON (FE++): 150 PPM	SULFATE: 100 PPM
CALCIUM: 10 PPM	TOTAL HARDNESS: 50 PPM
MAGNESIUM: 6 PPM	BICARBONATE: 487 PPM
CHLORIDE: 1595 PPM	SODIUM CHLORIDE (CALC): 2624 PPM
SODIUM+POTASS: 1243 PPM	TOT. DISSOLVED SOLIDS: 3474 PPM
KCL :no trace	OIL :none

REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST M Keith

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL CONS. COMMISSION

Drawer DD
Artesia, NM 80620

05F

FORM APPROVED
Budget: Bureau No. 104-4000
Expires: March 31, 1997

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

RECEIVED

3. Address and Telephone No.

P.O. Box 5270 Hobbs, New Mexico 88241

APR 26 1993

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1980' FSL & ^{990'} 1980' FEL
Sec. 1-T18S-R27E

C.L.D.

5. Lease Designation and Serial No.

NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed. Com. #3

9. API Well No.

30-015-27163

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- Notice of Intent
- Subsequent Report
- Final Abandonment Notice

TYPE OF ACTION

- Abandonment
- Recompletion
- Plugging Back
- Casing Repair
- Altering Casing
- Other
- Change of Plans
- New Construction
- Non-Routine Fracturing
- Water Shut-Off
- Conversion to Injection
- Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

scribe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

- 1) Formation: Morrow
- 2) Amount of water produced 10 BW/mo.
- 3) Water analysis attached
- 4) Water is stored on lease in fiberglass tank
- 5) Produced water will be trucked by I & W Inc.
- 6) The disposal well is I & W Inc., Walter Solt #1, Unit Letter L, Section 5-T18S-R28E Eddy County, New Mexico

SWD #318

14. I hereby certify that the foregoing is true and correct

Signed *David R. Glass*

Title Production Engineer

Date March 4, 1993

(This space for Federal or State office use)

Approved by (ORIG. SGD) DAVID R. GLASS
Conditions of approval, if any:

Title PETROLEUM ENGINEER

Date 4/22/93

SEE ATTACHED

* U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

COMPANY : MENSOURNE DIL LEASE : CHALK BLUFF FED.COMWELL NO. : 3
 UNIT : I SECTION : 1 TOWNSHIP : 15
 L : 9961 H : 9961 L/H : 1 G/GMEX : 0.849
 %CO2 : 0.42 %N2 : 0.33 H2S : DATE :
 d : 2.278 Fr : 0.012892 GH : 8456.9 RANGE : 27
 Pc = 2273.2 Pc2 = 5167.4 *
 Pt2 = 5031.9 Pw = 2244.7 *
 4810.1 2199.5 *
 4465.6 2132.7 *
 4053.0 2055.4 *

VOL 1 : 655 PSIA 1 : 2243.2 RESV.TEMP 173.6 Pc2-Pw2= 128.6 Pw2 = 5038.8 *
 VOL 2 : 1310 PSIA 2 : 2193.2 329.8 4837.6 *
 VOL 3 : 2283 PSIA 3 : 2113.2 SHUT-IN PR= 2273.2 618.9 4548.6 *
 VOL 4 : 3294 PSIA 4 : 2013.2 942.6 4224.8 *

PCR : 668 n = 0.884 *
 TCR : 401 *

Pc2/(Pc2-Pw2) = 40.184 *
 15.666 *
 8.350 *
 5.482 *

LINE		RATE 1		RATE 2		RATE 3		RATE 4	
		'1ST	'2ND	'1ST	'2ND	'1ST	'2ND	'1ST	'2ND
1	QM	0.655	0.655	1.310	1.310	2.283	2.283	3.294	3.294
2	TW	534	534	534	534	534	534	534	534
	Ts	633.6	633.6	633.6	633.6	633.6	633.6	633.6	633.6
	T	583.8	583.8	583.8	583.8	583.8	583.8	583.8	583.8
	PR (est)	3.36		3.28		3.16		3.01	
5	Z(est)	0.727	0.738	0.727	0.736	0.728	0.733	0.731	0.730
6	TZ	424.5	430.8	424.6	429.5	425.2	427.7	426.5	426.0
7	GH/TZ	19.924	19.629	19.918	19.691	19.891	19.774	19.829	19.852
8	eS	2.111	2.088	2.110	2.093	2.108	2.099	2.104	2.105
9	l-e-S	0.526	0.521	0.526	0.522	0.526	0.524	0.525	0.525
10	Pt	2243.2	2243.2	2193.2	2193.2	2113.2	2113.2	2013.2	2013.2
11	Pt2 /1000	5031.9	5031.9	4810.1	4810.1	4465.6	4465.6	4053.0	4053.0
12	Fr	0.012892	0.012892	0.012892	0.012892	0.012892	0.012892	0.012892	0.012892
13	Fc=FrTZ	5.472	5.555	5.474	5.537	5.481	5.514	5.498	5.492
14	FcQm	3.58	3.64	7.17	7.25	12.51	12.59	18.11	18.09
15	L/H(FcQm)	12.8	13.2	51.4	52.6	156.6	158.5	328.0	327.3
16	Fw	6.761363	6.896568	27.05758	27.47157	82.32401	82.97298	172.0865	171.83059
17	Pw2	5038.7	5038.8	4837.2	4837.6	4547.9	4548.6	4225.1	4224.8
18	Ps2	10636.7	10519.8	10208.7	10123.1	9588.7	9547.9	8887.4	8894.3
19	Ps	3261.4	3243.4	3195.1	3181.7	3096.6	3090.0	2981.2	2982.3
20	P	2752.3	2743.3	2694.2	2687.4	2604.9	2601.6	2497.2	2497.8
21	Pr	4.12	4.11	4.03	4.02	3.90	3.89	3.74	3.74
22	Tr	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
23	Z	0.738	0.738	0.736	0.735	0.733	0.732	0.730	0.730

[Pc2/Pc2-Pw2]n = 26.181 *
 11.386 *
 6.528 *
 4.500 *
 AOF= Q 17.148 *
 14.915 *
 14.903 *
 14.823 *



Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Newbourne Oil Co.
Attention: Mr. R. Jones
P. O. Box 5270
Hobbs, New Mexico 88240

SAMPLE IDENTIFICATION: Chalk bluff #3
COMPANY: Newbourne Oil Co.
LEASE:
PLANT:

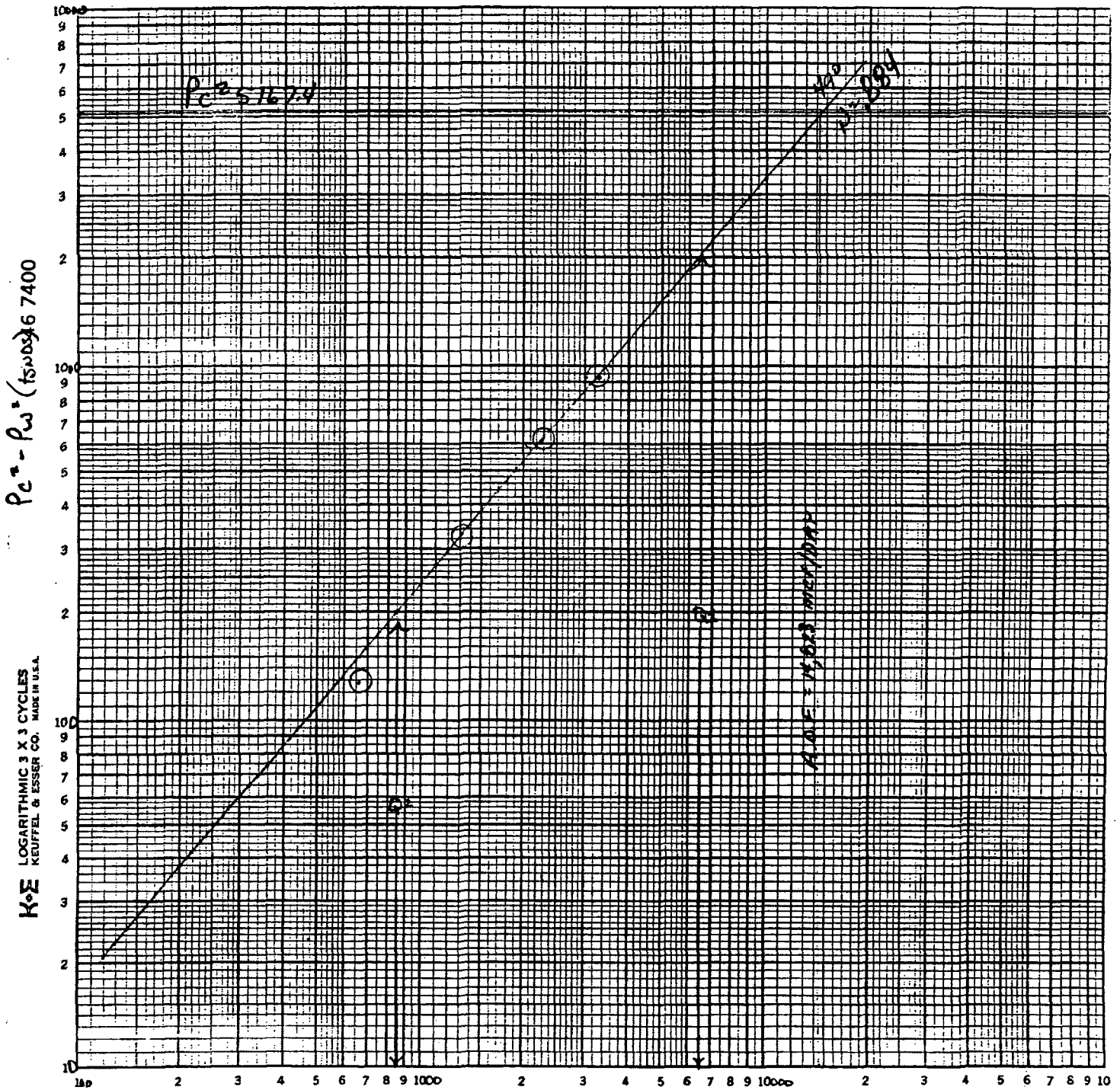
SAMPLE DATA:	DATE SAMPLED:	3/4/93 12:30PM	GAS (XX)	LIQUID ()
	ANALYSIS DATE:	03-05-93	SAMPLED BY:	R. Jones
	PRESSURE - PSIG	530.0	ANALYSIS BY:	Rolland Perry
	SAMPLE TEMP. °F			
	ATMOS. TEMP. °F			

REMARKS:

COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM		
Hydrogen Sulfide (H2S)				
Nitrogen (N2)	0.33			
Carbon Dioxide (CO2)	0.42			
Methane (C1)	83.10			
Ethane (C2)	8.14	2.164		
Propane (C3)	3.14	0.862		
I-Butane (IC4)	0.40	0.130		
N-Butane (NC4)	0.86	0.270		
I-Pentane (IC5)	0.39	0.140		
N-Pentane (NC5)	0.41	0.147		
Hexane (C6)	2.81	1.214		
Heptanes Plus (C7+)	0.00	0.000		
	<u>100.00</u>	<u>4.927</u>		
BTU/CU.FT. - DRY	1269	MOLECULAR WT.	21.1701	
AT 14.650 DRY	1265			
AT 14.650 WET	1239	26# GASOLINE -	1.591	
AT 15.025 DRY	1298			
AT 15.025 WET	1304			
SPECIFIC GRAVITY -				
CALCULATED	0.731			
MEASURED				

MEWBOURNE OIL COMPANY
 Chalk-Bluff Federal Com. Well #3
 1-18S-27E
 Eddy County, New Mexico
 3/4/93



Q MCF/DAY

$\text{Log } Q_1 = 6500; \text{Log} = 3.81291$

$\text{Log } Q_2 = 850; \text{Log} = 2.92942$

$\text{Slope } N = .88349 = .884$

Submit in duplicate to appropriate district office See Rule 401 & Rule 1122

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

RECEIVED APR 18 1993

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator MEYER OIL COMPANY				Lease or Unit Name CHALK BLUFF FEDERAL COM.			
Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special				Test Date 3/4/93		Well No. 3	
Completion Date 1/16/93		Total Depth 10150		Plug Back TD 10102		Elevation GL 3628'	
Csg. Size 4 1/2		Wt. d 10.5 4.052		Set At 3600 10150		Perforations: From: 9950 To: 9954	
Tbg. Size 2 7/8 & 2 3/8		Wt. d 4.7 & 6.5 1.91 2.441		Set At 9972		Perforations: From: 9957 To: 9972	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple subgke				Packer Set At 9797		Formation MORROW	
Producing Thru tbg.		Reservoir Temp. °F 133		Mean Annual Temp. °F 60		Baro. Press - P _a 13.2	
k 9950		H 9950		G _g .731		% CO ₂ .42	
				% N ₂ .33		% H ₂ S Prover	
						Meter Run 3.068	
						Taps flg.	

FLOW DATA				TUBING DATA				CASING DATA		Duration of Flow
NO.	Prover Line Size	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI						2260		Pkr.		48 hr.
1.	3 X 1.500		530	5	148	2230		"		1 hr.
2.	3 X 1.500		530	19	124	2180		"		1 hr.
3.	3 X 1.500		535	52	88	2100		"		1 hr.
4.	3 X 1.500		540	102	70	2000		"		1 hr.
5.										

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, F _{spv}	Rate of Flow Q, Mcfd
1.	11.13	52.12	543.2	.9248	1.170	1.043	655
2.	11.13	101.59	543.2	.9436	1.170	1.049	1310
3.	11.13	168.84	548.2	.9741	1.170	1.066	2283
4.	11.13	237.54	553.2	.9905	1.170	1.075	3294
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P. L Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
1.	.81	608	1.52	.919	23.63	57.0	.731	XXXXXX	668	401
2.	.81	584	1.46	.909				XXXXXX		
3.	.82	548	1.37	.880				XXXXXX		
4.	.83	530	1.32	.865						
5.										

P _c 2273.2		P _w 5167.4		1) $\frac{P_c^2}{P_c^2 - P_w^2} = 5.4821$		2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 4.500$	
NO.	P _i ²	P _w	P _w ²	P _c ² - P _w ²	AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 14,823$		
1.	5031.9	2244.7	5038.8	128.6			
2.	4810.1	2199.5	4837.6	329.8			
3.	4465.6	2132.7	4548.6	618.9			
4.	4053.9	2055.4	4224.8	942.6			
5.							

Absolute Open Flow **14,823** Mcfd @ 15.025 Angle of Slope θ **49** Slope, n **.884**

Remarks: **13.3 BBLs CONDENSATE PRODUCED DURING TEST**

Approved By Division	Conducted By: PRO WELL TESTERS	Calculated By: KS	Checked By: KS
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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Oil & Gas Division
811 S. 1st
Artesia, NM 88212

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

CSF

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Mewbourne Oil Company

3. Address and Telephone No.

P. O. Box 5270, Hobbs, NM 88241 505-393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1980' FSL & 990' FEL of Section 1, T18S, R27E

Designation and Serial No.
NM 0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Chalk Bluff Fed. Comm. #3

9. API Well No.

30-015-27163

10. Field and Pool, or Exploratory Area

N. Illinois Camp Morrow

11. County or Parish, State

Eddy

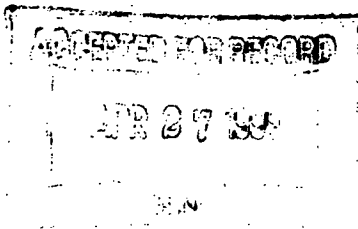
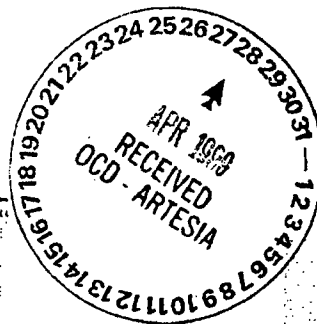
12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input checked="" type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Add Morrow perforations 9860' to 9870'.



RECEIVED
APR 15 11:11 AM '99

(ORIG. SGD.) GARY GOURLEY

14. I hereby certify that the foregoing is true and correct

Signed Jerry Edgar Title District Manager Date 04/15/99

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.

Map ID No. 98

Artificial Penetration Review

OPERATOR Newbourne Oil

STATUS Active

LEASE Chalk Bluff 6 State

LOCATION Sec. 6-T18S-R27E

WELL NUMBER 1

MUD FILLED BOREHOLE NA

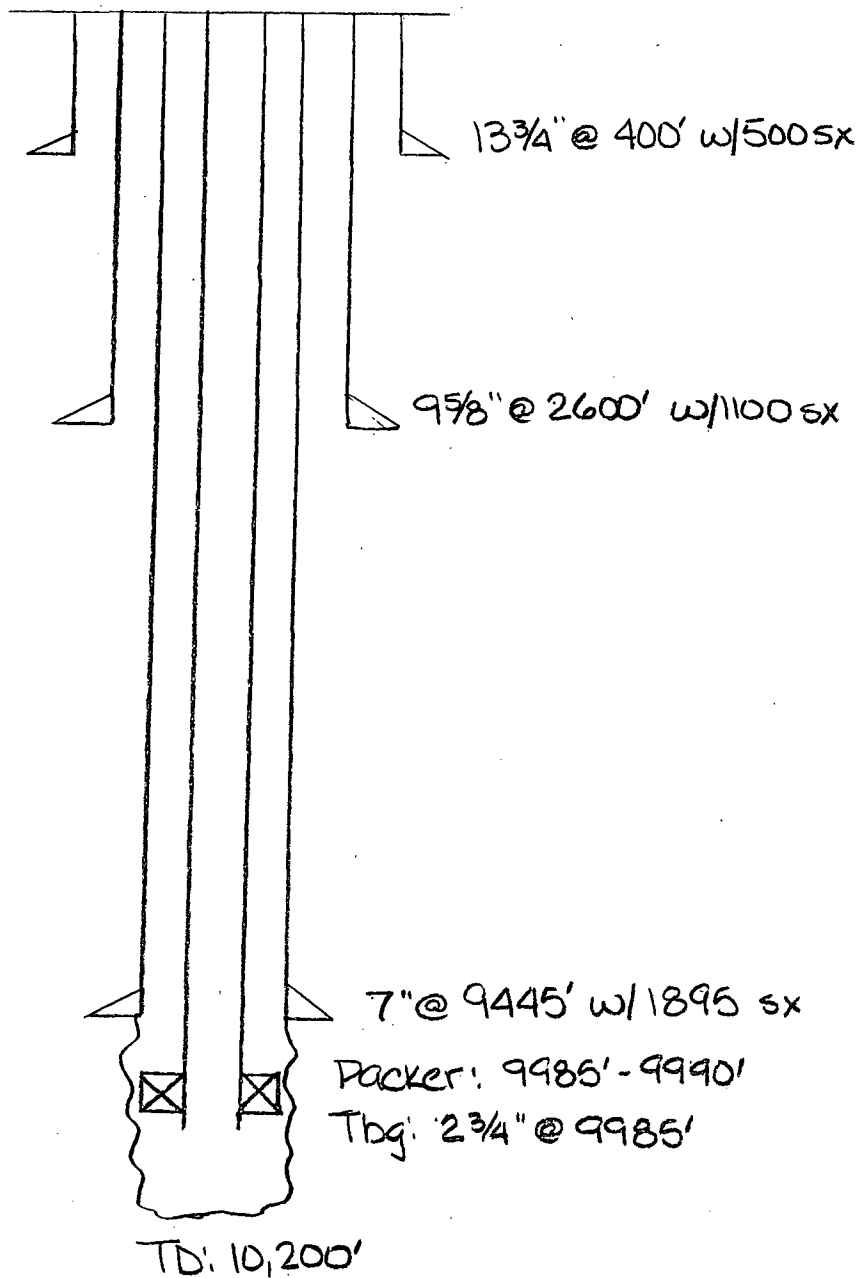
DRILLED 4/16/92

TOP INJECTION ZONE _____

PLUGGED NA

API NO. 30-015-26943

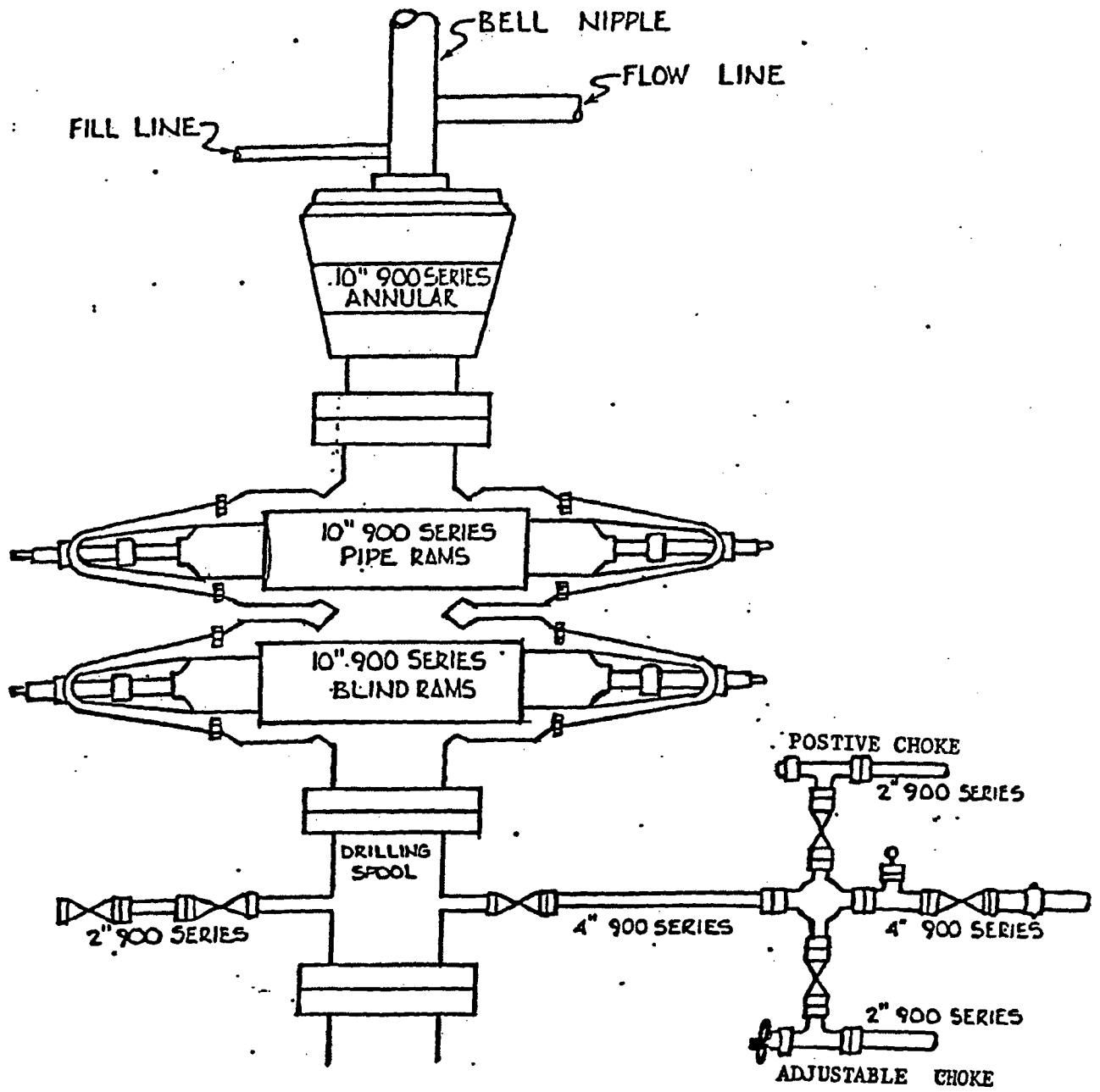
REMARKS:



MAP ID NO. 98

**MEWBOURNE OIL CO.
CHALK BLUFF 6 STATE NO. 001**

API NO. 30-015-26943



Mewbourne Oil Company
 990' FSL & 730' FWL
 Sec. 6-T18S-R28E
 Chalk Bluff "6" State #1

BOP Diagram

Submit to Appropriate District Office
 State Leases - 4 copies
 Fee Lease - 3 copies

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

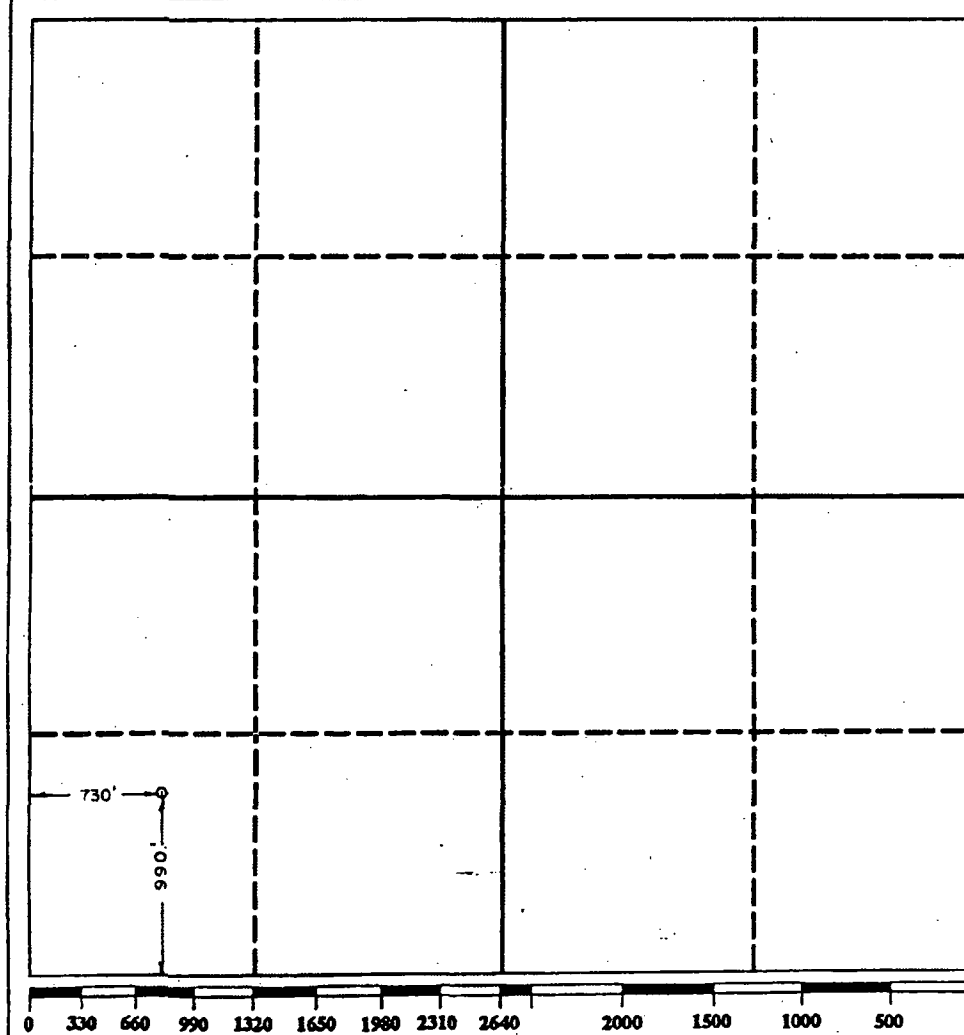
WELL LOCATION AND ACREAGE DEDICATION PLAT
 All Distances must be from the outer boundaries of the section

Operator MEWBOURNE OIL COMPANY			Lease CHALK BLUFF "6" State			Well No. 1		
Unit Letter M	Section 6	Township 18 SOUTH	Range 28 EAST	County NMFM		EDDY		

Actual Footage Location of Well:
 990 feet from the **SOUTH** line and 730 feet from the **WEST** line

Ground level Elev. 3635.0	Producing Formation Morrow	Pool North Illinois Camp Morrow	Dedicated Acreage: 334.98 Acres
-------------------------------------	--------------------------------------	---	---

- Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?
 Yes No If answer is "yes" type of consolidation _____
 If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)
 No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION
 I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: *W.H. Cravey*
 Printed Name: **W.H. Cravey**
 Position: **District Supt.**
 Company: **Mewbourne Oil Co.**
 Date: **July 9, 1991**

SURVEYOR CERTIFICATION
 I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: **6/28/91**
 Signature: *L. Jones*
 Professional Surveyor
 Certificate No. **2680**

Submit to Appropriate District Office
 State Lease - 6 copies
 Fee Lease - 5 copies

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-101
 Revised 1-1-89

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

DISTRICT I
 O. Box 1980, Hobbs, NM 88240

DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

API NO. (assigned by OCD on New Wells)

20-015-26943

5. Indicate Type of Lease
 STATE FEE

6. State Oil & Gas Lease No.
 E-7179

RECEIVED
 JUL 15 1991

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
 DRILL RE-ENTER DEEPEN PLUG BACK

b. Type of Well:
 OIL WELL GAS WELL OTHER

SINGLE ZONE MULTIPLE ZONE

2. Name of Operator
 Mewbourne Oil Company

3. Address of Operator
 P.O. Box 5270 Hobbs, New Mexico 88241

4. Well Location
 Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line
 Section 6 Township 18S Range 28E NMPM Eddy County

7. Lease Name or Unit Agreement Name
 Chalk Bluff "6" State

8. Well No.
 1

9. Pool name or Wildcat
 North Illinois Camp *Morrow*

10. Proposed Depth
 10,200'

11. Formation
 Morrow

12. Rotary or C.T.
 Rotary

13. Elevations (Show whether DF, RT, GR, etc.)
 3635' G.L.

14. Kind & Status Plug Bond
 Blanket on file

15. Drilling Contractor
 WEK Drilling Co.

16. Approx. Date Work will start
 August 10, 1991

17. PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
17-1/2"	13-3/8"	68#	400'	500	Surface
12-1/4"	9-5/8"	36#	2,600'	1000	Surface
7-7/8"	5-1/2"	17#	10,200'	600	Back 6,000'

Blow Out Preventor: Schaffer LWS or equivalent (Double Ram Hydraulic) 900 series.
 Hydril 900 series annular preventor. Grant rotating head,
 totco flow monitors on pits.

Mud Program:
 0' - 400' Fresh water with spud mud. Paper for LCM material
 400' - 2,600' Fresh water with LCM as needed.
 2,600' - 8,400' Cut brine with lime.
 8,400' - 10,200' Cut brine with Drispac, salt gel, lime, soda ash
 Wt. 9.2-9.6 ppg WL 10 cc's or less

Gas is not dedicated.

APPROVAL VALID FOR 10 DAYS
 PERMIT EXPIRES 8/11/92
 UNLESS DRILLING UNDERWAY

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Mike Williams TITLE District Supt. DATE July 11, 1991
 TYPE OR PRINT NAME _____ TELEPHONE NO. _____

(This space for State Use) ORIGINAL SIGNED BY
 MIKE WILLIAMS

APPROVED BY SUPERVISOR DISTRICT II TITLE _____ DATE FEB 11 1992

CONDITIONS OF APPROVAL, IF ANY:

NSL-R-9631

Handwritten notes:
 1-15-91
 2-14-92
 uper hat API

RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources Department

APR 3 1992

Form C-103
Revised 1-1-89

disc
up

Submit 3 Copies
to Appropriate
District Office

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MAR 23 1992

O. C. D.
ARTESIA OFFICE

WELL API NO.
30-015-26943

5. Indicate Type of Lease
STATE FEE

6. State Oil & Gas Lease No.
E-7179

7. Lease Name or Unit Agreement Name

CHALK BLUFF "6" STATE

8. Well No.

1

9. Pool name or Wildcat

NORTH ILLINOIS CAMP MORROW

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
OIL WELL GAS WELL OTHER

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input checked="" type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
WELL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input checked="" type="checkbox"/>	
OTHER: <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

2/18/92 - Spud 7:45 AM 2/17/92. Cemented 13-3/8" casing at 400' with 100 sxs Class "C" + 10 pps Calseal + 5 pps Gilsonite + 1/2 pps Flocele + 2% CaCl₂ and 200 sxs Class "C" + 6% gel + 1/2 pps Flocele + 5# gilsonite + 2% CaCl₂. Tailed in with 200 sxs Class "C" + 2% CaCl₂. Plug down 4:15 PM 2/17/92. Pressure tested casing to 1000#. Float held okay. Did not circulate cement. WOC 3 hrs. Ran 1" and tagged at 190'. Cemented with 150 sxs Class "C" Neat. Circulated 20 sacks to pit. Total 12-1/4 hrs. WOC.

2/22/92 - Ran 9-5/8" 24# J-55 casing set at 2600' and cemented with 100 sxs Class "C" + 10# calseal + 1/2 pps Flocele + 5 pps Gilsonite + 2% CaCl₂ and 700 sxs Class "C" Lite + 1/2 pps Flocele + 5 pps Gilsonite. Tailed in with 300 sxs Class "C" + 2% CaCl₂. Had full returns while cementing. Plug down at 10:30 PM 2/22/92. Pressure tested casing to 1000# for 30 mins, float held okay. Circ 65 sxs to pit. WOC 8 1/2 hours.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Raymond Thompson TITLE Engr. Oprns. Secretary DATE 3/19/92

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use)
ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II

APR 23 1992

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

CISF
DP +

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MAR 23 1992

O.C.D.
ARTESIA OFFICE

WELL API NO. 30-015-26943
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. E-7179
7. Lease Name or Unit Agreement Name CHALK BLUFF "6" STATE
8. Well No. 1
9. Pool name or Wildcat NORTH ILLINOIS CAMP MORROW

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER
2. Name of Operator Mewbourne Oil Company ✓
3. Address of Operator P. O. Box 7698, Tyler, Texas 75711
4. Well Location Unit Letter <u>M</u> : <u>730</u> Feet From The <u>West</u> Line and <u>990</u> Feet From The <u>South</u> Line Section <u>6</u> Township <u>18S</u> Range <u>28E</u> NMPM <u>Eddy</u> County
10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
DRILL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input checked="" type="checkbox"/>	
OTHER: _____ <input type="checkbox"/>		OTHER: _____ <input type="checkbox"/>	

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

3/14/92 - Ran 7" 26# S-95 casing set at 9445'. Bottom of packer at 7096'. DVT at 7033'.
CEMENTED 1ST STAGE with 325 sacks Class "H" + 2 pps KCL + .3% CFR-3 + .4% Halad 22A + 5 pps Gilsonite + 5 pps Silicalite & 300 sacks Class "H" + 2 pps KCL + .3% CFR-3 + .4% Halad 22A + 5 pps Silicalite. Plug down at 9:00 AM 3/15/92. Pressure tested casing to 2600# and set packer. Checked float collar. Held okay. Did not have returns while cementing. Dropped bomb and opened DVT at 9:30 AM. Pumped 1 bbl and had full returns. Circulated bottoms up from DVT. Did circulate cement.
CEMENTED 2ND STAGE with 1170 sacks H/L + 1/2 pps Flocele + 5 pps Silicalite + 5 pps salt. Tailed in with 100 sacks Class "H" + 5# Silicalite + 2 pps KCL. Had full returns while cementing. Started losing returns with 140 bbls displacement gone. Lost complete returns with 240 bbls of displacement gone. Plug down at 11:45 AM 3/15/92. Closed DVT. Held okay. Did not circulate on 2nd stage. WOC 19-1/4 hours.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE *Raymond Thompson* TITLE Engr. Oprns. Secretary DATE 3/19/92

TYPE OR PRINT NAME _____ TELEPHONE NO. _____

(This space for State Use) ORIGINAL SIGNED BY
 MIKE WILLIAMS
 SUPERVISOR, DISTRICT II

FILED BY _____ TITLE _____ DATE MAR 26 1992

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

CISF
Op +

DISTRICT I
Box 1980, Hobbs, NM 88240

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL API NO. 30-015-26943
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. E-7179
7. Lease Name or Unit Agreement Name CHALK BLUFF "6" STATE
8. Well No. 1
9. Pool name or Wildcat NORTH ILLINOIS CAMP MORROW

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: OIL WELL GAS WELL OTHER

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

4. Well Location
Unit Letter M 730 Feet From The West Line and 990 Feet From The South Line
Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:	SUBSEQUENT REPORT OF:
PERFORM REMEDIAL WORK <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>
ORARILY ABANDON <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
OR ALTER CASING <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>
OTHER: <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
	CASING TEST AND CEMENT JOB <input checked="" type="checkbox"/>
	OTHER: <input type="checkbox"/>

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

3/24/92 - Ran 4-1/2" 11.6# N-80 liner. Top of liner at 9077'. Set liner at 10,198'. Cemented with 750 gals mud flush followed by 175 sxs Class "H" + 5 pps KCL + 5 pps Silicalite + 6/10% Halad 22A + 4/10% CRF-3. Plug down to 10,151' at 7:15 AM 3/23/92 with full returns. Checked float. Held okay.

4/10/92 - Tested casing to 1000# for 30 mins, held okay. Drilled out 120' cement in 4 1/2" liner. Drilled through at 9200'. Tagged up at 10,103'. Drilled down to landing collar at 10,151'. Circulated hole. Tested casing to 1000# for 30 mins. Held OK.

4/11/92 - Western spotted acid over perforation interval. Ran CBL from TD 10,159' to 620'. Had good bond around 4 1/2" liern from TD to 9600'.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE Engr. Oprns. Secretary DATE 4/22/92

TYPE OR PRINT NAME _____ TELEPHONE NO. _____

(This space for State Use) ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II

APPROVED BY _____ TITLE _____ DATE MAY 25 1992

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

CSF
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DISTRICT I
Box 1980, Hobbs, NM 88240

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL API NO. 30-015-26943
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. E-7179
7. Lease Name or Unit Agreement Name CHALK BLUFF "6" STATE
8. Well No. 1
9. Pool name or Wildcat NORTH ILLINOIS CAMP MORROW
10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3635' GR

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"
(FORM C-101) FOR SUCH PROPOSALS.) RECEIVED

1. Type of Well: OIL WELL GAS WELL OTHER APR 24 1992

2. Name of Operator
Mewbourne Oil Company O. C. D.

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line
Section 6 Township 18S Range 28E NMPM Eddy County

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:	SUBSEQUENT REPORT OF:
PERFORM REMEDIAL WORK <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
DRILL OR ALTER CASING <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>
OTHER: <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
	CASING TEST AND CEMENT JOB <input type="checkbox"/>
	OTHER: Perforate and acidize <input checked="" type="checkbox"/>

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

4/14/92 - Ran 2-3/8" tubing set at 9990'. Tested to 8000#. Held okay. Set packer with 16 points compression.

4/15/92 - Perforated Lower Morrow 10,084' - 10,092'. 8' net, 1 SPF, 9 holes.

4/16/92 - Acidized perms with 2600 gals 7 1/2% HCL + additives and 1367 scf/bbl N² & 15 frac balls. MTP 3800#. Max TP 7600#. Avg 6300#. Well started flowing to pit on 10/64" choke. FTP 3000#.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE Engr. Oprns. Secretary DATE 4/22/92

TYPE OR PRINT NAME _____ TELEPHONE NO. _____

(This space for State Use)

ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II

APPROVED BY _____ TITLE _____ DATE MAY 25 1992

CONDITIONS OF APPROVAL, IF ANY:

SEC 6 TWN 18s RGE 28e

API # 30-015-26943

OPERATOR Mcwbourne Oil

WELL NAME Chalk Bluff "6" St. #1

STATE OCD TOPS AS PER Darrell Moore DATE 5/27/92

Southeastern New Mexico

Northwestern New Mexico

T. Anhy _____	T. Canyon _____	T. Ojo Alamo _____	T. Penn. "B" _____
T. Salt _____	T. Strawn <u>8910</u>	T. Kirtland-Fruitland _____	T. Penn. "C" _____
B. Salt _____	T. Atoka <u>9593</u>	T. Pictured Cliffs _____	T. Penn. "D" _____
T. Yates _____	T. Miss _____	T. Cliff House _____	T. Leadville _____
T. 7 Rivers _____	T. Devonian _____	T. Menefee _____	T. Madison _____
T. Queen <u>1209</u>	T. Silurian _____	T. Point Lookout _____	T. Elbert _____
T. Grayburg <u>1560</u>	T. Montoya _____	T. Mancos _____	T. McCracken _____
T. San Andres <u>2062</u>	T. Simpson _____	T. Gallup _____	T. Ignacio Otzte _____
T. Glorieta <u>3632</u>	T. McKee _____	Base Greenhorn _____	T. Granite _____
T. Paddock _____	T. Ellenburger _____	T. Dakota _____	T. _____
T. _____ bry _____	T. Gr. Wash _____	T. Morrison _____	T. _____
T. _____	T. Delaware Sand _____	T. Todilto _____	T. _____
T. Drinkard _____	T. Bone Springs _____	T. Entrada _____	T. _____
T. Abo _____	T. Morrow <u>9842</u>	T. Wingate _____	T. _____
T. Wolfcamp <u>6910</u>	T. _____	T. Chinle _____	T. _____
T. Penn _____	T. _____	T. Permian _____	T. _____
T. Cisco (Bough C) _____	T. _____	T. Penn "A" _____	T. _____

OIL OR GAS SANDS OR ZONES

No. 1, from.....to..... No. 3, from.....to.....
 No. 2, from.....to..... No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....
 No. 2, from.....to.....feet.....
 No. 3, from.....to.....feet.....

REMARKS: Perils reported (10,084-10,092) are wrong.

KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT



DRILLING CO., INC. — OIL WELL DRILLING CONTRACTORS.

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

March 31, 1992

Mewbourne Oil Company
P.O. Box 5270
Hobbs, N.M. 88202

REF: Chalk Bluff "6" St. #1

Gentlemen:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

400' - 3/4°	5168' - 2°	6351' - 2 3/4°
912' - 1°	5262' - 2 1/2°	6443' - 2 1/2°
1405' - 3/4°	5316' - 2 1/2°	6534' - 2 3/4°
1878' - 1°	5419' - 2 3/4°	6625' - 1 1/4°
2367' - 1°	5513' - 3°	7151' - 3/4°
2600' - 1 1/4°	5605' - 2 1/2°	7278' - 1 1/4°
3082' - 2 1/4°	5698' - 2 1/2°	7770' - 1 1/4°
3176' - 1 1/2°	5792' - 2 1/2°	8289' - 1°
3299' - 1 1/4°	5885' - 2 1/4°	8778' - 1°
3791' - 1 1/2°	5979' - 2 3/4°	9282' - 1 1/4°
4287' - 2 1/4°	6072' - 2 3/4°	9450' - 1 3/4°
438' - 1 1/4°	6166' - 3 1/4°	10200' - 1 1/2°
4752' - 1 1/4°	6259' - 3°	

Sincerely,

Arnold Newkirk
Vice President

STATE OF NEW MEXICO)
)
COUNTY OF CHAVES)

The foregoing was acknowledged before me this 31st day of March 1992 by Arnold Newkirk.

MY COMMISSION EXPIRES

October 07, 1992

NOTARY PUBLIC

Submit to Appropriate District Office
 Lease - 6 copies
 Lease - 5 copies
 DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
 Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

Form C-105
 Revised 1-1-89

CISF
 Blm
 BMM
 5/2/92

RECEIVED
 MAY - 4 1992

WELL API NO.
 30-015-26943

5. Indicate Type of Lease
 STATE FEE

6. State Oil & Gas Lease No.
 E-7179

WELL COMPLETION OR RECOMPLETION REPORT AND LOGS

1a. Type of Well:
 OIL WELL GAS WELL DRY OTHER _____

b. Type of Completion:
 NEW WELL WORK OVER DEEPEN PLUG BACK DIFF RESVR OTHER _____

2. Name of Operator
 MEWBOURNE OIL COMPANY

3. Address of Operator
 P. O. Box 7698, Tyler, Texas 75711

4. Well Location
 Unit Letter M : 730 Feet From The WEST Line and 990 Feet From The SOUTH Line
 Section 6 Township 18S Range 28E NMPM EDDY County

7. Lease Name or Unit Agreement Name
 CHALK BLUFF "6" STATE

8. Well No.
 1

9. Pool name or Wildcat
 NORTH ILLINOIS CAMP MORROW

10. Date Spudded 2/17/92 11. Date T.D. Reached 3/21/92 12. Date Compl. (Ready to Prod.) 4/16/92 13. Elevations (DF & RKB, RT, GR, etc.) DF 3339', GR 3324' 14. Elev. Casinghead

15. Total Depth 10,200' 16. Plug Back T.D. 10,151' 17. If Multiple Compl. How Many Zones? _____ 18. Intervals Drilled By Rotary Tools X Cable Tools _____

19. Producing Interval(s), of this completion - Top, Bottom, Name
10,084' - 10,092' - Morrow 20. Was Directional Survey Made Yes

Type Electric and Other Logs Run SDL-DSN, DIL/DLL-MSFL 22. Was Well Cored NO

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB/FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	48# & 68#	400'	17-1/2"	500 sxs - circ	None
9-5/8"	24#	2,600'	12-1/4"	1100 sxs - circ	None
7"	26#	9,445'	7-7/8"	1895 sxs - circ 1st string	None

24. LINER RECORD					25. TUBING RECORD		
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
4-1/2"	9077'	10,198'	175		2-3/8"	9,990'	9,990'

26. Perforation record (interval, size, and number)
10,084' - 10,092' - 8', 1 SPF, 9 holes

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.
 DEPTH INTERVAL 10,084-092' AMOUNT AND KIND MATERIAL USED Acidized with 2600 gals 7 1/2 HCL + additives & 1367 scf/bbl N² & 15 frac balls.

PRODUCTION

28. Date First Production 4/17/92 Production Method (Flowing, gas lift, pumping - Size and type pump) Flowing Well Status (Prod. or Shut-in) Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
4/28/92	24 hours	12/64"		36	1,902	0	52,833:1

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)
2690#	---		36	1,902	0	51.6

29. Disposition of Gas (Sold, used for fuel, vented, etc.) Sold Test Witnessed By Bill Pierce

List Attachments
Logs

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature [Signature] Printed Name Gaylon Thompson Title Engr. Oprns. Sec. Date 4/28/92

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico

Northwestern New Mexico

T. Anhy _____	T. Canyon <u>8,432'</u>	T. Ojo Alamo _____	T. Penn. "B" _____
T. Salt _____	T. Strawn <u>8,944'</u>	T. Kirtland-Fruitland _____	T. Penn. "C" _____
B. Salt _____	T. Atoka <u>9,562'</u>	T. Pictured Cliffs _____	T. Penn. "D" _____
T. Yates <u>478'</u>	T. Miss _____	T. Cliff House _____	T. Leadville _____
T. 7 Rivers <u>596'</u>	T. Devonian _____	T. Menefee _____	T. Madison _____
T. Queen <u>1,209'</u>	T. Silurian _____	T. Point Lookout _____	T. Elbert _____
T. Grayburg <u>1,560'</u>	T. Montoya _____	T. Mancos _____	T. McCracken _____
T. San Andres <u>2,062'</u>	T. Simpson _____	T. Gallup _____	T. Ignacio Otzte _____
T. Glorieta <u>3,626'</u>	T. McKee _____	Base Greenhorn _____	T. Granite _____
T. Paddock _____	T. Ellenburger _____	T. Dakota _____	T. _____
T. Blinebry _____	T. Gr. Wash _____	T. Morrison _____	T. _____
T. Tubb <u>4,736'</u>	T. Delaware Sand _____	T. Todilto _____	T. _____
T. Drinkard <u>5,531'</u>	T. Bone Springs _____	T. Entrada _____	T. _____
T. Abo <u>5,878'</u>	T. Morrow <u>9,664'</u>	T. Wingate _____	T. _____
T. Wolfcamp <u>6,606'</u>	T. Mor. Clast. <u>9,874'</u>	T. Chinle _____	T. _____
T. Penn _____	T. L. Morrow <u>10,006'</u>	T. Permian _____	T. _____
T. Cisco <u>7,742'</u>	T. _____	T. Penn "A" _____	T. _____

OIL OR GAS SANDS OR ZONES

No. 1, from 10,084' to 10,092' No. 3, from _____ to _____
 No. 2, from _____ to _____ No. 4, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from NONE to _____ feet
 No. 2, from _____ to _____ feet
 No. 3, from _____ to _____ feet

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology	From	To	Thickness in Feet	Lithology
0	430	430	Red Bed & Anhydrite				
430	2490	2060	Anhydrite				
2490	2600	110	Anhydrite & Dolomite				
2600	4782	2182	Dolomite				
4782	7520	2730	Dolomite & Lime				
7520	9450	1930	No Returns				
9450	9840	390	Lime				
9840	10028	188	Lime & Shale				
10028	10200	172	Shale				

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Hrazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

dsf
BT
GTT
DP

**REQUEST FOR ALLOWABLE AND AUTHORIZATION
TO TRANSPORT OIL AND NATURAL GAS**

I.

Operator MEWBOURNE OIL COMPANY	Well API No. 30-015-26943
Address P. O. Box 7698, Tyler, Texas 75711	
Reason(s) for Filing (Check proper box) RECEIVED Please explain)	
New Well <input checked="" type="checkbox"/>	Change in Transporter of: Oil <input type="checkbox"/> Dry Gas <input type="checkbox"/> APR 24 1992
Recompletion <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/> Condensate <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	
If change of operator give name and address of previous operator O. C. D. OFFICE	

II. DESCRIPTION OF WELL AND LEASE

Lease Name CHALK BLUFF "6" STATE	Well No. 1	Pool Name, including Formation N. ILLINOIS CAMP MORROW	Kind of Lease State, Federal or Fee	Lease No. E-7179
Location Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line Section 6 Township 18S Range 28E , NMPM , Eddy County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input type="checkbox"/> or Condensate <input checked="" type="checkbox"/> PHILLIPS PETROLEUM COMPANY - TRUCKS	Address (Give address to which approved copy of this form is to be sent) 4001 Pembroke, Odessa, Texas 79761					
Name of Authorized Transporter of Casinghead Gas <input type="checkbox"/> or Dry Gas <input checked="" type="checkbox"/> TRANSWESTERN PIPELINE COMPANY	Address (Give address to which approved copy of this form is to be sent) P.O. Box 1188, Houston, Texas 77251					
If well produces oil or liquids, give location of tanks.	Unit M	Sec. 6	Twp. 18S	Rge. 28E	Is gas actually connected? Yes	When? 4/22/92

If this production is commingling with that from any other lease or pool, give commingling order number:

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well X	New Well X	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
Date Spudded 2/17/92	Date Compl. Ready to Prod. 4/16/92		Total Depth 10,200'		P.B.T.D. 10,151'			
Elevations (DF, RKB, RT, GR, etc.) DF 3339', GR 3324'	Name of Producing Formation MORROW		Top Oil/Gas Pay 10,084'		Tubing Depth 9,990'			
Perforations 10,084' - 10,092'				Depth Casing Shoe ---				
TUBING, CASING AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE		DEPTH SET		SACKS CEMENT			
17-1/2"	13-3/8"		400'		500 - circ			
12-1/4"	9-5/8"		2,600'		1100 - circ			
7-7/8"	7"		9,445'		1895 - circ 1st stg.			
7"	4 1/2" Liner		10,198'		175			

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL. (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.) Post EO-2	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size 6-5-92 comp & BK
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas - MCF

GAS WELL

Actual Prod. Test - MCF/D 2,149 Mcf	Length of Test 24 hours	Bbls. Condensate/MMCF 89.9:1	Gravity of Condensate N/A - 51.6
Testing Method (pilot, back pr.) Back Pressure	Tubing Pressure (Shut-in) N/A	Casing Pressure (Shut-in) ---	Choke Size 12/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gaylon Thompson
Signature
Gaylon Thompson, Engr Oprns. Secretary
Printed Name
April 22, 1992 (903) 561-2900
Date Telephone No.

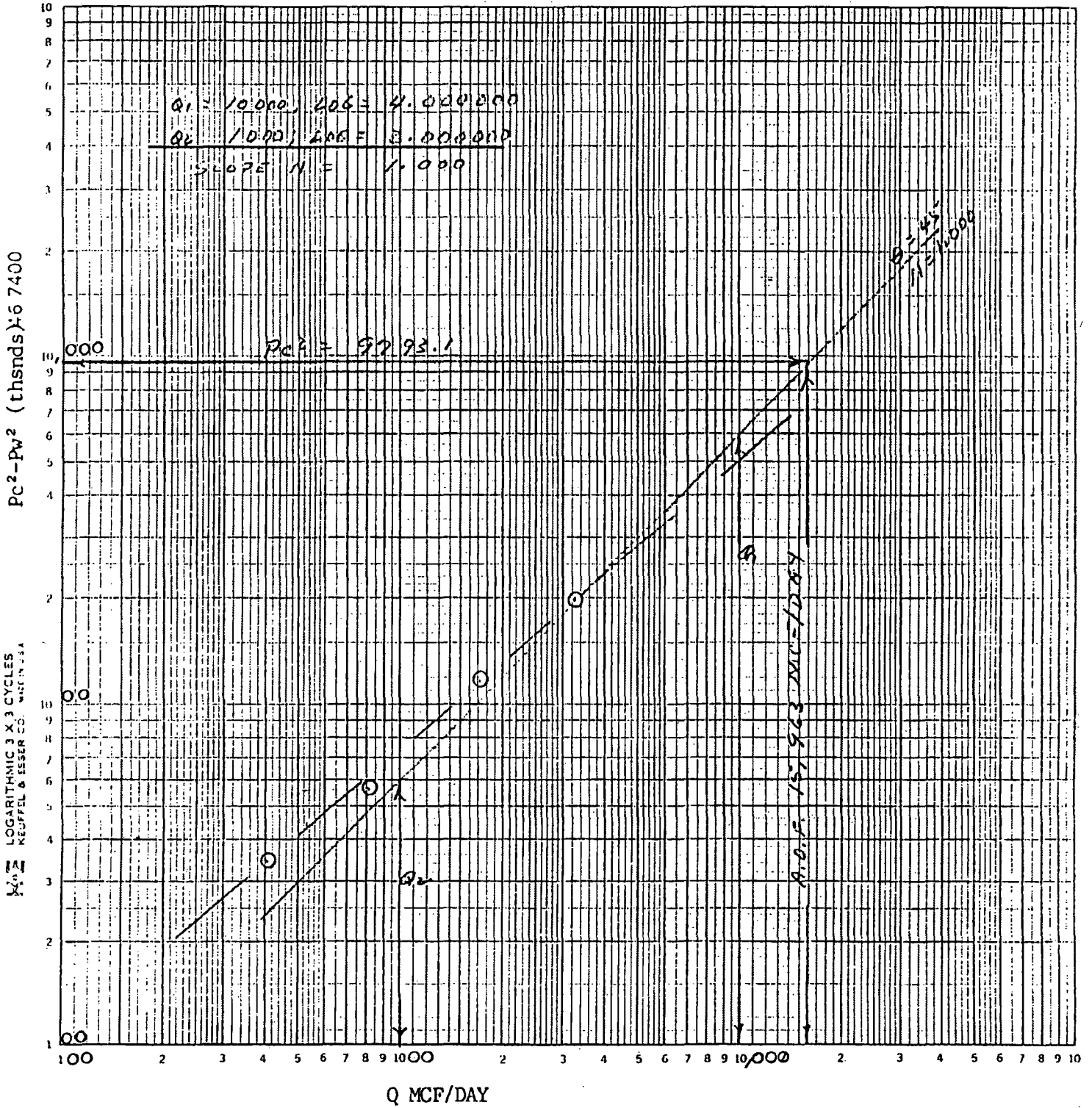
OIL CONSERVATION DIVISION

Date Approved **MAY 25 1992**
By **ORIGINAL SIGNED BY**
MIKE WILLIAMS
Title **SUPERVISOR, DISTRICT II**

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

MEWBOURNE OIL COMPANY
 Chalk Bluff "6" St., Well # 1
 6-18-28
 Eddy County, New Mexico
 4-24-92



Submit in duplicate to appropriate district office
Rule 401 & Rule 1122

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-122
Revised 4-1-91

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

clst
File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator MEWBOURNE OIL COMPANY						Lease or Unit Name CHALK BLUFF '6' St.					
Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special						Test Date 4-24-92			Well No. 1		
Completion Date 4-16-92			Total Depth 10151			Plug Back TD 10151			Elevation		
Csg. Size 7" & 4 1/2"			Wt 26#			Set At 10198			Perforations: From: 10084 To: 10092		
Tbg. Size 2 7/8 & 2 3/8			Wt 6.5			Set At 9976			Perforations: From: To:		
Type Well - Single - Bradenhead - G.G. or G.O. Multiple						Packer Set At 9976			Formation Morrow		
Producing Thru TBG			Reservoir Temp. °F 175 @ 10088			Mean Annual Temp. °F 60			Baro. Press - P. 13.2		
L *10088		H 10088		Gg .643		% CO ₂ .44		% N ₂ .38		% H ₂ S	
								Prover		Meter Run 3.068	
										Taps FLG	
FLOW DATA					TUBING DATA			CASING DATA		Duration of Flow	
NO.	Prover Line Size	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow	
SI						2960		PKR		72 hrs.	
1.	3 X .750		430	34.00	111	2815		"		1 hr.	
2.	3 X 1.000		440	40.00	102	2730		"		1 hr.	
3.	3 X 1.500		435	32.00	78	2590		"		1 hr.	
	3 X 1.750		480	49.00	54	2575		"		1 hr.	
RATE OF FLOW CALCULATIONS											
NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, F _{pw}	Rate of Flow Q, Mcfd				
1.	2.672	122.76	443.2	.9543	1.247	1.035	404				
2.	4.789	134.64	453.2	.9619	1.247	1.035	801				
3.	11.13	119.76	448.2	.9831	1.247	1.045	1708				
4.	15.61	155.46	493.2	1.006	1.247	1.058	3221				
5.											
NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio 40.1 Mcf/tbl.						
1.	.66	571	1.53	.934	A.P. I. Gravity of Liquid Hydrocarbons 51.6 @ 60° Deg.						
2.	.67	562	1.51	.933	Specific Gravity Separator Gas .643 XXXXXXXXXXX						
3.	.66	538	1.44	.916	Specific Gravity Flowing Fluid XXXXX						
4.	.73	514	1.38	.893	Critical Pressure 670 P.S.I.A.			P.S.I.A.			
5.					Critical Temperature 372 R			R			
P _c **3129.4 P _c ² 9793.1											
NO.	P _c ²	P _w	P _w ²	P _c ² - P _w ²	1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{4.956}{\quad}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \frac{4.956}{\quad}$						
1.	**	3073.7	9447.6	345.5	AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \frac{15.963}{\quad}$						
2.	**	3037.7	9227.6	565.5							
3.	**	2933.4	8604.8	1188.3							
4.	**	2795.9	7817.1	1976.0							
5.											
Absolute Open Flow 15,963 Mcfd @ 15.025				Angle of Slope θ 45				Slope, n 1,000			
Remarks: * BHP Instrument Set @ this Depth											
** From Known B.H.P. Calculated back to Surface											
*** Well Made 6.375 BBLS 51.6 @ 60 Condensate & 3.0 BBLS H ₂ O											
Approved By Division			Conducted By: Pro Well Testers			Calculated By: BM			Checked By: BM		

Submit 3 Copies
to Appropriate
District Office

Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 198C, Hobbs, NM 88240

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

NOV 16 1993

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL API NO
30-015-26943

5. Indicate Type of Lease
STATE FEE

6. State Oil & Gas Lease No.
E-7179

7. Lease Name or Unit Agreement Name

Chalk Bluff "6" State

8. Well No.

9. Pool name or Wildcat
North Illinois Camp Morrow

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
OIL WELL GAS WELL OTHER

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc)

3339' DF 3324' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER: <input type="checkbox"/>		OTHER: Add Perforations <input checked="" type="checkbox"/>	

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

11/02/93 Rig up Schlumberger and perf'd Morrow 10,044' - 10,064' with 2 SPF. 20' and 41 holes.

11/03/93 Acidized Morrow formation with 4,000 gal. 7 1/2% FE acid & 1,000 CF/bbl. nitrogen Put well on production.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Brent Thurman TITLE Production Engineer DATE 11/15/93
TYPE OR PRINT NAME Brent Thurman TELEPHONE NO (505) 393-5905

(This space for State Use) ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II

NOV 23 1993

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY.

30-015-20943

OGRIID 14744

PROP 7877

POOL 78890

1923010-0

1923830-G

1923050-W

Oxford[®]

ESSELTE

MADE IN U.S.A.

NO. R753 1/3

IT IS THEREFORE ORDERED THAT:

R-9631
12-19-91

(1) All mineral interests, whatever they may be, from the base of the Abo formation to the base of the Morrow formation, underlying Lots 3 through 7, the SE/4 NW/4, and the E/2 SW/4 (W/2 equivalent) of Section 6, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico, thereby forming a non-standard 334.98-acre gas spacing and proration unit for any and all formations and/or pools developed on 320-acre spacing within said vertical extent, which presently includes, but is not necessarily limited to the Undesignated Empire-Pennsylvanian Gas Pool and the Undesignated North Illinois Camp-Morrow Gas Pool, are hereby pooled, said unit shall be dedicated to a well to be drilled at an unorthodox gas well location 990 feet from the South line and 730 feet from the West line (Unit M) of said Section 6.

5-22-92

Overhead
Auction

Surf - 9416

Overhead
2588 - 9464

9451 - 10295

Overhead Auction
2588 - 9452

R-9631
Camp. Poly.
NSP & NSL
12-19-91

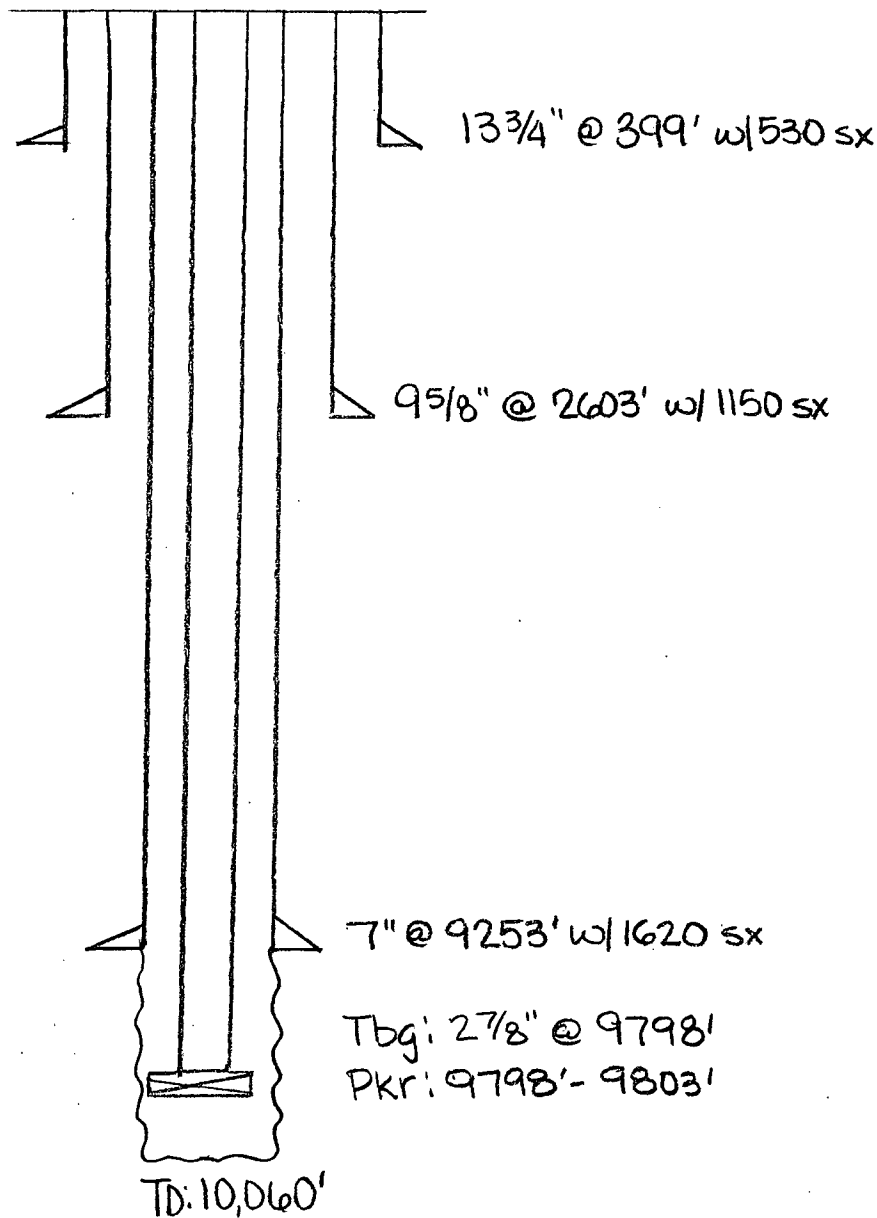
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 100
Artificial Penetration Review

OPERATOR Newbourne Oil
LEASE Chalk Bluff 36 State
WELL NUMBER 1
DRILLED 3/30/93
PLUGGED NA

STATUS Active
LOCATION Sec. 36-T17S-R27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE -3561'
API NO. 30-015-27286

REMARKS:



MAP ID NO. 100

**MEWBOURNE OIL CO.
CHALK BLUFF 36 STATE NO. 001**

API NO. 30-015-27286

Submit to Appropriate District Office
State Lease - 6 copies
Fee Lease - 3 copies

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-10
Revised 1-1-8
elm
BLS
8/8

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87501

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

API NO. (assigned by OCD or New Mexico)
30-015-27286

5. Indicate Type of Lease
STATE FEE

6. State Oil & Gas Lease No.
E-379-4

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
DRILL RE-ENTER DEEPEN PLUG BACK

b. Type of Well:
OIL WELL GAS WELL OTHER
SINGLE ZONE MULTIPLE ZONE

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
P.O. Box 5270, Hobbs, New Mexico 88241

4. Well Location
Unit Letter **M** : **990** Feet From The **West** Line and **660** Feet From The **South** Line
Section **36** Township **17S** Range **27E** NMPM **Eddy** County

7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

8. Well No.
1

9. Pool name or Wildcat
Illinois Camp Morrow North

10. Proposed Depth
10,300'

11. Formation
Morrow

12. Rotary or C.T.
Rotary

13. Elevations (Show whether DF, RT, GR, etc.)
3635' G.R.

14. Kind & Status Plug. Bond
Blanket on file

15. Drilling Contractor
WEK Drilling

16. Approx. Date Work will start
Jan. 31, 1993

17. **PROPOSED CASING AND CEMENT PROGRAM**

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
17-1/2"	13-3/8"	48#	400'	400 sks.	Circ.
12-1/4"	9-5/8"	36#	2,600'	700 sks.	Tie back into surf.
8-3/4"	5-1/2"	17#	10,300'	600 sks.	Bring above top of Abo

Mud Program:

- 0' - 400' Spud mud w/fresh water gel, LCM as needed.
- 400' - 2,600' Fresh water gel & lime. LCM as needed.
- 2,600' - 9,200' Cut brine with lime for pH control. WL-NC.
- 9,200' - 10,300' Cut brine w/Drispac, salt gel, lime, soda ash and starch. Wt. 9.2-9.6 ppg, WL 10 cc or less, Vis. 32-36. Raise wt. accordingly if abnormal pressures are encountered.

POST 10-1
1-12-93
JEWELER 4/2/93

BOP Program:

1500 Series Double Ram Hydraulic BOP w/900 Series Hydril from Intermediate csg. to T.D. 900 Series Hydril on Surface csg. to Intermediate csg. point. PVT system, mud-gas separator, rotating head from Wolfcamp to T.D.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 01/18/93
(505)
TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 393-5905

(This space for State Use)

APPROVED BY Mark Kelly TITLE Geologist DATE 1-19-93

CONDITIONS OF APPROVAL, IF ANY:

NOTIFY N.M.O.C.D. IN SUFFICIENT TIME TO WITNESS CEMENTING THE CASING

APPROVAL VALID FOR 180 DAYS
PERMIT EXPIRES 7-11-93
UNLESS DRILLING UNDERWAY

N.S.C. * R-9315

13 3/8

Submit to Appropriate District Office
 State Lease - 4 copies
 Fee Lease - 3 copies

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form O-1
 Rev. 7-1-88

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

DISTRICT I
 Box 1960, Hobbs, NM 88240

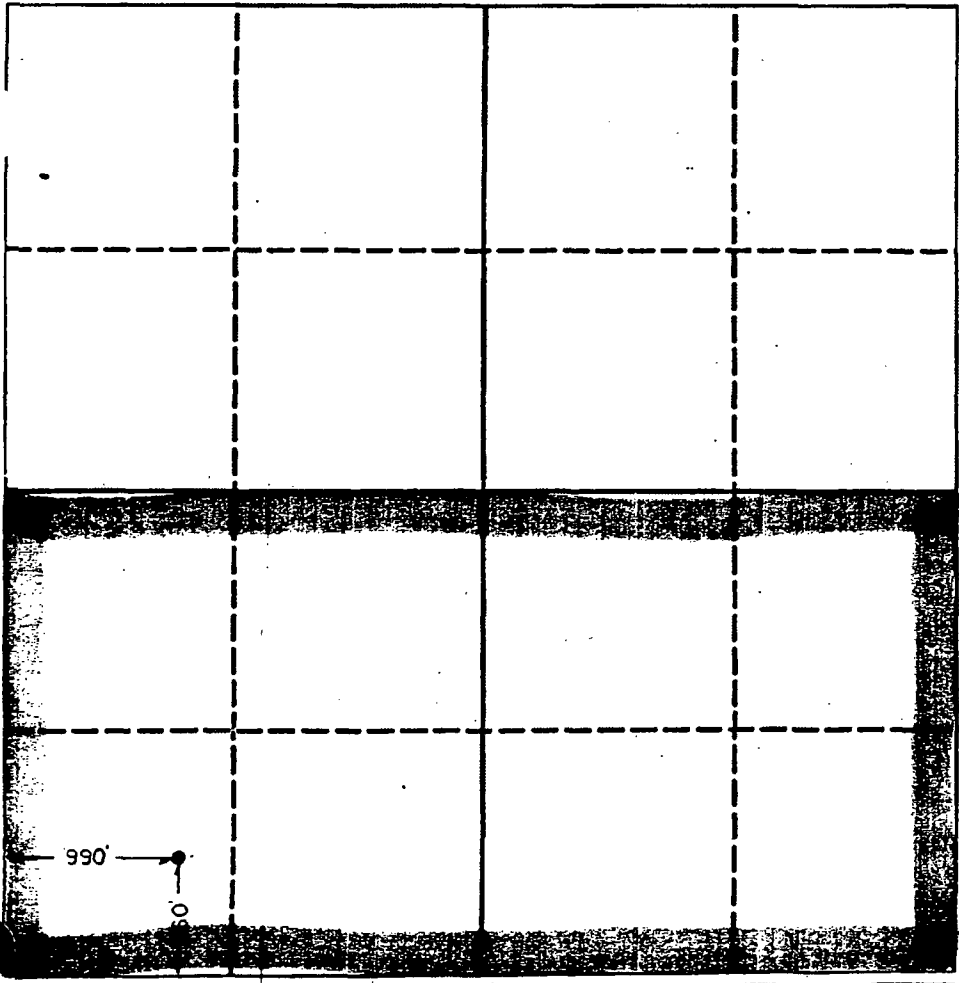
DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT
 All Distances must be from the outer boundaries of the section

Operator MEWBOURNE OIL COMPANY			Lease CHALK BLUFF 36 STATE		Well No. 1
Unit Letter M	Section 36	Township 17 SOUTH	Range 27 EAST	County NMPM	EDDY
Actual Footage Location of Well: 990 feet from the WEST line and 660 feet from the SOUTH line					
Ground level Elev. 3635	Producing Formation Morrow	Pool Illinois Camp Morrow North		Dedicated Acreage: 320 Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?
 Yes No If answer is "yes" type of consolidation Communitization
 If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)
 No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.

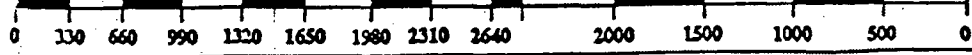


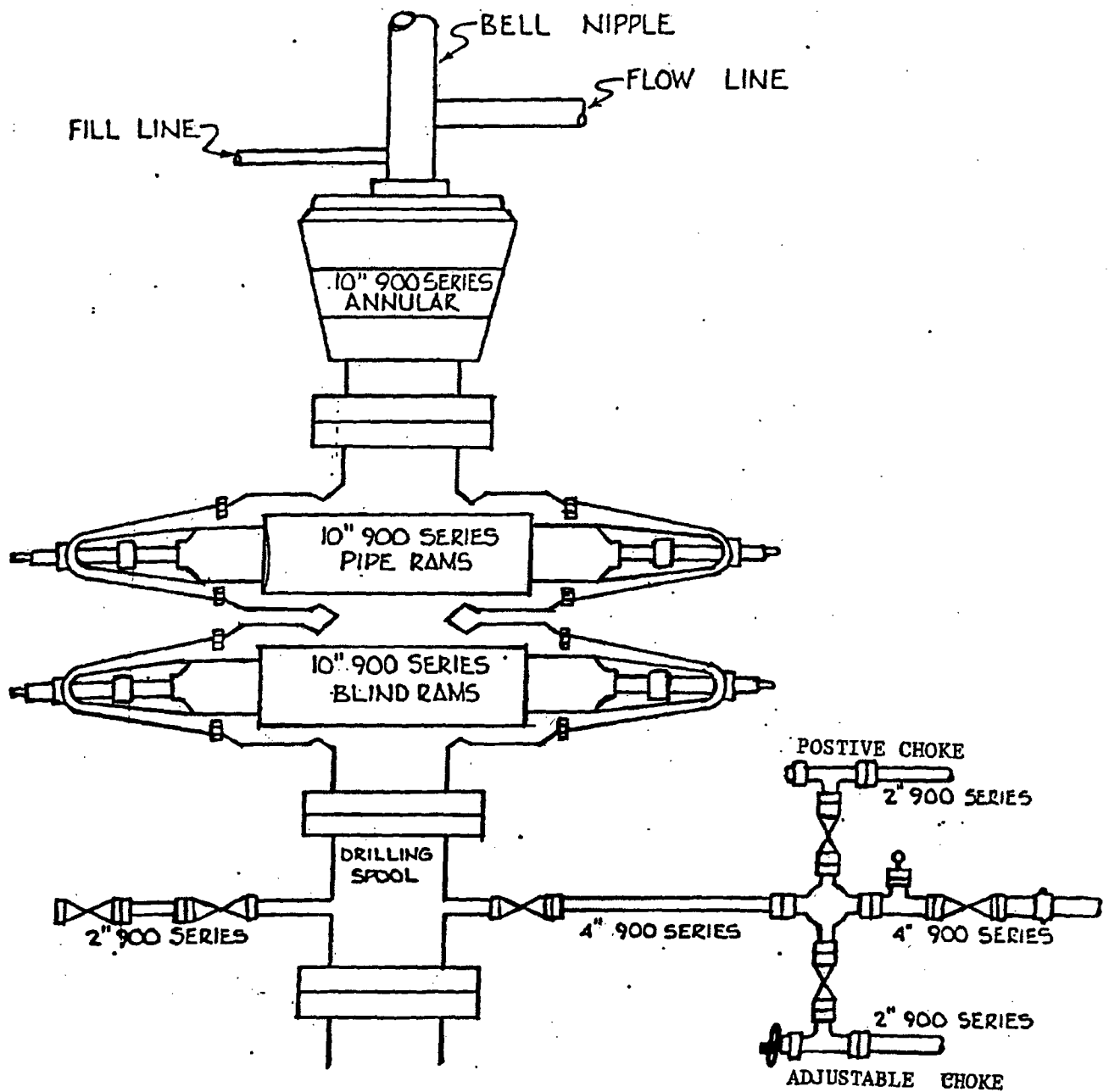
OPERATOR CERTIFICATION
 I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: *Bill Pierce*
 Printed Name: **Bill Pierce**
 Position: **Drilling Superintendent**
 Company: **Mewbourne Oil Company**
 Date: **October 27, 1992**

SURVEYOR CERTIFICATION
 I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: **10/19/92**
 Signature & Seal of Professional Surveyor: *[Signature]*
 Certificate No. **3640**





Mewbourne Oil Company
 Chalk Bluff "36" State #1
 660' FSL & 990' FWL
 Section 36-T17S-R27E
 Eddy County, New Mexico
 Lease Number E-379-4

FIELD REPORT FOR CEMENTING OF WELLS

OIL CONSERVATION DIVISION

API 30-015-27286

Operator <u>Newbourne Oil Co.</u>		Lease <u>Chalk Bluff "36" St.</u>		Well # <u>1</u>	
Location of Well	Unit <u>M</u>	Section <u>36</u>	Township <u>17</u>	Range <u>27</u>	County <u>Eddy</u>
Drilling Contractor	<u>WEK Drilling</u>		Type of Equipment <u>Rotary</u>		

APPROVED CASING PROGRAM

* Witness

Size of Hole	Size of Casing	Weight Per Foot	New or Used	Depth	Sacks Cement
<u>17 1/2</u>	* <u>13 3/8</u>	<u>48 #</u>		<u>400 ±</u>	<u>400 Circ</u>
<u>12 1/4</u>	<u>9 5/8</u>	<u>36 #</u>		<u>2600 ±</u>	<u>700 Surf</u>
<u>8 3/4</u>	<u>5 1/2</u>	<u>17 #</u>		<u>10,300 ±</u>	<u>600 Top of ABO</u>

Casing Data:

Surface joints of 13 3/8" inch 48 # Grade H-40

(Approved) (Rejected)

Inspected by MCS. date JAN 2 - 93

Cementing Program

Size of hole 17 1/2" Size of Casing 13 3/8" Sacks cement required

Type of Shoe used guide Float coliar used insert Btm 3 jts welded yes

TD of hole 400' Set 400' Feet of 13 3/8" Inch 48 # Grade H-40

(New)-used csg. @ 400' with 200 270cc sacks neat cement around shoe

+ 230 sax Halliburton Life additives 1/4# flocele, 5# gilsonite, 270cc

Plug down @ 8:45 (AM) (PM) Date JAN. 3 - 1992

Cement circulated Yes No. of Sacks 30 *

Cemented by Halliburton Witnessed by Mike. Stubblefield

Temp. Survey ran @ (AM) (PM) Date top cement @

Casing test @ (AM) (PM) Date

Method Used Witnessed by

Checked for shut off @ (AM) (PM) Date

Method used Witnessed by

Remarks: * Cement fell back after Plug Down.

Ready mixed cmt top to surface 2 yards.

4 centralizers

Lost circ. 2 349'

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-87

clst
up

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
J. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

12809 1993

O.C.D.

WELL API NO.
30-015-27286

5. Indicate Type of Lease
STATE FEE

6. State Oil & Gas Lease No.
E-379-4



7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

8. Well No.
1

9. Pool name or Wildcat
Illinois Camp Morrow North

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
OIL WELL GAS WELL OTHER

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
P. O. Box 5270 Hobbs, New Mexico 88241

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line
Section 36 Township 17S Range 27E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input checked="" type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
DRILL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input checked="" type="checkbox"/>	
OTHER: <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

2-2-93: MIRU WEK Drilling Co. Rig #2. Spudded 17 1/2" surface hole @ 6:00 P. M. MST.

2-3-93: Drilled 17 1/2" surface hole to 400' K. B. Ran 9 jts. of 13 3/8", 48#, J-55, STC new casing to 400'. Howco cemented w/100 sks. of Class "C" containing 10#/sk. Cal-Seal + 5#/sk. Gilsonite + 1/2#/sk. Flocele + 2% CaCl₂ followed by 230 sacks of Class "C" Lite containing 1/4#/sk. Flocele + 5#/sk. Gilsonite + 2% CaCl₂, tailed in with 100 sacks of Class "C" Neet containing 2% CaCl₂. Plug down to 353' @ 8:45 AM. MST. Circulated 30 sacks of cement to the pit. Cement job witnessed by Mike Stubblefield w/NMOCD office in Artesia. Cement slurry volume for lead cement was 580 cu. ft. Slurry volume for tail cement was 268 cu. ft. Total slurry volume was 848 cu. ft. Compressive strength for tail slurry is 1350 psi in 12 hrs. @ 70° F. Estimated formation temperature is 68° F, estimated slurry temp. was 70° F. NU BOP and WOC 13 1/2 hrs. Pressure tested blind rams, pipe rams and casing to 600# each for 30 min. w/rig pump. All held 0. K.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 2/4/93
TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 505 393-5905

This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

FEB 15 1993

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

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TRICT I
Box 1980, Hobbs, NM 88240

TRICT II
J. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

FEB 09 1993

O. C. D.

WELL API NO.
30-015-27286

5. Indicate Type of Lease
STATE FEE

6. State Oil & Gas Lease No.
E-379-4

7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

8. Well No.
1

9. Pool name or Wildcat
Illinois Camp Morrow, North

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
OIL WELL GAS WELL OTHER

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
P. O. Box 5270 Hobbs, New Mexico 88241

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line
Section 36 Township 17S Range 27E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data
NOTICE OF INTENTION TO:
PERFORM REMEDIAL WORK PLUG AND ABANDON
TEMPORARILY ABANDON CHANGE PLANS
REPAIR OR ALTER CASING
OTHER:
SUBSEQUENT REPORT OF:
REMEDIAL WORK ALTERING CASING
COMMENCE DRILLING OPNS. PLUG AND ABANDONMENT
CASING TEST AND CEMENT JOB
OTHER:

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.
2-7-93: Drilled 12 1/4" Intermediate hole to 2603' K.B. Ran 58 jts. of 9 5/8", 36#, J-55, new LS casing and set @ 2603' K. B. Howco cemented w/950 sks. of Class "C" Lite containing 1/4#/sk. flocele + 8#/sk. salt followed by 200 sks. of Class "C" Neet cement containing 2% CaCl₂. Plug down to 2557' @ 6:15 P.M. MST 2-7-93. Circulated 50 sacks to pit. Lead slurry weighed 13.8#/gal. and yield was 1.6 cu. ft./sk. Slurry volume was 1520 cu. ft. Tail slurry weighed 14.8#/gal and yield was 1.36 cu. ft./sk. Slurry volume was 268 cu. ft. Total slurry volume was 1,754 cu. ft. Compressive strength for tail slurry is 1350 psi in 12 hrs. @ 70° F. Estimated formation temp. is 75° F, estimated slurry temp. was 72° F. WOC 12 hrs. NU BOP and pressure tested blind and pipe rams, and casing to 1,000# for 30 min w/rig pump. All held 0. K.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.
SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 2/8/93
TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 393-5905

his space for State Use) ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT I? TITLE _____ DATE FEB 15 1993
APPROVED BY _____
CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

CLF
up

DISTRICT I
Box 1980, Hobbs, NM 88240
DISTRICT II
P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MAR 24 1993

WELL API NO. 30-015-27286
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. E-379-4
7. Lease Name or Unit Agreement Name Chalk Bluff "36" State
8. Well No. 1
9. Pool name or Wildcat Illinois Camp Morrow, North

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
OIL WELL GAS WELL OTHER

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
Box 5270 Hobbs, New Mexico 88241

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line
Section 36 Township 17S Range 27E NMPM Eddy County
10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:	SUBSEQUENT REPORT OF:
PERFORM REMEDIAL WORK <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>
OTHER: <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
	CASING TEST AND CEMENT JOB <input checked="" type="checkbox"/>
	OTHER: <input type="checkbox"/>

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

2-24-93: Drilling 8 3/4" production hole. Lost complete returns @ 8250'. Spotted mud pills and spotted 150 sack cement plug. Regained partial returns.

3-5-93: Drilled to 9289'. Ran 215 joints of new 26#, N-80, 7" API casing and set @ 9253'. Casing stuck 36' off of bottom. Cemented 1st stage by Howco w/535 sacks of Class "H" containing 3% KCL + 1% Halad 322 + 5#/sk. Gilsonite + 5#/sk. SilicaLite + 10#/sk. Microbond. Opened D. V. tool @ 6654' and circulated 6 hrs. Cemented 2nd stage w/750 sacks of Class "H" Lite containing 1/4#/sk. Flocele followed by 335 sacks of Class "H" containing 8#/sk. SilicaLite + 1/4#/sk. Flocele + .6% Halad 322. Plug down to 6654' @ 5:00 PM 3-5-93. Circulated 56 sacks to the pit. 1st stage cement slurry weighed 14.8#/gal. with a yield of 1.53 cu. ft./sk. Total slurry volume was 818 cu. ft. BHT by logs was 123° F. Estimated slurry temp. was 73° F. Compressive strength of cement was 2025 psi in 12 hrs. 2nd. stage lead cement slurry yield was 1.85 cu. ft./sk. @ 12.7#/gal. Yield for slurry was 1387 cu. ft. Tail cement slurry yield was 1.75 cu. ft./sk. 13.6#/gal. Yield was 586 cu. ft. Total slurry volume was 1973 cu. ft. Estimated

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 3-22-93

TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 505 393-5905

(This space for State Use) ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT I

APPROVED BY _____ TITLE _____ DATE APR 5 1993

CONDITIONS OF APPROVAL, IF ANY:

formation temp. was 100° F, estimated slurry temp. was 72° F. Compressive strength for 2nd stage lead slurry in 12 hrs. was 1600 psi and tail slurry was 1900 psi. WOC 24 hrs. Drilled out D. V. Tool, float collar, and 1/2 of shoe joint. Pressure tested casing, blind rams, and pipe rams to 2,000# for 30 min. Held O. K.

115 07MAY 1960
115 07MAY 1960
115 07MAY 1960

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

151
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DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

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MAR 24 1993

WELL API NO.
30-015-27286

5. Indicate Type of Lease
STATE FEE

6. State Oil & Gas Lease No.
E-379-4

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG A WELL IN A
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"
(FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

1. Type of Well:
OIL WELL GAS WELL OTHER

8. Well No.
1

2. Name of Operator
Mewbourne Oil Company

9. Pool name or Wildcat
Illinois Camp Morrow-North

3. Address of Operator
P.O. Box 5270 Hobbs, New Mexico 88241

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line
Section 36 Township 17S Range 27E NMPM County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data
NOTICE OF INTENTION TO: PERFORM REMEDIAL WORK PLUG AND ABANDON TEMPORARILY ABANDON CHANGE PLANS PULL OR ALTER CASING OTHER:
SUBSEQUENT REPORT OF: REMEDIAL WORK ALTERING CASING COMMENCE DRILLING OPNS. PLUG AND ABANDONMENT CEMENT JOB OTHER:

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.
3/19/93 T.D. 6" hole @ 10,060'. Ran logs and 37 jts. of new 11.35#, N-80, 4-1/2" flush joint liner. Hung liner @ 10,057' KB. Howco cemented w/225 sks. of Class "H" containing 5% salt + 5% Halad 22-A + 5% CFR-3. Plug down to 10,012' @ 6:15 p.m. 03/19/93. Top of liner @ 8439' KB. Rig released @ 3:00 p.m. 03/20/93

I hereby certify that the information above is true and complete to the best of my knowledge and belief.
SIGNATURE Bill Pierce TITLE Drilling Supt. DATE 03/22/93
TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 505 393-5905

This space for State Use)
ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II
APPROVED BY _____ TITLE _____ DATE APR 5 1993
CONDITIONS OF APPROVAL, IF ANY:

SEC 36 TRN 17 RGE 27

API # 30-015-27286

OPERATOR MEMBORNE OIL CO

WELL NAME ANK BLUFF 36 ST#1

STATE OGD TOPS AS PER MA

DATE 4-23-93

Southeastern New Mexico

Northwestern New Mexico

T. Anhy		T. Canyon	9327
T. Salt		T. Shawn	8820
T. Salt		T. Atoka	9780
T. Yates	328	T. Miss	10040
T. 7 Rivers	464	T. Devonian	
T. Queen	1008	T. Silurian	
T. Grayburg	1360	T. Monrovia	
T. S. Andres	1785	T. Simpson	
T. Glensia	3155	T. McKee	
T. Paddock		T. Ellenburger	
T. Blinberry		T. Gc. Wash	
T. Tubb	4025	T. Delaware Sand	
T. Drinkard	4855	T. Home Springs	
T. Abo	5120	T. Wagon Ln	9494
T. Wolfcamp	6702	T. "	25 9674
T. Penn	8210	T.	
T. Cisco (Bough C)		T.	

T. Ojo Alamo		T. Penn. B
T. Kirtland-Froidland		T. Penn. C
T. Pictured Cliffs		T. Penn. D
T. Cliff House		T. Leadville
T. Mancos		T. Madison
T. Point Lookout		T. Elbert
T. Mancos		T. McCracken
T. Gallup		T. Ignacio Ozona
Base Greenhorn		T. Granite
T. Dakota		T.
T. Morrison		T.
T. Todillo		T.
T. Escada		T.
T. Wingate		T.
T. Chinle		T.
T. Permian		T.
T. Penn "A"		T.

OIL OR GAS SANDS OR ZONES

No. 1, from _____ to _____ No. 3, from _____ to _____
No. 2, from _____ to _____ No. 4, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.
No. 1, from _____ to _____ feet
No. 2, from _____ to _____ feet
No. 3, from _____ to _____ feet

REMARKS:



DRILLING CO., INC. - OIL WELL DRILLING CONTRACTORS

KEN REYNOLDS-PRESIDENT
ARNIE NEWKIRK-VICE-PRESIDENT

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

RECEIVED

APR 15 1993

C.L.D.

March 19, 1993

Mewbourne Oil Company
P.O. Box 5270
Hobbs, N.M. 88240

RE: Chalk Bluff "36" State #1

Gentlemen:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

Table with 4 columns of depth and angle measurements. Includes values like 424' - 3/4°, 4197' 2 3/4°, 5411' - 3°, 6415' - 2 3/4°, etc.

Sincerely,

Handwritten signature of Gary W. Chappell

Gary W. Chappell
Contracts manager
STATE OF NEW MEXICO
COUNTY OF CHAVES

The foregoing was acknowledged before me this 19th day of March 1993 by Gary W. Chappell.

MY COMMISSION EXPIRES

October 07, 1996

Handwritten signature of Notary Public
NOTARY PUBLIC

Submit to Appropriate District Office
 State Lease - 6 copies
 Fee Lease - 5 copies
DISTRICT I
 Box 1980, Hobbs, NM 88240
DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-100
 Revised 1-1-8

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

RECEIVED
 APR 15 1993

C/S
 B/S
 B/S
 B/S

WELL API NO:
 30-015-27200
 5. Indicate Type of Lease
 STATE FEE
 6. State Oil & Gas Lease No.
 E-379-4

WELL COMPLETION OR RECOMPLETION REPORT

1a. Type of Well: OIL WELL GAS WELL DRY OTHER _____
 b. Type of Completion: NEW WELL WORK OVER DEEPEN PLUG BACK DEEP RESVR OTHER _____
 2. Name of Operator: Mewbourne Oil Company
 3. Address of Operator: P.O. Box 5270 Hobbs, New Mexico 88241
 4. Well Location: Unit Letter M: 990 Feet From The West Line and 660 Feet From The South Line
 Section 36 Township 17S Range 27E NMPM Eddy County
 7. Lease Name or Unit Agreement Name: Chalk Bluff "36" State
 8. Well No.: 1
 9. Pool name or Wildcat: N. Illinois Camp Morrow
 10. Date Spudded: 02/02/93 11. Date T.D. Reached: 03/17/93 12. Date Compl. (Ready to Prod.): 03/30/93 13. Elevations (DF & RKB, RT, GR, etc.): 3650' KB 3635' GR 14. Elev. Casinghead: 3635' GR
 15. Total Depth: 10,060' 16. Plug Back T.D.: 10,012' 17. If Multiple Compl. How Many Zones?: 2 18. Intervals Drilled By: Rotary Tools Cable Tools _____
 19. Producing Interval(s), of this completion - Top, Bottom, Name: 9842'-9886': Lower Morrow 20. Was Directional Survey Made: Yes
 21. Type Electric and Other Logs Run: SDI-DSN, DLL-MSFL-GR, Sonic, CBL 22. Was Well Cored: No

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	48#/ft.	399'	17-1/2"	530 sx. Class "C"	Circulated
9-5/8"	36#/ft.	2603'	12-1/4"	1150 sx. Class "C"	Circulated
7"	26#/ft.	9253'	8-3/4"	1620 sx. Class "H"	Circulated

24. LINER RECORD				25. TUBING RECORD			
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
4-1/2"	8439'	10,057'	225 sx.		2-7/8-2-3/8"	9803'	9702'

26. Perforation record (interval, size, and number)			27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.	
INTERVAL	SIZE	HOLES	DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
9842'-9856'	14'	4 spf 49 holes		
9864'-9886'	22'	4 spf 80 holes		

PRODUCTION

28. Date First Production: 03/30/93 Production Method (Flowing, gas lift, pumping - Size and type pump): Flowing Well Status (Prod. or Shut-in): Producing
 Date of Test: 03/31/93 Hour Tested: 24 Hours Choke Size: 1/4" Prod's For Test Period: 10 Oil - Bbl: 10 Gas - MCF: 1500 Water - Bbl: 0 Gas - Oil Ratio: 150 MCF/BBL
 Flow Tubing Press: 1500# Casing Pressure: Packer Calculated 24-Hour Rate: 10 Oil - Bbl: 10 Gas - MCF: 1500 Water - Bbl: 0 Oil Gravity - API - (Corr.): 55.0

29. Disposition of Gas (Sold, used for fuel, vented, etc.): Sold Test Witnessed By: Erick W. Nelson

30. List Attachments: Logs

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature: Erick W. Nelson Printed Name: Erick W. Nelson Title: Engineer Date: 04/05/93

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico

Northwestern New Mexico

<table border="0" style="width: 100%;"> <tr><td>T. Anhy _____</td><td>T. Canyon _____ 8328'</td></tr> <tr><td>T. Salt _____</td><td>T. Strawn _____ 8822'</td></tr> <tr><td>B. Salt _____</td><td>T. Atoka _____ 9380'</td></tr> <tr><td>T. Yates _____ 328'</td><td>T. Miss _____ 10040'</td></tr> <tr><td>T. 7 Rivers _____ 464'</td><td>T. Devonian _____</td></tr> <tr><td>T. Queen _____ 1007'</td><td>T. Silurian _____</td></tr> <tr><td>T. Grayburg _____ 1322'</td><td>T. Monoya _____</td></tr> <tr><td>T. San Andres _____ 1784'</td><td>T. Simpson _____</td></tr> <tr><td>T. Glorieta _____ 3164'</td><td>T. McKee _____</td></tr> <tr><td>T. Paddock _____</td><td>T. Ellenburger _____</td></tr> <tr><td>T. Blinebry _____</td><td>T. Gr. Wash _____</td></tr> <tr><td>T. Tubb _____ 4028'</td><td>T. Delaware Sand _____</td></tr> <tr><td>T. Drinkard _____ 4870'</td><td>T. Bone Springs _____</td></tr> <tr><td>T. Abo _____ 5120'</td><td>T. Morrow Lime _____ 9494'</td></tr> <tr><td>T. Wolfcamp _____ 6706'</td><td>T. Morrow Clastics _____ 9674'</td></tr> <tr><td>T. Penn _____ 8208'</td><td>T. _____</td></tr> <tr><td>T. Cisco (Bough C) _____</td><td>T. _____</td></tr> </table>	T. Anhy _____	T. Canyon _____ 8328'	T. Salt _____	T. Strawn _____ 8822'	B. Salt _____	T. Atoka _____ 9380'	T. Yates _____ 328'	T. Miss _____ 10040'	T. 7 Rivers _____ 464'	T. Devonian _____	T. Queen _____ 1007'	T. Silurian _____	T. Grayburg _____ 1322'	T. Monoya _____	T. San Andres _____ 1784'	T. Simpson _____	T. Glorieta _____ 3164'	T. McKee _____	T. Paddock _____	T. Ellenburger _____	T. Blinebry _____	T. Gr. Wash _____	T. Tubb _____ 4028'	T. Delaware Sand _____	T. Drinkard _____ 4870'	T. Bone Springs _____	T. Abo _____ 5120'	T. Morrow Lime _____ 9494'	T. Wolfcamp _____ 6706'	T. Morrow Clastics _____ 9674'	T. Penn _____ 8208'	T. _____	T. Cisco (Bough C) _____	T. _____	<table border="0" style="width: 100%;"> <tr><td>T. Ojo Alamo _____</td><td>T. Penn. "B" _____</td></tr> <tr><td>T. Kirtland-Fruitland _____</td><td>T. Penn. "C" _____</td></tr> <tr><td>T. Pictured Cliffs _____</td><td>T. Penn. "D" _____</td></tr> <tr><td>T. Cliff House _____</td><td>T. Leadville _____</td></tr> <tr><td>T. Menefee _____</td><td>T. Madison _____</td></tr> <tr><td>T. Point Lookout _____</td><td>T. Elbert _____</td></tr> <tr><td>T. Mancos _____</td><td>T. McCracken _____</td></tr> <tr><td>T. Gallup _____</td><td>T. Ignacio Otzte _____</td></tr> <tr><td>Base Greenhorn _____</td><td>T. Granite _____</td></tr> <tr><td>T. Dakota _____</td><td>T. _____</td></tr> <tr><td>T. Morrison _____</td><td>T. _____</td></tr> <tr><td>T. Todilto _____</td><td>T. _____</td></tr> <tr><td>T. Entrada _____</td><td>T. _____</td></tr> <tr><td>T. Wingate _____</td><td>T. _____</td></tr> <tr><td>T. Chinle _____</td><td>T. _____</td></tr> <tr><td>T. Permian _____</td><td>T. _____</td></tr> <tr><td>T. Penn "A" _____</td><td>T. _____</td></tr> </table>	T. Ojo Alamo _____	T. Penn. "B" _____	T. Kirtland-Fruitland _____	T. Penn. "C" _____	T. Pictured Cliffs _____	T. Penn. "D" _____	T. Cliff House _____	T. Leadville _____	T. Menefee _____	T. Madison _____	T. Point Lookout _____	T. Elbert _____	T. Mancos _____	T. McCracken _____	T. Gallup _____	T. Ignacio Otzte _____	Base Greenhorn _____	T. Granite _____	T. Dakota _____	T. _____	T. Morrison _____	T. _____	T. Todilto _____	T. _____	T. Entrada _____	T. _____	T. Wingate _____	T. _____	T. Chinle _____	T. _____	T. Permian _____	T. _____	T. Penn "A" _____	T. _____
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OIL OR GAS SANDS OR ZONES

No. 1, from 9842' to 9856' No. 3, from _____ to _____
 No. 2, from 9864' to 9886' No. 4, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from NONE to _____ feet
 No. 2, from _____ to _____ feet
 No. 3, from _____ to _____ feet

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology	From	To	Thickness in Feet	Lithology
0'	1600'	1600'	Redbed & Anhydrite				
1600'	6700'	5100'	Dolomite Sandston				
6700'	8200'	1500'	Limestone & Shale				
8200'	8600'	400'	No Returns				
8600'	9700'	1100'	Lime & Shale				
9700'	9900'	200'	Sand & Shale				
9900'	10060'	160'	Shale				



Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Newbourne Oil Company
Attention: Mr. Jay Prudhomme
P. O. Box 5270
Hobbs, New Mexico 88241

SAMPLE IDENTIFICATION: Chalk Bluff 36 State #1
COMPANY: Newbourne Oil Co.
LEASE:
PLANT:

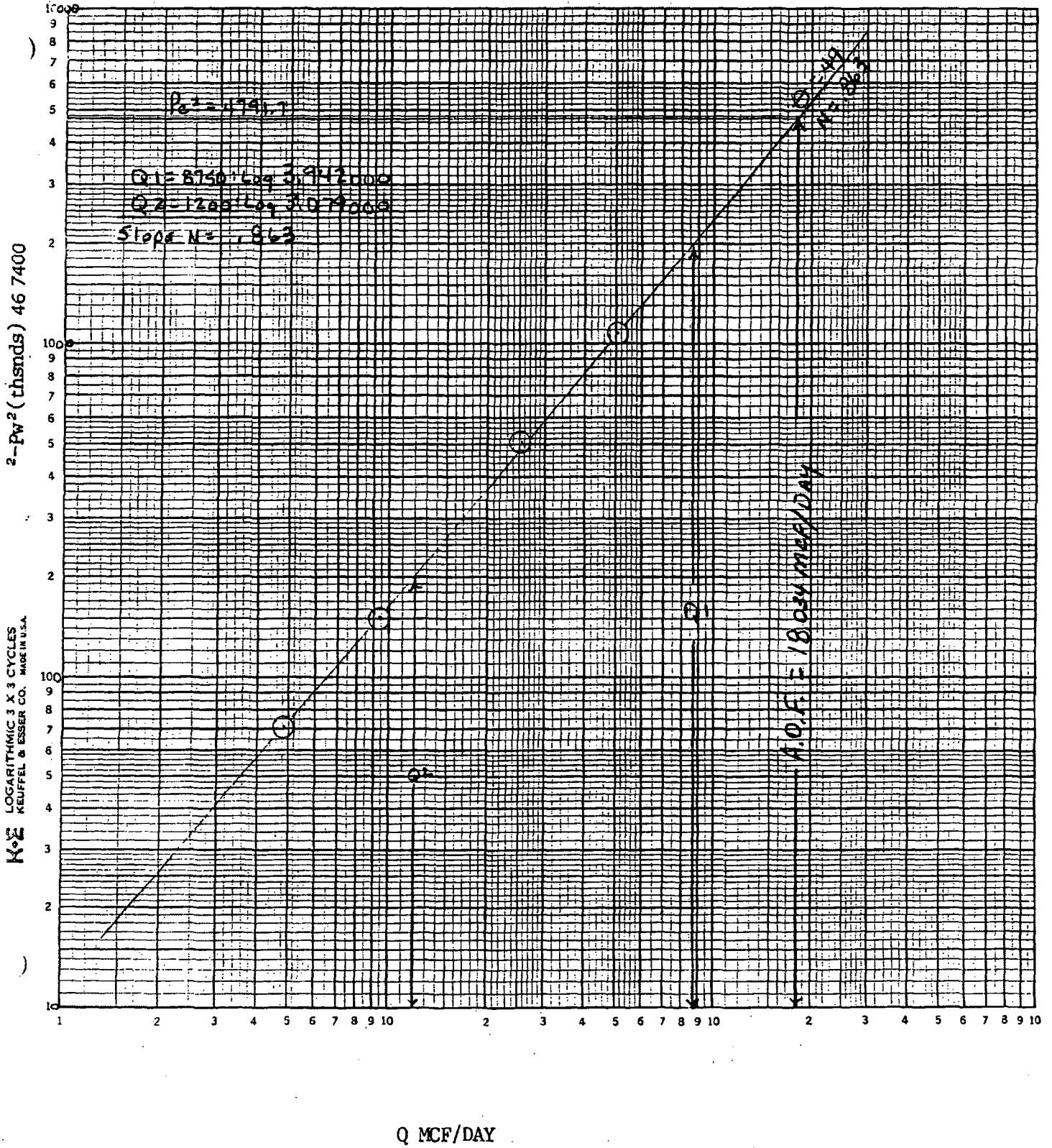
SAMPLE DATA:	DATE SAMPLED: 05-18-93	GAS (XX)	LIQUID ()
	ANALYSIS DATE: 05-18-93	SAMPLED BY:	
	PRESSURE - PSIG	ANALYSIS BY:	Vickie Walker
	SAMPLE TEMP. °F		
	ATMOS. TEMP. °F		

REMARKS:

COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM		
Hydrogen Sulfide (H2S)				
Nitrogen (N2)	0.41			
Carbon Dioxide (CO2)	0.41			
Methane (C1)	88.13			
Ethane (C2)	7.02	1.866		
Propane (C3)	2.44	0.669		
I-Butane (IC4)	0.31	0.102		
N-Butane (NC4)	0.59	0.184		
I-Pentane (IC5)	0.19	0.070		
N-Pentane (NC5)	0.15	0.055		
Hexane (C6)	0.35	0.150		
Heptanes Plus (C7+)	0.00	0.000		
	<u>100.00</u>	<u>3.096</u>		
BTU/CU.FT.				
AT 14.696 DRY	1135		MOLECULAR WT.	18.6894
AT 14.650 DRY	1132			
AT 14.650 WET	1109		26# GASOLINE -	0.337
AT 15.025 DRY	1161			
AT 15.025 WET	1166			
SPECIFIC GRAVITY -				
CALCULATED	0.645			
MEASURED				

MEWBOURNE OIL COMPANY
 Chalk Bluff 36 State, Well #1
 36-17S-27E
 Eddy County, New Mexico
 5-18-93



Submit in duplicate to appropriate district office See Rule 401 & Rule 1122

State of New Mexico Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED Form C-122
Revised 4-1-91
MAY 24 1992
C.L.D.
C157
File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator MEWBOURNE OIL COMPANY					Lease or Unit Name CHALK BLUFF 36 STATE					
Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special					Test Date 5-18-93		Well No. 1			
Completion Date 3-18-93		Total Depth 10060		Plug Back TD 10009		Elevation 3635		Unit Ltr. Sec. TWP - Rge. 36-17S-27E		
Csg. Size 4 1/2	Wt. 11.60	d 4.052	Set At 10012	Perforations: From: 9842 To: 9856			County EDDY			
Tbg. Size 2 3/8	Wt. 6.5	d 2.441	Set At 8024	Perforations: From: 9864 To: 9886			Pool NORTH ILLINOIS			
Type Well - Single - Bradenhead - G.G. or G.O. Multiple single				Packer Set At 9688			Formation MORROW			
Producing Thru tbg.		Reservoir Temp. °F		Mean Annual Temp. °F 60°		Baro. Press - P _a 13.2		Connection Transwestern		
L 9864	H 9864	G _g .645	% CO ₂ .41	% N ₂ .41	% H ₂ S	Prover	Meter Run 3.068	Taps Fig.		
FLOW DATA					TUBING DATA			CASING DATA		Duration of Flow
NO.	Prover Line Size	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI						2140		Pkr.		
1.	3.068	X 1.000	425	15.00	105	2125		"		60 Min
2.	3.068	X 1.000	425	57.00	90	2100		"		60 Min
3.	3.068	X 1.750	425	38.00	82	1990		"		60 Min
4.	3.068	X 2.000	440	74.00	75	1800		"		60 Min
RATE OF FLOW CALCULATIONS										
NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd			
1.	4.789	81.07	438.2	.9594	1.245	1.034	480			
2.	4.789	158.04	438.2	.9680	1.245	1.038	947			
3.	15.61	129.04	438.2	.9795	1.245	1.039	2552			
4.	21.32	183.13	453.2	.9859	1.245	1.047	5018			
5.										
NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio 62.479 Mcf/bbl.					
1.	.654	565	1.519	.935	A.P. I. Gravity of Liquid Hydrocarbons 53 Deg.					
2.	.654	550	1.478	.929	Specific Gravity Separator Gas .645		XXXXXXXXXX			
3.	.654	542	1.457	.926	Specific Gravity Flowing Fluid XXXXXX		GMIX .693			
4.	.676	535	1.438	.913	Critical Pressure 670 P.S.I.A.		669 P.S.I.A.			
5.					Critical Temperature 372 R		388 R			
P _c 2189.0		P _c 4791.7								
NO.	P _i ²	P _w	P _w ²	P _c ² - P _w ²	1) $\frac{P_c^2}{P_c^2 - P_w^2} = 4.403$		(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 3.594$			
1.		2172.6	4720.2	71.5						
2.		2153.7	4638.4	153.3						
3.		2068.9	4280.3	511.4	AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 18.034$					
4.		1924.4	3703.3	1088.4						
5.										
Absolute Open Flow 18,034 Mcfd @ 15.025		Angle of Slope Θ 49			Slope, n .863					
Remarks: 6 BBLs of 53 Gravity Oil During Test										
Calculated with B.H.P. Instruments.										
Approved By Division			Conducted By: PRO WELL TESTERS			Calculated By: KS		Checked By: KS		

Submit 3 Copies
 Appropriate District Office
 DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
 Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
 P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

RECEIVED
 APR 15 1993

Form C-104
 Revised 1-1-89
 See Instructions
 at Bottom of Page

C. L. D.

**REQUEST FOR ALLOWABLE AND AUTHORIZATION
 TO TRANSPORT OIL AND NATURAL GAS**

Operator Mewbourne Oil Company	Well API No. 30-015-27286
Address P.O. Box 5270 Hobbs, New Mexico 88241	
Reason(s) for Filing (Check proper box) <input type="checkbox"/> Other (Please explain)	
New Well <input checked="" type="checkbox"/>	Change in Transporter of: Oil <input type="checkbox"/> Dry Gas <input type="checkbox"/>
Recompletion <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/> Condensate <input type="checkbox"/>
Change in Operator <input type="checkbox"/>	

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name Chalk Bluff "36" State	Well No. 1	Pool Name, Including Formation N. Illinois Camp Morrow	Kind of Lease State, XXXX/XXXX/XX	Lease No. E-379-4
Location Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line Section 36 Township 17S Range 27E , NMPM , Eddy County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input type="checkbox"/> or Condensate <input checked="" type="checkbox"/> Amoco Pipeline ICT	Address (Give address to which approved copy of this form is to be sent) Oil Tender Dept. Box 702068 Tulsa, Ok 74170-206					
Name of Authorized Transporter of Casinghead Gas <input type="checkbox"/> or Dry Gas <input checked="" type="checkbox"/> Transwestern Pipeline Company	Address (Give address to which approved copy of this form is to be sent) P.O. Box 1188 Houston, Texas 77251					
If well produces oil or liquids, give location of tanks.	Unit M	Sec. 36	Typ. 17S	Reg. 27E	Is gas actually connected? <input checked="" type="checkbox"/>	When? 03/30/93

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					
Date Spudded 02/02/93	Date Compl. Ready to Prod. 03/30/93	Total Depth 10,060'		P.B.T.D. 10,012'				
Elevations (DP, RKB, RT, GR, etc.) 3650' KB 3635' GR	Name of Producing Formation Morrow	Top Oil/Gas Pay 9,842'		Tubing Depth 9,803'				
Performances 9842'-9856', 9864'-9886'							Depth Casing Shoe	

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8"	399'	530 sx. Class "C"
12-1/4"	9-5/8"	2603'	1150 sx. Class "C"
8-3/4"	7"	9253'	1620 sx. Class "C"
6"	4-1/2" Liner	10057'	225 sx. Class "H"

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)			
Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.) Post ID-2 4-30-93 camp + AK	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas - MCF

GAS WELL

Actual Prod. Test - MCF/D 1500	Length of Test 24 Hours	Bbls. Condensate/MMCF 6.6	Gravity of Condensate 55
Testing Method (prior, back pr.) Back Pressure	Tubing Pressure (Shut-in) 2700#	Casing Pressure (Shut-in) Packer	Choke Size 1/4"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature Erick W. Nelson
 Printed Name **Erick W. Nelson** Title **Engineer**
 Date **04/02/93** Telephone No. **(505) 393-5905**
 Date **April 5, 1993**

OIL CONSERVATION DIVISION

Date Approved **APR 26 1993**
 By J. M. Williams
 Title **SUPERVISOR, DISTRICT II**

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

- 1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
- 2) All sections of this form must be filled out for allowable on new and recompleted wells.
- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-101
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address Mewbourne Oil Company P. O. Box 5270 Hobbs, NM 88241		OGRID Number 14744
		API Number 30 - 015-27286
Property Code 7871	Property Name Chalk Bluff "36" State	Well No. 1

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
M	36	17S	27E		660	South	990	West	Eddy

Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
WC									
Proposed Pool 1 Atoka Gas Pool					Proposed Pool 2				

Work Type Code P	Well Type Code G	Cable/Rotary R	Lease Type Code S	Ground Level Elevation 3635
Multiple No	Proposed Depth 10060	Formation Atoka	Contractor Key Energy Services	Spud Date 09-15-99

Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2"	13-3/8"	48#	399	530	Surface
12-1/4"	9-5/8"	36#	2603	1150	Surface
8-3/4"	7"	26#	9253	1620	Surface
6"	4-1/2" Liner	11.6#	10057	225	TOL @ 8439'

Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

- Temporarily abandon Morrow perforations 9842-9856' and 9864-9886' by setting a cast iron bridge plug at 9800' and dumping 20' cement plug on top.
- Test the Atoka Formation through perforations 9442-9446' and 9452-9464'.
- File for commingling permit if well conditions warrant.

6" 5000 psi WP dual hydraulic BOP's will be utilized on this project. Any produced fluids will be diverted through a 5000 psi WP adjustable choke to a steel tank via 2" steel lines.

I hereby certify that the information given above is true and complete to the best of my knowledge and belief. Signature: <i>Jerry Elgin</i>	OIL CONSERVATION DIVISION	
	Approved By: ORIGINAL SIGNED BY TIM W. GUM	Title: DISTRICT II SUPERVISOR
Printed name: Jerry Elgin	Approval Date: 8-17-99	Expiration Date: 8-17-00
Title: District Manager		

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-102

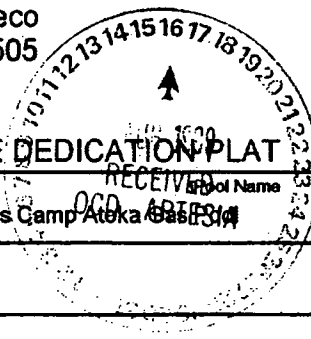
Revised October 18, 1994

Instructions on back

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies



AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30-015-27286	2 Pool Code	3 Well Name North Illinois Camp Atoka East 34
4 Property Code	5 Property Name Chalk Bluff "36" State	6 Well Number 1
7 OGRID No. 14744	8 Operator Name Mewbourne Oil Company	9 Elevation 3635

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
M	36	17S	27E		660	South	990	West	Eddy

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County

12 Dedicated Acres 320.00	13 Joint or Infill	14 Consolidation Code C	15 Order No.
------------------------------	--------------------	----------------------------	--------------

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	<p>16 OPERATOR CERTIFICATION</p> <p><i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief</i></p> <p>Signature: <i>Jerry Elgin</i></p> <p>Printed Name: Jerry Elgin</p> <p>Title: District Manager</p> <p>Date: 08-13-99</p>
	<p>17 SURVEYOR CERTIFICATION</p> <p><i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i></p> <p>Date of Survey: 10-19-92</p> <p>Signature and Seal of Professional Surveyor:</p> <p>Original signed by Herschel Jones</p> <p>Certificate Number</p>



**NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT**

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

ADMINISTRATIVE ORDER DHC-2464

Mewbourne Oil Company
P.O. Box 7698
Tyler, Texas 75711

Attention: Mr. K. M. Calvert

*Chalk Bluff "36" State No. 1
API No. 30-015-27286
Unit M, Section 36, Township 17 South, Range 27 East, NMPM,
Eddy County, New Mexico.
Wildcat-Atoka (Gas -N/A), and
North Illinois Camp-Morrow (Gas - 78890) Pools*



Dear Mr. Calvert:

Reference is made to your recent application for an exception to Rule 303.A. of the Division Rules and Regulations to permit the above described well to commingle production from the subject pools in the wellbore.

It appearing that the subject well qualifies for approval for such amendment pursuant to the provisions of Rule 303.C., and that reservoir damage or waste will not result from such downhole commingling, and correlative rights will not be violated thereby, you are hereby authorized to commingle the production as described above and any Division Order which authorized the dual completion and required separation of the zones is hereby placed in abeyance.

The maximum amount of gas which may be produced daily from the well shall be determined by Division Rules and Regulations or by the gas allowable for each respective prorated gas pool as printed in the Division's Southeast Gas Proration Schedule.

Assignment of allowable to the well and allocation of production from the well shall be on the following basis:

Wildcat-Atoka Gas Pool	Oil-100%	Gas-73%
North Illinois Camp-Morrow Gas Pool	Oil-0%	Gas-27%

78890

Administrative Order DHC-2464

Mewbourne Oil Company

September 21, 1999

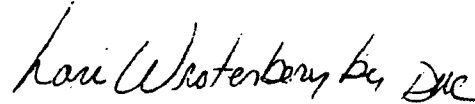
Page 2

REMARKS: The operator shall notify the Artesia District Office of the Division upon implementation of the commingling process.

Pursuant to Rule 303.H., the commingling authority granted herein may be rescinded by the Division Director if conservation is not being best served by such commingling.

Approved at Santa Fe, New Mexico on this 21st day of September, 1999.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



LORI WROTENBERY
Director

S E A L

LW/DRC

cc: Oil Conservation Division - Artesia /
State Land Office-Oil & Gas Division

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

CISF
JP

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

OIL CONSERVATION DIVISION

2040 Pacheco St.
Santa Fe, NM 87505

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL API NO. 30-015-27286
Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
State Oil & Gas Lease No. E-379-4
Lease Name or Unit Agreement Name Chalk Bluff 36 State
Well No. 1
Pool name or Wildcat Wildcat Atoka

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

Type of Well:
OIL WELL GAS WELL OTHER

Name of Operator
Mewbourne Oil Company

Address of Operator
PO Box 5270, Hobbs, New Mexico 88240

Well Location
Unit Letter M 660 Feet From The South Line and 990 Feet From The West Line
Section 36 Township 17s Range 27e NMPM Eddy County

Elevation (Show whether DF, RKB, RT, GR, etc.)
3625 GL

11 Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG AND ANBANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER: _____ <input type="checkbox"/>		OTHER: <u>Test Atoka</u> <input checked="" type="checkbox"/>	

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

9-21-99...POOH w/ Tbg.
9-22-99...Set RBP over Morrow perms. Perforate Atoka perms @ 9466-84. GIH w/ Pkr & tbg.
9-24-99...Acidize new Atoka perms w/ 3000 gals 7 1/2% HCL adding N2 w/ Ball Sealers. Swab & Flow test.
10-18-99...Frac Atoka perms w/ 30,000 gals 70 Quality Foam using 10,000 lbs 20/40 Interprop. Flow back & clean-up
10-19-99...Turn to sales.



I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE Consultant DATE 11-01-99
TYPE OR PRINT NAME NM Young TELEPHONE NO. 393-5405

APPROVED BY [Signature] TITLE District Supervisor DATE 11-5-99

CONDITIONS OF APPROVAL, IF ANY:

Submit to Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
DISTRICT I

Box 1980, Hobbs, NM 88240

DISTRICT II

Drawer DD, Artesia, NM 88210

DISTRICT III

1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 Pacheco St.
Santa Fe, NM 87505

Form C-105
Revised 1-1-89

017
BWW
BWW
SLLD

WELL API NO.
30-015-27286

5. Indicate Type of Lease
STATE FEE

6. State Oil & Gas Lease No.
E-379-4

7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

8. Well No.
1

9. Pool name or Wildcat
Wildcat Atoka Gas Pool
SE Logan Draw
Atoka

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:
OIL WELL GAS WELL DRY OTHER
1b. Type of Completion:
NEW WELL WORK OVER DEEPEN PLUG BACK DIFF RESVR OTHER

2. Name of Operator
Mewbourne Oil Company

3. Address of Operator
P. O. Box 5270, Hobbs, NM 88241

4. Well Location
Unit Letter M 660 Feet From The South Line and 990 Feet From The West Line
Section 36 Township 17S Range 27E NMPM Eddy County

10. Date Spudded 02/03/93 11. Date T.D. Reached 03/19/93 12. Date Compl. (Ready to Prod.) 09/24/99 13. Elevations (DF & RKB, RT, GR, etc.) 3635' GR 14. Elev. Casinghead 3635'

15. Total Depth 10060' 16. Plug Back T.D. 9780' 17. If Multiple Compl. How Many Zones? NA 18. Intervals Drilled By Rotary Tools Cable Tools

19. Producing Interval(s), of this completion - Top, Bottom, Name
9466-9470' & 9476-9484', Atoka 20. Was Directional Survey Made
No

21. Type Electric and Other Logs Run
DIL 22. Was Well Cored
No

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB/FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	48#	399'	17-1/2"	530 sks Class C	None
9-5/8"	36#	2603'	12-1/4"	1150 sks Class C	None
7"	26#	9253'	8-3/4"	1620 sks Class H	None

24. LINER RECORD				25. TUBING RECORD			
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
4-1/2"	8439'	10057'	225		2-3/8"	9407'	9407'

26. Perforation record (interval, size, and number)	27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.
<u>9466-9484', 0.44" entry hole diameter, 56 holes total</u>	
	DEPTH INTERVAL
	AMOUNT AND KIND MATERIAL USED
	<u>9466-9484' Fracture stimulated with 10000# IP 20/40</u>

28. PRODUCTION							
Date First Production <u>09/24/99</u>		Production Method (Flowing, gas lift, pumping - Size and type pump) <u>Flowing</u>				Well Status (Prod. or Shut-in) <u>Producing</u>	
Date of Test <u>10/18/99</u>	Hours Tested <u>24</u>	Choke Size <u>24/64"</u>	Prod'n For Test Period	Oil - Bbl. <u>2</u>	Gas - MCF <u>317</u>	Water - Bbl. <u>2</u>	Gas - Oil Ratio <u>158500</u>
Flow Tubing Press. <u>45</u>	Casing Pressure <u>Packer</u>	Calculated 24-Hour Rate	Oil - Bbl. <u>2</u>	Gas - MCF <u>317</u>	Water - Bbl. <u>2</u>	Oil Gravity - API - (Corr.) <u>63.8</u>	

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
Sold Test Witnessed By
Mr. Miller

30. List Attachments

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Jerry Elgin Printed Name Jerry Elgin Title District Manager Date 10/19/99

District I
PO Box 1980, Hobbs, NM 88241-1980
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-104
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
5 Copies
 AMENDED REPORT

515F
LT
ST
OP

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address Mewbourne Oil Company P. O. Box 5270 Hobbs, NM 88241		² OGRID Number 14744
		³ Reason for Filing Code Plug Back
⁴ API Number 30 - 0 15-27286	⁵ Pool Name Chalk Bluff <i>Wagon Wheel Gas Pool</i> <i>Logan Draw, Aztec, SE</i>	⁶ Pool Code 96979
⁷ Property Code 7871	⁸ Property Name Chalk Bluff "36" State	⁹ Well Number 1

II. ¹⁰ Surface Location

UI or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
M	36	17S	27E		660	South	990	West	Eddy

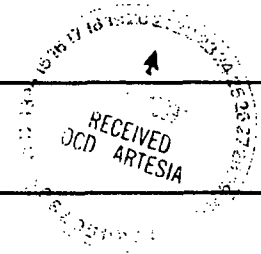
¹¹ Bottom Hole Location

UI or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County

¹² Lse Code	¹³ Producing Method Code Flowing	¹⁴ Gas Connection Date 10/24/94	¹⁵ C-129 Permit Number	¹⁶ C-129 Effective Date	¹⁷ C-129 Expiration Date
------------------------	--	---	-----------------------------------	------------------------------------	-------------------------------------

III. Oil and Gas Transporters

¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ POD	²¹ O/G	²² POD ULSTR Location and Description
138848	Amoco Pipeline Company Tulsa, OK	1923810	O	
000990	Transwestern Pipeline Company Houston, TX	2819523	G	



IV. Produced Water

²³ POD 1923850	²⁴ POD ULSTR Location and Description
------------------------------	--

V. Well Completion Data

²⁵ Spud Date	²⁶ Ready Date	²⁷ TD	²⁸ PBD	²⁹ Perforations	³⁰ DHC, DC, MC
02/03/93	09/24/99	10060	9780	9486-9484'	

³¹ Hole Size	³² Casing & Tubing Size	³³ Depth Set	³⁴ Sacks Cement
17-1/2"	13-3/8"	399'	530
12-1/4"	9-5/8"	2603'	1150
8-3/4"	7"	9253'	1620
6-1/8"	4-1/2"	10057'	225

VI. Well Test Data

³⁵ Date New Oil	³⁶ Gas Delivery Date	³⁷ Test Date	³⁸ Test Length	³⁹ Tbg. Pressure	⁴⁰ Csg. Pressure
09/24/99	09/24/99	10/18/99	24 hours	45	Packer

⁴¹ Choke Size	⁴² Oil	⁴³ Water	⁴⁴ Gas	⁴⁵ AOF	⁴⁶ Test Method
24/64"	2	2	317		Sold

⁴⁷ I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature: *Jerry Elgin*
 Printed name: Jerry Elgin
 Title: District Manager
 Date: 10/20/99

OIL CONSERVATION DIVISION
 ORIGINAL SIGNED BY TIM W. GUM
 DISTRICT II SUPERVISOR *B60*
 Approved by:
 Title:
 Approval Date: 10-27-99
 Phone: 505-393-5805

⁴⁸ If this is a change of operator fill in the OGRID number and name of the previous operator

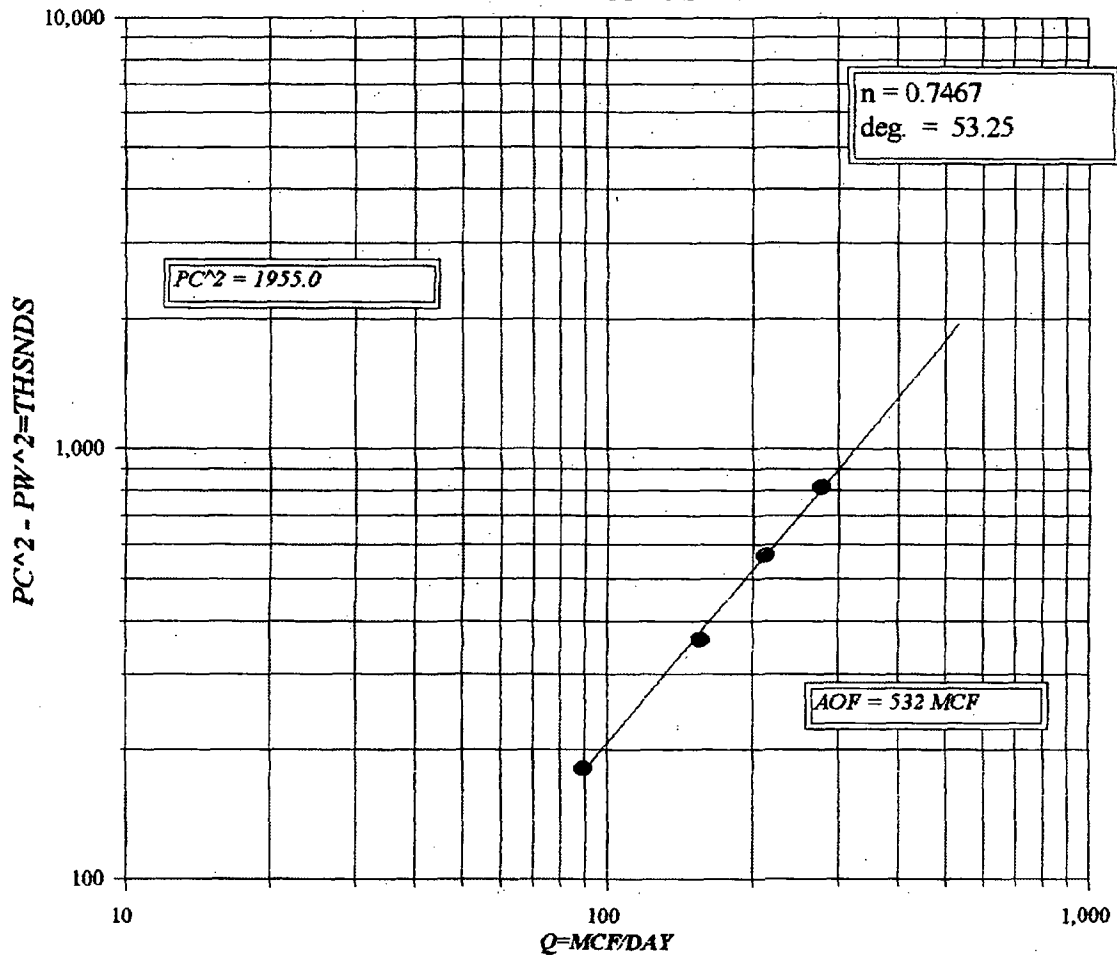
Previous Operator Signature	Printed Name	Title	Date

COMPANY : MEMPHIS OIL CO. LEASE : C. B. JO ST. WELL NO. : 1 PC = 1398.2 PCZ = 1955.0 *
 UNIT : M SECTION : 36 TOWNSHIP : 17 Pt2 = 1774.8 Pw = 1332.3 *
 L : 9385 H : 936 L/H : 1 G/GMIX : 0.696 1593.1 1262.5 *
 %CO2 : 4.586 %N2 : 0.788 H2S : DATE : 10 27 99 1388.2 1178.8 *
 d : 1.995 Fr : 0.018231 GH : 6532.0 RANGE : 27 1141.1 1069.3 *

VOL 1 : 89 PSIA 1 : 1332.2 RESV. TEMP 167.9 Pc2-Pw2= 180.0 Pw2 = 1775.0 *
 VOL 2 : 156 PSIA 2 : 1262.2 361.1 1593.9 *
 VOL 3 : 212 PSIA 3 : 1178.2 SHUT-IN PR= 1398.2 565.5 1389.5 *
 VOL 4 : 276 PSIA 4 : 1068.2 811.6 1143.4 *
 PCR : 652 n = 0.747 *
 TCR : 381 *

LINE	RATE 1		RATE 2		RATE 3		RATE 4		Pc2/(Pc2-Pw2)	Pc2/(Pc2-Pw2)n
	1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND		
1	QM	0.089	0.089	0.156	0.156	0.212	0.212	0.276	0.276	
2	TW	534	534	534	534	534	534	534	534	[Pc2/Pc2-Pw2]n = 5.936
3	Ts	627.9	627.9	627.9	627.9	627.9	627.9	627.9	627.9	3.529
4	T	580.9	580.9	580.9	580.9	580.9	580.9	580.9	580.9	2.525
	PR (est)	2.04		1.94		1.81		1.64		1.928
5	Z (est)	0.809	0.793	0.815	0.799	0.824	0.807	0.835	0.819	
6	TZ	469.9	460.5	473.7	464.1	478.5	468.9	485.3	476.0	AOF= Q 0.528
7	GH/TZ	13.901	14.185	13.790	14.074	13.650	13.929	13.458	13.724	0.551
8	eS	1.684	1.702	1.677	1.695	1.668	1.686	1.656	1.673	0.535
9	l-e-S	0.406	0.413	0.404	0.410	0.401	0.407	0.396	0.402	0.532
10	Pt	1332.2	1332.2	1262.2	1262.2	1178.2	1178.2	1068.2	1068.2	
11	Pt2 /1000	1774.8	1774.8	1593.1	1593.1	1388.2	1388.2	1141.1	1141.1	
12	Fr	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231	
	=FrTZ	8.567	8.395	8.636	8.462	8.724	8.549	8.848	8.677	
	cQm	0.76	0.75	1.35	1.32	1.85	1.81	2.44	2.39	
15	L/H(FcQm)	0.6	0.6	1.8	1.7	3.4	3.3	6.0	5.7	
16	Fw	0.236154	0.230308	0.732800	0.714522	1.370485	1.336601	2.363611	2.3073869	
17	Pw2	1775.0	1775.0	1593.9	1593.9	1389.5	1389.5	1143.4	1143.4	
18	Ps2	2989.4	3021.4	2673.2	2701.8	2318.3	2342.6	1894.0	1912.9	
19	Ps	1729.0	1738.2	1635.0	1643.7	1522.6	1530.6	1376.2	1383.1	
20	P	1530.6	1535.2	1448.6	1453.0	1350.4	1354.4	1222.2	1225.6	
21	Pr	2.35	2.35	2.22	2.23	2.07	2.08	1.87	1.88	
22	Tr	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	
23	Z	0.793	0.792	0.799	0.799	0.807	0.807	0.819	0.819	FORM C122-D

MEWBOURNE OIL COMPANY
CHALK BLUFF 36 ST. # 1



Submit in duplicate to appropriate district office See Rule 401 & Rule 1122

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-122
Revised 4-1-91

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator <input checked="" type="checkbox"/> Mewbourne Oil Company				Lease or Unit Name Chalk Bluff 36 State			
Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special				Test Date 10/27/99		Well No. 1	
Completion Date 10/16/99		Total Depth 10060		Plug Back TD 9780		Elevation 3563' GL	
Unit Ltr. - Sec. - TWP - Rge. M 36 17s 27e		County Eddy		Perforations: From: 9466 To: 9484			
Csg. Size 4 1/2	Wt. 11.35	d 4.000	Set At 8439 - 10060	Perforations: From: Open To: Ended		Pool SE Logan Draw	
Tbg. Size 2 3/8	Wt. 4.6	d 1.995	Set At 9385	Perforations: From: Open To: Ended		Illinois Camp	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single				Packer Set At 9385		Formation Atoka	
Producing Thru Tbg	Reservoir Temp. °F 60	Mean Annual Temp. °F 60		Baro. Press - P _s 13.2		Connection Elk Horn	
L 9385	H 9385	Gg 0.696	% CO ₂ 4.586	% N ₂ 0.788	% H ₂ S	Prover 3.068	Meter Run 3.068
						Taps FLG	

FLOW DATA				TUBING DATA				CASING DATA		Duration of Flow
NO.	Prover Line Size	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI						1385		PACKER		24 hrs
1.	3.068 x 0.875		28	10.00	60	1319		"		1 hr
2.	3.068 x 0.875		27	32.00	70	1249		"		1 hr
3.	3.068 x 0.875		27	60.00	77	1165		"		1 hr
4.	3.068 x 0.875		29	95.00	68	1055		"		1 hr
5.										

RATE OF FLOW CALCULATIONS							
NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1.	3.650	20.30	41.2	1.000	1.199	1.004	89
2.	3.650	35.87	40.2	.9905	1.199	1.004	156
3.	3.650	49.11	40.2	.9840	1.199	1.004	212
4.	3.650	63.32	42.2	.9924	1.199	1.004	276
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl.
1.	.06	520	1.36	.993	Dry Gas	
2.	.06	530	1.39	.993	Dry	
3.	.06	537	1.40	.993		
4.	.06	528	1.38	.993		
5.						

P _c 1398.2		P _c ² 1955.00		1) $\frac{P_c^2}{P_c^2 - P_w^2} = 2.409$		2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.928$	
NO.	P _t ²	P _w	P _w ²	P _c ² · P _w ²	AOF = Q · $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = .532$		
1.		1332.3	1775.0	180.0			
2.		1262.5	1593.9	361.1			
3.		1178.8	1389.5	565.5			
4.		1069.3	1143.4	811.6			
5.							

Absolute Open Flow 532 Mcfd @ 15.025 Angle of Slope θ 53.25 Slope, n .7467

Remarks: Well produced no fluid
* Corrected to 4.586% CO2

Approved By Division _____ Conducted By: Jarrel Services, Inc. Calculated By: Bob Murray Checked By: Bob Murray



NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
DISTRICT II ARTESIA
811 S. FIRST ST. ARTESIA, NM 88210
(505) 748-1283
FAX (505) 748-9720

Jennifer A. Salisbury
CABINET SECRETARY

January 28th, 1999 2000
MAB

Mewbourne Oil Company
P.O. Box 5270
Hobbs, NM 88241

Re: **Well Placed In Pool**

Gentlemen/Madams:

As the result of Division Order 11300, the following described gas well has been placed in the pool shown below. This change in nomenclature has been made in our files. Please change your records to reflect the proper pool name. All subsequent reports must show this nomenclature until further notice.

Logan Draw; Atoka, Southeast Gas Pool
Chalk Bluff '36' State #1
Unit M, Section 36, Township 17 South, Range 27 East, NMPM
Poolcode: 96979

Transporters are advised by copy of this letter, to change their records to reflect the pool name as established by this order, effective October 1, 1999.

Sincerely,

Bryan Arrant
District Geologist

Cc: Amoco Pipeline Company
Transwestern Pipeline Company
Santa Fe
Mae
Well File

District I
PQ Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-101
Revised October 18, 1994

Instructions on back
Submit to Appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

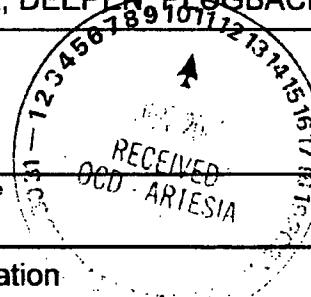
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

AMENDED REPORT

CISF
[Signature]

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address Mewbourne Oil Company PO Box 5270 Hobbs, N.M. 88241 505-393-5905		OGRID Number 14744
Property Code 7871		Property Name Chalk Bluff 36 State 1
API Number 30-015-27286		Well No. 1



Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
M	36	17S	28E		660	S	990	W	Eddy

Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
Proposed Pool 1					Proposed Pool 2				

Work Type Code P	Well Type Code G	Cable/Rotary R	Lease Type Code S	Ground Level Elevation 3625
Multiple	Proposed Depth 9400	Formation Canyon/Wolfcamp	Contractor TBA	Spud Date

Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC

Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

This well has been producing from the Morrow & Atoka formations. Mewbourne Oil Company would like to set a CIBP 100' above top perforations. Cap CIBP w/ 35' cement. Attempt a completion in the Canyon @ +/- 8550'. If results warrant, Mewbourne Oil Company would like to test the Wolfcamp @ +/- 7200'.

During operations of plugback & testing, a 7 1/16 x 3000 psi BOP w/ 2 3/8" rams & blinds will be used.

I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: [Signature]
Printed name: N.M. Young

OIL CONSERVATION DIVISION
APPROVED BY: [Signature] ORIGINAL SIGNED BY TIM W. GUM
DISTRICT II SUPERVISOR

Title: District Manager

Approval Date: AUG 29 2001 Expiration Date: AUG 29 2002

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

State of New Mexico
Department of Geology, Minerals and Natural Resources

Form C-102
Revised 1-1-88

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

DISTRICT I
Box 1980, Hobbs, NM 88240

ICT II
Drawer DD, Artesia, NM 88210

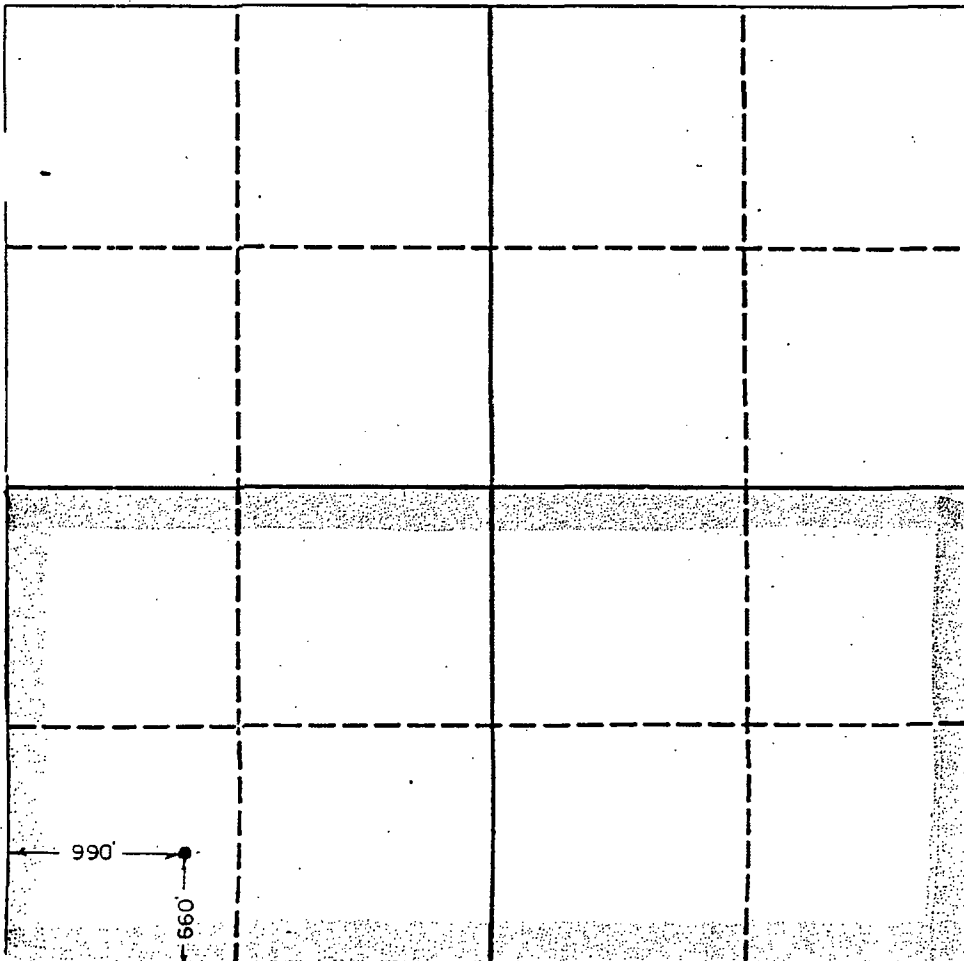
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator MEWBOURNE OIL COMPANY			Lease CHALK BLUFF 36 STATE			Well No. 1			
Unit Letter M	Section 36	Township 17 SOUTH	Range 27 EAST	County NMPM		EDDY			
Actual Footage Location of Well: 990 feet from the WEST line and 660 feet from the SOUTH line									
Ground level Elev. 3635		Producing Formation Illinois Camp Morrow North			Pool Illinois Camp Morrow North				Dedicated Acreage: 320 Acres

- Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?
 Yes No If answer is "yes" type of consolidation Communitization
 If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)
 No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature
Bill Pierce

Printed Name
Bill Pierce

Position
Drilling Superintendent

Company
Mewbourne Oil Company

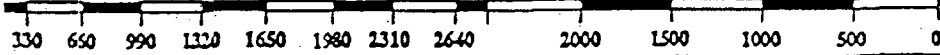
Date
October 27, 1992

SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed
10/19/92

Signature & Seal of Professional Surveyor
[Signature]

Certificate No.
3640



CISF
AP

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

OIL CONSERVATION DIVISION
2040 Pacheco St.
Santa Fe, NM 87505

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

WELL API NO. 30-015-27286
Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
State Oil & Gas Lease No. E-379-4
Lease Name or Unit Agreement Name Chalk Bluff 36 State
Well No. 1
Pool name or Widcat Logan Draw Atoka

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

Type of Well:
OIL WELL GAS WELL OTHER

Name of Operator
Mewbourne Oil Company /

Address of Operator
PO Box 5270, Hobbs, New Mexico 88241

Well Location
Unit Letter M : 660 Feet From The South Line and 990 Feet From The West Line
Section 36 Township 17S Range R28E NMPM Eddy County

Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GL

11 Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

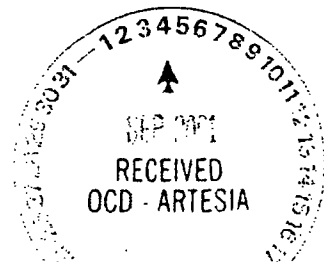
<p>NOTICE OF INTENTION TO:</p> <p>PERFORM REMEDIAL WORK <input type="checkbox"/></p> <p>TEMPORARILY ABANDON <input type="checkbox"/></p> <p>OR ALTER CASING <input type="checkbox"/></p> <p>OTHER: <input type="checkbox"/></p>	<p>SUBSEQUENT REPORT OF:</p> <p>REMEDIAL WORK <input type="checkbox"/></p> <p>COMMENCE DRILLING OPNS. <input type="checkbox"/></p> <p>CASING TEST AND CEMENT JOB <input type="checkbox"/></p> <p>OTHER: PB Atoka. Test & plug off Canyon. Test & Produce Wolfcamp <input checked="" type="checkbox"/></p>
--	--

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

6/28/01... POOH w/ tbg. RIH w/ 4 1/2" CIBP & set @ 9400'. Dump 35' cement on plug. New PBTD @ 9365'. Test to 1000 psi. OK. Perforate Canyon @ 8528-72' (12' 2 spf. 24 holes). Acidize w/ 2100 gals 20% Ne-Fe & ball sealers. Swab test.

7/05/01...POOH. RIH & set 7" RBP @ 8300'. Load & test to 1000 psi. OK. New PBTD @ 8300'. Perforate Wolfcamp @ 7164-7277' (29' 2 spf. 58 holes). GIH w/ tbg. Acidize perms w/ 5000 gals 20% Ne-Fe & ball sealers. Swab test.

7/16/01...POOH w/ test equipment. Run tbg & rods & put well on production.



I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE District Manager DATE 08-24-01

TYPE OR PRINT NAME N.M. Young TELEPHONE NO. 505-393-5905

(This space for State Use)

APPROVED BY [Signature] ORIGINAL SIGNED BY **TIM W. GUM** DISTRICT II SUPERVISOR TITLE _____ DATE **SEP 6 2001**

CONDITIONS OF APPROVAL, IF ANY:

Submit to Appropriate District Office
 State Lease - 6 copies
 Fee Lease - 5 copies
DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-105
 Revised 1-1-89

OIL CONSERVATION DIVISION

2040 Pacheco St.
 Santa Fe, NM 87505

DISTRICT II
 Drawer DD, Artesia, NM 88210

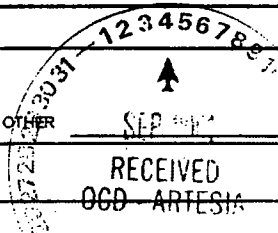
DISTRICT III
 1000 Rio Brazos Rd, Aztec, NM 87410

WELL API NO.
 30-015-27286

5. Indicate Type of Lease
 STATE FEE

6. State Oil & Gas Lease No.
 E-379-4

CIS
 [Handwritten initials]



WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well: OIL WELL GAS WELL DRY OTHER _____

b. Type of Completion: NEW WELL WORK OVER DEEPEN PLUG BACK DIFF RESVR OTHER _____

2. Name of Operator
 Mewbourne Oil Company

3. Address of Operator
 PO Box 5270, Hobbs, New Mexico 88241

4. Well Location
 Unit Letter M : 660 Feet From The South Line and 990 Feet From The West Line
 Section 36 Township 17S Range 27 26E NMPM Eddy County

7. Lease Name or Unit Agreement Name.
 Chalk Bluff 36 State

8. Well No.
 1

9. Pool name or Wildcat
 Logan Draw Wolfcamp

10. Date Spudded: 02/03/93
 11. Date T.D. Reached: 03/19/93
 12. Date Compl. (Ready to Prod.): 07/17/01
 13. Elevations (DF & RKB, RT, GR, etc.): 3635' GL
 14. Elev. Casinghead: 3635'

15. Total Depth: 10060
 16. Plug Back T.D.: 8300
 17. If Multiple Compl. How Many Zones?:
 18. Intervals Drilled By: Rotary Tools
 Cable Tools

19. Producing Interval(s), of this completion - Top, Bottom, Name
 7164-7277

20. Was Directional Survey Made
 No

21. Type Electric and Other Logs Run
 CBL, DN & DLL

22. Was Well Cored
 No

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB/FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48#	399'	17 1/2"	530 sks	N/A
9 5/8"	36#	2603'	12 1/4"	1150 sks	N/A
7"	26#	9253	8 3/4"	1620 sks	N/A

24. LINER RECORD				25. TUBING RECORD			
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
4 1/2"	8439'	10057'	225		2 7/8"	7352	TAC @ 7190'

26. Perforation record (interval, size, and number)
 7164-7277. 58 .38" diameter holes

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
7164-7277	5000 gals 20% Ne-Fe & ball sealers

28. PRODUCTION

Date First Production: 07/17/01
 Production Method (Flowing, gas lift, pumping - Size and type pump): Pumping, 2" x 1 1/2" x 24"
 Well Status (Prod. or Shut-in): Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - BbL.	Gas - MCF	Water - BbL.	Gas - Oil Ratio
07/22/01	24	N/A		88	88	78	1000

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - BbL.	Gas - MCF	Water - BbL.	Oil Gravity - API - (Corr.)
N/A	35		88	88	78	38

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
 Sold

Test Witnessed By
 J. Capps

30. List Attachments
 C-103 & C104.

31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature: [Signature] Printed Name: N.M. Young Title: District Manager Date: 08/24/01

District I
PO Box 1980, Hobbs, NM 88241-1980
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-104
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
5 Copies
 AMENDED REPORT

LT
GT
SP

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address Mewbourne Oil Company PO Box 5270 Hobbs, New Mexico 88241		² OGRID Number 14744
		³ Reason for Filing Code Plug Back/Recompletion
⁴ API Number 30 - 0 15-27286	⁵ Pool Name Logan Draw Wolfcamp.	⁶ Pool Code 96960
⁷ Property Code 7871	⁸ Property Name Chalk Bluff 36 State	⁹ Well Number 1

II. ¹⁰ Surface Location

UI or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
	36	17S	27E		660	South	990	West	Eddy

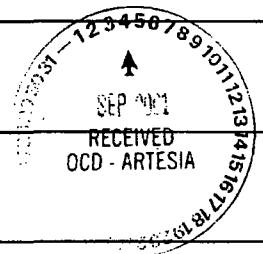
¹¹ Bottom Hole Location

UI or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County

¹² Lse Code	¹³ Producing Method Code Pumping	¹⁴ Gas Connection Date 07/17/01	¹⁵ C-129 Permit Number	¹⁶ C-129 Effective Date	¹⁷ C-129 Expiration Date
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III. Oil and Gas Transporters

¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ POD	²¹ O/G	²² POD ULSTR Location and Description
138648	Amoco Pipeline Company Tulsa, OK.	1923810	O	
990	Elkhorn Operating Company HRCO Artesia, NM	2829736	G	



IV. Produced Water

²³ POD 1923850	²⁴ POD ULSTR Location and Description
------------------------------	--

V. Well Completion Data

²⁵ Spud Date 02/03/93	²⁶ Ready Date 07/17/01	²⁷ TD 10060	²⁸ PBTD 8300	²⁹ Perforations 7164-7277	³⁰ DHC, DC, MC
³¹ Hole Size	³² Casing & Tubing Size	³³ Depth Set	³⁴ Sacks Cement		
17 1/2"	13 3/8"	399'	530		
12 1/4"	9 5/8"	2603'	1150		
8 3/4"	7"	9253'	1620		
6 1/8"	4 1/2"	10057'	225		

VI. Well Test Data

³⁵ Date New Oil 07/17/01	³⁶ Gas Delivery Date 07/17/01	³⁷ Test Date 07/22/01	³⁸ Test Length 24	³⁹ Tbg. Pressure N/A	⁴⁰ Csg. Pressure 35
⁴¹ Choke Size N/A	⁴² Oil 88	⁴³ Water 78	⁴⁴ Gas 88	⁴⁵ AOF	⁴⁶ Test Method Pumping

⁴⁷ I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature: *N.M. Young*
Printed name: N.M. Young
Title: District Manager
Date: 08/24/01
Phone: 505-393-5905

OIL CONSERVATION DIVISION
ORIGINAL SIGNED BY TIM W. GUM
DISTRICT II SUPERVISOR

Approved by: *T.W. Gum*
Title:
Approval Date: SEP 6 2001

⁴⁸ If this is a change of operator fill in the OGRID number and name of the previous operator

Previous Operator Signature	Printed Name	Title	Date
-----------------------------	--------------	-------	------

WUN-21000

e-101
C-102
C-10288
Ongard

OCRID # 14744

PROP # 7871

POOL # 96960

Oxford[®]

ESSELTE

MADE IN U.S.A.

NO. R753 1/3

4-15-93

Dual Speed
Neutron Log

Surf - 9242'

9370' - 10,059'

Comp. Sonic Log

1220' - 9260'

Dual Lat.

2598' - 9275'

9310' - 10,059'

DHC-2464

9-24-99

all
pts 100%
near 0

NSL-R-9815

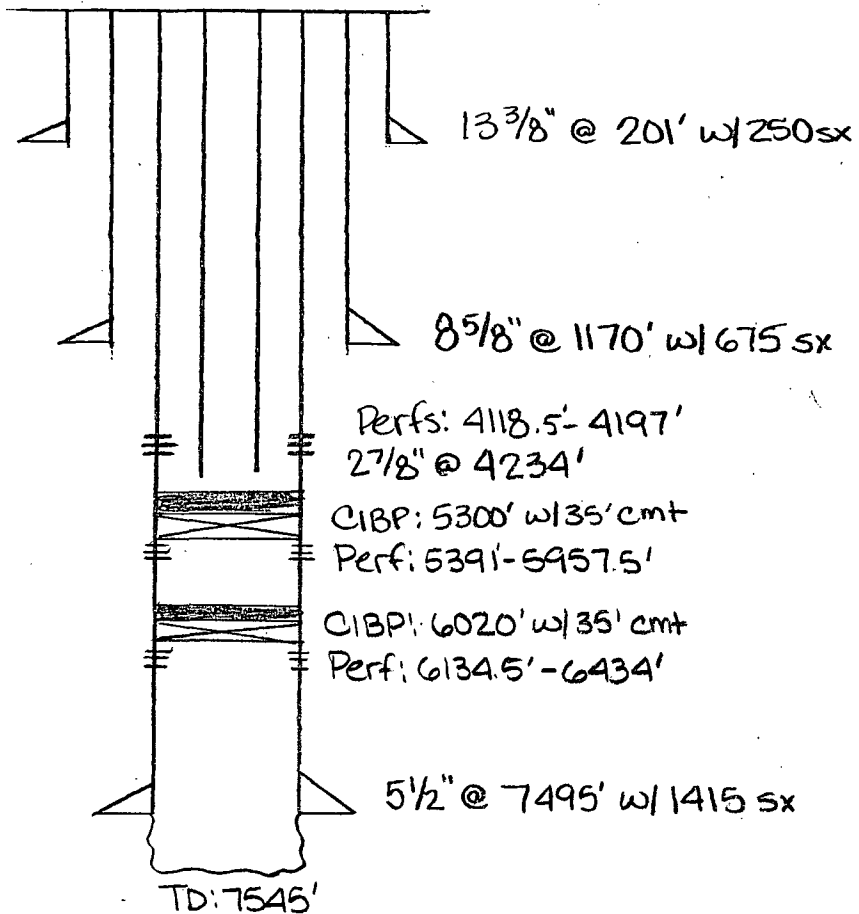
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 117
Artificial Penetration Review

OPERATOR Mack Energy Corp.
LEASE State H
WELL NUMBER 2
DRILLED 1/11/08
PLUGGED NA

STATUS Active
LOCATION Sec. 2-T18S-R27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE ≈ -3615'
API NO. 30-015-35814

REMARKS:



MAP ID NO. 117

**MACK ENERGY CORPORATION
STATE H NO. 2**

API NO. 30-015-35814

District II
 1301 W. Grand Ave., Artesia, NM 88210
 Phone: (505) 748-1283 Fax: (505) 748-9720

State of New Mexico
 Energy, Minerals and Natural Resources
 Oil Conservation Division
 1220 S. St Francis Dr.
 Santa Fe, NM 87505

Form C-101
 Permit 60506

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address MACK ENERGY CORP PO BOX 960 ARTESIA, NM 88211		2. OGRID Number 13837
		3. API Number 30-015-35814
4. Property Code 303847	5. Property Name STATE H	6. Well No. 002

7. Surface Location

UL - Lot	Section	Township	Range	Lot Etn	Feet From	N/S Line	Feet From	E/W Line	County
H	2	18S	27E	H	2063	N	441	E	EDDY

8. Pool Information

CHALK BLUFF; WOLFCAMP GAS 96963

Additional Well Information

9. Well Type New Well	10. Well Type OIL	11. Cable/Rotary	12. Lease Type State	13. Ground Level Elevation 3590
14. Multiple N	15. Proposed Depth	16. Formation Wolfcamp	17. Contractor	18. Spud Date 9/20/2007
Depth to Ground water 50		Distance from nearest fresh water well		Distance to nearest surface water
Pit: Liner: Synthetic <input type="checkbox"/> mls thick Clay <input type="checkbox"/> Pit Volume: bbls Drilling Method: Closed Loop System <input checked="" type="checkbox"/> Fresh Water <input type="checkbox"/> Brine <input type="checkbox"/> Diesel/Oil-based <input type="checkbox"/> Gas/Air <input type="checkbox"/>				

19. Proposed Casing and Cement Program

Type	Hole Size	Casing Type	Casing Weight/ft.	Setting Depth	Sacks of Cement	Estimated TOC
Surf	12.25	8.625	24	360	400	0
Prod	7.875	5.5	17	7313	1300	0

Casing/Cement Program: Additional Comments

Mack Energy proposes to drill a 12 1/4 hole to 360', run 8 5/8 casing and cement. Drill a 7 7/8 hole to 7313', run 5 1/2 casing and cement. Note: On production string a fluid caliper will be run and will figure cement with 25% excess, attempt to circ.

Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
DoubleRam	2000	2000	

I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOCD guidelines <input type="checkbox"/> a general permit <input type="checkbox"/> or an (attached) alternative OCB-approved plan <input type="checkbox"/> .	OIL CONSERVATION DIVISION	
	Approved By: Bryan Arrant	
	Title: Geologist	
	Approved Date: 9/19/2007	Expiration Date: 9/19/2008
	Conditions of Approval Attached	

Printed Name: Electronically filed by Jerry Sherrell

Title: Production Clerk

Email Address: jerrys@mackenergycorp.com

Date: 9/11/2007

Phone: 505-748-1288

District I
 1625 N. French Dr., Hobbs, NM 88240
 Phone:(505) 393-6161 Fax:(505) 393-0720

District II
 1301 W. Grand Ave., Artesia, NM 88210
 Phone:(505) 748-1283 Fax:(505) 748-9720

District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-102
 Permit 60506

WELL LOCATION AND ACREAGE DEDICATION PLAT

1. API Number 30-015-35814	2. Pool Code 96963	3. Pool Name CHALK BLUFF; WOLFCAMP GAS
4. Property Code 303847	5. Property Name STATE H	
6. Well No. 002	7. OGRID No. 13837	
8. Operator Name MACK ENERGY CORP	9. Elevation 3590	

10. Surface Location

UL - Lot	Section	Township	Range	Lot Ltn.	Feet From	N/S Line	Feet From	E/W Line	County
H	2	18S	27E		2063	N	441	E	EDDY

11. Bottom Hole Location If Different From Surface

UL - Lot	Section	Township	Range	Lot Ltn.	Feet From	N/S Line	Feet From	E/W Line	County
H	2	18S	27E	H	2300	N	340	E	EDDY

12. Dedicated Acres 40.00	13. Joint or Infill	14. Consolidation Code	15. Order No.
------------------------------	---------------------	------------------------	---------------

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> </tr> <tr> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%; background-color: black;"></td> </tr> <tr> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> </tr> <tr> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> <td style="width: 25%; height: 25%;"></td> </tr> </table>																	<p style="text-align: center;">OPERATOR CERTIFICATION</p> <p><i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location(s) or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i></p> <p>E-Signed By: Jerry Shenell Title: Production Clerk Date: 9/11/2007</p> <hr/> <p style="text-align: center;">SURVEYOR CERTIFICATION</p> <p><i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i></p> <p>Surveyed By: Ronald Eidson Date of Survey: 8/28/2007 Certificate Number: 3239</p>

Permit Comments

Operator: MACK ENERGY CORP , 13837
Well: STATE H #002
API: 30-015-35814

Created By	Comment	Comment Date
JWSHERRELL	H2S concentrations of wells in this area from surface to TD are low enough that a contingency plan is not required.	9/11/2007

Permit Conditions of Approval

Operator: MACK ENERGY CORP, 13837

Well: STATE H #002

API: 30-015-35814

OCD Reviewer	Condition
Barrant	Pit construction and closure must satisfy all requirements of your approved plan, D.C.D. Rule 19.16.2.5D, and the Pit and Below-Grade Tank Guidelines
Barrant	As noted, operator to drill surface hole w/fresh water mud.
Barrant	Cement to cover all oil, gas and water bearing zones.



30-015-35814

Mack Energy Corp.

Eddy County, NM (NAD 27 NME)

State H #2

State H #2

Wellbore #1

Plan: Plan #1

Standard Planning Report

11 September, 2007





Scientific Drilling
Planning Report



Database:	EDM 2003.16 Single User Db	Local Co-ordinate Reference:	Well State H #2:
Company:	Mack Energy Corp.	TVD Reference:	WELL @ 3608.00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3608.00ft (KB Elev)
Site:	State H #2	North Reference:	Grid
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project:	Eddy County, NM (NAD 27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	State H #2				
Site Position:	Northing:	646,629.20 ft	Latitude:	32° 46' 39.510 N	
From:	Map	Easting:	528,184.50 ft	Longitude:	104° 14' 29.874 W
Position Uncertainty:	0.00 ft	Slot Radius:	ft	Grid Convergence:	0.05 °

Well:	State H #2					
Well Position	+N/S	0.00 ft	Northing:	646,629.20 ft	Latitude:	32° 46' 39.510 N
	+E/W	0.00 ft	Easting:	528,184.50 ft	Longitude:	104° 14' 29.874 W
Position Uncertainty	0.00 ft	Wellhead Elevation:	3,606.00 ft	Ground Level:	0.00 ft	

Wellbore:	Wellbore #1		
-----------	-------------	--	--

Magnetics:	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	9/11/2007	8.37	60.68	49,269

Design:	Plan #1		
---------	---------	--	--

Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD)	+N/S	+E/W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	156.92

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (ft)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
460.00	0.00	0.00	460.00	0.00	0.00	0.00	0.00	0.00	0.00	
768.76	6.18	156.92	768.18	-15.29	6.52	2.00	2.00	0.00	156.92	
2,854.52	6.18	156.92	2,841.82	-221.71	94.48	0.00	0.00	0.00	0.00	
3,163.30	0.00	0.00	3,150.00	-237.00	101.00	2.00	-2.00	0.00	180.00	
7,313.30	0.00	0.00	7,300.00	-237.00	101.00	0.00	0.00	0.00	0.00	PBHL-State H #1



Scientific Drilling
Planning Report



Database:	EDM 2003.16 Single User Dr	Local Co-ordinate Reference:	Well State: H 22
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3608.000 (KB Elev)
Project:	Eddy County, NM (NAD 27, NME)	MD Reference:	WELL @ 3608.000 (KB Elev)
Site:	State H 22	North Reference:	Grid
Well:	State H 22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	NS (ft)	EW (ft)	Vertical Section (ft)	Dogleg Rate (1/1000)	Build Rate (1/1000)	Turn Rate (1/1000)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
480.00	0.00	0.00	480.00	0.00	0.00	0.00	0.00	0.00	0.00	
KOP 480' Start 2.0/100'										
500.00	0.80	156.92	500.00	-0.26	0.11	0.28	2.00	2.00	0.00	
600.00	2.80	156.92	599.94	-3.15	1.34	3.42	2.00	2.00	0.00	
700.00	4.80	156.92	699.72	-8.24	3.94	10.05	2.00	2.00	0.00	
788.78	6.18	156.92	768.18	-15.20	6.52	16.62	2.00	2.00	0.00	
EOC hold 6.18'										
800.00	6.18	156.92	799.22	-16.38	7.83	19.98	0.00	0.00	0.00	
900.00	6.18	156.92	898.64	-28.28	12.05	30.74	0.00	0.00	0.00	
1,000.00	6.18	156.92	998.06	-38.18	16.27	41.50	0.00	0.00	0.00	
1,100.00	6.18	156.92	1,097.48	-48.07	20.49	52.26	0.00	0.00	0.00	
1,200.00	6.18	156.92	1,196.90	-57.97	24.70	63.01	0.00	0.00	0.00	
1,300.00	6.18	156.92	1,296.32	-67.87	28.92	73.77	0.00	0.00	0.00	
1,400.00	6.18	156.92	1,395.74	-77.76	33.14	84.53	0.00	0.00	0.00	
1,500.00	6.18	156.92	1,495.16	-87.66	37.36	95.29	0.00	0.00	0.00	
1,600.00	6.18	156.92	1,594.58	-97.55	41.57	106.04	0.00	0.00	0.00	
1,700.00	6.18	156.92	1,694.00	-107.45	45.79	116.80	0.00	0.00	0.00	
1,800.00	6.18	156.92	1,793.42	-117.35	50.01	127.56	0.00	0.00	0.00	
1,900.00	6.18	156.92	1,892.84	-127.24	54.23	138.32	0.00	0.00	0.00	
2,000.00	6.18	156.92	1,992.26	-137.14	58.44	149.07	0.00	0.00	0.00	
2,100.00	6.18	156.92	2,091.68	-147.04	62.66	159.83	0.00	0.00	0.00	
2,200.00	6.18	156.92	2,191.10	-156.93	66.88	170.59	0.00	0.00	0.00	
2,300.00	6.18	156.92	2,290.52	-166.83	71.10	181.35	0.00	0.00	0.00	
2,400.00	6.18	156.92	2,389.94	-176.73	75.31	192.10	0.00	0.00	0.00	
2,500.00	6.18	156.92	2,489.36	-186.62	79.53	202.86	0.00	0.00	0.00	
2,600.00	6.18	156.92	2,588.78	-196.52	83.75	213.62	0.00	0.00	0.00	
2,700.00	6.18	156.92	2,688.20	-206.41	87.97	224.38	0.00	0.00	0.00	
2,800.00	6.18	156.92	2,787.62	-216.31	92.18	235.13	0.00	0.00	0.00	
2,854.52	6.18	156.92	2,841.82	-221.71	94.48	241.00	0.00	0.00	0.00	
Start Drop 2.0/100'										
2,900.00	5.27	156.92	2,887.07	-225.88	96.26	245.53	2.00	-2.00	0.00	
3,000.00	3.27	156.92	2,886.79	-232.72	99.18	252.97	2.00	-2.00	0.00	
3,100.00	1.27	156.92	3,086.71	-238.36	100.73	258.92	2.00	-2.00	0.00	
3,163.30	0.00	0.00	3,150.00	-237.00	101.00	257.62	2.00	-2.00	0.00	
EOC hold 0.0'										
3,200.00	0.00	0.00	3,186.70	-237.00	101.00	257.62	0.00	0.00	0.00	
3,300.00	0.00	0.00	3,286.70	-237.00	101.00	257.62	0.00	0.00	0.00	
3,400.00	0.00	0.00	3,386.70	-237.00	101.00	257.62	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,486.70	-237.00	101.00	257.62	0.00	0.00	0.00	
3,600.00	0.00	0.00	3,586.70	-237.00	101.00	257.62	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,686.70	-237.00	101.00	257.62	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,786.70	-237.00	101.00	257.62	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,886.70	-237.00	101.00	257.62	0.00	0.00	0.00	
4,000.00	0.00	0.00	3,986.70	-237.00	101.00	257.62	0.00	0.00	0.00	
4,100.00	0.00	0.00	4,086.70	-237.00	101.00	257.62	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,186.70	-237.00	101.00	257.62	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,286.70	-237.00	101.00	257.62	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,386.70	-237.00	101.00	257.62	0.00	0.00	0.00	



Scientific Drilling
Planning Report



Database:	EDM.2003.16 Single User Db	Local Co-ordinate Reference:	Well State H #2
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3808.00R (KB Elev)
Project:	Eddy County, NM (NAD 27/NM)	MD Reference:	WELL @ 3808.00R (KB Elev)
Site:	State H #2	North Reference:	Grid
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore Design:	Wellbore #1 Plan # 15		

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	N/S (ft)	E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Budd Rate (°/100ft)	Turn Rate (°/100ft)
4,500.00	0.00	0.00	4,486.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,600.00	0.00	0.00	4,586.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,700.00	0.00	0.00	4,686.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,800.00	0.00	0.00	4,786.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,900.00	0.00	0.00	4,886.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,000.00	0.00	0.00	4,986.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,100.00	0.00	0.00	5,086.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,200.00	0.00	0.00	5,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,300.00	0.00	0.00	5,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,400.00	0.00	0.00	5,386.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,500.00	0.00	0.00	5,486.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,600.00	0.00	0.00	5,586.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,700.00	0.00	0.00	5,686.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,800.00	0.00	0.00	5,786.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,900.00	0.00	0.00	5,886.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,000.00	0.00	0.00	5,986.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,100.00	0.00	0.00	6,086.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,200.00	0.00	0.00	6,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,300.00	0.00	0.00	6,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,400.00	0.00	0.00	6,386.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,500.00	0.00	0.00	6,486.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,600.00	0.00	0.00	6,586.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,700.00	0.00	0.00	6,686.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,800.00	0.00	0.00	6,786.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,900.00	0.00	0.00	6,886.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,000.00	0.00	0.00	6,986.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,100.00	0.00	0.00	7,086.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,200.00	0.00	0.00	7,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,300.00	0.00	0.00	7,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,313.30	0.00	0.00	7,300.00	-237.00	101.00	257.62	0.00	0.00	0.00

Target Name	Dip Angle (°)	Dip Dir (°)	TVD (ft)	N/S (ft)	E/W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-State H #1 - plan hits target - Circle (radius 10.00)	0.00	0.00	7,300.00	-237.00	101.00	646,382.20	528,285.50	32° 46' 37.184 N	104° 14' 28.693 W
South HL-State H #1 - plan misses by 14.14ft at 7313.30ft MD (7300.00 TVD, -237.00 N, 101.00 E) - Rectangle (sides W0.00 H200.00 D0.00)	0.00	0.00	7,300.00	-247.00	111.00	646,382.20	528,295.50	32° 46' 37.065 N	104° 14' 28.576 W
East HL-State H #1 - plan misses by 14.14ft at 7313.30ft MD (7300.00 TVD, -237.00 N, 101.00 E) - Rectangle (sides W800.00 H0.00 D0.00)	0.00	0.00	7,300.00	-247.00	111.00	646,382.20	528,295.50	32° 46' 37.065 N	104° 14' 28.576 W



Scientific Drilling
Planning Report

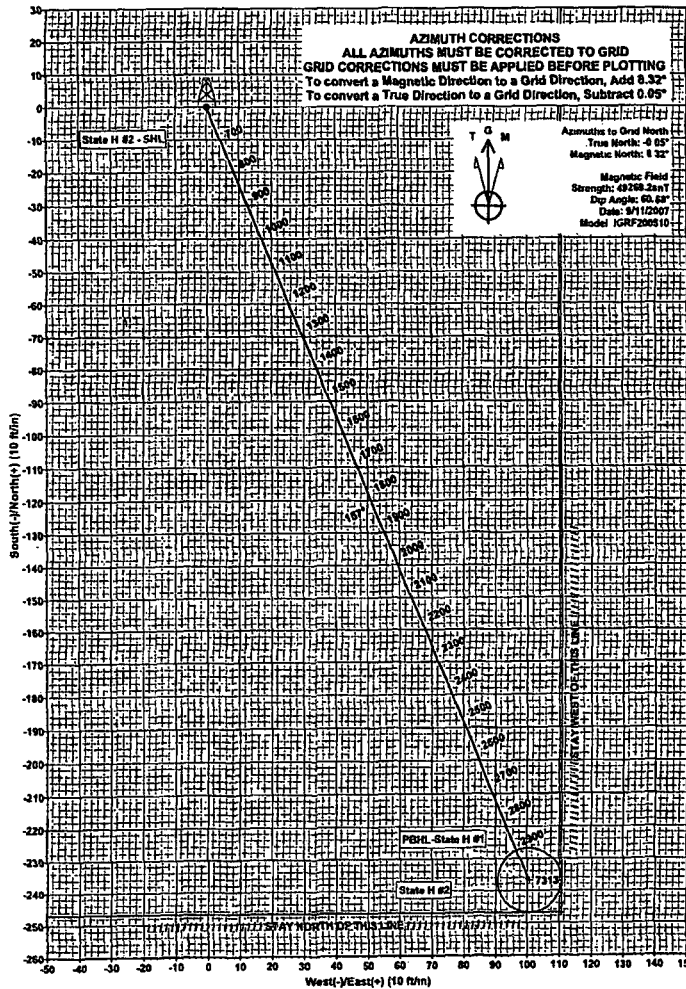
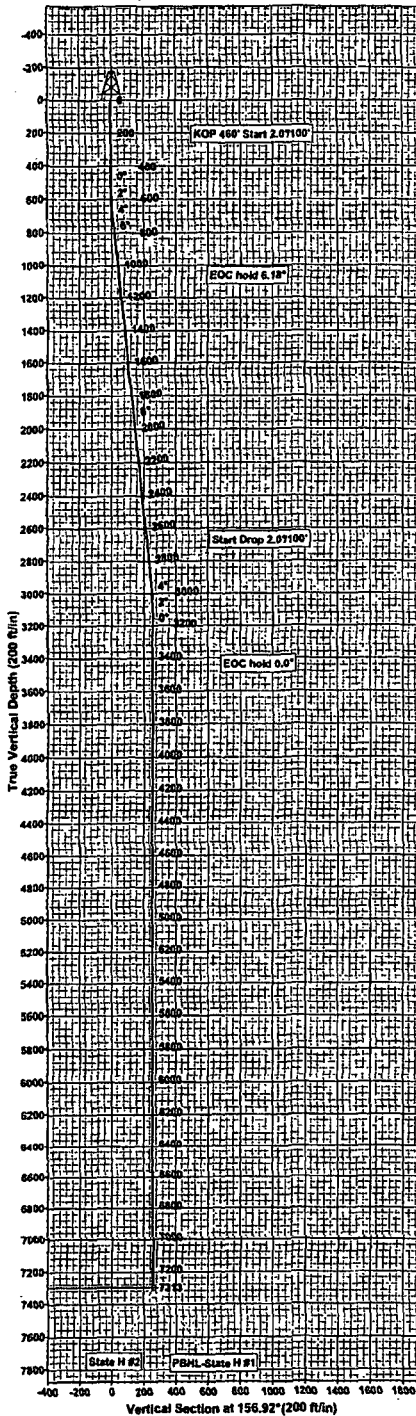


Database:	EDM 2003.16 Single User Db	Local Coordinates Reference:	Well State H #2
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3508.00ft (KB Elev)
Project:	Eddy County NM (NAD 27 NME)	MD Reference:	WELL @ 3508.00ft (KB Elev)
Site:	State H #2	North Reference:	Grid 12 N
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore #:	Wellbore #1		
Design:	Plan #1		

Plan Approximations					
Measured Depth (ft)	Depth (m)	N/S (ft)	E/W (ft)	Comments	
480.00	480.00	0.00	0.00	KOP 480' Start 2.0"/100'	
788.78	788.18	-15.29	6.52	EOC hold 6.18"	
2,854.52	2,841.82	-221.71	94.48	Start Drop 2.0"/100'	
3,163.30	3,150.00	-237.00	101.00	EOC hold 0.0"	



Scientific Drilling for Mack Energy Corp.
 Site: Eddy County, NM (NAD 27 NME)
 Well: State H #2
 Wellbore: Wellbore #1
 Design: Plan #1



AZIMUTH CORRECTIONS
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
 To convert a Magnetic Direction to a Grid Direction, Add 8.32°
 To convert a True Direction to a Grid Direction, Subtract 0.05°



Azimuths to Grid North
 True North: 0.00°
 Magnetic North: 8.32°
 Magnetic Field Strength: 49268.2auV
 Dip Angle: 60.62°
 Date: 9/11/2007
 Model: IGR200510

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	D Lag	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	460.00	0.00	0.00	460.00	0.00	0.00	0.00	0.00	0.00	
3	752.78	6.18	156.92	768.19	-15.29	6.52	2.00	156.92	16.62	
4	2854.52	6.18	156.82	2341.82	-21.71	94.48	0.00	0.00	241.00	
5	3163.30	0.00	0.00	3150.00	-37.00	101.00	2.00	180.00	257.63	
6	7313.30	0.00	0.00	7300.00	-37.00	101.00	0.00	0.00	257.63	PBHL - State H #1

WELL DETAILS: State H #2

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	946629.20	528184.50	32°45'39.510 N	104°14'29.374 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
East HL - State H #1	7300.00	-247.00	111.00	946382.20	528295.50	32°46'37.065 N	104°14'28.576 W	Rectangle (E: 1.00, W: 0.00)
PBHL - State H #1	7300.00	-237.00	101.00	946392.20	528285.50	32°46'37.164 N	104°14'28.693 W	Circle (Radius: 10.00)
South HL - State H #1	7300.00	-247.00	111.00	946382.20	528285.50	32°46'37.065 N	104°14'28.576 W	Rectangle (E: 1.00, W: 200.00)

PROJECT DETAILS: Eddy County, NM (NAD 27 NME) Plan: Plan #1 (State H #2 Wellbore #1)
 Geodetic System: US State Plane 1927 (Exact solution) Created By: Julio Pina
 Datum: NAD 1927 (NADCON CONUS) Date: 11-Sep-07
 Ellipsoid: Clarke 1866 Checked: _____
 Zone: New Mexico East 3001 Date: _____
 System Datum: Mean Sea Level Reviewed: _____
Approved: _____

Submit 3 Copies To Appropriate District Office
 District I
 1625 N French Dr, Hobbs, NM 88240
 District II
 1301 W Grand Ave, Artesia, NM 88210
 District III
 1000 Rio Brazos Rd, Aztec, NM 87410
 District IV
 1220 S St Francis Dr, Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 May 27, 2004

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

WELL API NO. 30-015-35814
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. B-9391
7. Lease Name or Unit Agreement Name State H
8. Well Number 2
9. OGRID Number 013837
10. Pool name or Wildcat Chalk Bluff Wolfcamp

SUNDRY NOTICES AND REPORTS ON WELLS
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

1. Type of Well: Oil Well Gas Well Other

2. Name of Operator
Mack Energy Corporation

3. Address of Operator
P. O. Box 960 Artesia, NM 88211-0960

4. Well Location
 Unit Letter H 2063 feet from the North line and 441 feet from the East line
 Section 2 Township 18S Range 27E NMPM County Eddy

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3590' GR

Pit or Below-grade Tank Application or Closure

Pit type _____ Depth Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____

Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: <u>Change casing</u> <input checked="" type="checkbox"/>		OTHER: _____ <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Mack Energy would like to change the casing string approved on this APD.

- Drill a 17 1/2" hole to 200', run 13 3/8" 48# H-40 casing and cement.
- Drill a 12 1/4" hole to 1150', run 8 5/8" 24# J-55 casing and cement.
- Drill a 7 7/8" hole to approximately 7300', run 5 1/2" 17# L-80 casing and cement.

OCT 22 2007
 OCD-ARTESIA

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit or an (attached) alternative OCD-approved plan

SIGNATURE Jerry W. Sherrell TITLE Production Clerk DATE 10/19/07

Type or print name Jerry W. Sherrell E-mail address: jerrys@mackenergycorp.com Telephone No (505)748-1288

For State Use Only

APPROVED BY: BRYAN G. ARRANT TITLE DISTRICT II GEOLOGIST DATE OCT 22 2007

Conditions of Approval (if any):



Mack Energy Corp.

Eddy County, NM (NAD 27 NME)

State H #2

State H #2

Wellbore #1

OCT 22 2007
OCD-ARTESIA

Plan: Plan #2

Standard Planning Report

19 October, 2007





**Scientific Drilling
Planning Report**



Database:	EDM 2003 16 Single User Db	Local Co-ordinate Reference:	Well State H #2
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3606 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3606 00ft (KB Elev)
Site:	State H #2	North Reference:	Grid
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Project	Eddy County, NM (NAD 27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	State H #2				
Site Position:		Northing:	646,629 20 ft	Latitude:	32° 46' 39 510 N
From:	Map	Easting:	528,184 50 ft	Longitude:	104° 14' 29 874 W
Position Uncertainty:	0 00 ft	Slot Radius:	ft	Grid Convergence:	0 05 °

Well	State H #2					
Well Position	+N/-S	0 00 ft	Northing:	646,629 20 ft	Latitude:	32° 46' 39 510 N
	+E/-W	0 00 ft	Easting:	528,184 50 ft	Longitude:	104° 14' 29 874 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	3,606 00 ft	Ground Level:	0 00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/19/2007	8 36	80 68	49,259

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0 00	0 00	156 92

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
1,250 00	0 00	0 00	1,250 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
1,785 00	10 70	156.92	1,781.89	-45.82	19 53	2 00	2 00	0 00	156 92	
2,636 01	10 70	156.92	2,618 11	-191 18	81 47	0 00	0 00	0 00	0 00	
3,171 01	0 00	0 00	3,150 00	-237 00	101 00	2 00	-2 00	0 00	180 00	
7,321 01	0 00	0 00	7,300 00	-237 00	101 00	0 00	0 00	0 00	0 00	PBHL-State H #1



**Scientific Drilling
Planning Report**



Database:	EDM 2003 16 Single User Db	Local Co-ordinate Reference:	Well State H #2
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3606.00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3606 00ft (KB Elev)
Site:	State H #2	North Reference:	Grid
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
1,150 00	0 00	0 00	1,150 00	0 00	0 00	0 00	0 00	0 00	0 00
8 5/8" Casing									
1,250 00	0 00	0 00	1,250 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP 1250' Start 2.0°/100'									
1,300 00	1 00	156 92	1,299 99	-0 40	0 17	0 44	2 00	2 00	0 00
1,400 00	3 00	156 92	1,399 93	-3 61	1 54	3 93	2 00	2 00	0 00
1,500 00	5 00	156 92	1,499 68	-10 03	4 27	10 90	2 00	2 00	0 00
1,600 00	7 00	156 92	1,599 13	-19 64	8 37	21 35	2 00	2 00	0 00
1,700 00	9 00	156 92	1,698 15	-32 45	13 83	35 27	2 00	2 00	0 00
1,785 00	10 70	156 92	1,781 90	-45 82	19 53	49 81	2 00	2 00	0 00
EOC hold 10.70°									
1,800 00	10 70	156 92	1,796 63	-48 38	20 62	52 59	0 00	0 00	0 00
1,900 00	10 70	156 92	1,894 89	-65 46	27 90	71 16	0 00	0 00	0 00
2,000 00	10 70	156 92	1,993 15	-82 54	35 18	89 73	0 00	0 00	0 00
2,100 00	10 70	156 92	2,091 41	-99 63	42 46	108 29	0 00	0 00	0 00
2,200 00	10 70	156 92	2,189 68	-116 71	49 74	126 86	0 00	0 00	0 00
2,300 00	10 70	156 92	2,287 94	-133 79	57 01	145 43	0 00	0 00	0 00
2,400 00	10 70	156 92	2,386 20	-150 87	64 29	163 99	0 00	0 00	0 00
2,500 00	10 70	156 92	2,484 46	-167 95	71 57	182 56	0 00	0 00	0 00
2,599 99	10 70	156 92	2,582 72	-185 03	78 85	201 13	0 00	0 00	0 00
2,636 01	10 70	156 92	2,618 11	-191 18	81 47	207 81	0 00	0 00	0 00
Start Drop 2.0°/100'									
2,699 99	9 42	156 92	2,681 11	-201 46	85 85	218 99	2 00	-2 00	0 00
2,799 99	7 42	156 92	2,780 03	-214 93	91 59	233 63	2 00	-2 00	0 00
2,899 99	5 42	156 92	2,879 39	-225 22	95 98	244 81	2 00	-2 00	0 00
2,999 99	3 42	156 92	2,979 09	-232 31	99 00	252 52	2 00	-2 00	0 00
3,099 99	1 42	156 92	3,079 00	-236 19	100 65	256 74	2 00	-2 00	0 00
3,171 01	0 00	0 00	3,150 00	-237 00	101 00	257 62	2 00	-2 00	0 00
EOC hold 0.0°									
7,321 01	0 00	0 00	7,300 00	-237 00	101 00	257 62	0 00	0 00	0 00
East HL-State H #1 - PBHL-State H #1 - South HL-State H #1									

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-State H #1 - hit/miss target - Shape - Circle (radius 10 00)	0 00	0 00	7,300 00	-237 00	101 00	646,392 20	528,285 50	32° 46' 37 164 N	104° 14' 28.693 W
South HL-State H #1 - plan misses by 14 14ft at 7321.01ft MD (7300.00 TVD, -237 00 N, 101.00 E) - Rectangle (sides W0 00 H200.00 D0.00)	0 00	0 00	7,300 00	-247 00	111 00	646,382 20	528,295 50	32° 46' 37 065 N	104° 14' 28 576 W
East HL-State H #1 - plan misses by 14 14ft at 7321 01ft MD (7300 00 TVD, -237 00 N, 101 00 E) - Rectangle (sides W800 00 H0 00 D0 00)	0 00	0 00	7,300 00	-247 00	111 00	646,382 20	528,295 50	32° 46' 37 065 N	104° 14' 28 576 W



**Scientific Drilling
Planning Report**



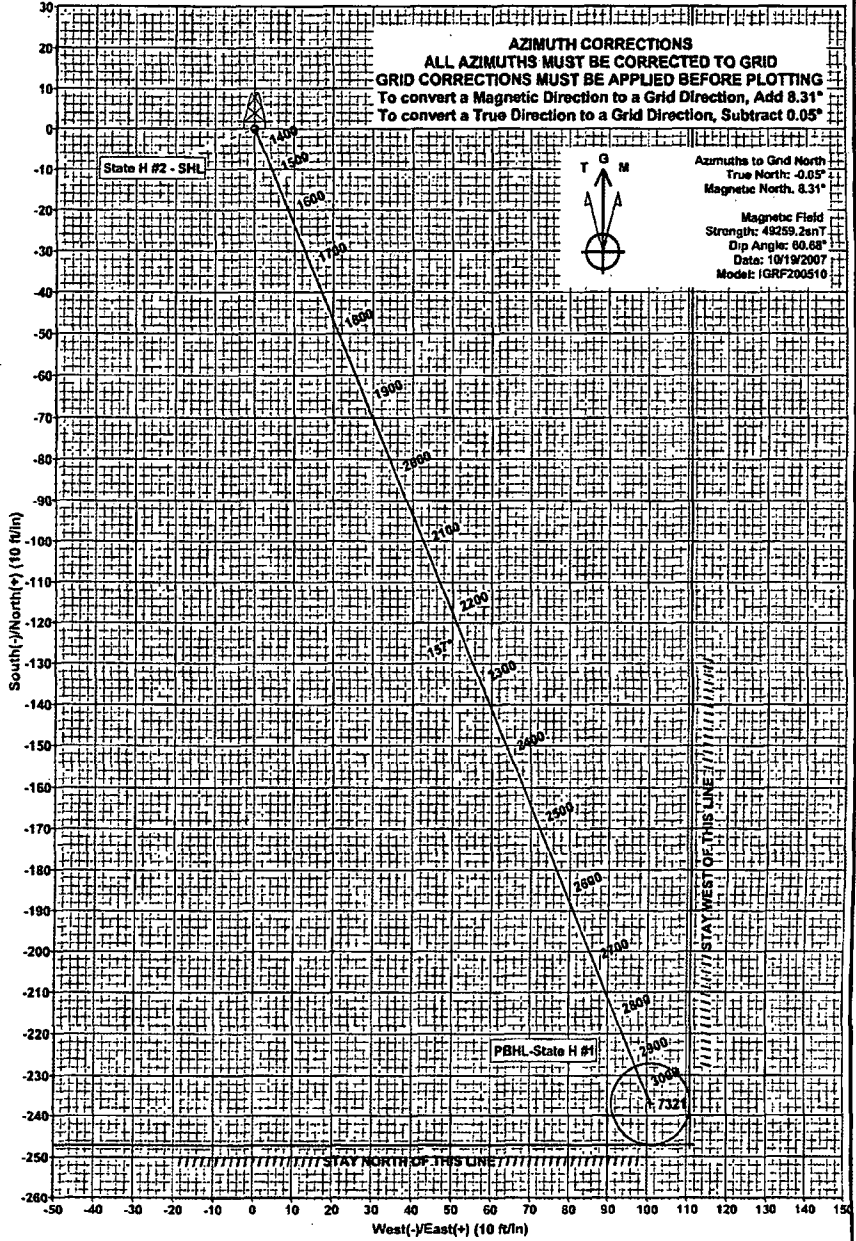
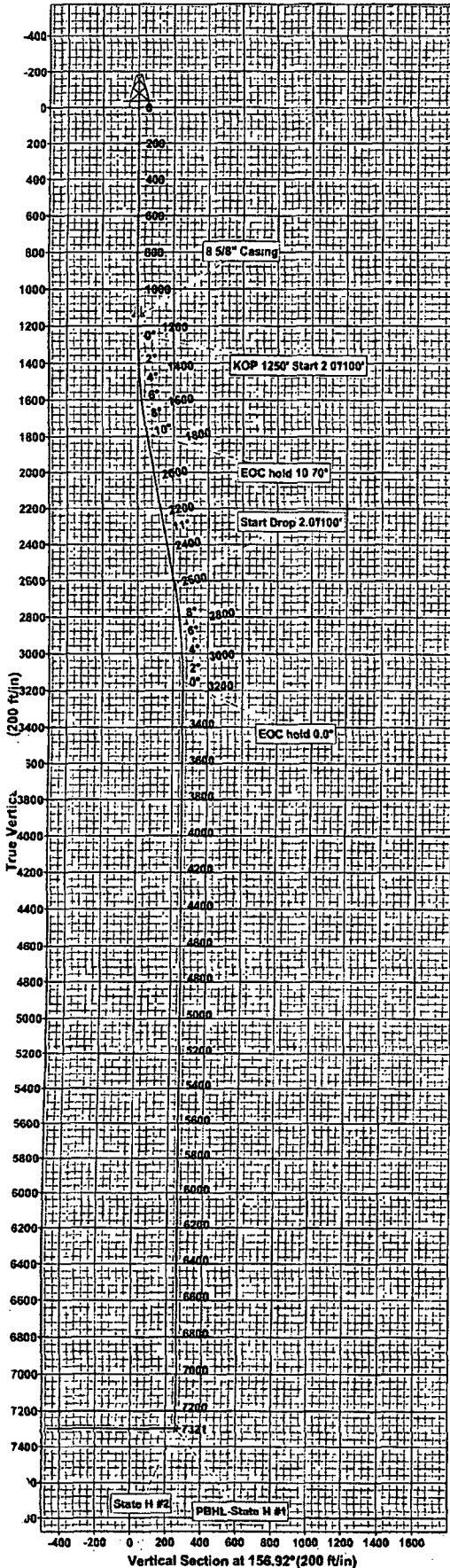
Database:	EDM 2003.16 Single User Db	Local Co-ordinate Reference:	Well State H #2
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3606 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3606 00ft (KB Elev)
Site:	State H #2	North Reference:	Gnd
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (ft)	Hole Diameter (ft)
1,150 00	1,150 00	8 5/8" Casing	8 62500	12.25000

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,250 00	1,250 00	0 00	0 00	KOP 1250' Start 2 0°/100'
1,785 00	1,781 90	-45 82	19.53	EOC hold 10.70°
2,636 01	2,618 11	-191 18	81 47	Start Drop 2 0°/100'
3,171 01	3,150 00	-237 00	101 00	EOC hold 0 0°



Scientific Drilling for Mack Energy Corp.
 Site: Eddy County, NM (NAD 27 NME)
 Well: State H #2
 Wellbore: Wellbore #1
 Design: Plan #2



AZIMUTH CORRECTIONS
 ALL AZIMUTHS MUST BE CORRECTED TO GRID
 GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
 To convert a Magnetic Direction to a Grid Direction, Add 8.31°
 To convert a True Direction to a Grid Direction, Subtract 0.05°



Azimuths to Grid North
 True North: -0.05°
 Magnetic North: 8.31°
 Magnetic Field
 Strength: 49259.2nT
 Dip Angle: 60.68°
 Date: 10/19/2007
 Model: IGRF200510

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1250.00	0.00	0.00	1250.00	0.00	0.00	0.00	0.00	0.00	
3	1785.00	10.70	156.92	1781.89	-45.82	19.53	2.00	156.92	49.81	
4	2636.01	10.70	156.92	2618.11	-191.18	81.47	0.00	0.00	207.81	
5	3171.01	0.00	0.00	3150.00	-237.00	101.00	2.00	180.00	257.62	
6	7321.01	0.00	0.00	7300.00	-237.00	101.00	0.00	0.00	257.62	PBHL-State H #1

WELL DETAILS: State H #2

+N-S	+E-W	Northing	Ground Level	0.00	Latitude	Longitude	Slot
0.00	0.00	646629.20	528184.50	32°46'39.510 N	104°14'28.693 W		

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
East HL-State H #1	7300.00	-247.00	111.00	646382.20	528295.50	32°46'37.065 N	104°14'28.576 W	Rectangle (Sides: L800.00 W0.00)
PBHL-State H #1	7300.00	-237.00	101.00	646392.20	528285.50	32°46'37.164 N	104°14'28.693 W	Circle (Radius: 10.00)
South HL-State H #1	7300.00	-247.00	111.00	646382.20	528295.50	32°46'37.065 N	104°14'28.576 W	Rectangle (Sides: L0.00 W200.00)

PROJECT DETAILS: Eddy County, NM (NAD 27 NME)

Geodetic System: US State Plans 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level

Plan: Plan #2 (State H #2/Wellbore #1)

Created By: Julio Pina Date: 19-Oct-07
 Checked: Date: _____
 Reviewed: Date: _____
 Approved: Date: _____

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(505) 393-6161 Fax:(505) 393-0720

District II
1301 W. Grand Ave., Artesia, NM 88210
Phone:(505) 748-1283 Fax:(505) 748-9720

District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-103
Permit 65781

<p align="center">SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVIOR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)</p>		<p>7. Well API NUMBER 30-015-35814</p>
<p>1. Type of Well: <u>O</u></p>		<p>5. Indicate Type of Lease S</p>
<p>2. Name of Operator MACK ENERGY CORP</p>		<p>6. State Oil & Gas Lease No.</p>
<p>3. Address of Operator PO BOX 960, 11352 LOVINGTON HWY ARTESIA, NM 88211</p>		<p>7. Lease Name or Unit Agreement Name STATE H</p>
<p>4. Well Location Unit Letter <u>H</u> : <u>2063</u> feet from the <u>N</u> line and <u>441</u> feet from the <u>E</u> line Section <u>2</u> Township <u>18S</u> Range <u>27E</u> NMPM <u>Eddy</u> County</p>		<p>8. Well Number 002</p>
<p>11. Elevation (Show whether DR, KB, BT, GR, etc.) 3590 GR</p>		<p>9. OGRID Number 13837</p>
<p>Pit or Below-grade Tank Application <input type="checkbox"/> or Closure <input type="checkbox"/></p> <p>Pit Type _____ Depth to Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____</p> <p>Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____</p>		<p>10. Pool name or Wildcat</p>

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:	SUBSEQUENT REPORT OF:
PERFORM REMEDIAL WORK <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>
PLUG AND ABANDON <input type="checkbox"/>	ALTER CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>
CHANGE OF PLANS <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>
MULTIPLE COMPL <input type="checkbox"/>	Other: <u>Drilling/Cement</u> <input checked="" type="checkbox"/>

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work.) SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

10/31/2007 Spud 17 1/2 hole @ 10:00pm.
11/1/2007 TD @ 201. Ran 5jts 13 3/8 H-40 48# @ 201', Cmt w/250sx C+2%CC, circ 104sx, plug down 12:20pm. WOC 18hrs test to 1800# 30min, OK.
11/4/2007 TD 12 1/4 hole @ 1165'.
11/5/2007 Ran 27jts 8 5/8 J-55 32# @ 1170'. Cmt w/475sx C, 200sx C+2%CC, circ 218sx, plug down 3:00am. WOC 12hrs test to 600# 30min, OK.
11/20/2007 TD @ 7545'.
11/22/2007 Ran 177jts 5 1/2 J-55 17# @ 7495', Cmt w/530sx C, circ 217sx. 2nd stage 365sx C, 520sx C, plug down 6:55pm, circ 200sx. WOC 12hrs test to 600# 20min, OK.
10/31/2007 Spudded well.

Casing and Cement Program

Date	String	Fluid Type	Hole Size	Csg Size	Weight lb/ft	Grade	Est TOC	Dpth Set	Sacks	Yield	Class	1" Dpth	Pres Held	Pres Drop	Open Hole
11/01/07	Surf	FreshWater	17.5	13.375	48	H-40	0	201	250		C		1800	0	Y
11/05/07	Int1	FreshWater	12.25	8.825	32	J-55	0	1170	875		C		600	0	Y
11/22/07	Prod	CutBrine	7.875	5.5	17	J-55	0	7495	1415		C		800	0	Y

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit or an (attached) alternative OGD-approved plan .

SIGNATURE Electronically Signed _____ TITLE Production Clerk DATE 12/11/2007
Type or print name Jerry Sherrill E-mail address jerryss@mackenergycorp.com Telephone No. 505-748-1288

For State Use Only:
APPROVED BY: Bryan Arant TITLE Geologist DATE 12/12/2007 7:46:02 AM

Submit 3 Copies To Appropriate District Office
 District I
 1625 N French Dr., Hobbs, NM 88240
 District II
 1301 W. Grand Ave., Artesia, NM 88210
 District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV
 1220 S St Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 May 27, 2004

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

WELL API NO. 30-015-35814
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. B-9391
7. Lease Name or Unit Agreement Name State H
8. Well Number 2
9. OGRID Number 013837
10. Pool name or Wildcat Red Lake; Glorieta-Yeso NE

SUNDRY NOTICES AND REPORTS ON WELLS
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

1. Type of Well: Oil Well Gas Well Other **FEB 26 2008**

2. Name of Operator
Mack Energy Corporation **OCD-ARTESIA**

3. Address of Operator
P. O. Box 960 Artesia, NM 88211-0960

4. Well Location
 Unit Letter H 2063 feet from the North line and 441 feet from the East line
 Section 2 Township 18S Range 27E NMPM County Eddy

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3590' GR

Pit or Below-grade Tank Application or Closure

Pit type Depth Groundwater Distance from nearest fresh water well _____ Distance from nearest surface water _____

Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: _____ <input type="checkbox"/>		OTHER: <u>Completion</u> <input checked="" type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

- 12/15/2007 Perforated from 6134.5-6434' 57 holes.
- 12/17/2007 Acidized w/4500 gals 15%.
- 12/18/2007 RIH w/203 joints 2 7/8 tubing SN @ 6439'. RIH w/2 1/2"x2"x20' pump.
- 12/26/2007 Set CIBP @ 6020' w/35' cement cap. Perforated from 5789.5-5957.5' 52 holes.
- 12/27/2007 Acidized w/4500 gals 15%.
- 12/28/2007 Perforated from 5391-5700.5' 83 holes. Acidized w/5000 gals 15%.
- 12/29/2007 RIH w/188 joints 2 7/8 tubing SN @ 5965'. RIH w/2 1/2"x2"x20' pump.
- 1/7/2008 Set CIBP @ 5300' w/35' cement cap. Perforated from 4118.5-4197' 40 holes.
- 1/8/2008 Acidized w/2000 gals 15%.
- 1/9/2008 Frac w/8130# liteprop, 68,890# 16/30 sand, 14,046# siberprop, 91,292 gals 30/40# gel.
- 1/11/2008 RIH w/134 joints 2 7/8" tubing SN @ 4243'. RIH 2 1/2 x 2 x 20' Pump.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOC guidelines , a general permit or an (attached) alternative OCD-approved plan

SIGNATURE Jerry W. Sherrell TITLE Production Clerk DATE 2/25/08

Type or print name Jerry W. Sherrell E-mail address: jerrys@mackenergycorp.com Telephone No. (575)748-1288
 For State Use Only

FOR RECORDS ONLY

APPROVED BY: _____ TITLE _____ DATE 2-28-08
 Conditions of Approval (if any): _____

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources **FEB 26 2008**
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-104
Revised Feb. 26, 2007
Submit to Appropriate District Office
5 Copies

OCD-ARTESIA

AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

1 Operator name and Address Mack Energy Corporation P.O. Box 960 Artesia, NM 88211-0960		2 OGRID Number 013837
4 API Number 30-015-35814		3 Reason for Filing Code/ Effective Date NW
5 Pool Name Red Lake; Glorieta-Yeso, NE	6 Pool Code 5130 96136	
7 Property Code 303847	8 Property Name State H	9 Well Number 2

H. Surface Location

UL of lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	2	18S	27E		2063	North	441	East	Eddy

Bottom Hole Location

UL of lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	2	18S	27E		2300	North	340	East	Eddy

12 Lse Code	13 Producing Method Code	14 Gas Connection Date	15 C-129 Permit Number	16 C-129 Effective Date	17 C-129 Expiration Date
S	P	1/11/08			

III. Oil and Gas Transporters

18 Transporter OGRID	19 Transporter Name and Address	20 O/G/W
015694	Navajo Refining PO Box 159 Artesia, NM 88211-0159	O
036785	DCP Midstream LP 4001 Penbrook Odessa, TX 79762	G

IV. Well Completion Data

21 Spud Date	22 Ready Date	23 TD	24 PBDT	25 Perforations	26 DHC, MC
10/31/2007	11/23/2007	7545'	5265'	4118.5-4197'	
27 Hole Size	28 Casing & Tubing Size	29 Depth Set	30 Sacks Cement		
17 1/2	13 3/8	201	250		
12 1/4	8 5/8	1170	675		
7 7/8	5 1/2	7495	1415		
	2 7/8	4243			

V. Well Test Data

31 Date New Oil	32 Gas Delivery Date	33 Test Date	34 Test Length	35 Tbg. Pressure	36 Csg. Pressure
1/14/2008	1/14/2008	1/30/08	24 hours		
37 Choke Size	38 Oil	39 Water	40 Gas	41 Test Method	
8		30	30	P	

42 I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature: *Jerry W. Sherrell*

Printed name:
Jerry W. Sherrell
Title:
Production Clerk

E-mail Address:
jerrys@mackenergycorp.com

Date:
2/25/08

Phone:
(575)748-1288

OIL CONSERVATION DIVISION
Approved by: *Kimberly M. Wilson*
Title: *Compliance Officer*
Approval Date: *3-5-08*

Submit to Appropriate District Office
 State Lease - 6 copies
 Fee Lease - 5 copies
DISTRICT I
 P O Box 1980, Hobbs, NM 88240

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-105
 Revised 1-1-89

OIL CONSERVATION DIVISION
 2040 South Pacheco
 Santa Fe, New Mexico 87505

DISTRICT II
 1 South First, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

WELL API NO
 30-015-35814
 5 Indicate Type of Lease
 STATE FEE
 6 State Oil & Gas Lease No
 B-9391

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1 Type of Well
 OIL WELL GAS WELL DRY OTHER _____
 b Type of Completion
 NEW WELL WORK OVER Deepen PLUG BACK DIFF RESVR OTHER _____

2 Name of Operator
 Mack Energy Corporation

3 Address of Operator
 P.O. Box 960, Artesia, NM 88211-0960

4 Well Location
 Unit Letter H : 2063 Feet From The North Line and 441 Feet From The East Line
 Section 2 Township 18S Range 27E NMPM Eddy County

7 Lease Name or Unit Agreement Name
 State H

8 Well No
 2

9 Pool name or Wildcat
 Red Lake; Glorieta-Yeso, NE

10 Date Spudded
 10/31/2007

11 Date TD Reached
 11/21/2007

12 Date Compl (Ready to Prod.)
 1/11/08

13 Elevations (DF & RKB, RT, GR, etc)
 3590' GR

14 Elev Casinghead

15 Total Depth
 7545'

16 Plug Back TD
 5265'

17 If Multiple Compl How Many Zones?

18 Intervals Drilled By
 Rotary Tools Yes
 Cable Tools

19 Producing Interval(s), of this completion - Top, Bottom, Name
 4118.5-4197'

20 Was Directional Survey Made
 Yes

21 Type Electric and Other Logs Run
 Gamma Ray, Neutron, Density, Lateralog, Spectral Gamma Ray

22 Was Well Cored
 No

FEB 26 2008
 OCD-ARTESIA

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8	48	201	17 1/2	250 sx	None
8 5/8	32	1170	12 1/4	675 sx	None
5 1/2	17	7495	7 7/8	1415 sx	None

24 LINER RECORD				25 TUBING RECORD			
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
					2 7/8	4243'	

26 Perforation record (interval, size, and number)	27 ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.
6134.5-6434', .42, 57 CIBP @ 6020 w/35' cmt cap	DEPTH INTERVAL
5391-5957.5', .42, 92 CIBP @ 5300' w/35' cmt cap	AMOUNT AND KIND MATERIAL USED
4118.5-4197', .42, 40	See C-103 for detail

PRODUCTION

28 Date First Production		Production Method (Flowing, gas lift, pumping - Size and type pump)				Well Status (Prod. or Shut-in)	
1/14/2008		2 1/2x2x20' Pump				Producing	
Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water- Bbl	Gas - Oil Ratio
1/30/08	24 hours			8	30	30	3750
Flow Tubing Press	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl	Gas - MCF	Water- Bbl.	Oil Gravity - API - (Corr.)	
		8		30	30		

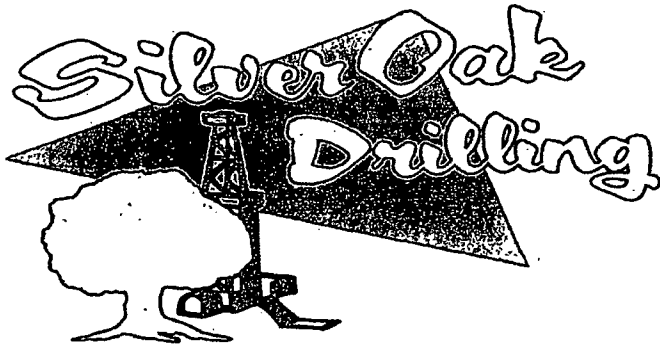
29 Disposition of Gas (Sold, used for fuel, vented, etc)
 Sold

Test Witnessed By
 Robert C. Chase

30 List Attachments
 ation Survey and Logs

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Jerry W. Sherrell Printed Name Jerry W. Sherrell Title Production Clerk Date 2/25/08



PO Box 1370
Artesia, NM 88211-1370
(505) 748-1288

FEB 26 2008
OCD-ARTESIA

November 30, 2007

Mack Energy Corporation
PO Box 960
Artesia, NM 88211-0960

RE: State H #2
2310' FNL & 990' FEL
Sec. 2, T18S, R27E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned re-entered well.

Very truly yours,

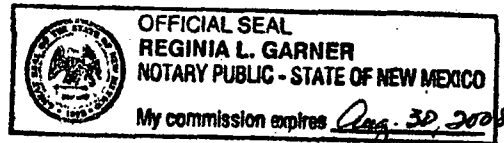
A handwritten signature in cursive script that reads "Leroy Curry".

Leroy Curry
Drilling Superintendent

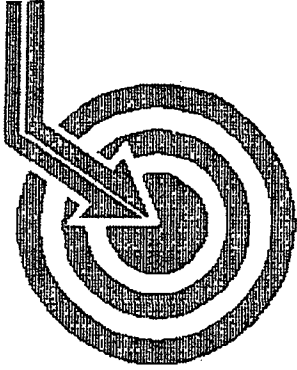
State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 30th day of November, 2007.

A handwritten signature in cursive script that reads "Regina L. Garner".

Notary Public

Date	Depth	Dev	Dir
11/01/2007	133.00	0.50	0.00
11/02/2007	431.00	0.75	0.00
11/03/2007	700.00	0.50	0.00
11/04/2007	975.00	1.00	0.00
11/04/2007	1134.00	0.50	0.00
11/06/2007	1301.00	1.66	164.90
11/06/2007	1396.00	3.41	161.90
11/07/2007	1492.00	5.19	159.10
11/07/2007	1587.00	7.21	156.40
11/07/2007	1683.00	8.51	155.20
11/07/2007	1778.00	9.94	158.10
11/07/2007	1873.00	9.56	157.60
11/08/2007	1968.00	10.53	159.60
11/08/2007	2064.00	9.83	160.00
11/08/2007	2159.00	9.69	160.50
11/08/2007	2350.00	10.78	156.20
11/08/2007	2445.00	10.67	156.40
11/08/2007	2540.00	10.54	155.40
11/08/2007	2604.00	10.43	156.30
11/09/2007	2699.00	8.58	156.50
11/09/2007	2794.00	7.39	158.60
11/09/2007	2984.00	4.30	162.00
11/09/2007	3080.00	2.86	157.10
11/09/2007	3175.00	1.50	150.00
11/09/2007	3270.00	0.67	256.70
11/09/2007	3365.00	0.82	280.50
11/10/2007	3460.00	0.48	176.00
11/10/2007	3556.00	0.51	181.00
11/10/2007	3651.00	0.65	173.10
11/10/2007	3746.00	0.67	157.20
11/10/2007	3841.00	0.59	154.20
11/10/2007	3936.00	0.24	309.30
11/11/2007	4031.00	0.30	302.30
11/11/2007	4126.00	0.45	322.60
11/11/2007	4222.00	1.06	337.40
11/11/2007	4602.00	1.01	348.10
11/12/2007	4666.00	1.10	18.68
11/12/2007	4729.00	0.53	71.05
11/12/2007	4824.00	0.27	38.14
11/12/2007	4920.00	0.71	12.94
11/12/2007	5015.00	1.19	5.48
11/12/2007	5110.00	0.82	20.33
11/12/2007	5206.00	0.28	132.80
11/13/2007	5301.00	0.54	23.07
11/13/2007	5396.00	0.34	49.15
11/13/2007	5491.00	1.12	153.70
11/13/2007	5586.00	2.14	189.30
11/13/2007	5660.00	1.31	189.40
11/13/2007	5681.00	1.09	194.70
11/13/2007	5745.00	0.67	318.40
11/13/2007	5839.00	0.24	221.30
11/14/2007	5935.00	1.41	161.10
11/15/2007	5998.00	1.01	182.35
11/16/2007	6188.00	0.34	306.90
11/16/2007	6474.00	0.11	334.80
11/16/2007	6570.00	0.15	314.50
11/17/2007	6664.00	0.27	304.50
11/17/2007	6759.00	0.45	295.50
11/17/2007	6854.00	0.46	296.60
11/17/2007	6949.00	0.59	290.10
11/17/2007	7044.00	1.09	134.40
11/18/2007	7140.00	0.38	89.52
11/18/2007	7235.00	0.57	122.40
11/18/2007	7382.00	0.81	125.40



Scientific Drilling

FEB 26 2008
OCD-ARTESIA

MACK ENERGY

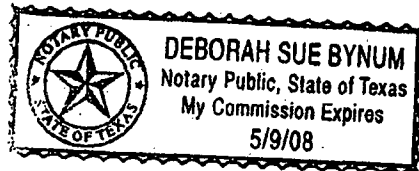
Field: Chalk Bluff
Site: Eddy County, NM
Well: State H #2
Wellpath: DH - Job #32D11071006
Survey: 11/05/07-11/14/07

This survey is correct to the best of my knowledge and is supported by actual field data.

.....*L. Wharton*.....Company Representative

Notorized this date 19th of December, 2007.

Deborah Sue Bynum
Notary Signature
County of Midland
e of Texas





Scientific
Drilling

Scientific Drilling International Survey Report

Company: MACK ENERGY	Date: 12/16/2007	Time: 18:34.47	Page: 1
Field: Chalk Bluff	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: State H #2	Section (VS) Reference:	Well (0.00N,0.00E,156.92Azi)	
Wellpath: VH - Job #32K11071013	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 11/06/07	Start Date:	11/06/2007
Company: Scientific Drilling Internatio	Engineer:	Madrid w/P&M
Tool: Keeper;Keeper Gyro	Tied-to:	From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClSD ft	ClSA deg
0.00	0.00	359.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.62	77.45	100.00	0.10	0.12	0.53	0.62	0.54	77.45
200.00	0.42	110.33	199.99	0.45	0.11	1.40	0.35	1.40	85.60
300.00	0.37	96.72	299.99	0.86	-0.06	2.06	0.11	2.07	91.59
400.00	0.38	143.78	399.99	1.35	-0.36	2.58	0.30	2.61	98.00
500.00	0.26	212.14	499.99	1.80	-0.82	2.66	0.37	2.78	107.20
600.00	0.28	250.72	599.99	1.91	-1.10	2.30	0.18	2.55	115.41
700.00	0.44	271.18	699.99	1.74	-1.17	1.69	0.20	2.05	124.64
800.00	0.40	74.03	799.98	1.62	-1.06	1.64	0.83	1.96	122.94
900.00	1.01	96.02	899.98	2.09	-1.06	2.85	0.66	3.04	110.38
1000.00	0.95	87.15	999.96	2.81	-1.11	4.56	0.16	4.69	103.70
1100.00	0.56	76.15	1099.95	3.17	-0.95	5.86	0.41	5.94	99.24
1143.00	0.26	86.43	1142.95	3.24	-0.90	6.16	0.72	6.23	98.28



Scientific Drilling International Survey Report

Company: MACK ENERGY	Date: 12/16/2007	Time: 19:33:59	Page: 1
Field: Chalk Bluff	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: State H #2	Section (VS) Reference:	Well (0.00N,0.00E,156.92Azi).	
Wellpath: DH - Job #32D11071006	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 11/05/07-11/14/07	Start Date: 11/05/2007
Company: Scientific Drilling Internatio	Engineer: Hernandez/Biggs/Elger
Tool: MWD;MWD	Tied-to: From: Definitive Path

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
1143.00	0.26	86.43	1142.95	3.24	-0.90	6.16	0.00	6.23	98.28
1206.00	0.17	46.81	1205.95	3.26	-0.82	6.37	0.27	6.43	97.37
1301.00	1.66	164.91	1300.94	4.57	-2.06	6.83	1.84	7.14	106.75
1396.00	3.41	161.92	1395.84	8.75	-6.07	8.07	1.85	10.10	126.96
1492.00	5.19	159.14	1491.57	15.93	-12.84	10.50	1.87	16.59	140.73
1587.00	7.21	156.46	1586.01	26.19	-22.32	14.41	2.15	26.57	147.15
1682.00	8.51	155.25	1680.11	39.18	-34.17	19.74	1.38	39.46	149.99
1778.00	9.94	158.14	1774.87	54.56	-48.32	25.80	1.57	54.77	151.90
1873.00	9.56	157.67	1868.50	70.65	-63.22	31.85	0.41	70.79	153.26
1968.00	10.53	159.64	1962.04	87.21	-78.66	37.86	1.08	87.30	154.30
2064.00	9.83	160.07	2056.53	104.15	-94.59	43.71	0.73	104.20	155.20
2159.00	9.69	160.58	2150.15	120.23	-109.75	49.13	0.17	120.25	155.88
2255.00	10.79	160.25	2244.62	137.26	-125.83	54.86	1.15	137.27	156.45
2350.00	10.78	156.23	2337.95	155.02	-142.33	61.44	0.79	155.02	156.65
2445.00	10.67	156.45	2431.29	172.70	-158.52	68.54	0.12	172.70	156.62
2540.00	10.54	155.44	2524.66	190.18	-174.49	75.66	0.24	190.18	156.56
2604.00	10.43	156.37	2587.60	201.82	-185.12	80.42	0.32	201.83	156.52
2699.00	8.58	156.51	2681.29	217.51	-199.50	86.69	1.95	217.52	156.51
2794.00	7.39	158.65	2775.36	230.71	-211.69	91.74	1.29	230.71	156.57
2889.00	5.58	158.12	2869.75	241.43	-221.66	95.68	1.91	241.43	156.65
2984.00	4.30	167.04	2964.40	249.55	-229.42	98.20	1.57	249.55	156.83
3080.00	2.86	157.16	3060.21	255.49	-235.14	99.94	1.63	255.49	156.97
3175.00	1.50	150.04	3155.14	259.10	-238.40	101.48	1.46	259.10	156.94
3270.00	0.67	256.00	3250.13	260.24	-239.61	101.56	1.90	260.24	157.03
3365.00	0.82	280.00	3345.12	259.79	-239.63	100.35	0.36	259.79	157.28
3460.00	0.48	176.03	3440.12	259.79	-239.90	99.71	1.10	259.80	157.43
3556.00	0.51	181.08	3536.11	260.56	-240.73	99.73	0.06	260.57	157.50
3651.00	0.65	173.19	3631.11	261.46	-241.69	99.79	0.17	261.48	157.57
3746.00	0.67	157.21	3726.10	262.54	-242.74	100.07	0.19	262.55	157.60
3841.00	0.59	154.21	3821.10	263.58	-243.69	100.50	0.09	263.60	157.59
3936.00	0.24	309.36	3916.09	263.89	-244.00	100.55	0.86	263.91	157.60
4031.00	0.30	302.31	4011.09	263.51	-243.74	100.19	0.07	263.53	157.66
4126.00	0.45	322.60	4106.09	262.95	-243.32	99.75	0.21	262.97	157.71
4222.00	1.06	337.45	4202.08	261.69	-242.20	99.18	0.66	261.72	157.73
4317.00	0.86	37.93	4297.07	260.47	-240.82	99.29	1.03	260.49	157.59
4412.00	0.59	7.90	4392.06	259.70	-239.78	99.79	0.48	259.71	157.40
4507.00	1.14	0.19	4487.05	258.42	-238.35	99.86	0.59	258.42	157.27
4602.00	1.01	346.16	4582.04	256.72	-236.59	99.66	0.31	256.72	157.16
4667.00	1.10	18.68	4647.03	255.69	-235.44	99.73	0.92	255.69	157.04
4729.00	0.53	71.05	4709.02	255.27	-234.78	100.19	1.42	255.27	156.89
4824.00	0.28	38.14	4804.02	255.19	-234.46	100.75	0.35	255.19	156.75
4920.00	0.71	12.94	4900.01	254.59	-233.69	101.03	0.49	254.60	156.62
5015.00	1.19	5.48	4995.00	253.25	-232.14	101.25	0.52	253.26	156.43
5110.00	0.82	20.33	5089.99	251.89	-230.52	101.58	0.47	251.91	156.22
5206.00	0.28	132.80	5185.98	251.60	-230.03	101.99	1.00	251.63	156.09
5301.00	0.54	23.07	5280.98	251.51	-229.78	102.34	0.72	251.54	155.99
5396.00	0.34	49.15	5375.98	251.11	-229.18	102.73	0.29	251.15	155.86
5491.00	1.12	153.76	5470.97	251.95	-229.83	103.35	1.32	252.00	155.79
5586.00	2.14	189.33	5565.94	254.38	-232.42	103.47	1.46	254.41	156.00



Scientific Drilling International Survey Report

Company: MACK ENERGY	Date: 12/16/2007	Time: 19:33:59	Page: 2
Field: Chalk Bluff	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: State H #2	Section (VS) Reference:	Well (0 00N,0.00E,156.92Azi)	
Wellpath: DH - Job #32D11071006	Survey Calculation Method:	Minimum Curvature	Db: Sybase

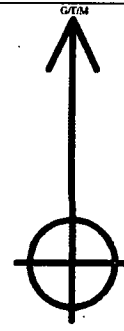
Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
5681.00	1.09	194.79	5660.90	256.59	-235.04	102.96	1.12	256.60	156.34
5745.00	0.67	318.43	5724.89	256.71	-235.35	102.55	2.44	256.72	156.45
5839.00	0.24	221.30	5818.89	256.28	-235.08	102.06	0.79	256.28	156.53
5935.00	1.41	161.10	5914.88	257.54	-236.35	102.31	1.36	257.55	156.59
5998.00	1.01	182.35	5977.87	258.82	-237.64	102.54	0.94	258.82	156.66
6093.00	0.20	294.46	6072.86	259.45	-238.41	102.35	1.16	259.45	156.77
6189.00	0.34	306.99	6168.86	259.08	-238.17	101.97	0.16	259.08	156.82
6284.00	0.45	287.60	6263.86	258.59	-237.89	101.39	0.18	258.59	156.92
6379.00	1.01	331.75	6358.85	257.51	-237.04	100.64	0.79	257.51	157.00
6474.00	0.11	334.85	6453.84	256.59	-236.22	100.20	0.95	256.59	157.01
6570.00	0.15	314.50	6549.84	256.38	-236.04	100.07	0.06	256.38	157.02
6665.00	0.27	304.58	6644.84	256.08	-235.83	99.80	0.13	256.08	157.06
6760.00	0.45	295.56	6739.84	255.61	-235.54	99.28	0.20	255.61	157.14
6855.00	0.46	296.68	6834.84	255.04	-235.21	98.60	0.01	255.04	157.26
6950.00	0.51	281.73	6929.83	254.50	-234.95	97.85	0.14	254.51	157.39
7046.00	1.09	134.41	7025.83	255.10	-235.50	98.08	1.61	255.11	157.39
7140.00	0.38	89.52	7119.82	256.05	-236.13	99.03	0.92	256.05	157.25
7235.00	0.57	122.42	7214.82	256.56	-236.38	99.75	0.34	256.56	157.12
7330.00	0.81	125.40	7309.81	257.52	-237.02	100.69	0.26	257.52	156.98
7367.00	0.87	128.12	7346.81	257.99	-237.35	101.13	0.19	257.99	156.92



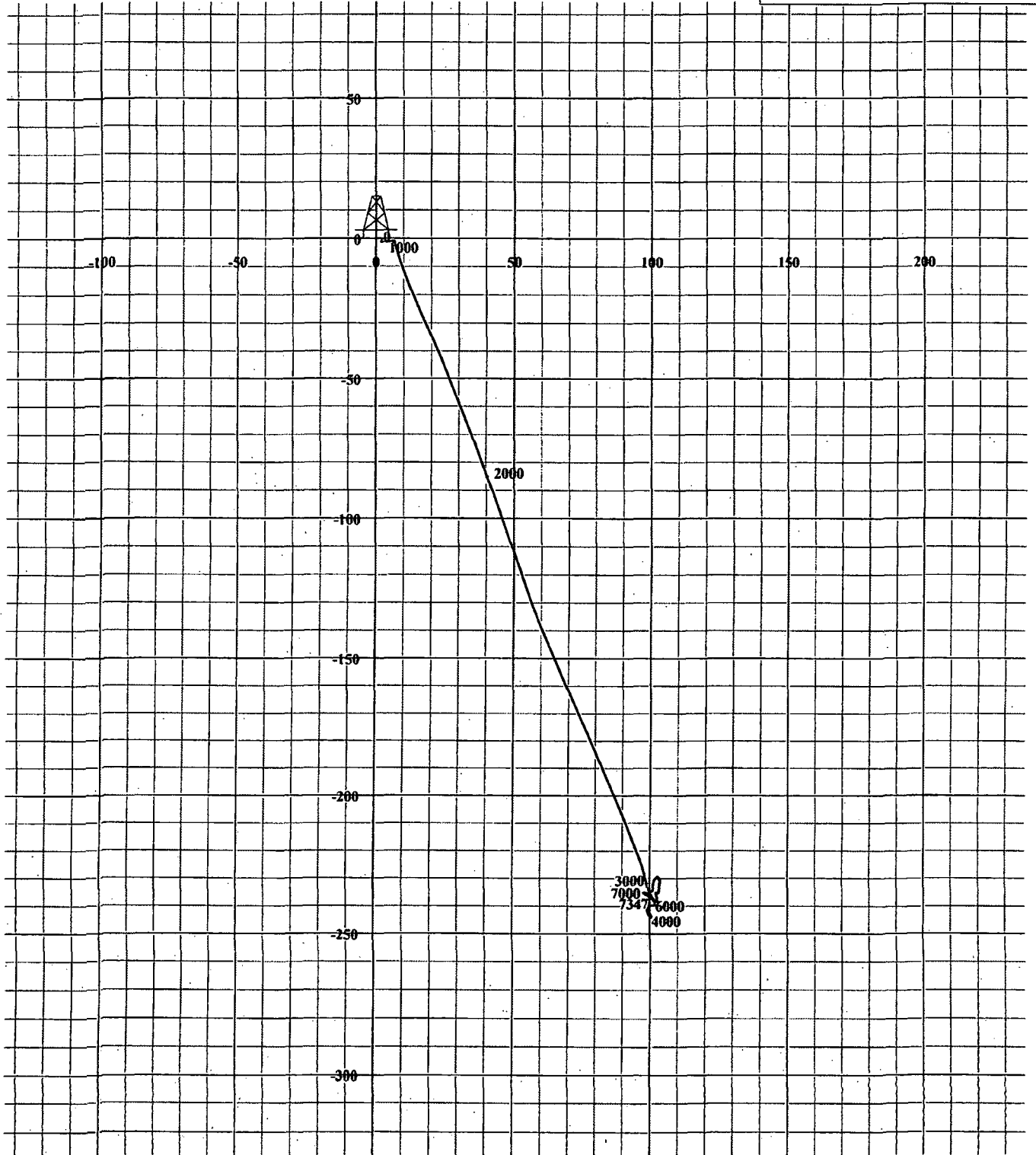
**Scientific
Drilling**

**Field: Chalk Bluff
Site: Eddy County, NM
Well: State H #2
Wellpath: DH - Job #32D11071006
Survey: 11/05/07-11/14/07**



Adjusts to Grid North
True North 0.00°
Magnetic North 0.00°
Magnetic Field
Strength 0aT
Dip Angle 0.00°
Date 12/16/2007
Model Igr2000

South(-)/North(+) [50



West(-)/East(+) [50ft/in]

Wilson, Kimberly M, EMNRD

From: Jerry Sherrell [jerrys@mackenergycorp.com]
Sent: Wednesday, March 05, 2008 3:37 PM
To: Wilson, Kimberly M, EMNRD
Subject: FW: Financial Assurance/Rule 40- Mack
Importance: High

From: Altomare, Mikal, EMNRD [mailto:Mikal.Altomare@state.nm.us]
Sent: Tuesday, March 04, 2008 11:03 AM
To: Mull, Donna, EMNRD
Cc: Rebecca Groh; Jerry Sherrell; Phillips, Dorothy, EMNRD
Subject: Financial Assurance/Rule 40- Mack
Importance: High

Donna –

I have received a pdf version of what appears to be a properly and fully executed single well bond for the state h no. 001, 03-015-00745, which Mack has assured me that they are overnighting to our office. Everything appears to be in order, and I expect that, upon receipt of the original in our office, it will be reviewed and accepted and Mack will no longer be listed as being out of compliance with financial assurance requirements. That being said, and given that Mack has posted all other necessary financial assurances for all other properties, if there are no other violations or issues with approval of pending Mack applications, consider them to be in compliance for purposes of pending permit applications with your office.

Please contact me if you have any questions.

Thanks,

Mikal



Mikal M. Altomare

Assistant General Counsel
Oil Conservation Division
Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Tel 505.476.3480 ~ Fax 505.476.3462
mikal.altomare@state.nm.us

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3/5/2008

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APPENDIX C

USGS EARTHQUAKE DATA





NEIC: Earthquake Search Results

U. S. G E O L O G I C A L S U R V E Y
E A R T H Q U A K E D A T A B A S E

FILE CREATED: Mon Jun 4 16:13:25 2012
 Circle Search Earthquakes= 225
 Circle Center Point Latitude: 32.772N Longitude: 104.233W
 Radius: 321.860 km
 Catalog Used: PDE
 Data Selection: Historical & Preliminary Data

CAT	YEAR	MO	DA	ORIG TIME	LAT	LONG	DEP	MAGNITUDE	IEM	DTSVNWG	DIST
									NFO		km
									TF		
PDE	1973	09	22	233835.80	34.47	-106.95	5	3.1 MLGS	...	.....	314
PDE	1974	11	28	033520.50	32.31	-104.14	5	3.7 MLGS	...	.....	51
PDE	1975	08	01	072757.30	31.42	-104.01	5	3.0 LgTUL	.F.	.....	150
PDE	1976	01	19	040330.50	31.90	-103.08	1	3.5 MDGS	.F.	.....	145
PDE	1976	01	22	072157	31.90	-103.07	1	2.8 MDGS	...	.....	145
PDE	1976	01	25	044827.90	31.90	-103.08	2	3.9 MDGS	5F.	.....	145
PDE	1977	01	04	183137.60	32.36	-106.92	5	3.2 MLGS	5F.	.....	256
PDE	1977	04	26	090307.30	31.90	-103.08	4	3.3 MLGS	.F.	.....	144
PDE	1977	11	28	014050.50	32.95	-100.84	5	3.5 MLGS	...	.....	318
PDE	1978	03	02	100452.70	31.56	-102.51	11	3.5 MLGS	.F.	.....	210
PDE	1979	07	05	010501	32.95	-100.89	4	2.7 UKTUL	.H.	.....	312
PDE	1980	03	22	004912.50	34.60	-105.92	5	3.4 MLGS	4F.	.....	255
PDE	1981	05	09	123550.80	33.99	-107.03	5	3.1 MLGS	5F.	.....	293
PDE	1982	01	04	165608.05	31.18	-102.49	5	3.9 LgTUL	3F.	.....	240
PDE	1982	03	16	110302.67	35.36	-103.27	5	3.1 LgTUL	3F.	.....	300
PDE	1982	04	26	083147.79	33.02	-100.84	5	2.8 LgGS	...	.....	318
PDE	1982	05	18	060008.50	34.17	-106.95	9	2.8 MLGS	.F.	.....	296
PDE	1982	05	18	060838.40	34.20	-106.90	6	2.8 MLGS	.F.	.....	293
PDE	1982	05	24	063251.70	34.17	-106.95	6	2.9 MLGS	.F.	.....	295
PDE	1982	09	20	035517.20	33.95	-107.06	11	3.5 LgTUL	4F.	.....	293
PDE	1982	10	07	124125.99	34.31	-106.82	4	2.4 MLGS	.F.	.....	294
PDE	1982	11	28	023648.51	33.00	-100.84	5	3.3 LgTUL	4F.	.....	318
PDE	1983	03	02	232219.40	34.30	-106.89	8	4.3 LgTUL	6D.	.....	299
PDE	1983	04	30	073420.18	33.32	-106.44	7	3.5 MLGS	...	.....	214
PDE	1983	09	15	232536.05	35.14	-104.39	5	3.2 LgTUL	5F.	.....	263
PDE	1983	09	29	074408.43	35.24	-104.30	5	2.7 MDGS	...	.....	274
PDE	1984	05	21	133113.54	35.07	-102.23	5	3.1 LgTUL	...	.....	314
PDE	1984	08	26	021954	34.31	-106.80	5	2.9 MLGS	.F.	.....	292
PDE	1984	12	04	203636.02	32.26	-103.56	5	2.9 MLGS	...	.....	84
PDE	1985	06	05	103600.60	32.56	-106.92	6	2.9 MLGLD	4F.	.....	252
PDE	1985	06	27	182000.03	33.62	-106.47	0	3.4 LgGS	...	.....E..	229
PDE	1985	08	16	145652.96	34.13	-106.83	7	4.1 MLGS	6D.	.....	284

PDE	1985	09	06	052246.20	32.54	-106.94	5	2.6	MDGLD	.F.	.....	255
PDE	1985	12	15	071452.23	35.28	-104.64	5	3.6	LgTUL	.F.	.....	280
PDE	1986	04	17	210430.30	32.59	-106.91	5	2.7	MDGLD	.F.	.....	251
PDE	1986	04	28	130016	34.01	-106.82	5	2.6	MDGLD	.F.	.....	276
PDE	1986	08	27	180656.38	35.16	-105.09	5	3.2	MLGS	.F.	.....	276
PDE	1987	05	14	155958.46	33.54	-106.52	0	2.9	MLGS	...	....E..	229
PDE	1988	12	25	075233.93	35.12	-105.96	0	2.8	MDSNM	.F.	.....	304
PDE	1989	01	29	050715.33	35.22	-104.09	7	3.4	MDSNM	...	.....	271
PDE	1989	11	29	065438.50	34.46	-106.89	13	4.7	MDSNM	5F.	.....	309
PDE	1990	01	29	131610.68	34.46	-106.88	12	4.8	LgTUL	6D.	.....	308
PDE	1990	01	31	010819.29	34.44	-106.86	10	4.0	LgTUL	5F.	.....	306
PDE	1990	02	21	120219.34	34.01	-106.54	5	3.6	MLGS	.F.	.....	255
PDE	1990	02	27	132322	33.95	-106.59	5	3.9	MDSNM	4F.	.....	255
PDE	1990	05	05	162622.89	34.45	-106.88	6	3.6	MDSNM	.F.	.....	307
PDE	1990	07	21	192822.79	34.46	-106.86	11	3.0	MDSNM	...	.....	306
PDE	1990	07	21	203031.34	34.46	-106.86	7	3.1	MDSNM	...	.....	306
PDE	1990	07	21	234804.92	34.45	-106.85	7	3.2	MDSNM	...	.....	306
PDE	1990	07	22	212705.13	34.84	-106.01	10	3.7	MDSNM	...	.....	281
PDE	1990	07	31	073240.18	34.46	-106.86	7	3.3	MDSNM	.F.	.....	307
PDE	1990	11	08	104653.77	34.45	-106.86	6	4.3	MDSNM	4F.	.....	306
PDE	1990	11	08	110346.51	34.45	-106.86	8	3.1	MDSNM	.F.	.....	306
PDE	1990	11	10	121816.85	34.45	-106.85	7	3.1	MDSNM	...	.....	305
PDE	1990	11	15	072524.38	34.46	-106.86	6	3.6	MDSNM	4F.	.....	306
PDE	1990	12	05	033644.30	34.45	-106.86	8	2.6	MDSNM	...	.....	306
PDE	1991	03	05	201711.40	34.44	-106.87	9	2.9	MDSNM	3F.	.....	306
PDE	1991	03	06	143659.07	34.44	-106.88	7	2.5	MDSNM	...	.....	307
PDE	1991	06	05	184414.90	34.45	-106.85	4	3.0	MDSNM	.F.	.....	305
PDE	1991	06	20	1605	33.62	-106.47	0	3.5	MLGS	...	....E..	229
PDE	1991	12	09	124716.50	34.85	-106.55	14	3.1	LgTUL	3F.	.....	314
PDE	1992	01	02	114535.61	32.33	-103.10	5	5.0	LgTUL	5F.	.....	116
PDE	1992	02	23	161752.51	30.65	-105.51	5	3.4	LgTUL	...	.....	264
PDE	1992	08	24	012535.20	34.01	-106.86	5	2.6	MDSNM	.F.	.....	280
PDE	1992	08	26	032452.67	32.17	-102.71	5	3.0	LgGS	...	.....	157
PDE	1993	03	24	023203.50	35.39	-104.19	5	3.0	LgGS	2F.	.....	290
PDE	1993	06	10	1510	33.62	-106.47	0	3.2	MLGS	...	....E..	229
PDE	1993	06	23	032312.28	31.35	-102.51	5	2.8	MDSNM	...	.....	226
PDE	1993	12	22	192511.39	33.33	-105.68	10	3.2	MDSNM	...	.....	148
PDE	1994	01	01	025131.29	34.44	-106.98	10	2.5	MDSNM	...	.....	314
PDE	1995	03	19	183643.97	35.00	-104.21	5	3.3	LgGS	...	.....	246
PDE	1995	04	14	003256.17	30.28	-103.35	17	5.7	MwGS	6CM	.....	287
PDE	1995	04	14	011148.40	30.30	-103.35	10	2.7	LgGS	...	.....	286
PDE	1995	04	14	021426	30.30	-103.35	10	2.8	LgGS	...	.....	286
PDE	1995	04	14	021938.50	30.30	-103.35	10	3.3	LgGS	.F.	.....	286
PDE	1995	04	14	034842	30.30	-103.35	10	2.6	LgGS	.F.	.....	286
PDE	1995	04	14	041116	30.30	-103.35	10	2.4	LgGS	.F.	.....	286
PDE	1995	04	14	055339	30.30	-103.35	10	2.7	LgGS	...	.....	286
PDE	1995	04	14	073936.50	30.30	-103.35	10	2.4	LgGS	.F.	.....	286
PDE	1995	04	14	082712.50	30.30	-103.35	10	2.8	LgGS	.F.	.....	286
PDE	1995	04	14	100258	30.30	-103.35	10	2.9	LgGS	.F.	.....	286
PDE	1995	04	14	105720.40	30.30	-103.35	10	2.3	LgGS	.F.	.....	286
PDE	1995	04	15	031805	30.30	-103.35	10	2.4	LgGS	.F.	.....	286
PDE	1995	04	15	143329.51	30.27	-103.32	10	4.0	LgGS	6D.	.....	290
PDE	1995	04	16	004043.30	30.30	-103.35	10	2.3	LgGS	...	.....	286
PDE	1995	04	16	102625.50	30.30	-103.35	10	2.5	LgGS	...	.....	286
PDE	1995	04	16	161609.60	30.30	-103.35	10	2.4	LgGS	...	.....	286
PDE	1995	04	17	085000.50	30.30	-103.35	10	2.5	LgGS	...	.....	286
PDE	1995	04	21	044144	30.30	-103.35	10	2.9	LgGS	3F.	.....	286
PDE	1995	06	01	010615.70	30.30	-103.35	10	3.5	LgGS	4F.	.....	286
PDE	1995	07	06	024151	30.30	-103.35	10	2.7	LgGS	.F.	.....	286
PDE	1995	07	06	024704	30.30	-103.35	10	2.6	LgGS	.F.	.....	286

PDE	1995	08	28	151339.05	34.21	-106.94	3	2.8	LgGS	5F.	.....	297
PDE	1995	11	12	174559.40	30.30	-103.35	10	3.6	LgGS	.F.	.....	286
PDE	1996	03	15	131757.22	33.59	-105.69	10	2.9	LgGS	.F.	.....	163
PDE	1996	03	24	201612.70	34.26	-105.68	10	3.5	LgGS	.F.	.....	212
PDE	1996	03	24	201923.10	34.27	-105.69	10	3.7	LgGS	.F.	.....	214
PDE	1996	07	22	100614.98	34.20	-105.71	10	3.5	LgGS	.F.	.....	209
PDE	1997	05	20	094105.82	34.19	-105.74	10	3.2	LgGS	.F.	.....	210
PDE	1997	12	31	132830.05	34.53	-106.15	5	3.5	MLGS	.F.	.....	264
PDE	1997	12	31	133206.60	34.55	-106.15	5	3.5	MLGS	...	.....	265
PDE	1997	12	31	133358.90	34.55	-106.15	5	3.4	MLGS	...	.....	265
PDE	1998	01	04	080531.87	34.55	-106.19	5	4.0	MLGS	.F.	.....	268
PDE	1998	04	15	103342.42	30.19	-103.30	10	3.6	LgGS	.F.	.....	299
PDE	1998	07	14	053848.75	35.34	-103.47	5	3.0	MDSNM	.F.	.....	293
PDE	1999	03	01	080023.50	32.57	-104.66	1	2.9	LgGS	...	.....	45
PDE	1999	03	14	224317.97	32.59	-104.63	1	4.0	MDSNM	.F.	.....	42
PDE	1999	03	17	122923.11	32.58	-104.67	1	3.5	MDSNM	...	.....	46
PDE	1999	05	30	190425.60	32.58	-104.66	10	3.9	MDSNM	...	.....	45
PDE	1999	08	09	065122.97	32.57	-104.59	5	2.9	MDSNM	...	.....	40
PDE	2000	02	02	071420.26	32.58	-104.63	5	2.7	LgGS	...	.....	42
PDE	2000	02	26	030100.83	30.24	-103.61	5	2.8	LgGS	.F.	.....	286
PDE	2001	06	02	015553.72	32.33	-103.14	5	3.3	LgGS	...	.....	113
PDE	2001	11	22	000708.02	31.79	-102.63	5	3.1	LgGS	...	.....	186
PDE	2002	09	17	154514.47	32.58	-104.63	10	3.5	LgGS	...	.....	42
PDE	2002	09	17	233419.35	32.58	-104.63	10	3.3	LgGS	...	.....	43
PDE	2003	06	21	020309.56	32.67	-104.50	5	3.6	LgGS	...	.....	28
PDE	2004	05	23	092205.28	32.53	-104.57	5	4.0	mbGS	3F.	.....	41
PDE	2004	05	24	213628.56	34.47	-106.90	5	3.5	MLGS	.F.	.....	310
PDE	2004	06	22	085528.23	32.53	-104.58	5	3.7	LgGS	.F.	.....	42
PDE	2004	08	26	184518.62	32.58	-104.50	5	3.4	MLGS	...	.....	33
PDE	2004	10	28	025904.82	32.60	-104.50	5	3.0	LgGS	...	.....	31
PDE	2004	11	14	212749.90	33.25	-106.20	5	3.5	LgGS	...	.....	191
PDE	2005	10	30	025734.81	34.07	-106.98	5	2.4	MLGS	.F.	.....	292
PDE	2005	12	19	202740.37	32.53	-104.55	5	4.1	MwSLM	3FM	.....	40
PDE	2005	12	22	143011.67	32.58	-104.57	5	3.6	LgGS	.F.	.....	37
PDE	2006	01	27	100456.45	32.59	-104.55	5	2.7	LgGS	...	.....	35
PDE	2006	01	27	160745.84	32.55	-104.58	5	3.1	LgGS	...	.....	40
PDE	2006	02	04	195510.68	32.58	-104.62	5	2.7	MLGS	...	.....	42
PDE	2006	03	04	171458.25	30.29	-103.67	5	2.7	LgGS	...	.....	280
PDE	2006	03	20	175529.12	32.60	-104.56	5	3.0	MLGS	...	.....	36
PDE	2006	04	08	180835.23	31.95	-101.42	5	2.9	MLGS	...	.....	279
PDE	2006	08	12	104909.67	32.90	-100.89	5	2.8	LgGS	.F.	.....	312
PDE	2007	05	23	051655.15	34.07	-106.94	5	3.4	MLGS	3F.	.....	289
PDE	2008	01	29	102453.24	32.90	-100.84	5	3.3	LgGS	.F.	.....	317
PDE	2008	02	18	1415	32.27	-101.42	0	2.1	LgGS	.C.	....E..	269
PDE	2008	04	16	090604.36	33.66	-106.06	5	2.7	MLGS	...	.....	196
PDE	2008	05	23	180305.86	32.50	-104.60	5	2.7	LgGS	...	.....	45
PDE	2008	07	18	173109.40	32.89	-100.84	5	2.7	LgGS	...	.....	317
PDE	2008	12	28	205659.99	30.44	-103.36	5	2.6	MLGS	...	.....	271
PDE	2009	01	30	014121.66	32.50	-104.61	5	2.7	LgGS	...	.....	46
PDE	2009	06	05	171732.94	31.35	-105.98	0	2.4	MLEPT	.F.	.....	227
PDE	2009	06	05	181023.63	31.35	-105.98	0	2.6	MLEPT	.F.	.....	227
PDE	2009	08	20	015723.10	34.03	-106.87	5	2.7	MLGS	3F.	.....	282
PDE	2009	08	30	003100.29	34.22	-106.89	5	2.5	MLGS	.F.	.....	293
PDE	2009	08	30	063947.47	34.16	-106.86	5	2.6	MLGS	.F.	.....	289
PDE	2009	08	30	070943.72	34.19	-106.88	5	2.1	MLGS	.F.	.....	291
PDE	2009	11	17	185306.84	32.43	-104.64	5	3.0	LgGS	...	.....	54
PDE	2010	01	27	045933.05	32.90	-100.83	5	3.1	LgGS	.F.	.....	318
PDE	2010	02	21	095539.77	32.57	-104.61	5	2.8	LgGS	...	.....	41
PDE	2010	03	28	000355.08	32.44	-104.50	4	4.1	MwRMT	3FM	.....	44
PDE	2010	04	11	195632.67	32.41	-101.06	5	2.9	LgGS	...	.....	300

PDE	2010	04	12	002005.97	32.94	-100.88	5	2.8	LgGS	...	314
PDE	2010	05	09	071807.37	34.04	-106.83	5	2.1	MLGS	.F.	279
PDE	2010	05	27	204721.87	31.11	-105.58	5	3.7	MLGS	...	223
PDE	2010	05	31	215819.17	32.52	-104.61	5	4.0	MLGS	...	44
PDE	2010	08	08	011238.07	32.90	-100.85	5	3.4	MwRMT	2FM	316
PDE	2010	08	25	020514.32	32.95	-100.86	5	2.8	LgGS	...	315
PDE	2010	08	29	124836.61	32.91	-100.92	5	2.6	LgGS	...	310
PDE-W	2010	10	09	074227.63	32.93	-100.89	5	3.1	LgGS	...	313
PDE-W	2010	10	26	065629.79	32.92	-100.85	5	3.1	LgGS	...	316
PDE-W	2010	11	01	091058.42	33.00	-100.82	5	2.8	LgGS	...	320
PDE-W	2011	01	11	043415.77	34.39	-106.99	5	2.7	MLGS	...	312
PDE-W	2011	02	17	182534.41	30.11	-103.30	5	3.3	LgGS	...	307
PDE-W	2011	03	01	033012.76	32.88	-100.84	5	3.1	LgGS	2F.	317
PDE-W	2011	03	01	063159.89	32.84	-100.80	5	2.5	LgGS	...	321
PDE-W	2011	03	12	152200.86	32.88	-100.90	5	3.0	LgGS	...	312
PDE-W	2011	03	14	001948.80	32.96	-100.81	5	3.0	LgGS	...	320
PDE-W	2011	03	28	091211.95	32.91	-100.82	5	3.0	LgGS	...	320
PDE-W	2011	04	06	233835.45	34.40	-107.02	5	3.2	MLGS	...	315
PDE-W	2011	04	25	165631.88	32.82	-100.84	5	2.5	LgGS	...	317
PDE-W	2011	04	28	010341.97	30.74	-105.71	6	4.4	mbGS	.F.	264
PDE-W	2011	04	28	035625.61	30.74	-105.78	10	4.0	mbGS	...	268
PDE-W	2011	04	28	045834.59	30.68	-105.75	9	3.6	MwRMT	.FM	272
PDE-W	2011	04	28	074903.45	30.82	-105.80	5	3.1	LgGS	...	262
PDE-W	2011	04	28	075418.94	30.58	-105.85	5	2.7	LgGS	...	286
PDE-W	2011	04	30	010716.82	30.76	-105.75	10	4.6	MDUNM	...	265
PDE-W	2011	05	02	114328.24	30.73	-105.72	10	4.2	MwRMT	2FM	266
PDE-W	2011	05	02	115836.35	30.74	-105.70	10	3.3	MLGS	...	264
PDE-W	2011	05	02	134032.64	30.69	-105.75	10	3.3	MLGS	...	271
PDE-W	2011	05	02	135536.79	30.73	-105.67	5	4.4	mbGS	2F.	264
PDE-W	2011	05	03	025830.18	30.67	-105.73	10	3.8	MwRMT	.FM	273
PDE-W	2011	05	03	114203.84	30.49	-105.68	10	2.8	MLGS	...	287
PDE-W	2011	05	04	162627.03	30.71	-105.79	10	3.7	MwRMT	.M	271
PDE-W	2011	05	05	052010.02	30.79	-105.76	10	3.6	MLGS	...	262
PDE-W	2011	05	06	002426.09	30.75	-105.73	10	2.8	MLGS	...	264
PDE-W	2011	05	06	004559.26	30.81	-105.71	10	2.8	MLGS	...	258
PDE-W	2011	05	07	045100.88	30.64	-105.73	10	4.1	MDUNM	2F.	275
PDE-W	2011	05	08	132449.65	30.75	-105.81	10	3.1	MLGS	...	269
PDE-W	2011	05	08	134616.49	30.72	-105.76	10	3.2	MLGS	...	269
PDE-W	2011	05	08	135758.52	30.71	-105.75	10	2.9	MLGS	...	269
PDE-W	2011	05	08	190732.13	30.81	-105.31	10	3.0	MLGS	...	239
PDE-W	2011	05	08	225459.93	30.74	-105.74	10	3.3	MLGS	...	266
PDE-W	2011	05	09	064019.15	30.76	-105.69	10	3.9	MDUNM	.F.	261
PDE-W	2011	05	10	184118.44	30.72	-105.72	10	3.4	MLGS	...	267
PDE-W	2011	05	13	124916.26	30.76	-105.45	10	2.6	MLGS	...	250
PDE-W	2011	05	14	220751.11	30.82	-105.74	10	3.9	MDUNM	.F.	259
PDE-W	2011	05	17	200820	30.75	-105.74	10	4.2	MDUNM	...	265
PDE-W	2011	05	19	103523.51	30.80	-105.69	10	3.4	MwRMT	.M	258
PDE-W	2011	05	19	115649.90	30.72	-105.59	10	2.9	MLGS	...	260
PDE-W	2011	05	20	231419.06	30.20	-105.55	10	2.7	MLGS	...	310
PDE-W	2011	05	25	100301.09	30.70	-105.63	10	2.8	MLGS	...	264
PDE-W	2011	05	27	014128.20	30.80	-105.76	10	3.6	MLGS	...	261
PDE-W	2011	05	27	014908.92	30.98	-105.78	10	3.0	MLGS	...	246
PDE-W	2011	07	14	102913.60	32.93	-100.81	5	2.5	LgGS	...	321
PDE-W	2011	09	11	183635.11	32.74	-100.84	5	2.5	LgGS	3F.	318
PDE-W	2011	09	11	203158.11	32.89	-100.85	5	2.8	LgGS	2F.	316
PDE-W	2011	09	12	003149.11	32.80	-100.88	5	2.7	LgGS	2F.	314
PDE-W	2011	09	12	022931.34	32.73	-100.85	5	2.5	LgGS	.H.	317
PDE-W	2011	09	12	091946.71	32.85	-100.85	5	2.6	LgGS	...	316
PDE-W	2011	09	12	092612.90	32.76	-100.84	5	2.7	LgGS	2F.	317
PDE-W	2011	09	12	141834.05	32.82	-100.87	7	3.4	LgGS	3F.	314

PDE-W	2011	09	28	214637.55	32.52	-104.66	5	2.7	LgGS	...	48
PDE-W	2011	11	24	064959.99	32.95	-100.81	5	2.8	LgGS	...	320
PDE-W	2011	11	24	231549.01	32.94	-100.85	5	3.1	LgGS	...	317
PDE-W	2011	12	09	184733.24	32.94	-100.86	5	3.5	LgGS	3F.	315
PDE-W	2011	12	17	144658.46	32.81	-100.85	5	3.2	LgGS	3F.	316
PDE-W	2011	12	29	061907.64	32.81	-100.91	5	2.5	LgGS	...	311
PDE-W	2011	12	29	114808.28	32.88	-100.83	5	2.5	LgGS	.F.	318
PDE-W	2012	01	15	092901.68	31.23	-103.61	5	2.7	LgGS	2F.	181
PDE-W	2012	01	24	182102.61	30.32	-103.38	5	3.6	LgGS	4F.	283
PDE-W	2012	02	06	040024.75	32.09	-104.91	5	2.7	LgGS	...	98
PDE-W	2012	03	06	031149.71	31.81	-106.31	5	2.5	MLGS	3F.	223
PDE-W	2012	03	18	105722.43	32.28	-103.89	5	3.1	LgGS	...	63
PDE-Q	2012	04	05	091115.95	31.57	-106.09	5	2.9	MLGS	.F.	219

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APPENDIX D

INJECTION FLUID ANALYTICAL DATA





08-Mar-2011

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: 1102690

Dear Aaron,

ALS Environmental received 2 samples on 24-Feb-2011 08:50 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 39.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Glenda H. Ramos

JayLynn F Thibault
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

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Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1102690

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1102690-01	Effluent	Water		2/23/2011 08:50	2/24/2011 08:50	<input type="checkbox"/>
1102690-02	Trip Blank	Water		2/23/2011	2/24/2011 08:50	<input type="checkbox"/>

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1102690

Case Narrative

Prep Comments for 3510_B, Sample 1102690-01F: Matrix Int. Sample Very Dirty. Batch 50327, Method 8270_W, Sample SLCSDW2-110224: Insufficient sample for MS/ MSD Batch 50327, Semivolatiles, Sample 1102690-01F: Sample had to be ran at 5X due to sample matrix.

Batch R106075, Method 300_W, Sample CCV: Bromide not reported in this analytical sequence. 1102742-01D MS/MSD & 1102725-01B MS/MSD -Spike recoveries out of control due to elevated analytes in background samples causing matrix inteference resulting in poor or over range spike recoveries

Batch R106075, Method 300_W, Sample CCV: Bromide not reported in this analytical sequence. 1102742-01D MS/MSD & 1102725-01b MS/MSD -Spike recoveries out of control due to elevated analytes in background samples causing matrix inteference and poor recoveries

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 2/23/2011 08:50 AM

Work Order: 1102690
Lab ID: 1102690-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			SW7470		Prep Date: 3/1/2011	Analyst: JCJ
Mercury	ND		0.000200	mg/L	1	3/1/2011 03:35 PM
METALS			SW6020		Prep Date: 2/25/2011	Analyst: ALR
Aluminum	6.00		0.500	mg/L	50	2/28/2011 06:13 PM
Arsenic	0.0557		0.00500	mg/L	1	2/25/2011 09:21 PM
Barium	0.0590		0.00500	mg/L	1	2/25/2011 09:21 PM
Beryllium	ND		0.00200	mg/L	1	2/25/2011 09:21 PM
Boron	0.216		0.0200	mg/L	1	2/25/2011 09:21 PM
Cadmium	ND		0.00200	mg/L	1	2/25/2011 09:21 PM
Calcium	124		0.500	mg/L	1	2/25/2011 09:21 PM
Chromium	0.00562		0.00500	mg/L	1	2/25/2011 09:21 PM
Cobalt	ND		0.00500	mg/L	1	2/25/2011 09:21 PM
Copper	0.0265		0.00500	mg/L	1	2/25/2011 09:21 PM
Iron	3.80		0.200	mg/L	1	2/25/2011 09:21 PM
Lead	ND		0.00500	mg/L	1	2/25/2011 09:21 PM
Magnesium	37.3		0.200	mg/L	1	2/25/2011 09:21 PM
Manganese	0.0940		0.00500	mg/L	1	2/25/2011 09:21 PM
Molybdenum	0.202		0.00500	mg/L	1	2/25/2011 09:21 PM
Nickel	0.0141		0.00500	mg/L	1	2/25/2011 09:21 PM
Potassium	28.7		0.200	mg/L	1	2/25/2011 09:21 PM
Selenium	0.382		0.00500	mg/L	1	2/25/2011 09:21 PM
Silver	ND		0.00500	mg/L	1	2/25/2011 09:21 PM
Sodium	959		10.0	mg/L	50	2/28/2011 06:13 PM
Vanadium	0.0193		0.00500	mg/L	1	2/25/2011 09:21 PM
Zinc	1.42		0.00500	mg/L	1	2/25/2011 09:21 PM
SEMIVOLATILES			SW8270		Prep Date: 2/24/2011	Analyst: ACN
1,2,4-Trichlorobenzene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2,4,5-Trichlorophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2,4,6-Trichlorophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Methylnaphthalene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Methylphenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Nitroaniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Nitrophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
3&4-Methylphenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
3-Nitroaniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
4-Nitroaniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
4-Nitrophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Acenaphthene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Acenaphthylene	ND		0.025	mg/L	5	2/25/2011 04:39 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 2/23/2011 08:50 AM

Work Order: 1102690
Lab ID: 1102690-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Anthracene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Benz(a)anthracene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Benzidine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Hexachloroethane	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Indeno(1,2,3-cd)pyrene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Isophorone	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Naphthalene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Nitrobenzene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
N-Nitrosodimethylamine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
N-Nitrosodi-n-propylamine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
N-Nitrosodiphenylamine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Pentachlorophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Phenanthrene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Phenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Pyrene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Surr: 2,4,6-Tribromophenol	91.8		42-124	%REC	5	2/25/2011 04:39 PM
Surr: 2-Fluorobiphenyl	88.7		48-120	%REC	5	2/25/2011 04:39 PM
Surr: 2-Fluorophenol	65.7		20-120	%REC	5	2/25/2011 04:39 PM
Surr: 4-Terphenyl-d14	80.2		51-135	%REC	5	2/25/2011 04:39 PM
Surr: Nitrobenzene-d5	77.4		41-120	%REC	5	2/25/2011 04:39 PM
Surr: Phenol-d6	64.9		20-120	%REC	5	2/25/2011 04:39 PM
VOLATILES			SW8260			Analyst: PC
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
2-Butanone	ND		0.010	mg/L	1	2/24/2011 06:32 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	2/24/2011 06:32 PM
2-Hexanone	ND		0.010	mg/L	1	2/24/2011 06:32 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Acetone	0.025		0.010	mg/L	1	2/24/2011 06:32 PM
Benzene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Bromodichloromethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Bromoform	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Bromomethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Carbon disulfide	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	2/24/2011 06:32 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 2/23/2011 08:50 AM

Work Order: 1102690
Lab ID: 1102690-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Chloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Chloroform	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Chloromethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Dibromochloromethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Ethylbenzene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
m,p-Xylene	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Methylene chloride	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Styrene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Tetrachloroethene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Toluene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Trichloroethene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Vinyl acetate	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Vinyl chloride	ND		0.0020	mg/L	1	2/24/2011 06:32 PM
Xylenes, Total	ND		0.015	mg/L	1	2/24/2011 06:32 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	94.0		70-125	%REC	1	2/24/2011 06:32 PM
<i>Surr: 4-Bromofluorobenzene</i>	95.8		72-125	%REC	1	2/24/2011 06:32 PM
<i>Surr: Dibromofluoromethane</i>	95.2		71-125	%REC	1	2/24/2011 06:32 PM
<i>Surr: Toluene-d8</i>	97.2		75-125	%REC	1	2/24/2011 06:32 PM
REACTIVE CYANIDE			SW-846			Analyst: HN
Reactive Cyanide	ND		40.0	mg/Kg	1	2/28/2011 10:00 AM
REACTIVE SULFIDE			SW-846			Analyst: HN
Reactive Sulfide	ND		40.0	mg/Kg	1	2/28/2011 10:00 AM
ANIONS			E300			Analyst: TDW
Chloride	410		5.00	mg/L	10	2/26/2011 01:28 AM
Sulfate	1,510		25.0	mg/L	50	3/2/2011 02:09 AM
<i>Surr: Selenate (surr)</i>	95.0		85-115	%REC	10	2/26/2011 01:28 AM
<i>Surr: Selenate (surr)</i>	103		85-115	%REC	50	3/2/2011 02:09 AM
ALKALINITY			SM2320B			Analyst: DM
Alkalinity, Bicarbonate (As CaCO3)	441		5.00	mg/L	1	3/4/2011 09:30 AM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	3/4/2011 09:30 AM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	3/4/2011 09:30 AM
Alkalinity, Total (As CaCO3)	441		5.00	mg/L	1	3/4/2011 09:30 AM
SPECIFIC CONDUCTIVITY			M2510 B			Analyst: DM
Specific Conductivity	6,270		1.00	µmhos/cm	1	3/7/2011 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company

Project: Injection Well Quarterly

Work Order: 1102690

Sample ID: Effluent

Lab ID: 1102690-01

Collection Date: 2/23/2011 08:50 AM

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
IGNITIBILITY			SW1010			Analyst: JKP
Ignitability	> 212		50.0	°F	1	3/4/2011 10:00 AM
PH			E150.1			Analyst: DM
pH	7.40	H	0.100	pH units	1	3/2/2011 01:00 PM
TOTAL DISSOLVED SOLIDS			M2540C			Analyst: JKP
Total Dissolved Solids (Residue, Filterable)	3,310		10.0	mg/L	1	3/1/2011 03:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50340 Instrument ID ICPMS03 Method: SW6020

MBLK Sample ID: MBLKW1-022511-50340 Units: mg/L Analysis Date: 2/25/2011 03:53 PM

Client ID: Run ID: ICPMS03_110225A SeqNo: 2290830 Prep Date: 2/25/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	0.01716	0.050								J
Cadmium	ND	0.0020								
Calcium	ND	0.50								
Chromium	ND	0.0050								
Cobalt	ND	0.0050								
Copper	ND	0.0050								
Iron	ND	0.20								
Lead	ND	0.0050								
Magnesium	ND	0.20								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Potassium	ND	0.20								
Vanadium	ND	0.0050								
Silver	ND	0.0050								
Sodium	ND	0.20								
Vanadium	ND	0.0050								
Zinc	ND	0.0050								

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50340 Instrument ID ICPMS03 Method: SW6020

LCS Sample ID: MLCSW1-022511-50340 Units: mg/L Analysis Date: 2/25/2011 03:58 PM
 Client ID: Run ID: ICPMS03_110225A SeqNo: 2290831 Prep Date: 2/25/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1065	0.010	0.1	0	106	80-120	0			
Arsenic	0.04971	0.0050	0.05	0	99.4	80-120	0			
Barium	0.05105	0.0050	0.05	0	102	80-120	0			
Beryllium	0.05071	0.0020	0.05	0	101	80-120	0			
Boron	0.5158	0.050	0.5	0	103	80-120	0			
Cadmium	0.05049	0.0020	0.05	0	101	80-120	0			
Calcium	5.162	0.50	5	0	103	80-120	0			
Chromium	0.04908	0.0050	0.05	0	98.2	80-120	0			
Cobalt	0.04995	0.0050	0.05	0	99.9	80-120	0			
Copper	0.0506	0.0050	0.05	0	101	80-120	0			
Iron	4.942	0.20	5	0	98.8	80-120	0			
Lead	0.05038	0.0050	0.05	0	101	80-120	0			
Magnesium	5.035	0.20	5	0	101	80-120	0			
Manganese	0.05085	0.0050	0.05	0	102	80-120	0			
Molybdenum	0.04969	0.0050	0.05	0	99.4	80-120	0			
Nickel	0.05028	0.0050	0.05	0	101	80-120	0			
Potassium	5.067	0.20	5	0	101	80-120	0			
Selenium	0.04992	0.0050	0.05	0	99.8	80-120	0			
Silver	0.05021	0.0050	0.05	0	100	80-120	0			
Sodium	5.035	0.20	5	0	101	80-120	0			
Vanadium	0.04847	0.0050	0.05	0	96.9	80-120	0			
Zinc	0.05204	0.0050	0.05	0	104	80-120	0			

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50340 Instrument ID ICPMS03 Method: SW6020

MS	Sample ID: 1102716-01DMS	Units: mg/L					Analysis Date: 2/25/2011 04:24 PM				
Client ID:	Run ID: ICPMS03_110225A	SeqNo: 2290836			Prep Date: 2/25/2011		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Aluminum	1.383	0.010	0.1	1.317	66	80-120	0			SO	
Arsenic	0.05555	0.0050	0.05	0.004552	102	80-120	0				
Barium	0.1866	0.0050	0.05	0.1391	95	80-120	0				
Beryllium	0.05096	0.0020	0.05	0.0002062	102	80-120	0				
Boron	0.6296	0.050	0.5	0.1208	102	80-120	0				
Cadmium	0.05097	0.0020	0.05	0.00001532	102	80-120	0				
Calcium	27.29	0.50	5	22.66	92.6	80-120	0			O	
Chromium	0.05251	0.0050	0.05	0.003365	98.3	80-120	0				
Cobalt	0.05036	0.0050	0.05	0.0003329	100	80-120	0				
Copper	0.05437	0.0050	0.05	0.004448	99.8	80-120	0				
Iron	5.848	0.20	5	0.9871	97.2	80-120	0				
Lead	0.05417	0.0050	0.05	0.003855	101	80-120	0				
Magnesium	7.581	0.20	5	2.835	94.9	80-120	0				
Manganese	0.08381	0.0050	0.05	0.03486	97.9	80-120	0				
Molybdenum	0.0538	0.0050	0.05	0.002954	102	80-120	0				
Nickel	0.0514	0.0050	0.05	0.001801	99.2	80-120	0				
Potassium	37.47	0.20	5	33.6	77.4	80-120	0			SO	
Seelenium	0.05219	0.0050	0.05	0.0008471	103	80-120	0				
Silver	0.04987	0.0050	0.05	-0.0001762	100	80-120	0				
Sodium	51	0.20	5	47.13	77.4	80-120	0			SO	
Vanadium	0.05334	0.0050	0.05	0.004668	97.3	80-120	0				
Zinc	0.07856	0.0050	0.05	0.02639	104	80-120	0				

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50340 Instrument ID ICPMS03 Method: SW6020

MSD Sample ID: 1102716-01DMSD Units: mg/L Analysis Date: 2/25/2011 04:29 PM

Client ID: Run ID: ICPMS03_110225A SeqNo: 2290837 Prep Date: 2/25/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.602	0.010	0.1	1.317	285	80-120	1.383	14.7	15	SO
Arsenic	0.05702	0.0050	0.05	0.004552	105	80-120	0.05555	2.61	15	
Barium	0.193	0.0050	0.05	0.1391	108	80-120	0.1866	3.37	15	
Beryllium	0.05114	0.0020	0.05	0.0002062	102	80-120	0.05096	0.353	15	
Boron	0.6442	0.050	0.5	0.1208	105	80-120	0.6296	2.29	15	
Cadmium	0.05162	0.0020	0.05	0.00001532	103	80-120	0.05097	1.27	15	
Calcium	27.63	0.50	5	22.66	99.4	80-120	27.29	1.24	15	O
Chromium	0.05323	0.0050	0.05	0.003365	99.7	80-120	0.05251	1.36	15	
Cobalt	0.05094	0.0050	0.05	0.0003329	101	80-120	0.05036	1.15	15	
Copper	0.05558	0.0050	0.05	0.004448	102	80-120	0.05437	2.2	15	
Iron	6.006	0.20	5	0.9871	100	80-120	5.848	2.67	15	
Lead	0.05441	0.0050	0.05	0.003855	101	80-120	0.05417	0.442	15	
Magnesium	7.626	0.20	5	2.835	95.8	80-120	7.581	0.592	15	
Manganese	0.08481	0.0050	0.05	0.03486	99.9	80-120	0.08381	1.19	15	
Molybdenum	0.05382	0.0050	0.05	0.002954	102	80-120	0.0538	0.0372	15	
Nickel	0.05274	0.0050	0.05	0.001801	102	80-120	0.0514	2.57	15	
Potassium	37.91	0.20	5	33.6	86.2	80-120	37.47	1.17	15	O
Selenium	0.05345	0.0050	0.05	0.0008471	105	80-120	0.05219	2.39	15	
Silver	0.05051	0.0050	0.05	-0.0001762	101	80-120	0.04987	1.28	15	
Sodium	50.87	0.20	5	47.13	74.8	80-120	51	0.255	15	SO
Vanadium	0.05487	0.0050	0.05	0.004668	100	80-120	0.05334	2.83	15	
Zinc	0.07832	0.0050	0.05	0.02639	104	80-120	0.07856	0.306	15	

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50340 Instrument ID ICPMS03 Method: SW6020

DUP Sample ID: 1102716-01DDUP Units: mg/L Analysis Date: 2/25/2011 04:14 PM

Client ID: Run ID: ICPMS03_110225A SeqNo: 2290834 Prep Date: 2/25/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.274	0.010	0	0	0	0-0	1.317	3.32	25	
Arsenic	0.00439	0.0050	0	0	0	0-0	0.004552	0	25	J
Barium	0.1384	0.0050	0	0	0	0-0	0.1391	0.505	25	
Beryllium	ND	0.0020	0	0	0	0-0	0.0002062	0	25	
Boron	0.1168	0.050	0	0	0	0-0	0.1208	3.37	25	
Cadmium	ND	0.0020	0	0	0	0-0	0.00001532	0	25	
Calcium	22.29	0.50	0	0	0	0-0	22.66	1.65	25	
Chromium	0.003164	0.0050	0	0	0	0-0	0.003365	0	25	J
Cobalt	ND	0.0050	0	0	0	0-0	0.0003329	0	25	
Copper	0.004629	0.0050	0	0	0	0-0	0.004448	0	25	J
Iron	0.9153	0.20	0	0	0	0-0	0.9871	7.55	25	
Lead	0.003715	0.0050	0	0	0	0-0	0.003855	0	25	J
Magnesium	2.779	0.20	0	0	0	0-0	2.835	2	25	
Manganese	0.03395	0.0050	0	0	0	0-0	0.03486	2.64	25	
Molybdenum	0.00302	0.0050	0	0	0	0-0	0.002954	0	25	J
Nickel	0.00147	0.0050	0	0	0	0-0	0.001801	0	25	J
Potassium	33.35	0.20	0	0	0	0-0	33.6	0.747	25	
Seelenium	ND	0.0050	0	0	0	0-0	0.0008471	0	25	
Sr	ND	0.0050	0	0	0	0-0	-0.0001762	0	25	
Sodium	46.96	0.20	0	0	0	0-0	47.13	0.361	25	
Vanadium	0.00459	0.0050	0	0	0	0-0	0.004668	0	25	J
Zinc	0.02171	0.0050	0	0	0	0-0	0.02639	19.5	25	

The following samples were analyzed in this batch:

1102690-01B

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50423 Instrument ID Mercury Method: SW7470

MBLK Sample ID: GBLKW2-030111-50423 Units: mg/L Analysis Date: 3/1/2011 03:09 PM

Client ID: Run ID: MERCURY_110301A SeqNo: 2294808 Prep Date: 3/1/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: GLCSW2-030111-50423 Units: mg/L Analysis Date: 3/1/2011 03:11 PM

Client ID: Run ID: MERCURY_110301A SeqNo: 2294810 Prep Date: 3/1/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00509	0.00020	0.005	0	102	85-115	0			

MS Sample ID: 1102798-02CMS Units: mg/L Analysis Date: 3/1/2011 03:17 PM

Client ID: Run ID: MERCURY_110301A SeqNo: 2294815 Prep Date: 3/1/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0051	0.00020	0.005	-0.000004	102	85-115	0			

MSD Sample ID: 1102798-02CMSD Units: mg/L Analysis Date: 3/1/2011 03:19 PM

Client ID: Run ID: MERCURY_110301A SeqNo: 2294817 Prep Date: 3/1/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00512	0.00020	0.005	-0.000004	102	85-115	0.0051	0.391	20	

DUP Sample ID: 1102798-02CDUP Units: mg/L Analysis Date: 3/1/2011 03:15 PM

Client ID: Run ID: MERCURY_110301A SeqNo: 2294813 Prep Date: 3/1/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	-0.000004	0	20	

The following samples were analyzed in this batch:

1102690-01B

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50327 Instrument ID SV-3 Method: SW8270

MBLK Sample ID: SBLKW2-110224-50327 Units: µg/L Analysis Date: 2/25/2011 10:32 AM
 Client ID: Run ID: SV-3_110225C SeqNo: 2291908 Prep Date: 2/24/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzidine	ND	5.0								
1,2-Dichloroethane	ND	5.0								
Benzo(a,b)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Surr: 2,4,6-Tribromophenol	81.73	5.0	100	0	81.7	42-124	0			
Surr: 2-Fluorobiphenyl	73.83	5.0	100	0	73.8	48-120	0			
Surr: 2-Fluorophenol	60.73	5.0	100	0	60.7	20-120	0			
Surr: 4-Terphenyl-d14	73.03	5.0	100	0	73	51-135	0			
Surr: Nitrobenzene-d5	74.66	5.0	100	0	74.7	41-120	0			
Surr: Phenol-d6	59.28	5.0	100	0	59.3	20-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50327 Instrument ID SV-3 Method: SW8270

LCS Sample ID: SLCSW2-110224-50327 Units: µg/L Analysis Date: 2/25/2011 10:54 AM

Client ID: Run ID: SV-3_110225C SeqNo: 2291909 Prep Date: 2/24/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.79	5.0	50	0	89.6	50-120	0			
2,4,5-Trichlorophenol	84.75	5.0	100	0	84.7	50-120	0			
2,4,6-Trichlorophenol	85.29	5.0	100	0	85.3	50-120	0			
2-Methylnaphthalene	41.56	5.0	50	0	83.1	55-120	0			
2-Methylphenol	68.6	5.0	100	0	68.6	50-120	0			
2-Nitroaniline	52.28	5.0	50	0	105	55-120	0			
2-Nitrophenol	82.98	5.0	100	0	83	55-120	0			
3&4-Methylphenol	96.02	5.0	150	0	64	55-120	0			
3-Nitroaniline	30	5.0	50	0	60	40-120	0			
4-Nitroaniline	40.02	5.0	50	0	80	50-120	0			
4-Nitrophenol	89.22	5.0	100	0	89.2	45-120	0			
Acenaphthene	45.48	5.0	50	0	91	55-120	0			
Acenaphthylene	46.5	5.0	50	0	93	55-120	0			
Aniline	27.95	5.0	50	0	55.9	30-120	0			
Anthracene	48.71	5.0	50	0	97.4	55-120	0			
Benz(a)anthracene	47.13	5.0	50	0	94.3	55-120	0			
Benzidine	16.98	5.0	50	0	34	10-120	0			
β-chloroethane	40.36	5.0	50	0	80.7	55-120	0			
benzo(1,2,3-cd)pyrene	45.46	5.0	50	0	90.9	55-120	0			
isophorone	39.57	5.0	50	0	79.1	55-120	0			
Naphthalene	44.72	5.0	50	0	89.4	55-120	0			
Nitrobenzene	42.54	5.0	50	0	85.1	55-120	0			
N-Nitrosodimethylamine	39.75	5.0	50	0	79.5	45-120	0			
N-Nitrosodi-n-propylamine	33.44	5.0	50	0	66.9	50-120	0			
N-Nitrosodiphenylamine	46.83	5.0	50	0	93.7	55-120	0			
Pentachlorophenol	84.94	5.0	100	0	84.9	55-120	0			
Phenanthrene	48.94	5.0	50	0	97.9	55-120	0			
Phenol	68.93	5.0	100	0	68.9	50-120	0			
Pyrene	47.24	5.0	50	0	94.5	55-120	0			
Surr: 2,4,6-Tribromophenol	81.04	5.0	100	0	81	42-124	0			
Surr: 2-Fluorobiphenyl	89.76	5.0	100	0	89.8	48-120	0			
Surr: 2-Fluorophenol	77.84	5.0	100	0	77.8	20-120	0			
Surr: 4-Terphenyl-d14	79.75	5.0	100	0	79.7	51-135	0			
Surr: Nitrobenzene-d5	79.22	5.0	100	0	79.2	41-120	0			
Surr: Phenol-d6	67.25	5.0	100	0	67.3	20-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 50327 Instrument ID SV-3 Method: SW8270

LCSD Sample ID: SLCSDW2-110224-50327 Units: µg/L Analysis Date: 2/25/2011 11:16 AM

Client ID: Run ID: SV-3_110225C SeqNo: 2291910 Prep Date: 2/24/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	41.51	5.0	50	0	83	50-120	44.79	7.6	20	
2,4,5-Trichlorophenol	82.32	5.0	100	0	82.3	50-120	84.75	2.91	20	
2,4,6-Trichlorophenol	80.71	5.0	100	0	80.7	50-120	85.29	5.52	20	
2-Methylnaphthalene	42.23	5.0	50	0	84.5	55-120	41.56	1.59	20	
2-Methylphenol	78.54	5.0	100	0	78.5	50-120	68.6	13.5	20	
2-Nitroaniline	50.52	5.0	50	0	101	55-120	52.28	3.41	20	
2-Nitrophenol	80.36	5.0	100	0	80.4	55-120	82.98	3.22	20	
3&4-Methylphenol	112.7	5.0	150	0	75.1	55-120	96.02	16	20	
3-Nitroaniline	29.25	5.0	50	0	58.5	40-120	30	2.51	20	
4-Nitroaniline	39.11	5.0	50	0	78.2	50-120	40.02	2.3	20	
4-Nitrophenol	86.48	5.0	100	0	86.5	45-120	89.22	3.12	20	
Acenaphthene	43.56	5.0	50	0	87.1	55-120	45.48	4.32	20	
Acenaphthylene	43.76	5.0	50	0	87.5	55-120	46.5	6.07	20	
Aniline	31.63	5.0	50	0	63.3	30-120	27.95	12.3	20	
Anthracene	47.13	5.0	50	0	94.3	55-120	48.71	3.29	20	
Benz(a)anthracene	44.23	5.0	50	0	88.5	55-120	47.13	6.35	20	
Benzidine	19.98	5.0	50	0	40	10-120	16.98	16.2	20	
Benzo(a)fluoranthene	39.19	5.0	50	0	78.4	55-120	40.36	2.95	20	
Benzo(a)pyrene	44.35	5.0	50	0	88.7	55-120	45.46	2.46	20	
Benzo(b)fluoranthene	40.56	5.0	50	0	81.1	55-120	39.57	2.47	20	
Benzo(k)fluoranthene	42.6	5.0	50	0	85.2	55-120	44.72	4.85	20	
Benzo(e)pyrene	39.59	5.0	50	0	79.2	55-120	42.54	7.18	20	
Benzo(g)perylene	36.14	5.0	50	0	72.3	45-120	39.75	9.5	20	
Benzo(i)perylene	38.81	5.0	50	0	77.6	50-120	33.44	14.9	20	
Benzo(j)fluoranthene	43.82	5.0	50	0	87.6	55-120	46.83	6.63	20	
Benzo(l)perylene	83.9	5.0	100	0	83.9	55-120	84.94	1.24	20	
Benzo(m)perylene	45.45	5.0	50	0	90.9	55-120	48.94	7.38	20	
Benzo(n)perylene	75.63	5.0	100	0	75.6	50-120	68.93	9.27	20	
Benzo(o)perylene	46.15	5.0	50	0	92.3	55-120	47.24	2.33	20	
Surr: 2,4,6-Tribromophenol	81.86	5.0	100	0	81.9	42-124	81.04	1	20	
Surr: 2-Fluorobiphenyl	80.35	5.0	100	0	80.3	48-120	89.76	11.1	20	
Surr: 2-Fluorophenol	78.92	5.0	100	0	78.9	20-120	77.84	1.38	20	
Surr: 4-Terphenyl-d14	78.76	5.0	100	0	78.8	51-135	79.75	1.25	20	
Surr: Nitrobenzene-d5	75.41	5.0	100	0	75.4	41-120	79.22	4.93	20	
Surr: Phenol-d6	73.58	5.0	100	0	73.6	20-120	67.25	8.99	20	

The following samples were analyzed in this batch:

1102690-01F

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R105900 Instrument ID VOA1 Method: SW8260

MBLK Sample ID: VBLKW-022411-R105900 Units: µg/L Analysis Date: 2/24/2011 11:47 AM

Client ID: Run ID: VOA1_110224B SeqNo: 2290447 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	0.5954	10								J
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	49.97	5.0	50	0	99.9	70-125	0			
Surr: 4-Bromofluorobenzene	48.32	5.0	50	0	96.6	72-125	0			
Surr: Dibromofluoromethane	48.9	5.0	50	0	97.8	71-125	0			
Surr: Toluene-d8	50.18	5.0	50	0	100	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R105900 Instrument ID VOA1 Method: SW8260

LCS Sample ID: VLCSW-022411-R105900 Units: µg/L Analysis Date: 2/24/2011 10:56 AM

Client ID: Run ID: VOA1_110224B SeqNo: 2290445 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	46.14	5.0	50	0	92.3	80-120	0			
1,1,2,2-Tetrachloroethane	52.1	5.0	50	0	104	72-120	0			
1,1,2-Trichloroethane	44.96	5.0	50	0	89.9	80-120	0			
1,1-Dichloroethane	47.54	5.0	50	0	95.1	76-120	0			
1,1-Dichloroethene	47.56	5.0	50	0	95.1	73-124	0			
1,2-Dichloroethane	51.36	5.0	50	0	103	78-120	0			
2-Butanone	95.28	10	100	0	95.3	58-132	0			
2-Chloroethyl vinyl ether	112.4	10	100	0	112	74-120	0			
2-Hexanone	108.8	10	100	0	109	61-130	0			
4-Methyl-2-pentanone	103.5	10	100	0	104	65-127	0			
Acetone	99.99	10	100	0	100	59-137	0			
Benzene	51.93	5.0	50	0	104	73-121	0			
Bromodichloromethane	53.26	5.0	50	0	107	80-120	0			
Bromoform	49.92	5.0	50	0	99.8	79-120	0			
Bromomethane	61.91	5.0	50	0	124	66-137	0			
Carbon disulfide	96.68	10	100	0	96.7	68-141	0			
Carbon tetrachloride	49.7	5.0	50	0	99.4	75-124	0			
o-crobenzene	46	5.0	50	0	92	80-120	0			
o-roethane	39.82	5.0	50	0	79.6	76-121	0			
chloroform	48.93	5.0	50	0	97.9	80-120	0			
Chloromethane	39.52	5.0	50	0	79	67-123	0			
cis-1,3-Dichloropropene	52.54	5.0	50	0	105	80-120	0			
Dibromochloromethane	46.26	5.0	50	0	92.5	80-120	0			
Ethylbenzene	46.88	5.0	50	0	93.8	80-120	0			
m,p-Xylene	92.51	10	100	0	92.5	78-121	0			
Methylene chloride	48.62	10	50	0	97.2	65-133	0			
Styrene	43.05	5.0	50	0	86.1	80-120	0			
Tetrachloroethene	47.77	5.0	50	0	95.5	79-120	0			
Toluene	43.26	5.0	50	0	86.5	80-120	0			
trans-1,3-Dichloropropene	54.52	5.0	50	0	109	80-120	0			
Trichloroethene	54.74	5.0	50	0	109	80-120	0			
Vinyl acetate	93.83	10	100	0	93.8	67-139	0			
Vinyl chloride	43.29	2.0	50	0	86.6	70-127	0			
Xylenes, Total	136.1	15	150	0	90.7	80-120	0			
Surr: 1,2-Dichloroethane-d4	45.82	5.0	50	0	91.6	70-125	0			
Surr: 4-Bromofluorobenzene	45.9	5.0	50	0	91.8	72-125	0			
Surr: Dibromofluoromethane	47.55	5.0	50	0	95.1	71-125	0			
Surr: Toluene-d8	46.36	5.0	50	0	92.7	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R105900 Instrument ID VOA1 Method: SW8260

MS		Sample ID: 1102658-01ZMS			Units: µg/L		Analysis Date: 2/24/2011 01:28 PM			
Client ID:		Run ID: VOA1_110224B			SeqNo: 2290458		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	46.53	5.0	50	0	93.1	80-120	0			
1,1,2,2-Tetrachloroethane	50.16	5.0	50	0	100	72-120	0			
1,1,2-Trichloroethane	47.43	5.0	50	0	94.9	80-120	0			
1,1-Dichloroethane	49.87	5.0	50	0	99.7	76-120	0			
1,1-Dichloroethene	44.61	5.0	50	0	89.2	73-124	0			
1,2-Dichloroethane	49.5	5.0	50	0	99	78-120	0			
2-Butanone	107	10	100	0	107	58-132	0			
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0			S
2-Hexanone	102.8	10	100	0	103	61-130	0			
4-Methyl-2-pentanone	110	10	100	0	110	65-127	0			
Acetone	96.87	10	100	0	96.9	59-137	0			
Benzene	48.06	5.0	50	0	96.1	73-121	0			
Bromodichloromethane	52.89	5.0	50	0	106	80-120	0			
Bromoform	51.47	5.0	50	0	103	79-120	0			
Bromomethane	63.72	5.0	50	0	127	66-137	0			
Carbon disulfide	88.75	10	100	0	88.7	68-141	0			
Carbon tetrachloride	44.55	5.0	50	0	89.1	75-124	0			
o-Chlorobenzene	47.07	5.0	50	0	94.1	80-120	0			
m-Chlorobenzene	39.38	5.0	50	0	78.8	76-121	0			
p-Chlorobenzene	49.87	5.0	50	0	99.7	80-120	0			
Chloromethane	40.61	5.0	50	0	81.2	67-123	0			
cis-1,3-Dichloropropene	51.17	5.0	50	0	102	80-120	0			
Dibromochloromethane	48.96	5.0	50	0	97.9	80-120	0			
Ethylbenzene	45.76	5.0	50	0	91.5	80-120	0			
m,p-Xylene	91.18	10	100	0	91.2	78-121	0			
Methylene chloride	48.76	10	50	0	97.5	65-133	0			
Styrene	43.63	5.0	50	0	87.3	80-120	0			
Tetrachloroethene	43.42	5.0	50	0	86.8	79-120	0			
Toluene	43.11	5.0	50	0	86.2	80-120	0			
trans-1,3-Dichloropropene	52.96	5.0	50	0	106	80-120	0			
Trichloroethene	51.89	5.0	50	0	104	80-120	0			
Vinyl acetate	97.23	10	100	0	97.2	67-139	0			
Vinyl chloride	39.73	2.0	50	0	79.5	70-127	0			
Xylenes, Total	136	15	150	0	90.7	80-120	0			
Surr: 1,2-Dichloroethane-d4	48.17	5.0	50	0	96.3	70-125	0			
Surr: 4-Bromofluorobenzene	50.33	5.0	50	0	101	72-125	0			
Surr: Dibromofluoromethane	48.7	5.0	50	0	97.4	71-125	0			
Surr: Toluene-d8	47.29	5.0	50	0	94.6	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R105900 Instrument ID VOA1 Method: SW8260

MSD Sample ID: 1102658-01ZMSD Units: µg/L Analysis Date: 2/24/2011 01:54 PM

Client ID: Run ID: VOA1_110224B SeqNo: 2290459 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	45.91	5.0	50	0	91.8	80-120	46.53	1.34	20	
1,1,2,2-Tetrachloroethane	52.15	5.0	50	0	104	72-120	50.16	3.88	20	
1,1,2-Trichloroethane	47.7	5.0	50	0	95.4	80-120	47.43	0.585	20	
1,1-Dichloroethane	47.86	5.0	50	0	95.7	76-120	49.87	4.1	20	
1,1-Dichloroethene	44.92	5.0	50	0	89.8	73-124	44.61	0.7	20	
1,2-Dichloroethane	47.81	5.0	50	0	95.6	78-120	49.5	3.47	20	
2-Butanone	107.5	10	100	0	108	58-132	107	0.476	20	
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S
2-Hexanone	117	10	100	0	117	61-130	102.8	12.9	20	
4-Methyl-2-pentanone	116.1	10	100	0	116	65-127	110	5.39	20	
Acetone	100.8	10	100	0	101	59-137	96.87	4	20	
Benzene	46.51	5.0	50	0	93	73-121	48.06	3.28	20	
Bromodichloromethane	49.1	5.0	50	0	98.2	80-120	52.89	7.44	20	
Bromoform	51.63	5.0	50	0	103	79-120	51.47	0.311	20	
Bromomethane	64.13	5.0	50	0	128	66-137	63.72	0.639	20	
Carbon disulfide	88.45	10	100	0	88.4	68-141	88.75	0.334	20	
Carbon tetrachloride	42.34	5.0	50	0	84.7	75-124	44.55	5.07	20	
o-Cresol	46.98	5.0	50	0	94	80-120	47.07	0.191	20	
p-Cresol	40.26	5.0	50	0	80.5	76-121	39.38	2.23	20	
Chloroform	48.96	5.0	50	0	97.9	80-120	49.87	1.86	20	
Chloromethane	37.91	5.0	50	0	75.8	67-123	40.61	6.85	20	
cis-1,3-Dichloropropene	49.94	5.0	50	0	99.9	80-120	51.17	2.44	20	
Dibromochloromethane	51.34	5.0	50	0	103	80-120	48.96	4.75	20	
Ethylbenzene	47.87	5.0	50	0	95.7	80-120	45.76	4.53	20	
m,p-Xylene	94.72	10	100	0	94.7	78-121	91.18	3.81	20	
Methylene chloride	51.97	10	50	0	104	65-133	48.76	6.37	20	
Styrene	46.67	5.0	50	0	93.3	80-120	43.63	6.72	20	
Tetrachloroethene	44.16	5.0	50	0	88.3	79-120	43.42	1.68	20	
Toluene	47.88	5.0	50	0	95.8	80-120	43.11	10.5	20	
trans-1,3-Dichloropropene	51.45	5.0	50	0	103	80-120	52.96	2.9	20	
Trichloroethene	51	5.0	50	0	102	80-120	51.89	1.73	20	
Vinyl acetate	90.65	10	100	0	90.6	67-139	97.23	7.01	20	
Vinyl chloride	39.63	2.0	50	0	79.3	70-127	39.73	0.243	20	
Xylenes, Total	143.8	15	150	0	95.9	80-120	136	5.55	20	
Surr: 1,2-Dichloroethane-d4	47.15	5.0	50	0	94.3	70-125	48.17	2.14	20	
Surr: 4-Bromofluorobenzene	52.08	5.0	50	0	104	72-125	50.33	3.41	20	
Surr: Dibromofluoromethane	49.5	5.0	50	0	99	71-125	48.7	1.64	20	
Surr: Toluene-d8	48.69	5.0	50	0	97.4	75-125	47.29	2.92	20	

The following samples were analyzed in this batch:

1102690-01A

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R106075 Instrument ID ICS3K2 Method: E300

MBLK		Sample ID: WBLKW1-022511-R106075				Units: mg/L		Analysis Date: 2/25/2011 12:05 PM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295380		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	ND	0.50									
Sulfate	ND	0.50									
Surr: Selenate (surr)	4.932	0.10	5	0	98.6	85-115	0				

LCS		Sample ID: WLCSW1-022511-R106075				Units: mg/L		Analysis Date: 2/25/2011 12:27 PM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295381		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	19.96	0.50	20	0	99.8	90-110	0				
Sulfate	18.83	0.50	20	0	94.2	90-110	0				
Surr: Selenate (surr)	5.106	0.10	5	0	102	85-115	0				

LCSD		Sample ID: WLCSW1-022511-R106075				Units: mg/L		Analysis Date: 2/25/2011 12:48 PM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295382		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	19.95	0.50	20	0	99.7	90-110	19.96	0.0601	20		
Sulfate	18.8	0.50	20	0	94	90-110	18.83	0.175	20		
Surr: Selenate (surr)	5.09	0.10	5	0	102	85-115	5.106	0.314	20		

MS		Sample ID: 1102742-01DMS				Units: mg/L		Analysis Date: 2/25/2011 01:32 PM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295384		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	3390	0.50	10	3462	-715	80-120	0			SEO	
Sulfate	183	0.50	10	180.3	26.6	80-120	0			SEO	
Surr: Selenate (surr)	5.55	0.10	5	0	111	85-115	0				

MS		Sample ID: 1102725-01BMS				Units: mg/L		Analysis Date: 2/26/2011 02:11 AM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295419		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	366.4	0.50	10	365.1	13.4	80-120	0			SEO	
Sulfate	1706	0.50	10	1733	-260	80-120	0			SEO	
Surr: Selenate (surr)	5.403	0.10	5	0	108	85-115	0				

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R106075 Instrument ID ICS3K2 Method: E300

MSD		Sample ID: 1102742-01DMSD				Units: mg/L		Analysis Date: 2/25/2011 01:54 PM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295385		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	3382	0.50	10	3462	-803	80-120	3390	0.26	20	SEO	
Sulfate	187.4	0.50	10	180.3	70.3	80-120	183	2.36	20	SEO	
Surr: Selenate (surr)	5.459	0.10	5	0	109	85-115	5.55	1.65	20		

MSD		Sample ID: 1102725-01BMMSD				Units: mg/L		Analysis Date: 2/26/2011 02:33 AM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295420		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	365.8	0.50	10	365.1	7.41	80-120	366.4	0.165	20	SEO	
Sulfate	1703	0.50	10	1733	-292	80-120	1706	0.185	20	SEO	
Surr: Selenate (surr)	5.193	0.10	5	0	104	85-115	5.403	3.96	20		

MSD		Sample ID: 1102703-11AZMS				Units: mg/L		Analysis Date: 2/26/2011 07:15 AM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295435		Prep Date:		DF: 100	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	1472	50	1000	468	100	80-120	0				
Sulfate	1186	50	1000	160.5	103	80-120	0				
Surr: Selenate (surr)	477.4	10	500	0	95.5	85-115	0				

MSD		Sample ID: 1102703-11AZMSD				Units: mg/L		Analysis Date: 2/26/2011 01:00 PM			
Client ID:		Run ID: ICS3K2_110225A				SeqNo: 2295437		Prep Date:		DF: 100	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	1474	50	1000	468	101	80-120	1472	0.109	20		
Sulfate	1261	50	1000	160.5	110	80-120	1186	6.16	20		
Surr: Selenate (surr)	509.7	10	500	0	102	85-115	477.4	6.55	20		

The following samples were analyzed in this batch:

1102690-01E

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106123** Instrument ID **WetChem** Method: **E150.1**

LCS Sample ID: **WLCSW1-030211-R106123** Units: **pH units** Analysis Date: **3/2/2011 01:00 PM**

Client ID: Run ID: **WETCHEM_110302C** SeqNo: **2296106** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.06	0.10	6	0	101	90-110	0			

DUP Sample ID: **1102682-01DDUP** Units: **pH units** Analysis Date: **3/2/2011 01:00 PM**

Client ID: Run ID: **WETCHEM_110302C** SeqNo: **2296134** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.8	0.10	0	0	0	0-0	7.75	0.643	20	H

The following samples were analyzed in this batch:

1102690-01D

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106143** Instrument ID: **Balance1** Method: **M2540C**

MBLK Sample ID: **BLANK-R106143** Units: **mg/L** Analysis Date: **3/1/2011 03:00 PM**

Client ID: Run ID: **BALANCE1_110301H** SeqNo: **2296281** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **LCS-R106143** Units: **mg/L** Analysis Date: **3/1/2011 03:00 PM**

Client ID: Run ID: **BALANCE1_110301H** SeqNo: **2296282** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1080	10	1000		0	108	85-115	0		

DUP Sample ID: **1102690-01EDUP** Units: **mg/L** Analysis Date: **3/1/2011 03:00 PM**

Client ID: **Effluent** Run ID: **BALANCE1_110301H** SeqNo: **2296271** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	3592	10	0		0	0	0-0	3312	8.11	20

The following samples were analyzed in this batch: 1102690-01E

Client: Navajo Refining Company
 Work Order: 1102690
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R106268 Instrument ID WetChem Method: SW1010

LCS Sample ID: LCS-030411-R106268 Units: °F Analysis Date: 3/4/2011 10:00 AM

Client ID: Run ID: WETCHEM_110304A SeqNo: 2298963 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	0			

LCSD Sample ID: LCSD-030411-R106268 Units: °F Analysis Date: 3/4/2011 10:00 AM

Client ID: Run ID: WETCHEM_110304A SeqNo: 2298965 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	83	0	25	

DUP Sample ID: 1103077-01ADUP Units: °F Analysis Date: 3/4/2011 10:00 AM

Client ID: Run ID: WETCHEM_110304A SeqNo: 2298968 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	116	50	0	0	0	0-0	114	1.74	25	

The following samples were analyzed in this batch: 1102690-01D

Client: Navajo Refining Company
 Work Order: 1102690
 Subject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R106313 Instrument ID WetChem Method: SM2320B

MBLK Sample ID: WBLKW1-030411-R106313 Units: mg/L Analysis Date: 3/4/2011 09:30 AM

Client ID: Run ID: WETCHEM_110304G SeqNo: 2300322 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: WLCSW1-030411-R106313 Units: mg/L Analysis Date: 3/4/2011 09:30 AM

Client ID: Run ID: WETCHEM_110304G SeqNo: 2300323 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	1015	5.0	1000	0	102	80-120	0			
Alkalinity, Total (As CaCO3)	1015	5.0	1000	0	102	80-120	0			

DUP Sample ID: 1102638-10BDUP Units: mg/L Analysis Date: 3/4/2011 09:30 AM

Client ID: Run ID: WETCHEM_110304G SeqNo: 2300340 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	616.2	5.0	0	0	0	0-0	615.2	0.166	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	616.2	5.0	0	0	0	0-0	615.2	0.166	20	

The following samples were analyzed in this batch: 1102690-01E

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106351** Instrument ID: **WetChem** Method: **M2510 B**

MBLK Sample ID: **WBLKW1-030711-R106351** Units: **µmhos/cm** Analysis Date: **3/7/2011 09:00 AM**

Client ID: Run ID: **WETCHEM_110307A** SeqNo: **2300764** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
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Specific Conductivity	ND	1.0								
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LCS Sample ID: **WLCSW1-030711-R106351** Units: **µmhos/cm** Analysis Date: **3/7/2011 09:00 AM**

Client ID: Run ID: **WETCHEM_110307A** SeqNo: **2300765** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
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Specific Conductivity	1380	1.0	1413	0	97.7	80-120	0			
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DUP Sample ID: **1102690-01EDUP** Units: **µmhos/cm** Analysis Date: **3/7/2011 09:00 AM**

Client ID: **Effluent** Run ID: **WETCHEM_110307A** SeqNo: **2300776** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
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Specific Conductivity	6260	1.0	0	0	0		6270	0.16	20	
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The following samples were analyzed in this batch: 1102690-01E

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1102690

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
°F	Fahrenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	



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Chain of Custody Form

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Page 1 of 1

ALS Project Manager: _____ ALS Work Order #: 1102690

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Narajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions (300) Cl, SO4
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	F	Alkalinity
Phone	(575) 748-6733	Phone	(575) 748-6733	G	pH
Fax	(575) 746-5421	Fax	(575) 746-5421	H	Conductivity
e-Mail Address		e-Mail Address		I	TDS
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Effluent	2-23-11	0850	L	Y		X	X	X	X	X	X	X	X	X		
2	Tip Blank																
3	Temp Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange Shipment Method: Fed Ex Required Turnaround Time: (Check Box) Std: 10 WK Days 5 WK Days 2 WK Days 24 Hour Results Due Date: _____

Relinquished by: Aaron Strange Date: 2-23-11 Time: 1615 Received by: _____ Notes: 10 Day TAT.

Relinquished by: _____ Date: _____ Time: _____ Received by (Laboratory): R. HZ 2/24/11 Cooler ID: _____ Cooler Temp: _____ QC Package: (Check One Box Below) Level II Std QC TRRP Checklist Level III Std QC/Raw Data TRRP Level IV Level IV SW846/CLP Other / EDD

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O8 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **24-Feb-11 08:50**

Work Order: **1102690**

Received by: **RDH**

Checklist completed by Salvador A. Yanes 24-Feb-11
eSignature Date

Reviewed by: Jay Lynn F. Thibault 24-Feb-11
eSignature Date

Matrices: **Water**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<input type="text" value="1.9c"/>	<input type="text" value="002"/>	
Cooler(s)/Kit(s):	<input type="text" value="1948"/>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<input type="text"/>		

Login Notes:

Client Contacted: _____ Date Contacted: _____ Person Contacted: _____
Contacted By: _____ Regarding: _____

Comments:

Corrective Action:

110 26910



PRIORITY OVERNIGHT

THU
Deliver By:
24 FEB 11

Empl# 768119 00:54 24FEB11

TRK# **4347 1079 0011** FORM 0201

IAH

77099 -TX-US

43 SGRA



ALS Environmental

10450 Stañcliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTOMER SEAL

Date: 2-23-11
Name: Aaron S. ...
Company: Navaj...

Time: 1615
Name: ...
Company: ...

Seal Broken By:
[Signature]
Date:
2/24/11

ALS
02/23/11

4347

Client: ALS Environmental
Project: 1102690
Work Order: 1102577

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1102577-01	1102690-01C	Water		2/23/2011 08:50	2/25/2011 14:45	<input type="checkbox"/>

Client: ALS Environmental
Project: 1102690
WorkOrder: 1102577

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
TDL	Target Detection Limit

<u>Units Reported</u>	<u>Description</u>
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: 01-Mar-11

Client: ALS Environmental
Project: 1102690
Sample ID: 1102690-01C
Collection Date: 2/23/2011 08:50 AM

Work Order: 1102577
Lab ID: 1102577-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE Cyanide, Reactive	ND		SW7.3.3.2 40.0	mg/Kg	1	Analyst: NZ 2/28/2011 10:00 AM
SULFIDE, REACTIVE Sulfide, Reactive	ND		SW7.3.4.2 40.0	mg/Kg	1	Analyst: NZ 2/28/2011 10:00 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 01-Mar-11

Client: ALS Environmental

QC BATCH REPORT

Work Order: 1102577

Project: 1102690

Batch ID: R87453 Instrument ID WETCHEM Method: SW7.3.4.2

MBLK Sample ID: WBLKW1-110228-R87453 Units: mg/Kg Analysis Date: 2/28/2011 10:00 AM

Client ID: Run ID: WETCHEM_110228M SeqNo: 1566858 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch: 1102577-01A

Client: ALS Environmental
 Work Order: 1102577
 Project: 1102690

QC BATCH REPORT

Batch ID: R87454 Instrument ID WETCHEM Method: SW7.3.3.2

MBLK Sample ID: WBLKW1-110228-R87454 Units: mg/Kg Analysis Date: 2/28/2011 10:00 AM

Client ID: Run ID: WETCHEM_110228N SeqNo: 1566874 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS Sample ID: WLCSW1-110228-R87454 Units: mg/Kg Analysis Date: 2/28/2011 10:00 AM

Client ID: Run ID: WETCHEM_110228N SeqNo: 1566875 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	0			

LCSD Sample ID: WLCSDW1-110228-R87454 Units: mg/Kg Analysis Date: 2/28/2011 10:00 AM

Client ID: Run ID: WETCHEM_110228N SeqNo: 1566883 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	249.6	0	35	

MS Sample ID: 1102577-01A MS Units: mg/Kg Analysis Date: 2/28/2011 10:00 AM

Client ID: 1102690-01C Run ID: WETCHEM_110228N SeqNo: 1566881 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	0			

MSD Sample ID: 1102577-01A MSD Units: mg/Kg Analysis Date: 2/28/2011 10:00 AM

Client ID: 1102690-01C Run ID: WETCHEM_110228N SeqNo: 1566882 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	249.6	0	35	

The following samples were analyzed in this batch: 1102577-01A



Subcontractor:
 ALS Laboratory Group
 3352 128th Ave.
 Holland, MI 49424

TEL: (616) 399-6070
 FAX: (616) 399-6185
 Acct #:

CHAIN-OF-CUSTODY RECORD

Date: 24-Feb-11
 COC ID: 10101
 Due Date: 04-Mar-11

Customer Information		Project Information		Parameter/Method Request for Analysis										
Purchase Order	10-2120271	Project Name	1102690	A	Reactive Cyanide (SW-846)									
Work Order		Project Number		B	Reactive Sulfide (SW-846)									
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C										
Send Report To	JayLynn F Thibault	Inv Attn	Accounts Payable	D										
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E										
					F									
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G										
Phone	(281) 530-5656	Phone	(281) 530-5656	H										
Fax	(281) 530-5887	Fax	(281) 530-5887	I										
eMail Address	jaylynn.thibault@alsenviro.com	eMail CC		J										
Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J	
1102690-01C (Effluent)	Water	23/Feb/2011 8:50	(1) 1LPNEAT	X	X									

Comments: Please analyze for RCI. CC:glenda.ramos@alsglobal.com & mary.knowles@alsglobal.com

Relinquished by: <i>[Signature]</i>	Date/Time: 2/24/11	Received by: <i>[Signature]</i>	Date/Time: 2/25/11 1445	Cooler IDs	Report/QC Level Std
Relinquished by:	Date/Time:	Received by:	Date/Time:		

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: ALS - HOUSTON

Date/Time Received: 25-Feb-11 14:45

Work Order: 1102577

Received by: KRW

Checklist completed by Keith Waringa
eSignature

25-Feb-11
Date

Reviewed by: Bill Curry
eSignature

28-Feb-11
Date

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.2 C</u>		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:			

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:



08-Jun-2011

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: 1105823

Dear Aaron,

ALS Environmental received 2 samples on 25-May-2011 09:15 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 37.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Chris Bryson".

Electronically approved by: Mary K. Knowles

Chris Bryson
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company



www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1105823

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1105823-01	Effluent	Water		5/24/2011 10:50	5/25/2011 09:15	<input type="checkbox"/>
1105823-02	Trip Blank	Water		5/24/2011	5/25/2011 09:15	<input type="checkbox"/>

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1105823

Case Narrative

As the pH analyses were performed in the laboratory, the results are H-flagged as appropriate.

Batch 52874, Metals, Sample 1105925-04 : MS/MSD is for an unrelated sample.

Batch 52774, Semivolatile Organics : LCSD RPD was above the control limits for Benzidine.
The individual recoveries were in control.

Batch R110726, Volatile Organics, Sample 1105756-46 : MS/MSD is for an unrelated sample.

Batch R110849, Anions, Sample 1106102-02 : MSD is for an unrelated sample.

The analysis for Reactive Cyanide and Reactive Sulfide was subcontracted to ALS Laboratory Group in Holland, MI.

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 5/24/2011 10:50 AM

Work Order: 1105823
Lab ID: 1105823-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY						
Mercury	ND		SW7470 0.000200	mg/L	Prep Date: 5/31/2011 1	Analyst: JCJ 5/31/2011 05:01 PM
METALS						
Aluminum	0.438		SW6020 0.0200	mg/L	Prep Date: 6/2/2011 2	Analyst: ALR 6/6/2011 07:26 PM
Arsenic	0.0198	*	0.00500	mg/L	1	6/3/2011 11:34 PM
Barium	0.0541		0.00500	mg/L	1	6/3/2011 11:34 PM
Boron	0.353		0.100	mg/L	2	6/6/2011 07:26 PM
Cadmium	ND		0.00200	mg/L	1	6/3/2011 11:34 PM
Chromium	ND		0.00500	mg/L	1	6/3/2011 11:34 PM
Copper	0.00715		0.00500	mg/L	1	6/3/2011 11:34 PM
Lead	ND		0.00500	mg/L	1	6/3/2011 11:34 PM
Manganese	0.0239		0.00500	mg/L	1	6/3/2011 11:34 PM
Molybdenum	0.168		0.00500	mg/L	1	6/3/2011 11:34 PM
Nickel	0.00605		0.00500	mg/L	1	6/3/2011 11:34 PM
Selenium	0.646	*	0.00500	mg/L	1	6/3/2011 11:34 PM
Silver	ND		0.00500	mg/L	1	6/3/2011 11:34 PM
Zinc	0.0884		0.00500	mg/L	1	6/3/2011 11:34 PM
SEMIVOLATILES						
1,2,4-Trichlorobenzene	ND		SW8270 0.0050	mg/L	Prep Date: 5/26/2011 1	Analyst: ACN 6/1/2011 01:51 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Methylphenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Nitroaniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Nitrophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
3-Nitroaniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
4-Nitroaniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
4-Nitrophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Acenaphthene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Acenaphthylene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Aniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Anthracene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Benzidine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Hexachloroethane	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 5/24/2011 10:50 AM

Work Order: 1105823
Lab ID: 1105823-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isophorone	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Naphthalene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Nitrobenzene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Pentachlorophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Phenanthrene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Phenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Pyrene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Pyridine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Surr: 2,4,6-Tribromophenol	67.9		42-124	%REC	1	6/1/2011 01:51 PM
Surr: 2-Fluorobiphenyl	57.5		48-120	%REC	1	6/1/2011 01:51 PM
Surr: 2-Fluorophenol	47.5		20-120	%REC	1	6/1/2011 01:51 PM
Surr: 4-Terphenyl-d14	63.3		51-135	%REC	1	6/1/2011 01:51 PM
Surr: Nitrobenzene-d5	53.6		41-120	%REC	1	6/1/2011 01:51 PM
Surr: Phenol-d6	53.9		20-120	%REC	1	6/1/2011 01:51 PM
VOLATILES			SW8260			Analyst: PC
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
2-Butanone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	6/1/2011 03:42 PM
2-Hexanone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Acetone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Benzene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Bromodichloromethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Bromoform	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Bromomethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Carbon disulfide	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chlorobenzene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chloroform	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chloromethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 5/24/2011 10:50 AM

Work Order: 1105823
Lab ID: 1105823-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Ethylbenzene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
m,p-Xylene	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Methylene chloride	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Styrene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Tetrachloroethene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Toluene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Trichloroethene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Vinyl acetate	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Vinyl chloride	ND		0.0020	mg/L	1	6/1/2011 03:42 PM
Xylenes, Total	ND		0.015	mg/L	1	6/1/2011 03:42 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	98.2		70-125	%REC	1	6/1/2011 03:42 PM
<i>Surr: 4-Bromofluorobenzene</i>	95.1		72-125	%REC	1	6/1/2011 03:42 PM
<i>Surr: Dibromofluoromethane</i>	107		71-125	%REC	1	6/1/2011 03:42 PM
<i>Surr: Toluene-d8</i>	92.3		75-125	%REC	1	6/1/2011 03:42 PM
REACTIVE CYANIDE			SW-846			Analyst: SUB
Reactive Cyanide	ND		40.0	mg/Kg	1	5/27/2011 12:30 PM
REACTIVE SULFIDE			SW-846			Analyst: SUB
Reactive Sulfide	ND		40.0	mg/Kg	1	5/27/2011 12:30 PM
ANIONS - EPA 300.0 (1993)			E300			Analyst: TDW
Chloride	213		5.00	mg/L	10	6/3/2011 03:19 PM
Sulfate	2,240		25.0	mg/L	50	6/6/2011 04:33 PM
<i>Surr: Selenate (surr)</i>	103		85-115	%REC	10	6/3/2011 03:19 PM
<i>Surr: Selenate (surr)</i>	98.5		85-115	%REC	50	6/6/2011 04:33 PM
ALKALINITY			SM2320B			Analyst: DM
Alkalinity, Bicarbonate (As CaCO3)	243		5.00	mg/L	1	5/31/2011 02:30 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	5/31/2011 02:30 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	5/31/2011 02:30 PM
Alkalinity, Total (As CaCO3)	243		5.00	mg/L	1	5/31/2011 02:30 PM
SPECIFIC CONDUCTIVITY			M2510 B			Analyst: DM
Specific Conductivity	4,680		1.00	µmhos/cm	1	5/26/2011 10:15 AM
IGNITIBILITY			SW1010			Analyst: KAH
Ignitability	> 212		50.0	°F	1	6/3/2011 03:00 PM
PH			SW9040			Analyst: DM
pH	7.85	H	0.100	pH units	1	5/26/2011 11:30 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 5/24/2011 10:50 AM

Work Order: 1105823
Lab ID: 1105823-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL DISSOLVED SOLIDS			M2540C			Analyst: JKP
Total Dissolved Solids (Residue, Filterable)	3,400		10.0	mg/L	1	5/31/2011 10:35 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 52816 Instrument ID Mercury Method: SW7470

MBLK Sample ID: GBLKW2-053111-52816 Units: mg/L Analysis Date: 5/31/2011 04:27 PM

Client ID: Run ID: MERCURY_110531A SeqNo: 2407056 Prep Date: 5/31/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: GLCSW2-053111-52816 Units: mg/L Analysis Date: 5/31/2011 04:29 PM

Client ID: Run ID: MERCURY_110531A SeqNo: 2407060 Prep Date: 5/31/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00538	0.00020	0.005	0	108	85-115	0			

MS Sample ID: 1105864-08CMS Units: mg/L Analysis Date: 5/31/2011 04:35 PM

Client ID: Run ID: MERCURY_110531A SeqNo: 2407068 Prep Date: 5/31/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.00020	0.005	-0.000003	100	85-115	0			

MSD Sample ID: 1105864-08CMSD Units: mg/L Analysis Date: 5/31/2011 04:37 PM

Client ID: Run ID: MERCURY_110531A SeqNo: 2407069 Prep Date: 5/31/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00505	0.00020	0.005	-0.000003	101	85-115	0.00502	0.596	20	

DUP Sample ID: 1105864-08CDUP Units: mg/L Analysis Date: 5/31/2011 04:33 PM

Client ID: Run ID: MERCURY_110531A SeqNo: 2407067 Prep Date: 5/31/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	-0.000003	0	20	

The following samples were analyzed in this batch: 1105823-01F

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 52874 Instrument ID ICPMS03 Method: SW6020

MBLK Sample ID: MBLKW2-060211-52874 Units: mg/L Analysis Date: 6/6/2011 03:12 PM
 Client ID: Run ID: ICPMS03_110606A SeqNo: 2413608 Prep Date: 6/2/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Boron	0.02016	0.050								J
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	0.002082	0.0050								J
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.0050								

LCS Sample ID: MLCSW2-060211-52874 Units: mg/L Analysis Date: 6/6/2011 03:04 PM
 Client ID: Run ID: ICPMS03_110606A SeqNo: 2413607 Prep Date: 6/2/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09684	0.010	0.1	0	96.8	80-120	0			
Arsenic	0.05093	0.0050	0.05	0	102	80-120	0			
Barium	0.04904	0.0050	0.05	0	98.1	80-120	0			
Boron	0.4566	0.050	0.5	0	91.3	80-120	0			
Cadmium	0.04988	0.0020	0.05	0	99.8	80-120	0			
Chromium	0.04946	0.0050	0.05	0	98.9	80-120	0			
Copper	0.04973	0.0050	0.05	0	99.5	80-120	0			
Lead	0.04928	0.0050	0.05	0	98.6	80-120	0			
Manganese	0.05148	0.0050	0.05	0	103	80-120	0			
Molybdenum	0.04824	0.0050	0.05	0	96.5	80-120	0			
Nickel	0.04964	0.0050	0.05	0	99.3	80-120	0			
Selenium	0.05265	0.0050	0.05	0	105	80-120	0			
Silver	0.04987	0.0050	0.05	0	99.7	80-120	0			
Zinc	0.05136	0.0050	0.05	0	103	80-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 52874 Instrument ID ICPMS03 Method: SW6020

MS		Sample ID: 1105925-04AMS				Units: mg/L		Analysis Date: 6/6/2011 04:48 PM			
Client ID:		Run ID: ICPMS03_110606A				SeqNo: 2413951		Prep Date: 6/2/2011		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Aluminum	0.2092	0.050	0.1	0.08945	120	80-120	0				
Arsenic	0.0607	0.025	0.05	0.008105	105	80-120	0				
Barium	0.1019	0.025	0.05	0.0517	100	80-120	0				
Boron	4.238	0.25	0.5	3.702	107	80-120	0			O	
Cadmium	0.0509	0.010	0.05	0.00186	98.1	80-120	0				
Chromium	0.0521	0.025	0.05	0.0007795	103	80-120	0				
Copper	0.04693	0.025	0.05	-0.001476	96.8	80-120	0				
Lead	0.05195	0.025	0.05	0.000925	102	80-120	0				
Manganese	10.75	0.025	0.05	10.65	200	80-120	0			SEO	
Molybdenum	0.09915	0.025	0.05	0.04766	103	80-120	0				
Nickel	0.0923	0.025	0.05	0.04406	96.5	80-120	0				
Selenium	0.06155	0.025	0.05	0.005515	112	80-120	0				
Silver	0.04716	0.025	0.05	0.0004823	93.3	80-120	0				
Zinc	0.053	0.025	0.05	0.00974	86.5	80-120	0				

MSD		Sample ID: 1105925-04AMSD				Units: mg/L		Analysis Date: 6/6/2011 04:53 PM			
Client ID:		Run ID: ICPMS03_110606A				SeqNo: 2413952		Prep Date: 6/2/2011		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Aluminum	0.2022	0.050	0.1	0.08945	113	80-120	0.2092	3.38	15		
Arsenic	0.06255	0.025	0.05	0.008105	109	80-120	0.0607	3	15		
Barium	0.1041	0.025	0.05	0.0517	105	80-120	0.1019	2.14	15		
Boron	4.362	0.25	0.5	3.702	132	80-120	4.238	2.88	15	SO	
Cadmium	0.0504	0.010	0.05	0.00186	97.1	80-120	0.0509	0.987	15		
Chromium	0.0537	0.025	0.05	0.0007795	106	80-120	0.0521	3.02	15		
Copper	0.04882	0.025	0.05	-0.001476	101	80-120	0.04693	3.96	15		
Lead	0.05245	0.025	0.05	0.000925	103	80-120	0.05195	0.958	15		
Manganese	11.08	0.025	0.05	10.65	860	80-120	10.75	3.02	15	SEO	
Molybdenum	0.09665	0.025	0.05	0.04766	98	80-120	0.09915	2.55	15		
Nickel	0.09645	0.025	0.05	0.04406	105	80-120	0.0923	4.4	15		
Selenium	0.0611	0.025	0.05	0.005515	111	80-120	0.06155	0.734	15		
Silver	0.04754	0.025	0.05	0.0004823	94.1	80-120	0.04716	0.813	15		
Zinc	0.0673	0.025	0.05	0.00974	115	80-120	0.053	23.8	15	R	

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 52874 Instrument ID ICPMS03 Method: SW6020

DUP Sample ID: 1105925-04ADUP Units: mg/L Analysis Date: 6/6/2011 04:25 PM

Client ID: Run ID: ICPMS03_110606A SeqNo: 2413947 Prep Date: 6/2/2011 DF: 5

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09685	0.050	0	0	0	0-0	0.08945	7.94	25	
Arsenic	0.007515	0.025	0	0	0	0-0	0.008105	0	25	J
Barium	0.05165	0.025	0	0	0	0-0	0.0517	0.0968	25	
Boron	3.873	0.25	0	0	0	0-0	3.702	4.5	25	
Cadmium	ND	0.010	0	0	0	0-0	0.00186	0	25	
Chromium	ND	0.025	0	0	0	0-0	0.0007795	0	25	
Copper	ND	0.025	0	0	0	0-0	-0.001476	0	25	
Lead	ND	0.025	0	0	0	0-0	0.000925	0	25	
Molybdenum	0.04683	0.025	0	0	0	0-0	0.04766	1.77	25	
Nickel	0.04412	0.025	0	0	0	0-0	0.04406	0.147	25	
Selenium	ND	0.025	0	0	0	0-0	0.005515	0	25	
Silver	ND	0.025	0	0	0	0-0	0.0004823	0	25	
Zinc	ND	0.025	0	0	0	0-0	0.00974	0	25	

DUP Sample ID: 1105925-04ADUP Units: mg/L Analysis Date: 6/6/2011 09:06 PM

Client ID: Run ID: ICPMS03_110606A SeqNo: 2414081 Prep Date: 6/2/2011 DF: 100

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Manganese	10.25	0.50	0	0	0	0-0	10.75	4.76	25	

The following samples were analyzed in this batch: 1105823-01F

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 52774 Instrument ID SV-5 Method: SW8270

MBLK Sample ID: SBLKW1-110526-52774 Units: µg/L Analysis Date: 5/27/2011 01:09 PM
 Client ID: Run ID: SV-5_110527B SeqNo: 2406655 Prep Date: 5/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzidiazine	ND	5.0								
Benzochlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	75.9	5.0	100	0	75.9	42-124	0			
Surr: 2-Fluorobiphenyl	68.71	5.0	100	0	68.7	48-120	0			
Surr: 2-Fluorophenol	58.32	5.0	100	0	58.3	20-120	0			
Surr: 4-Terphenyl-d14	71.17	5.0	100	0	71.2	51-135	0			
Surr: Nitrobenzene-d5	73.03	5.0	100	0	73	41-120	0			
Surr: Phenol-d6	64.89	5.0	100	0	64.9	20-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 52774 Instrument ID SV-5 Method: SW8270

LCS Sample ID: SLCSW1-110526-52774 Units: µg/L Analysis Date: 5/27/2011 03:09 PM
 Client ID: Run ID: SV-5_110527B SeqNo: 2406657 Prep Date: 5/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.5	5.0	50	0	87	50-120	0			
2,4,5-Trichlorophenol	81.63	5.0	100	0	81.6	50-120	0			
2,4,6-Trichlorophenol	81.96	5.0	100	0	82	50-120	0			
2,4-Dinitrotoluene	40.7	5.0	50	0	81.4	50-120	0			
2-Methylnaphthalene	45.07	5.0	50	0	90.1	55-120	0			
2-Methylphenol	80.62	5.0	100	0	80.6	50-120	0			
2-Nitroaniline	40.84	5.0	50	0	81.7	55-120	0			
2-Nitrophenol	82.91	5.0	100	0	82.9	55-120	0			
3&4-Methylphenol	116.7	5.0	150	0	77.8	55-120	0			
3-Nitroaniline	30	5.0	50	0	60	40-120	0			
4-Nitroaniline	30.99	5.0	50	0	62	50-120	0			
4-Nitrophenol	75.64	5.0	100	0	75.6	45-120	0			
Acenaphthene	42.84	5.0	50	0	85.7	55-120	0			
Acenaphthylene	42.77	5.0	50	0	85.5	55-120	0			
Aniline	25.15	5.0	50	0	50.3	30-120	0			
Anthracene	44.26	5.0	50	0	88.5	55-120	0			
Benz(a)anthracene	43.32	5.0	50	0	86.6	55-120	0			
Benzo(a)pyridine	11.34	5.0	50	0	22.7	10-120	0			
Benzo(b)fluoranthene	43.74	5.0	50	0	87.5	55-120	0			
Hexachloroethane	42.54	5.0	50	0	85.1	55-120	0			
Indeno(1,2,3-cd)pyrene	39.68	5.0	50	0	79.4	55-120	0			
Isophorone	41.64	5.0	50	0	83.3	55-120	0			
N-Nitrosodi-n-propylamine	40.56	5.0	50	0	81.1	50-120	0			
N-Nitrosodimethylamine	39.61	5.0	50	0	79.2	45-120	0			
N-Nitrosodiphenylamine	44.49	5.0	50	0	89	55-120	0			
Naphthalene	44.11	5.0	50	0	88.2	55-120	0			
Nitrobenzene	44.13	5.0	50	0	88.3	55-120	0			
Pentachlorophenol	78.73	5.0	100	0	78.7	55-120	0			
Phenanthrene	42.58	5.0	50	0	85.2	55-120	0			
Phenol	79.27	5.0	100	0	79.3	50-120	0			
Pyrene	44.26	5.0	50	0	88.5	55-120	0			
Pyridine	32.5	5.0	50	0	65	35-120	0			
Surr: 2,4,6-Tribromophenol	71.11	5.0	100	0	71.1	42-124	0			
Surr: 2-Fluorobiphenyl	81.91	5.0	100	0	81.9	48-120	0			
Surr: 2-Fluorophenol	80.91	5.0	100	0	80.9	20-120	0			
Surr: 4-Terphenyl-d14	75.75	5.0	100	0	75.8	51-135	0			
Surr: Nitrobenzene-d5	83.44	5.0	100	0	83.4	41-120	0			
Surr: Phenol-d6	76.63	5.0	100	0	76.6	20-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 52774 Instrument ID SV-5 Method: SW8270

LCSD Sample ID: SLCSDW1-110526-52774 Units: µg/L Analysis Date: 5/27/2011 02:42 PM
 Client ID: Run ID: SV-5_110527B SeqNo: 2406656 Prep Date: 5/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.11	5.0	50	0	86.2	50-120	43.5	0.886	20	
2,4,5-Trichlorophenol	82.74	5.0	100	0	82.7	50-120	81.63	1.35	20	
2,4,6-Trichlorophenol	81.32	5.0	100	0	81.3	50-120	81.96	0.794	20	
2,4-Dinitrotoluene	44.91	5.0	50	0	89.8	50-120	40.7	9.83	20	
2-Methylnaphthalene	46.29	5.0	50	0	92.6	55-120	45.07	2.66	20	
2-Methylphenol	88.25	5.0	100	0	88.3	50-120	80.62	9.04	20	
2-Nitroaniline	42.59	5.0	50	0	85.2	55-120	40.84	4.2	20	
2-Nitrophenol	83.45	5.0	100	0	83.4	55-120	82.91	0.643	20	
3&4-Methylphenol	129.5	5.0	150	0	86.3	55-120	116.7	10.4	20	
3-Nitroaniline	33.43	5.0	50	0	66.9	40-120	30	10.8	20	
4-Nitroaniline	34.54	5.0	50	0	69.1	50-120	30.99	10.8	20	
4-Nitrophenol	86.06	5.0	100	0	86.1	45-120	75.64	12.9	20	
Acenaphthene	42.95	5.0	50	0	85.9	55-120	42.84	0.26	20	
Acenaphthylene	42.16	5.0	50	0	84.3	55-120	42.77	1.44	20	
Aniline	30.09	5.0	50	0	60.2	30-120	25.15	17.9	20	
Anthracene	44.46	5.0	50	0	88.9	55-120	44.26	0.444	20	
Benz(a)anthracene	43.49	5.0	50	0	87	55-120	43.32	0.386	20	
Benzo(a)pyridine	14.28	5.0	50	0	28.6	10-120	11.34	23	20	R
Benzochlorobenzene	42.72	5.0	50	0	85.4	55-120	43.74	2.35	20	
Hexachloroethane	42.43	5.0	50	0	84.9	55-120	42.54	0.266	20	
Indeno(1,2,3-cd)pyrene	41.89	5.0	50	0	83.8	55-120	39.68	5.42	20	
Isophorone	43.64	5.0	50	0	87.3	55-120	41.64	4.7	20	
N-Nitrosodi-n-propylamine	45.05	5.0	50	0	90.1	50-120	40.56	10.5	20	
N-Nitrosodimethylamine	38.15	5.0	50	0	76.3	45-120	39.61	3.75	20	
N-Nitrosodiphenylamine	43.77	5.0	50	0	87.5	55-120	44.49	1.61	20	
Naphthalene	43.88	5.0	50	0	87.8	55-120	44.11	0.518	20	
Nitrobenzene	43.66	5.0	50	0	87.3	55-120	44.13	1.06	20	
Pentachlorophenol	80.87	5.0	100	0	80.9	55-120	78.73	2.68	20	
Phenanthrene	42.64	5.0	50	0	85.3	55-120	42.58	0.159	20	
Phenol	85.22	5.0	100	0	85.2	50-120	79.27	7.24	20	
Pyrene	44.62	5.0	50	0	89.2	55-120	44.26	0.811	20	
Pyridine	30.24	5.0	50	0	60.5	35-120	32.5	7.19	20	
Surr: 2,4,6-Tribromophenol	77.59	5.0	100	0	77.6	42-124	71.11	8.71	20	
Surr: 2-Fluorobiphenyl	77.13	5.0	100	0	77.1	48-120	81.91	6.02	20	
Surr: 2-Fluorophenol	83.93	5.0	100	0	83.9	20-120	80.91	3.66	20	
Surr: 4-Terphenyl-d14	74.68	5.0	100	0	74.7	51-135	75.75	1.43	20	
Surr: Nitrobenzene-d5	83.15	5.0	100	0	83.1	41-120	83.44	0.35	20	
Surr: Phenol-d6	83.82	5.0	100	0	83.8	20-120	76.63	8.96	20	

The following samples were analyzed in this batch:

1105823-01E

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110726 Instrument ID VOA1 Method: SW8260

MBLK Sample ID: VBLKW-060111-R110726 Units: µg/L Analysis Date: 6/1/2011 11:22 AM
 Client ID: Run ID: VOA1_110601A SeqNo: 2408605 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
o-Cresol	ND	5.0								
p-Cresol	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	46.27	5.0	50	0	92.5	70-125	0			
Surr: 4-Bromofluorobenzene	48.66	5.0	50	0	97.3	72-125	0			
Surr: Dibromofluoromethane	47.13	5.0	50	0	94.3	71-125	0			
Surr: Toluene-d8	44.65	5.0	50	0	89.3	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110726 Instrument ID VOA1 Method: SW8260

LCS Sample ID: VLCSW-060111-R110726 Units: µg/L Analysis Date: 6/1/2011 10:06 AM

Client ID: Run ID: VOA1_110601A SeqNo: 2408604 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	51.23	5.0	50	0	102	80-120	0			
1,1,2,2-Tetrachloroethane	46.09	5.0	50	0	92.2	72-120	0			
1,1,2-Trichloroethane	46.38	5.0	50	0	92.8	80-120	0			
1,1-Dichloroethane	48.29	5.0	50	0	96.6	76-120	0			
1,1-Dichloroethene	48.17	5.0	50	0	96.3	73-124	0			
1,2-Dichloroethane	46.01	5.0	50	0	92	78-120	0			
2-Butanone	82.85	10	100	0	82.8	58-132	0			
2-Chloroethyl vinyl ether	96.39	10	100	0	96.4	74-120	0			
2-Hexanone	85.87	10	100	0	85.9	61-130	0			
4-Methyl-2-pentanone	87.75	10	100	0	87.8	65-127	0			
Acetone	82.96	10	100	0	83	59-137	0			
Benzene	47.73	5.0	50	0	95.5	73-121	0			
Bromodichloromethane	48.55	5.0	50	0	97.1	80-120	0			
Bromoform	46.63	5.0	50	0	93.3	79-120	0			
Bromomethane	56.86	5.0	50	0	114	66-137	0			
Carbon disulfide	100.4	10	100	0	100	68-141	0			
Carbon tetrachloride	51.48	5.0	50	0	103	75-124	0			
o-Chlorobenzene	49.26	5.0	50	0	98.5	80-120	0			
p-Chloroethane	54.15	5.0	50	0	108	76-121	0			
Chloroform	48.53	5.0	50	0	97.1	80-120	0			
Chloromethane	44.93	5.0	50	0	89.9	67-123	0			
cis-1,3-Dichloropropene	53.96	5.0	50	0	108	80-120	0			
Dibromochloromethane	51.48	5.0	50	0	103	80-120	0			
Ethylbenzene	50.43	5.0	50	0	101	80-120	0			
m,p-Xylene	100.5	10	100	0	101	78-121	0			
Methylene chloride	50.35	10	50	0	101	65-133	0			
Styrene	51.18	5.0	50	0	102	80-120	0			
Tetrachloroethene	46.53	5.0	50	0	93.1	79-120	0			
Toluene	46.05	5.0	50	0	92.1	80-120	0			
trans-1,3-Dichloropropene	52.76	5.0	50	0	106	80-120	0			
Trichloroethene	50.91	5.0	50	0	102	80-120	0			
Vinyl acetate	98.15	10	100	0	98.2	67-139	0			
Vinyl chloride	52.04	2.0	50	0	104	70-127	0			
Xylenes, Total	151.8	15	150	0	101	80-120	0			
Surr: 1,2-Dichloroethane-d4	46.3	5.0	50	0	92.6	70-125	0			
Surr: 4-Bromofluorobenzene	47	5.0	50	0	94	72-125	0			
Surr: Dibromofluoromethane	48.56	5.0	50	0	97.1	71-125	0			
Surr: Toluene-d8	46.07	5.0	50	0	92.1	75-125	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110726 Instrument ID VOA1 Method: SW8260

MS	Sample ID: 1105756-46AMS	Units: µg/L					Analysis Date: 6/1/2011 01:30 PM				
Client ID:	Run ID: VOA1_110601A	SeqNo: 2408609	Prep Date:	DF: 5							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	252.9	25	250	0	101	80-120	0				
1,1,2,2-Tetrachloroethane	240.3	25	250	0	96.1	72-120	0				
1,1,2-Trichloroethane	246.2	25	250	0	98.5	80-120	0				
1,1-Dichloroethane	249.2	25	250	0	99.7	76-120	0				
1,1-Dichloroethene	237.8	25	250	0	95.1	73-124	0				
1,2-Dichloroethane	268	25	250	0	107	78-120	0				
2-Butanone	464.3	50	500	0	92.9	58-132	0				
2-Chloroethyl vinyl ether	37.14	50	500	0	7.43	74-120	0			JS	
2-Hexanone	481.3	50	500	0	96.3	61-130	0				
4-Methyl-2-pentanone	492.4	50	500	0	98.5	65-127	0				
Acetone	445.7	50	500	0	89.1	59-137	0				
Benzene	269.4	25	250	0	108	73-121	0				
Bromodichloromethane	287.1	25	250	0	115	80-120	0				
Bromoform	242.4	25	250	0	96.9	79-120	0				
Bromomethane	190.6	25	250	0	76.2	66-137	0				
Carbon disulfide	509.7	50	500	0	102	68-141	0				
Carbon tetrachloride	255	25	250	0	102	75-124	0				
Chlorobenzene	247.6	25	250	0	99.1	80-120	0				
Chloroethane	260.1	25	250	0	104	76-121	0				
Chloroform	247.8	25	250	0	99.1	80-120	0				
Chloromethane	206.9	25	250	0	82.8	67-123	0				
cis-1,3-Dichloropropene	275	25	250	0	110	80-120	0				
Dibromochloromethane	264.5	25	250	0	106	80-120	0				
Ethylbenzene	265.7	25	250	29.08	94.6	80-120	0				
m,p-Xylene	484.1	50	500	0	96.8	78-121	0				
Methylene chloride	246.8	50	250	0	98.7	65-133	0				
Styrene	250.9	25	250	0	100	80-120	0				
Tetrachloroethene	237.9	25	250	0	95.2	79-120	0				
Toluene	245.7	25	250	0	98.3	80-120	0				
trans-1,3-Dichloropropene	297.7	25	250	0	119	80-120	0				
Trichloroethene	271.3	25	250	0	109	80-120	0				
Vinyl acetate	502.3	50	500	0	100	67-139	0				
Vinyl chloride	234.6	10	250	0	93.9	70-127	0				
Xylenes, Total	734.8	75	750	0	98	80-120	0				
Surr: 1,2-Dichloroethane-d4	237.3	25	250	0	94.9	70-125	0				
Surr: 4-Bromofluorobenzene	247.4	25	250	0	99	72-125	0				
Surr: Dibromofluoromethane	246.8	25	250	0	98.7	71-125	0				
Surr: Toluene-d8	235.9	25	250	0	94.3	75-125	0				

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110726 Instrument ID VOA1 Method: SW8260

MSD Sample ID: 1105756-46AMSD Units: µg/L Analysis Date: 6/1/2011 01:56 PM

Client ID: Run ID: VOA1_110601A SeqNo: 2408610 Prep Date: DF: 5

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	239.8	25	250	0	95.9	80-120	252.9	5.33	20	
1,1,2,2-Tetrachloroethane	222.1	25	250	0	88.8	72-120	240.3	7.86	20	
1,1,2-Trichloroethane	252.6	25	250	0	101	80-120	246.2	2.58	20	
1,1-Dichloroethane	244	25	250	0	97.6	76-120	249.2	2.09	20	
1,1-Dichloroethene	237.5	25	250	0	95	73-124	237.8	0.151	20	
1,2-Dichloroethane	249	25	250	0	99.6	78-120	268	7.32	20	
2-Butanone	480.4	50	500	0	96.1	58-132	464.3	3.4	20	
2-Chloroethyl vinyl ether	ND	50	500	0	0	74-120	37.14	0	20	S
2-Hexanone	473.4	50	500	0	94.7	61-130	481.3	1.66	20	
4-Methyl-2-pentanone	440.6	50	500	0	88.1	65-127	492.4	11.1	20	
Acetone	433	50	500	0	86.6	59-137	445.7	2.9	20	
Benzene	252.3	25	250	0	101	73-121	269.4	6.57	20	
Bromodichloromethane	248.6	25	250	0	99.4	80-120	287.1	14.4	20	
Bromoform	233.7	25	250	0	93.5	79-120	242.4	3.64	20	
Bromomethane	228.8	25	250	0	91.5	66-137	190.6	18.2	20	
Carbon disulfide	484.7	50	500	0	96.9	68-141	509.7	5.04	20	
Carbon tetrachloride	235.1	25	250	0	94	75-124	255	8.13	20	
o-Crobenzene	243.1	25	250	0	97.2	80-120	247.6	1.86	20	
o-Croethane	230.6	25	250	0	92.2	76-121	260.1	12	20	
Chloroform	247.3	25	250	0	98.9	80-120	247.8	0.204	20	
Chloromethane	192.2	25	250	0	76.9	67-123	206.9	7.34	20	
cis-1,3-Dichloropropene	263.9	25	250	0	106	80-120	275	4.12	20	
Dibromochloromethane	256.8	25	250	0	103	80-120	264.5	2.95	20	
Ethylbenzene	244.9	25	250	29.08	86.3	80-120	265.7	8.15	20	
m,p-Xylene	466.8	50	500	0	93.4	78-121	484.1	3.65	20	
Methylene chloride	239.2	50	250	0	95.7	65-133	246.8	3.11	20	
Styrene	242	25	250	0	96.8	80-120	250.9	3.63	20	
Tetrachloroethene	227.1	25	250	0	90.8	79-120	237.9	4.66	20	
Toluene	237	25	250	0	94.8	80-120	245.7	3.58	20	
trans-1,3-Dichloropropene	262.2	25	250	0	105	80-120	297.7	12.7	20	
Trichloroethene	256.2	25	250	0	102	80-120	271.3	5.74	20	
Vinyl acetate	491.2	50	500	0	98.2	67-139	502.3	2.24	20	
Vinyl chloride	233.5	10	250	0	93.4	70-127	234.6	0.461	20	
Xylenes, Total	712.5	75	750	0	95	80-120	734.8	3.09	20	
Surr: 1,2-Dichloroethane-d4	244.5	25	250	0	97.8	70-125	237.3	2.97	20	
Surr: 4-Bromofluorobenzene	230	25	250	0	92	72-125	247.4	7.32	20	
Surr: Dibromofluoromethane	250.1	25	250	0	100	71-125	246.8	1.33	20	
Surr: Toluene-d8	233.7	25	250	0	93.5	75-125	235.9	0.921	20	

The following samples were analyzed in this batch:

1105823-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110566** Instrument ID: **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-052611-R110566** Units: **pH units** Analysis Date: **5/26/2011 11:30 AM**

Client ID: Run ID: **WETCHEM_110526G** SeqNo: **2404273** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.1	0.10	6	0	102	90-110	0			

DUP Sample ID: **1105823-01BDUP** Units: **pH units** Analysis Date: **5/26/2011 11:30 AM**

Client ID: **Effluent** Run ID: **WETCHEM_110526G** SeqNo: **2404275** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.93	0.10	0	0	0	0-0	7.85	1.01	20	H

The following samples were analyzed in this batch:

1105823-01B

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110567 Instrument ID WetChem Method: M2510 B

MBLK Sample ID: WBLKW1-052611-R110567 Units: $\mu\text{mhos/cm}$ Analysis Date: 5/26/2011 10:15 AM

Client ID: Run ID: WETCHEM_110526H SeqNo: 2404278 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: WLCSW1-052611-R110567 Units: $\mu\text{mhos/cm}$ Analysis Date: 5/26/2011 10:15 AM

Client ID: Run ID: WETCHEM_110526H SeqNo: 2404279 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1400	1.0	1413	0	99.1	80-120	0			

DUP Sample ID: 1105823-01BDUP Units: $\mu\text{mhos/cm}$ Analysis Date: 5/26/2011 10:15 AM

Client ID: Effluent Run ID: WETCHEM_110526H SeqNo: 2404281 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	4670	1.0	0	0	0		4680	0.214	20	

The following samples were analyzed in this batch:

1105823-01B

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110694 Instrument ID WetChem Method: SM2320B

MBLK Sample ID: WBLKW1-053111-R110694 Units: mg/L Analysis Date: 5/31/2011 02:30 PM

Client ID: Run ID: WETCHEM_1105311 SeqNo: 2407693 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: WLCSW1-053111-R110694 Units: mg/L Analysis Date: 5/31/2011 02:30 PM

Client ID: Run ID: WETCHEM_1105311 SeqNo: 2407694 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	989.7	5.0	1000	0	99	80-120	0			
Alkalinity, Total (As CaCO3)	989.7	5.0	1000	0	99	80-120	0			

DUP Sample ID: 1105705-10CDUP Units: mg/L Analysis Date: 5/31/2011 02:30 PM

Client ID: Run ID: WETCHEM_1105311 SeqNo: 2407713 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	200.9	5.0	0	0	0	0-0	201.9	0.492	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	200.9	5.0	0	0	0	0-0	201.9	0.492	20	

The following samples were analyzed in this batch:

1105823-01B

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110702 Instrument ID Balance1 Method: M2540C

MBLK Sample ID: BLANK-R110702 Units: mg/L Analysis Date: 5/31/2011 10:35 AM

Client ID: Run ID: BALANCE1_110531F SeqNo: 2408003 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: LCS-R110702 Units: mg/L Analysis Date: 5/31/2011 10:35 AM

Client ID: Run ID: BALANCE1_110531F SeqNo: 2408004 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1064	10	1000		0	106	85-115	0		

DUP Sample ID: 1105756-34EDUP Units: mg/L Analysis Date: 5/31/2011 10:35 AM

Client ID: Run ID: BALANCE1_110531F SeqNo: 2407982 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	2410	10	0		0	0	0-0	2412	0.083	20

DUP Sample ID: 1105756-46EDUP Units: mg/L Analysis Date: 5/31/2011 10:35 AM

Client ID: Run ID: BALANCE1_110531F SeqNo: 2407991 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1222	10	0		0	0	0-0	1170	4.35	20

The following samples were analyzed in this batch:

1105823-01B

Client: Navajo Refining Company
 Work Order: 1105823
 Subject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110849 Instrument ID ICS2100 Method: E300

MBLK Sample ID: WBLKW3-060211-R110849 Units: mg/L Analysis Date: 6/3/2011 10:57 AM

Client ID: Run ID: ICS2100_110603A SeqNo: 2411502 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.35	0.50								J
Surr: Selenate (surr)	5.178	0.10	5	0	104	85-115	0			

LCS Sample ID: WLCSW3-060211-R110849 Units: mg/L Analysis Date: 6/3/2011 11:11 AM

Client ID: Run ID: ICS2100_110603A SeqNo: 2411503 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.82	0.50	20	0	104	90-110	0			
Surr: Selenate (surr)	4.901	0.10	5	0	98	85-115	0			

LCSD Sample ID: WLCSDW3-060211-R110849 Units: mg/L Analysis Date: 6/3/2011 11:26 AM

Client ID: Run ID: ICS2100_110603A SeqNo: 2411504 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.49	0.50	20	0	107	90-110	20.82	3.19	20	
Surr: Selenate (surr)	5.025	0.10	5	0	100	85-115	4.901	2.5	20	

Sample ID: 1105704-06BMS

Units: mg/L Analysis Date: 6/3/2011 12:09 PM

Client ID: Run ID: ICS2100_110603A SeqNo: 2411507 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	125.4	0.50	10	117	84	80-120	0			EO
Surr: Selenate (surr)	4.953	0.10	5	0	99.1	85-115	0			

MS Sample ID: 1106102-02CMS Units: mg/L Analysis Date: 6/3/2011 05:27 PM

Client ID: Run ID: ICS2100_110603A SeqNo: 2412453 Prep Date: DF: 100

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	138500	50	1000	137600	90.4	80-120	0			EO
Surr: Selenate (surr)	507.4	10	500	0	101	85-115	0			

MSD Sample ID: 1105704-06BMSD Units: mg/L Analysis Date: 6/3/2011 12:24 PM

Client ID: Run ID: ICS2100_110603A SeqNo: 2411508 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	125.1	0.50	10	117	80.7	80-120	125.4	0.263	20	EO
Surr: Selenate (surr)	4.965	0.10	5	0	99.3	85-115	4.953	0.242	20	

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110849 Instrument ID ICS2100 Method: E300

MSD Sample ID: 1106102-02CMSD Units: mg/L Analysis Date: 6/3/2011 05:41 PM

Client ID: Run ID: ICS2100_110603A SeqNo: 2412454 Prep Date: DF: 100

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	126500	50	1000	137600	-1110	80-120	138500	9.07	20	SEO
Surr: Selenate (surr)	462.8	10	500	0	92.6	85-115	507.4	9.2	20	

The following samples were analyzed in this batch:

1105823-01B

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110875 Instrument ID WetChem Method: SW1010

LCS Sample ID: WLCS-060311-R110875 Units: °F Analysis Date: 6/3/2011 03:00 PM

Client ID: Run ID: WETCHEM_110603H SeqNo: 2411828 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	84	50	83	0	101	80-120	0			

LCSD Sample ID: WLCSD-060311-R110875 Units: °F Analysis Date: 6/3/2011 03:00 PM

Client ID: Run ID: WETCHEM_110603H SeqNo: 2411829 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	84	1.2	25	

DUP Sample ID: 1106074-07FDUP Units: °F Analysis Date: 6/3/2011 03:00 PM

Client ID: Run ID: WETCHEM_110603H SeqNo: 2411825 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	ND	50	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch:

1105823-01C

Client: Navajo Refining Company
 Work Order: 1105823
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110987 Instrument ID ICS3000 Method: E300

MBLK	Sample ID: WBLKW1-060611-R110987					Units: mg/L	Analysis Date: 6/6/2011 06:25 PM				
Client ID:	Run ID: ICS3000_110606A					SeqNo: 2414849	Prep Date:	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfate	ND	0.50									
Surr: Selenate (surr)	4.522	0.10	5	0	90.4	85-115	0				

LCS	Sample ID: WLCSW1-060611-R110987					Units: mg/L	Analysis Date: 6/6/2011 06:46 PM				
Client ID:	Run ID: ICS3000_110606A					SeqNo: 2414850	Prep Date:	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfate	20.9	0.50	20	0	104	90-110	0				
Surr: Selenate (surr)	5.095	0.10	5	0	102	85-115	0				

LCSD	Sample ID: WLCSW1-060611-R110987					Units: mg/L	Analysis Date: 6/6/2011 07:07 PM				
Client ID:	Run ID: ICS3000_110606A					SeqNo: 2414852	Prep Date:	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfate	20.85	0.50	20	0	104	90-110	20.9	0.216	20		
Surr: Selenate (surr)	5.061	0.10	5	0	101	85-115	5.095	0.67	20		

	Sample ID: 1105899-40IMS					Units: mg/L	Analysis Date: 6/7/2011 12:44 AM				
Client ID:	Run ID: ICS3000_110606A					SeqNo: 2414887	Prep Date:	DF: 5			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfate	57.42	2.5	50	7.255	100	80-120	0				
Surr: Selenate (surr)	23.66	0.50	25	0	94.6	85-115	0				

MS	Sample ID: 1105899-39IMS					Units: mg/L	Analysis Date: 6/7/2011 10:21 AM				
Client ID:	Run ID: ICS3000_110606A					SeqNo: 2414891	Prep Date:	DF: 5			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfate	55.45	2.5	50	0	111	80-120	0				
Surr: Selenate (surr)	24.38	0.50	25	0	97.5	85-115	0				

MSD	Sample ID: 1105899-40IMS					Units: mg/L	Analysis Date: 6/7/2011 01:48 AM				
Client ID:	Run ID: ICS3000_110606A					SeqNo: 2414890	Prep Date:	DF: 5			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfate	57.64	2.5	50	7.255	101	80-120	57.42	0.391	20		
Surr: Selenate (surr)	23.65	0.50	25	0	94.6	85-115	23.66	0.0211	20		

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R110987 Instrument ID ICS3000 Method: E300

MSD Sample ID: 1105899-39IMS Units: mg/L Analysis Date: 6/7/2011 10:42 AM

Client ID: Run ID: ICS3000_110606A SeqNo: 2414892 Prep Date: DF: 5

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	55.91	2.5	50	0	112	80-120	55.45	0.826	20	
Surr: Selenate (surr)	24.66	0.50	25	0	98.6	85-115	24.38	1.14	20	

The following samples were analyzed in this batch: 1105823-01B

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1105823

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
°F	Fahrenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	



ALS Environmental
 10450 Stancliff Rd., Suite 210
 Houston, Texas 77099
 Tel. +1 281 530 5856
 Fax. +1 281 530 5887

Chain of Custody Form

Page 1 of 1

COC ID: **33684**

1105823

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly



ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions (300); Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(575) 748- 0793 3311	Phone	(575) 748- 0793 3311	H	Conductivity
Fax	(575) 746- 5424 5451	Fax	(575) 746- 5424 5451	I	TDS
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Effluent	5-24-11	10:50	L	Y	9	X	X	X	X	X	X	X	X	X		
2	Trip blank																
3	Temp blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Relinquished by: [Signature] Date: 5-24-11 Time: 1:05

Received by: [Signature] Date: 5-24-11 Time: 5:15

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) Add 10 Wk Days 5 Wk Days 2 Wk Days 24 Hour

Notes: 10 Day TAT.

QC Package: (Check One Box Below) Level II Std QC TRRP Check/LS Level III Std QC/Raw Data TRRP Level IV Level IV SW/34/CLP Other / EDD

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O8 6-NaHSO4 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions of this form.
 3. The Chain of Custody is a legal document and must be maintained.

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Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **25-May-11 09:15**

Work Order: **1105823**

Received by: **DWH**

Checklist completed by David Hightower 25-May-11
eSignature Date

Reviewed by: Chris Bryson 29-May-11
eSignature Date

Matrices: water

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 2.0c 002

Cooler(s)/Kit(s): 3401

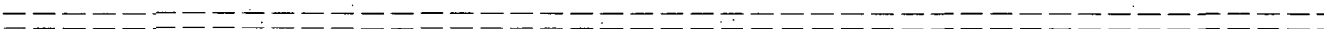
Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by: _____

Login Notes:



Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Empty text box for comments

Corrective Action:

Empty text box for corrective action

Client: ALS Environmental
Project: 1105823
Work Order: 1105675

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1105675-01	1105823-01D	Water		5/24/2011 10:50	5/27/2011 09:45	<input type="checkbox"/>

Client: ALS Environmental
 Project: 1105823
 WorkOrder: 1105675

**QUALIFIERS,
 ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
TDL	Target Detection Limit

<u>Units Reported</u>	<u>Description</u>
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: 27-May-11

Client: ALS Environmental
Project: 1105823
Sample ID: 1105823-01D
Collection Date: 5/24/2011 10:50 AM

Work Order: 1105675
Lab ID: 1105675-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE Cyanide, Reactive	ND		SW7.3.3.2 40.0	mg/Kg	1	Analyst: CV 5/27/2011 12:30 PM
SULFIDE, REACTIVE Sulfide, Reactive	ND		SW7.3.4.2 40.0	mg/Kg	1	Analyst: CV 5/27/2011 12:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: ALS Environmental
 Work Order: 1105675
 Project: 1105823

QC BATCH REPORT

Batch ID: R90393 Instrument ID WETCHEM Method: SW7.3.3.2

MBLK	Sample ID: WBLKW1-110524-R90393					Units: mg/Kg	Analysis Date: 5/24/2011 10:00 AM			
Client ID:	Run ID: WETCHEM_110524C			SeqNo: 1633537	Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS	Sample ID: WLCSW1-110524-R90393					Units: mg/Kg	Analysis Date: 5/24/2011 10:00 AM			
Client ID:	Run ID: WETCHEM_110524C			SeqNo: 1633538	Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	0			

LCSD	Sample ID: WLCSW1-110524-R90393					Units: mg/Kg	Analysis Date: 5/24/2011 10:00 AM			
Client ID:	Run ID: WETCHEM_110524C			SeqNo: 1633542	Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	249.6	0	35	

MS	Sample ID: 1105504-02A MS					Units: mg/Kg	Analysis Date: 5/25/2011 01:00 PM			
Client ID:	Run ID: WETCHEM_110524C			SeqNo: 1634710	Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	278.9	40	250	0	112	50-150	0			

MSD	Sample ID: 1105504-02A MSD					Units: mg/Kg	Analysis Date: 5/25/2011 01:00 PM			
Client ID:	Run ID: WETCHEM_110524C			SeqNo: 1634711	Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	278.9	11.1	35	

The following samples were analyzed in this batch: 1105675-01A

Client: ALS Environmental
Work Order: 1105675
Subject: 1105823

QC BATCH REPORT

Batch ID: R90528 Instrument ID WETCHEM Method: SW7.3.4.2

MBLK Sample ID: WBLKW1-110527-R90528 Units: mg/Kg Analysis Date: 5/27/2011 12:30 PM

Client ID: Run ID: WETCHEM_110527D SeqNo: 1636809 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch: 1105675-01A



Subcontractor:
 ALS Laboratory Group
 3352 128th Ave.
 Holland, MI 49424

TEL: (616) 399-6070
 FAX: (616) 399-6185
 Acc#: _____

CHAIN-OF-CUSTODY RECORD

Date: 25-May-11
 COC ID: 10516
 Due Date: 07-Jun-11

11 567S

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order		Project Name	1105823	A	Reactive Cyanide (SW-846)										
Work Order		Project Number		B	Reactive Sulfide (SW-846)										
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C											
Send Report To	JayLynn F Thibault	Inv Attn	Accounts Payable	D											
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E											
				F											
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G											
Phone	(281) 530-5656	Phone	(281) 530-5656	H											
Fax	(281) 530-5887	Fax	(281) 530-5887	I											
eMail Address	jaylynn.thibault@alsenviro.com	eMail CC		J											
Sample ID	Matrix	Collection Date	24hr	Bottle	A	B	C	D	E	F	G	H	I	J	
1105823-01D (Effluent)	Water	24/May/2011 10:50		(1) 1LPNEAT	X	X									

Comments:
 Please analyze for Reactive Cyanide & Sulfide cc:glenda.ramos@alsglobal.com mary.knowles@alsglobal.com

me

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level Std
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	5/27/11 0945		

4.0c

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: ALS - HOUSTON

Date/Time Received: 27-May-11 09:45

Work Order: 1105675

Received by: DS

Checklist completed by Diane Shaw 27-May-11
eSignature Date

Reviewed by: Bill Carey 27-May-11
eSignature Date

Matrices: Water

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 4.0 c

Cooler(s)/Kit(s):

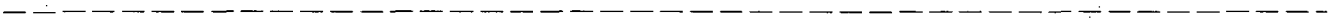
Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by:

Login Notes:



Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

[Empty text box for comments]

Corrective Action:

[Empty text box for corrective action]



06-Sep-2011

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: 1108743

Dear Aaron,

ALS Environmental received 2 samples on 24-Aug-2011 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 38.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Makenzie L. Henderson

Chris Bryson
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

DO NOT REMOVE OR DESTROY THIS INFORMATION FROM ANY ORIGINAL DOCUMENTS



www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1108743

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1108743-01	Injection Well Effluent	Liquid		8/23/2011 09:10	8/24/2011 09:20	<input type="checkbox"/>
1108743-02	Trip Blank	Water		8/23/2011	8/24/2011 09:20	<input checked="" type="checkbox"/>

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1108743

Case Narrative

PH, Sample Injection Well Effluent : Analytical results are flagged with an H qualifier for pH.

Batch 54977, Metals, Sample 1108727-01 : MS/MSD is for an unrelated sample.

Batch 54917, Semivolatile Organics : LCSD RPD was above the control limits for 3&4-Methylphenol, Benzidine, and Pyridine. The individual recoveries were in control.

Batch R115435, Volatile Organics, Sample 1108733-07 : MS/MSD is for an unrelated sample.

Batch R115163, pH, Sample Injection Well Effluent : Duplicate result is flagged with an H qualifier for pH.

The analysis for Reactive Cyanide and Reactive Sulfide was subcontracted to ALS Laboratory Group in Holland, MI.

ALS Environmental

Date: 06-Sep-11

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY							
				SW7470			
					Prep: SW7470 8/26/11		Analyst: JCJ
Mercury	ND	0		0.000200	mg/L	1	8/26/2011 13:54
METALS							
				SW6020			
					Prep: SW3010A 8/26/11		Analyst: ALR
Aluminum	0.625	0		0.0100	mg/L	1	8/26/2011 19:05
Arsenic	0.0207	0		0.00500	mg/L	1	8/26/2011 19:05
Barium	0.0796	0		0.00500	mg/L	1	8/26/2011 19:05
Boron	0.276	0		0.0500	mg/L	1	8/30/2011 14:01
Cadmium	ND	0		0.00200	mg/L	1	8/26/2011 19:05
Chromium	ND	0		0.00500	mg/L	1	8/26/2011 19:05
Copper	0.00709	0		0.00500	mg/L	1	8/26/2011 19:05
Lead	ND	0		0.00500	mg/L	1	8/26/2011 19:05
Manganese	0.0559	0		0.00500	mg/L	1	8/26/2011 19:05
Molybdenum	0.145	0		0.00500	mg/L	1	8/26/2011 19:05
Nickel	0.00767	0		0.00500	mg/L	1	8/26/2011 19:05
Selenium	0.465	0		0.00500	mg/L	1	8/26/2011 19:05
Silver	ND	0		0.00500	mg/L	1	8/26/2011 19:05
Zinc	0.0983	0		0.00500	mg/L	1	8/26/2011 19:05
SEMIVOLATILES - SW8270D							
				SW8270			
					Prep: SW3510 8/24/11		Analyst: JLJ
1,2,4-Trichlorobenzene	ND	0		0.050	mg/L	10	8/25/2011 22:54
2,4,5-Trichlorophenol	ND	0.4		0.050	mg/L	10	8/25/2011 22:54
2,4,6-Trichlorophenol	ND	0.002		0.050	mg/L	10	8/25/2011 22:54
2,4-Dinitrotoluene	ND	0.00013		0.050	mg/L	10	8/25/2011 22:54
2-Methylnaphthalene	ND	0		0.050	mg/L	10	8/25/2011 22:54
2-Methylphenol	ND	0.2		0.050	mg/L	10	8/25/2011 22:54
2-Nitroaniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
2-Nitrophenol	ND	0		0.050	mg/L	10	8/25/2011 22:54
3&4-Methylphenol	ND	0.2		0.050	mg/L	10	8/25/2011 22:54
3-Nitroaniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
4-Nitroaniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
4-Nitrophenol	ND	0		0.050	mg/L	10	8/25/2011 22:54
Acenaphthene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Acenaphthylene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Aniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
Anthracene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Benz(a)anthracene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Benzidine	ND	0		0.050	mg/L	10	8/25/2011 22:54
Hexachlorobenzene	ND	0.00013		0.050	mg/L	10	8/25/2011 22:54
Hexachloroethane	ND	0		0.050	mg/L	10	8/25/2011 22:54
Indeno(1,2,3-cd)pyrene	ND	0		0.050	mg/L	10	8/25/2011 22:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 06-Sep-11

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isophorone	ND	0		0.050	mg/L	10	8/25/2011 22:54
Naphthalene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Nitrobenzene	ND	0.002		0.050	mg/L	10	8/25/2011 22:54
N-Nitrosodimethylamine	ND	0		0.050	mg/L	10	8/25/2011 22:54
N-Nitrosodi-n-propylamine	ND	0		0.050	mg/L	10	8/25/2011 22:54
N-Nitrosodiphenylamine	ND	0		0.050	mg/L	10	8/25/2011 22:54
Pentachlorophenol	ND	0.1		0.050	mg/L	10	8/25/2011 22:54
Phenanthrene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Phenol	ND	0		0.050	mg/L	10	8/25/2011 22:54
Pyrene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Pyridine	ND	0.005		0.050	mg/L	10	8/25/2011 22:54
Surr: 2,4,6-Tribromophenol	78.3	0		42-124	%REC	10	8/25/2011 22:54
Surr: 2-Fluorobiphenyl	75.3	0		48-120	%REC	10	8/25/2011 22:54
Surr: 2-Fluorophenol	55.3	0		20-120	%REC	10	8/25/2011 22:54
Surr: 4-Terphenyl-d14	73.1	0		51-135	%REC	10	8/25/2011 22:54
Surr: Nitrobenzene-d5	70.5	0		41-120	%REC	10	8/25/2011 22:54
Surr: Phenol-d6	61.6	0		20-120	%REC	10	8/25/2011 22:54
VOLATILES			SW8260		Prep:		Analyst: PC
1,1,1-Trichloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1,2,2-Tetrachloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1,2-Trichloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1-Dichloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1-Dichloroethene	ND	0.0007		0.0050	mg/L	1	8/31/2011 16:22
1,2-Dichloroethane	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
2-Butanone	ND	0		0.010	mg/L	1	8/31/2011 16:22
2-Chloroethyl vinyl ether	ND	0		0.010	mg/L	1	8/31/2011 16:22
2-Hexanone	ND	0		0.010	mg/L	1	8/31/2011 16:22
4-Methyl-2-pentanone	ND	0		0.010	mg/L	1	8/31/2011 16:22
Acetone	ND	0		0.010	mg/L	1	8/31/2011 16:22
Benzene	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
Bromodichloromethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Bromoform	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Bromomethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Carbon disulfide	ND	0		0.010	mg/L	1	8/31/2011 16:22
Carbon tetrachloride	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
Chlorobenzene	ND	0.1		0.0050	mg/L	1	8/31/2011 16:22
Chloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Chloroform	ND	0.006		0.0050	mg/L	1	8/31/2011 16:22
Chloromethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
cis-1,3-Dichloropropene	ND	0		0.0050	mg/L	1	8/31/2011 16:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 06-Sep-11

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Ethylbenzene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
m,p-Xylene	ND	0		0.010	mg/L	1	8/31/2011 16:22
Methylene chloride	ND	0		0.010	mg/L	1	8/31/2011 16:22
Styrene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Tetrachloroethene	ND	0.0007		0.0050	mg/L	1	8/31/2011 16:22
Toluene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
trans-1,3-Dichloropropene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Trichloroethene	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
Vinyl acetate	ND	0		0.010	mg/L	1	8/31/2011 16:22
Vinyl chloride	ND	0.0002		0.0020	mg/L	1	8/31/2011 16:22
Xylenes, Total	ND	0		0.015	mg/L	1	8/31/2011 16:22
Surr: 1,2-Dichloroethane-d4	99.5	0		70-125	%REC	1	8/31/2011 16:22
Surr: 4-Bromofluorobenzene	98.0	0		72-125	%REC	1	8/31/2011 16:22
Surr: Dibromofluoromethane	99.3	0		71-125	%REC	1	8/31/2011 16:22
Surr: Toluene-d8	95.0	0		75-125	%REC	1	8/31/2011 16:22
REACTIVE CYANIDE			SW-846		Prep:		Analyst: HN
Reactive Cyanide	ND	0		40.0	mg/Kg	1	9/1/2011 12:00
REACTIVE SULFIDE			SW-846		Prep:		Analyst: HN
Reactive Sulfide	ND	0		40.0	mg/Kg	1	9/1/2011 12:00
ANIONS - EPA 300.0 (1993)			E300		Prep:		Analyst: JBA
Chloride	404	0		5.00	mg/L	10	8/30/2011 13:08
Sulfate	2,290	0		50.0	mg/L	100	8/30/2011 15:18
Surr: Selenate (surr)	113	0		85-115	%REC	10	8/30/2011 13:08
Surr: Selenate (surr)	113	0		85-115	%REC	100	8/30/2011 15:18
ALKALINITY			SM2320B		Prep:		Analyst: DM
Alkalinity, Bicarbonate (As CaCO3)	302	0		5.00	mg/L	1	8/29/2011 11:35
Alkalinity, Carbonate (As CaCO3)	ND	0		5.00	mg/L	1	8/29/2011 11:35
Alkalinity, Hydroxide (As CaCO3)	ND	0		5.00	mg/L	1	8/29/2011 11:35
Alkalinity, Total (As CaCO3)	302	0		5.00	mg/L	1	8/29/2011 11:35
SPECIFIC CONDUCTIVITY			M2510 B		Prep:		Analyst: TDW
Specific Conductivity	7,380	0		1.00	µmhos/cm	1	8/26/2011 14:00
IGNITIBILITY			SW1010		Prep:		Analyst: KAH
Ignitability	>212	0		50.0	°F	1	8/30/2011 16:00
PH			SW9040		Prep:		Analyst: TDW
pH	8.11	0	H	0.100	pH units	1	8/24/2011 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 06-Sep-11

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL DISSOLVED SOLIDS			M2540C		Prep:		Analyst: JBA
Total Dissolved Solids (Residue, Filterable)	4,320		0		10.0 mg/L	1	8/30/2011 08:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 06-Sep-11

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 54972 Instrument ID Mercury Method: SW7470

MBLK	Sample ID: GBLKW1-082611-54972	Units: mg/L	Analysis Date: 8/26/2011 01:25 PM							
Client ID:	Run ID: MERCURY_110826A	SeqNo: 2507300	Prep Date: 8/26/2011 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS	Sample ID: GLCSW1-082611-54972	Units: mg/L	Analysis Date: 8/26/2011 01:27 PM							
Client ID:	Run ID: MERCURY_110826A	SeqNo: 2507301	Prep Date: 8/26/2011 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0048	0.00020	0.005	0	96	85-115	0			

MS	Sample ID: 1108786-01DMS	Units: mg/L	Analysis Date: 8/26/2011 01:36 PM							
Client ID:	Run ID: MERCURY_110826A	SeqNo: 2507304	Prep Date: 8/26/2011 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00483	0.00020	0.005	0.000008	96.4	85-115	0			

MSD	Sample ID: 1108786-01DMSD	Units: mg/L	Analysis Date: 8/26/2011 01:38 PM							
Client ID:	Run ID: MERCURY_110826A	SeqNo: 2507305	Prep Date: 8/26/2011 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00483	0.00020	0.005	0.000008	96.4	85-115	0.00483	0	20	

DUP	Sample ID: 1108786-01DDUP	Units: mg/L	Analysis Date: 8/26/2011 01:34 PM							
Client ID:	Run ID: MERCURY_110826A	SeqNo: 2507303	Prep Date: 8/26/2011 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	0.000008	0	20	

The following samples were analyzed in this batch: 1108743-01B

Client: Navajo Refining Company
 Work Order: 1108743
 Subject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 54977 Instrument ID ICPMS03 Method: SW6020

MBLK Sample ID: MBLKW2-082611-54977 Units: mg/L Analysis Date: 8/26/2011 03:30 PM

Client ID: Run ID: ICPMS03_110826A SeqNo: 2507441 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004147	0.010								J
Arsenic	ND	0.0050								
Barium	0.0009094	0.0050								J
Boron	ND	0.050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	0.001994	0.0050								J
Selenium	0.001283	0.0050								J
Silver	ND	0.0050								
Zinc	ND	0.0050								

LCS Sample ID: MLCSW2-082611-54977 Units: mg/L Analysis Date: 8/26/2011 03:36 PM

Client ID: Run ID: ICPMS03_110826A SeqNo: 2507442 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04712	0.0050	0.05	0	94.2	80-120	0			
Barium	0.04682	0.0050	0.05	0	93.6	80-120	0			
Boron	0.4576	0.050	0.5	0	91.5	80-120	0			
Cadmium	0.04684	0.0020	0.05	0	93.7	80-120	0			
Chromium	0.04563	0.0050	0.05	0	91.3	80-120	0			
Copper	0.04509	0.0050	0.05	0	90.2	80-120	0			
Lead	0.04609	0.0050	0.05	0	92.2	80-120	0			
Manganese	0.04654	0.0050	0.05	0	93.1	80-120	0			
Molybdenum	0.04699	0.0050	0.05	0	94	80-120	0			
Nickel	0.04664	0.0050	0.05	0	93.3	80-120	0			
Selenium	0.04814	0.0050	0.05	0	96.3	80-120	0			
Silver	0.04666	0.0050	0.05	0	93.3	80-120	0			
Zinc	0.04991	0.0050	0.05	0	99.8	80-120	0			

LCS Sample ID: MLCSW2-082611-54977 Units: mg/L Analysis Date: 8/29/2011 02:50 PM

Client ID: Run ID: ICPMS03_110829A SeqNo: 2508554 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1175	0.010	0.1	0	118	80-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 54977 Instrument ID ICPMS03 Method: SW6020

MS Sample ID: 1108727-01CMS Units: mg/L Analysis Date: 8/26/2011 04:22 PM

Client ID: Run ID: ICPMS03_110826A SeqNo: 2507645 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05876	0.0050	0.05	0.009833	97.9	80-120	0			
Barium	0.1335	0.0050	0.05	0.09031	86.4	80-120	0			
Boron	0.6128	0.050	0.5	0.1211	98.3	80-120	0			
Cadmium	0.04577	0.0020	0.05	0.00007921	91.4	80-120	0			
Chromium	0.04331	0.0050	0.05	0.0001978	86.2	80-120	0			
Copper	0.04711	0.0050	0.05	0.005449	83.3	80-120	0			
Lead	0.04507	0.0050	0.05	0.0006013	88.9	80-120	0			
Manganese	1.393	0.0050	0.05	1.378	30	80-120	0			SO
Molybdenum	0.04858	0.0050	0.05	0.005414	86.3	80-120	0			
Nickel	0.04488	0.0050	0.05	0.002782	84.2	80-120	0			
Selenium	0.04823	0.0050	0.05	0.001377	93.7	80-120	0			
Silver	0.04221	0.0050	0.05	-0.00008971	84.6	80-120	0			
Zinc	0.06132	0.0050	0.05	0.008454	106	80-120	0			

MS Sample ID: 1108727-01CMS Units: mg/L Analysis Date: 8/29/2011 03:13 PM

Client ID: Run ID: ICPMS03_110829A SeqNo: 2508561 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1348	0.010	0.1	0.02636	108	80-120	0			

MSD Sample ID: 1108727-01CMSD Units: mg/L Analysis Date: 8/26/2011 04:28 PM

Client ID: Run ID: ICPMS03_110826A SeqNo: 2507646 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05957	0.0050	0.05	0.009833	99.5	80-120	0.05876	1.37	15	
Barium	0.1364	0.0050	0.05	0.09031	92.2	80-120	0.1335	2.15	15	
Boron	0.6309	0.050	0.5	0.1211	102	80-120	0.6128	2.91	15	
Cadmium	0.04648	0.0020	0.05	0.00007921	92.8	80-120	0.04577	1.54	15	
Chromium	0.04247	0.0050	0.05	0.0001978	84.5	80-120	0.04331	1.96	15	
Copper	0.04633	0.0050	0.05	0.005449	81.8	80-120	0.04711	1.67	15	
Lead	0.04511	0.0050	0.05	0.0006013	89	80-120	0.04507	0.0887	15	
Manganese	1.406	0.0050	0.05	1.378	56	80-120	1.393	0.929	15	SO
Molybdenum	0.04953	0.0050	0.05	0.005414	88.2	80-120	0.04858	1.94	15	
Nickel	0.04487	0.0050	0.05	0.002782	84.2	80-120	0.04488	0.0223	15	
Selenium	0.0496	0.0050	0.05	0.001377	96.4	80-120	0.04823	2.8	15	
Silver	0.04211	0.0050	0.05	-0.00008971	84.4	80-120	0.04221	0.237	15	
Zinc	0.05756	0.0050	0.05	0.008454	98.2	80-120	0.06132	6.33	15	

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 54977 Instrument ID ICPMS03 Method: SW6020

MSD Sample ID: 1108727-01CMSD Units: mg/L Analysis Date: 8/29/2011 03:19 PM

Client ID: Run ID: ICPMS03_110829A SeqNo: 2508562 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.133	0.010	0.1	0.02636	107	80-120	0.1348	1.34	15	

DUP Sample ID: 1108727-01CDUP Units: mg/L Analysis Date: 8/26/2011 04:10 PM

Client ID: Run ID: ICPMS03_110826A SeqNo: 2507639 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.009563	0.0050	0	0	0	0-0	0.009833	2.78	25	
Barium	0.08918	0.0050	0	0	0	0-0	0.09031	1.26	25	
Boron	0.1225	0.050	0	0	0	0-0	0.1211	1.15	25	
Cadmium	ND	0.0020	0	0	0	0-0	0.00007921	0	25	
Chromium	ND	0.0050	0	0	0	0-0	0.0001978	0	25	
Copper	0.005595	0.0050	0	0	0	0-0	0.005449	2.64	25	
Lead	ND	0.0050	0	0	0	0-0	0.0006013	0	25	
Manganese	1.379	0.0050	0	0	0	0-0	1.378	0.0725	25	
Molybdenum	0.004876	0.0050	0	0	0	0-0	0.005414	0	25	J
Nickel	0.002957	0.0050	0	0	0	0-0	0.002782	0	25	J
Vanadium	0.001136	0.0050	0	0	0	0-0	0.001377	0	25	J
Zinc	ND	0.0050	0	0	0	0-0	-0.00008971	0	25	
Aluminum	0.01054	0.0050	0	0	0	0-0	0.008454	22	25	

DUP Sample ID: 1108727-01CDUP Units: mg/L Analysis Date: 8/29/2011 03:02 PM

Client ID: Run ID: ICPMS03_110829A SeqNo: 2508557 Prep Date: 8/26/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.02433	0.010	0	0	0	0-0	0.02636	8.01	25	

The following samples were analyzed in this batch:

1108743-01B

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 54917 Instrument ID SV-5 Method: SW8270

MBLK Sample ID: SBLKW1-110824-54917 Units: µg/L Analysis Date: 8/25/2011 08:13 PM
 Client ID: Run ID: SV-5_110825A SeqNo: 2507391 Prep Date: 8/24/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
azidine	ND	5.0								
achlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	81.41	5.0	100	0	81.4	42-124	0			
Surr: 2-Fluorobiphenyl	86.14	5.0	100	0	86.1	48-120	0			
Surr: 2-Fluorophenol	75.63	5.0	100	0	75.6	20-120	0			
Surr: 4-Terphenyl-d14	80.92	5.0	100	0	80.9	51-135	0			
Surr: Nitrobenzene-d5	86.09	5.0	100	0	86.1	41-120	0			
Surr: Phenol-d6	66.83	5.0	100	0	66.8	20-120	0			

:: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 54917 Instrument ID SV-5 Method: SW8270

LCS Sample ID: SLCSW1-110824-54917 Units: µg/L Analysis Date: 8/26/2011 11:23 AM

Client ID: Run ID: SV-5_110825A SeqNo: 2507393 Prep Date: 8/24/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.43	5.0	50	0	88.9	50-120	0			
2,4,5-Trichlorophenol	103.1	5.0	100	0	103	50-120	0			
2,4,6-Trichlorophenol	95.38	5.0	100	0	95.4	50-120	0			
2,4-Dinitrotoluene	47.64	5.0	50	0	95.3	50-120	0			
2-Methylnaphthalene	47.6	5.0	50	0	95.2	55-120	0			
2-Methylphenol	96.63	5.0	100	0	96.6	50-120	0			
2-Nitroaniline	47.77	5.0	50	0	95.5	55-120	0			
2-Nitrophenol	88.99	5.0	100	0	89	55-120	0			
3&4-Methylphenol	147.8	5.0	150	0	98.5	55-120	0			
3-Nitroaniline	29.09	5.0	50	0	58.2	40-120	0			
4-Nitroaniline	41.65	5.0	50	0	83.3	50-120	0			
4-Nitrophenol	94.78	5.0	100	0	94.8	45-120	0			
Acenaphthene	47.46	5.0	50	0	94.9	55-120	0			
Acenaphthylene	46.79	5.0	50	0	93.6	55-120	0			
Aniline	28.98	5.0	50	0	58	30-120	0			
Anthracene	48.55	5.0	50	0	97.1	55-120	0			
Benz(a)anthracene	48.27	5.0	50	0	96.5	55-120	0			
Benzo(a)pyridine	10.72	5.0	50	0	21.4	10-120	0			
Benzo(a)pyrene	49.57	5.0	50	0	99.1	55-120	0			
Hexachloroethane	43.51	5.0	50	0	87	55-120	0			
Indeno(1,2,3-cd)pyrene	48.15	5.0	50	0	96.3	55-120	0			
Isophorone	47.42	5.0	50	0	94.8	55-120	0			
Naphthalene	47.18	5.0	50	0	94.4	55-120	0			
Nitrobenzene	45.6	5.0	50	0	91.2	55-120	0			
N-Nitrosodimethylamine	41.32	5.0	50	0	82.6	45-120	0			
N-Nitrosodi-n-propylamine	50.59	5.0	50	0	101	50-120	0			
N-Nitrosodiphenylamine	46.67	5.0	50	0	93.3	55-120	0			
Pentachlorophenol	98.83	5.0	100	0	98.8	55-120	0			
Phenanthrene	47.55	5.0	50	0	95.1	55-120	0			
Phenol	100.6	5.0	100	0	101	50-120	0			
Pyrene	50.35	5.0	50	0	101	55-120	0			
Pyridine	31.8	5.0	50	0	63.6	35-120	0			
Surr: 2,4,6-Tribromophenol	93.17	5.0	100	0	93.2	42-124	0			
Surr: 2-Fluorobiphenyl	85.96	5.0	100	0	86	48-120	0			
Surr: 2-Fluorophenol	84.74	5.0	100	0	84.7	20-120	0			
Surr: 4-Terphenyl-d14	79.69	5.0	100	0	79.7	51-135	0			
Surr: Nitrobenzene-d5	80.18	5.0	100	0	80.2	41-120	0			
Surr: Phenol-d6	87.86	5.0	100	0	87.9	20-120	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 54917 Instrument ID SV-5 Method: SW8270

LCSD Sample ID: SLCSDW1-110824-54917 Units: µg/L Analysis Date: 8/25/2011 05:08 PM
 Client ID: Run ID: SV-5_110825A SeqNo: 2507390 Prep Date: 8/24/2011 DF: 1

Analyte	Result	PQL	SPK.Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	47.65	5.0	50	0	95.3	50-120	44.43	7	20	
2,4,5-Trichlorophenol	101.2	5.0	100	0	101	50-120	103.1	1.85	20	
2,4,6-Trichlorophenol	94.98	5.0	100	0	95	50-120	95.38	0.415	20	
2,4-Dinitrotoluene	49.49	5.0	50	0	99	50-120	47.64	3.8	20	
2-Methylnaphthalene	45.87	5.0	50	0	91.7	55-120	47.6	3.7	20	
2-Methylphenol	80.73	5.0	100	0	80.7	50-120	96.63	17.9	20	
2-Nitroaniline	49.54	5.0	50	0	99.1	55-120	47.77	3.64	20	
2-Nitrophenol	89.09	5.0	100	0	89.1	55-120	88.99	0.116	20	
3&4-Methylphenol	116.3	5.0	150	0	77.5	55-120	147.8	23.9	20	R
3-Nitroaniline	34.99	5.0	50	0	70	40-120	29.09	18.4	20	
4-Nitroaniline	41.35	5.0	50	0	82.7	50-120	41.65	0.718	20	
4-Nitrophenol	90.42	5.0	100	0	90.4	45-120	94.78	4.71	20	
Acenaphthene	49.38	5.0	50	0	98.8	55-120	47.46	3.96	20	
Acenaphthylene	49.06	5.0	50	0	98.1	55-120	46.79	4.74	20	
Aniline	30.1	5.0	50	0	60.2	30-120	28.98	3.79	20	
Anthracene	49.62	5.0	50	0	99.2	55-120	48.55	2.18	20	
Benz(a)anthracene	48.91	5.0	50	0	97.8	55-120	48.27	1.33	20	
Benz(b)fluoranthene	6.897	5.0	50	0	13.8	10-120	10.72	43.4	20	R
Benzo(a)pyrene	50.03	5.0	50	0	100	55-120	49.57	0.931	20	
Hexachloroethane	44.94	5.0	50	0	89.9	55-120	43.51	3.23	20	
Indeno(1,2,3-cd)pyrene	46.95	5.0	50	0	93.9	55-120	48.15	2.53	20	
Isophorone	47.07	5.0	50	0	94.1	55-120	47.42	0.742	20	
Naphthalene	48.95	5.0	50	0	97.9	55-120	47.18	3.69	20	
Nitrobenzene	49.55	5.0	50	0	99.1	55-120	45.6	8.29	20	
N-Nitrosodimethylamine	47.19	5.0	50	0	94.4	45-120	41.32	13.3	20	
N-Nitrosodi-n-propylamine	42.37	5.0	50	0	84.7	50-120	50.59	17.7	20	
N-Nitrosodiphenylamine	49.64	5.0	50	0	99.3	55-120	46.67	6.16	20	
Pentachlorophenol	99.84	5.0	100	0	99.8	55-120	98.83	1.02	20	
Phenanthrene	50.21	5.0	50	0	100	55-120	47.55	5.44	20	
Phenol	88.36	5.0	100	0	88.4	50-120	100.6	12.9	20	
Pyrene	49.35	5.0	50	0	98.7	55-120	50.35	2	20	
Pyridine	41.38	5.0	50	0	82.8	35-120	31.8	26.2	20	R
Surr: 2,4,6-Tribromophenol	91.11	5.0	100	0	91.1	42-124	93.17	2.23	20	
Surr: 2-Fluorobiphenyl	91.19	5.0	100	0	91.2	48-120	85.96	5.9	20	
Surr: 2-Fluorophenol	83.72	5.0	100	0	83.7	20-120	84.74	1.21	20	
Surr: 4-Terphenyl-d14	79.96	5.0	100	0	80	51-135	79.69	0.335	20	
Surr: Nitrobenzene-d5	88.06	5.0	100	0	88.1	41-120	80.18	9.37	20	
Surr: Phenol-d6	76.78	5.0	100	0	76.8	20-120	87.86	13.5	20	

The following samples were analyzed in this batch:

1108743-01E

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115435 Instrument ID VOA1 Method: SW8260

MBLK Sample ID: VBLKW-083111-R115435 Units: µg/L Analysis Date: 8/31/2011 11:55 AM
 Client ID: Run ID: VOA1_110831A SeqNo: 2511258 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
o-benzene	ND	5.0								
o-roethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	49.66	5.0	50	0	99.3	70-125	0			
Surr: 4-Bromofluorobenzene	51.53	5.0	50	0	103	72-125	0			
Surr: Dibromofluoromethane	49.76	5.0	50	0	99.5	71-125	0			
Surr: Toluene-d8	48.97	5.0	50	0	97.9	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115435 Instrument ID VOA1 Method: SW8260

LCS Sample ID: VLCSW-083111-R115435 Units: µg/L Analysis Date: 8/31/2011 11:02 AM

Client ID: Run ID: VOA1_110831A SeqNo: 2511257 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	50.29	5.0	50	0	101	80-120	0			
1,1,2,2-Tetrachloroethane	50.77	5.0	50	0	102	72-120	0			
1,1,2-Trichloroethane	47.32	5.0	50	0	94.6	80-120	0			
1,1-Dichloroethane	51.27	5.0	50	0	103	76-120	0			
1,1-Dichloroethene	49.48	5.0	50	0	99	73-124	0			
1,2-Dichloroethane	49.42	5.0	50	0	98.8	78-120	0			
2-Butanone	99.25	10	100	0	99.3	58-132	0			
2-Chloroethyl vinyl ether	101.8	10	100	0	102	74-120	0			
2-Hexanone	98.83	10	100	0	98.8	61-130	0			
4-Methyl-2-pentanone	97.05	10	100	0	97.1	65-127	0			
Acetone	100.5	10	100	0	100	59-137	0			
Benzene	49.07	5.0	50	0	98.1	73-121	0			
Bromodichloromethane	50.6	5.0	50	0	101	80-120	0			
Bromoform	50.03	5.0	50	0	100	79-120	0			
Bromomethane	48.42	5.0	50	0	96.8	66-137	0			
Carbon disulfide	100.6	10	100	0	101	68-141	0			
Carbon tetrachloride	51.76	5.0	50	0	104	75-124	0			
o-crobenzene	45.9	5.0	50	0	91.8	80-120	0			
o-croethane	49.36	5.0	50	0	98.7	76-121	0			
Chloroform	49.13	5.0	50	0	98.3	80-120	0			
Chloromethane	46.69	5.0	50	0	93.4	67-123	0			
cis-1,3-Dichloropropene	47.26	5.0	50	0	94.5	80-120	0			
Dibromochloromethane	49.16	5.0	50	0	98.3	80-120	0			
Ethylbenzene	48.96	5.0	50	0	97.9	80-120	0			
m,p-Xylene	100.2	10	100	0	100	78-121	0			
Methylene chloride	48.86	10	50	0	97.7	65-133	0			
Styrene	49.79	5.0	50	0	99.6	80-120	0			
Tetrachloroethene	48.61	5.0	50	0	97.2	79-120	0			
Toluene	42.94	5.0	50	0	85.9	80-120	0			
trans-1,3-Dichloropropene	50.83	5.0	50	0	102	80-120	0			
Trichloroethene	51.23	5.0	50	0	102	80-120	0			
Vinyl acetate	99.99	10	100	0	100	67-139	0			
Vinyl chloride	51.01	2.0	50	0	102	70-127	0			
Xylenes, Total	149.9	15	150	0	99.9	80-120	0			
Surr: 1,2-Dichloroethane-d4	49.58	5.0	50	0	99.2	70-125	0			
Surr: 4-Bromofluorobenzene	46.4	5.0	50	0	92.8	72-125	0			
Surr: Dibromofluoromethane	47.97	5.0	50	0	95.9	71-125	0			
Surr: Toluene-d8	46.03	5.0	50	0	92.1	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115435 Instrument ID VOA1 Method: SW8260

MS Sample ID: 1108733-07ZMS Units: µg/L Analysis Date: 8/31/2011 01:41 PM

Client ID: Run ID: VOA1_110831A SeqNo: 2511356 Prep Date: DF: 250

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	10350	1,200	12500	0	82.8	80-120	0			
1,1,2,2-Tetrachloroethane	11540	1,200	12500	0	92.3	72-120	0			
1,1,2-Trichloroethane	11530	1,200	12500	0	92.2	80-120	0			
1,1-Dichloroethane	11850	1,200	12500	0	94.8	76-120	0			
1,1-Dichloroethene	10740	1,200	12500	129.3	84.9	73-124	0			
1,2-Dichloroethane	11230	1,200	12500	0	89.8	78-120	0			
2-Butanone	23340	2,500	25000	0	93.4	58-132	0			
2-Chloroethyl vinyl ether	22640	2,500	25000	0	90.6	74-120	0			
2-Hexanone	22960	2,500	25000	0	91.8	61-130	0			
4-Methyl-2-pentanone	24610	2,500	25000	0	98.4	65-127	0			
Acetone	20670	2,500	25000	0	82.7	59-137	0			
Benzene	10760	1,200	12500	0	86.1	73-121	0			
Bromodichloromethane	12320	1,200	12500	0	98.6	80-120	0			
Bromoform	11740	1,200	12500	0	93.9	79-120	0			
Bromomethane	10690	1,200	12500	0	85.5	66-137	0			
Carbon disulfide	21650	2,500	25000	0	86.6	68-141	0			
Carbon tetrachloride	9519	1,200	12500	0	76.2	75-124	0			
o-crobenzene	11330	1,200	12500	0	90.6	80-120	0			
o-croethane	10940	1,200	12500	0	87.5	76-121	0			
Chloroform	11500	1,200	12500	0	92	80-120	0			
Chloromethane	11120	1,200	12500	0	88.9	67-123	0			
cis-1,3-Dichloropropene	11670	1,200	12500	0	93.4	80-120	0			
Dibromochloromethane	11790	1,200	12500	0	94.3	80-120	0			
Ethylbenzene	10260	1,200	12500	0	82.1	80-120	0			
m,p-Xylene	20570	2,500	25000	0	82.3	78-121	0			
Methylene chloride	12060	2,500	12500	148.4	95.3	65-133	0			
Styrene	11800	1,200	12500	0	94.4	80-120	0			
Tetrachloroethene	9166	1,200	12500	0	73.3	79-120	0			S
Toluene	10770	1,200	12500	0	86.1	80-120	0			
trans-1,3-Dichloropropene	13010	1,200	12500	0	104	80-120	0			
Trichloroethene	12350	1,200	12500	2002	82.8	80-120	0			
Vinyl acetate	23950	2,500	25000	0	95.8	67-139	0			
Vinyl chloride	11670	500	12500	1420	82	70-127	0			
Xylenes, Total	31960	3,800	37500	0	85.2	80-120	0			
Surr: 1,2-Dichloroethane-d4	12640	1,200	12500	0	101	70-125	0			
Surr: 4-Bromofluorobenzene	12160	1,200	12500	0	97.3	72-125	0			
Surr: Dibromofluoromethane	12860	1,200	12500	0	103	71-125	0			
Surr: Toluene-d8	11680	1,200	12500	0	93.4	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115435 Instrument ID VOA1 Method: SW8260

MSD	Sample ID: 1108733-07ZMSD	Units: µg/L					Analysis Date: 8/31/2011 02:08 PM				
Client ID:	Run ID: VOA1_110831A	SeqNo: 2511357			Prep Date:		DF: 250				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	10030	1,200	12500	0	80.2	80-120	10350	3.13	20		
1,1,2,2-Tetrachloroethane	11960	1,200	12500	0	95.7	72-120	11540	3.6	20		
1,1,2-Trichloroethane	12060	1,200	12500	0	96.4	80-120	11530	4.48	20		
1,1-Dichloroethane	11630	1,200	12500	0	93.1	76-120	11850	1.85	20		
1,1-Dichloroethene	10730	1,200	12500	129.3	84.8	73-124	10740	0.125	20		
1,2-Dichloroethane	12510	1,200	12500	0	100	78-120	11230	10.8	20		
2-Butanone	24010	2,500	25000	0	96.1	58-132	23340	2.84	20		
2-Chloroethyl vinyl ether	22350	2,500	25000	0	89.4	74-120	22640	1.3	20		
2-Hexanone	23170	2,500	25000	0	92.7	61-130	22960	0.89	20		
4-Methyl-2-pentanone	24240	2,500	25000	0	97	65-127	24610	1.51	20		
Acetone	20860	2,500	25000	0	83.4	59-137	20670	0.909	20		
Benzene	11760	1,200	12500	0	94.1	73-121	10760	8.94	20		
Bromodichloromethane	12820	1,200	12500	0	103	80-120	12320	3.96	20		
Bromoform	12670	1,200	12500	0	101	79-120	11740	7.59	20		
Bromomethane	11950	1,200	12500	0	95.6	66-137	10690	11.1	20		
Carbon disulfide	20600	2,500	25000	0	82.4	68-141	21650	4.97	20		
Carbon tetrachloride	9831	1,200	12500	0	78.6	75-124	9519	3.22	20		
o-cresol	11170	1,200	12500	0	89.3	80-120	11330	1.43	20		
o-xylene	11590	1,200	12500	0	92.7	76-121	10940	5.73	20		
Chloroform	11770	1,200	12500	0	94.2	80-120	11500	2.37	20		
Chloromethane	11680	1,200	12500	0	93.4	67-123	11120	4.91	20		
cis-1,3-Dichloropropene	13270	1,200	12500	0	106	80-120	11670	12.8	20		
Dibromochloromethane	12380	1,200	12500	0	99.1	80-120	11790	4.92	20		
Ethylbenzene	10850	1,200	12500	0	86.8	80-120	10260	5.57	20		
m,p-Xylene	21540	2,500	25000	0	86.2	78-121	20570	4.62	20		
Methylene chloride	11780	2,500	12500	148.4	93.1	65-133	12060	2.32	20		
Styrene	12190	1,200	12500	0	97.5	80-120	11800	3.23	20		
Tetrachloroethene	9624	1,200	12500	0	77	79-120	9166	4.88	20	S	
Toluene	10860	1,200	12500	0	86.9	80-120	10770	0.907	20		
trans-1,3-Dichloropropene	12940	1,200	12500	0	103	80-120	13010	0.574	20		
Trichloroethene	13590	1,200	12500	2002	92.7	80-120	12350	9.54	20		
Vinyl acetate	24650	2,500	25000	0	98.6	67-139	23950	2.87	20		
Vinyl chloride	11990	500	12500	1420	84.6	70-127	11670	2.67	20		
Xylenes, Total	33470	3,800	37500	0	89.2	80-120	31960	4.62	20		
Surr: 1,2-Dichloroethane-d4	12170	1,200	12500	0	97.3	70-125	12640	3.8	20		
Surr: 4-Bromofluorobenzene	12660	1,200	12500	0	101	72-125	12160	4.05	20		
Surr: Dibromofluoromethane	12040	1,200	12500	0	96.3	71-125	12860	6.59	20		
Surr: Toluene-d8	12010	1,200	12500	0	96.1	75-125	11680	2.85	20		

The following samples were analyzed in this batch:

1108743-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115163 **Instrument ID:** WetChem **Method:** SW9040

LCS **Sample ID:** WLCSW1-082411-R115163 **Units:** pH units **Analysis Date:** 8/24/2011 02:00 PM

Client ID: **Run ID:** WETCHEM_110824P **SeqNo:** 2505871 **Prep Date:** **DF:** 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.02	0.10	6	0	100	90-110	0			

DUP **Sample ID:** 1108743-01DDUP **Units:** pH units **Analysis Date:** 8/24/2011 02:00 PM

Client ID: Injection Well Effluent **Run ID:** WETCHEM_110824P **SeqNo:** 2505873 **Prep Date:** **DF:** 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.15	0.10	0	0	0	0-0	8.11	0.492	20	H

The following samples were analyzed in this batch: 1108743-01D

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115248 **Instrument ID:** WetChem **Method:** M2510 B

MBLK Sample ID: **WBLKW1-082611-R115248** Units: **µmhos/cm** Analysis Date: **8/26/2011 02:00 PM**

Client ID: Run ID: **WETCHEM_110826B** SeqNo: **2507383** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **WLCSW1-082611-R115248** Units: **µmhos/cm** Analysis Date: **8/26/2011 02:00 PM**

Client ID: Run ID: **WETCHEM_110826B** SeqNo: **2507384** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1460	1.0	1413		0	103	80-120	0		

DUP Sample ID: **1108743-01DDUP** Units: **µmhos/cm** Analysis Date: **8/26/2011 02:00 PM**

Client ID: **Injection Well Effluent** Run ID: **WETCHEM_110826B** SeqNo: **2507387** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	7410	1.0	0		0	0	7380	0.406	20	

The following samples were analyzed in this batch: 1108743-01D

Client: Navajo Refining Company
 Work Order: 1108743
 Object: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115296 Instrument ID WetChem Method: SM2320B

MBLK Sample ID: WBLKW1-082911-R115296 Units: mg/L Analysis Date: 8/29/2011 11:35 AM

Client ID: Run ID: WETCHEM_110829B SeqNo: 2508254 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: WLCSW1-082911-R115296 Units: mg/L Analysis Date: 8/29/2011 11:35 AM

Client ID: Run ID: WETCHEM_110829B SeqNo: 2508255 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	982.6	5.0	1000	0	98.3	80-120	0			

DUP Sample ID: 1108713-02BDUP Units: mg/L Analysis Date: 8/29/2011 11:35 AM

Client ID: Run ID: WETCHEM_110829B SeqNo: 2508277 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	61.86	5.0	0	0	0	0-0	61.29	0.926	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	61.86	5.0	0	0	0	0-0	61.29	0.926	20	

The following samples were analyzed in this batch:

1108743-01C

Client: Navajo Refining Company
 Work Order: 1108743
 Subject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115381 Instrument ID WetChem Method: SW1010

LCS Sample ID: WLCS-083011-R115381 Units: °F Analysis Date: 8/30/2011 04:00 PM

Client ID: Run ID: WETCHEM_110830F SeqNo: 2509821 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	0			

LCSD Sample ID: WLCS-083011-R115381 Units: °F Analysis Date: 8/30/2011 04:00 PM

Client ID: Run ID: WETCHEM_110830F SeqNo: 2509826 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	83	0	25	

DUP Sample ID: 1108774-03DDUP Units: °F Analysis Date: 8/30/2011 04:00 PM

Client ID: Run ID: WETCHEM_110830F SeqNo: 2509827 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	ND	50	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch:

1108743-01D

Client: Navajo Refining Company
 Work Order: 1108743
 Subject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115391 Instrument ID ICS3000 Method: E300

MBLK		Sample ID: WBLKW1-083011-R115391				Units: mg/L		Analysis Date: 8/30/2011 04:22 PM			
Client ID:		Run ID: ICS3000_110830A				SeqNo: 2510041		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	ND	0.50									
Sulfate	ND	0.50									
Surr: Selenate (surr)	5.229	0.10	5	0	105	85-115		0			

LCS		Sample ID: WLCSW-083011-R115391				Units: mg/L		Analysis Date: 8/30/2011 04:43 PM			
Client ID:		Run ID: ICS3000_110830A				SeqNo: 2510042		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	20.68	0.50	20	0	103	90-110		0			
Sulfate	18.54	0.50	20	0	92.7	90-110		0			
Surr: Selenate (surr)	5.359	0.10	5	0	107	85-115		0			

LCSD		Sample ID: WLCSDW-083011-R115391				Units: mg/L		Analysis Date: 8/30/2011 05:29 PM			
Client ID:		Run ID: ICS3000_110830A				SeqNo: 2510321		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	20.72	0.50	20	0	104	90-110	20.68	0.179	20		
Sulfate	18.17	0.50	20	0	90.9	90-110	18.54	2.03	20		
Surr: Selenate (surr)	5.359	0.10	5	0	107	85-115	5.359	0	20		

MS		Sample ID: 1108713-01BMS				Units: mg/L		Analysis Date: 8/30/2011 07:28 PM			
Client ID:		Run ID: ICS3000_110830A				SeqNo: 2510322		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	11.79	0.50	10	1.702	101	80-120		0			
Sulfate	18.1	0.50	10	8.776	93.3	80-120		0			
Surr: Selenate (surr)	5.721	0.10	5	0	114	85-115		0			

MS		Sample ID: 1108948-01AMS				Units: mg/L		Analysis Date: 8/30/2011 09:27 PM			
Client ID:		Run ID: ICS3000_110830A				SeqNo: 2510327		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	18.5	0.50	10	8.106	104	80-120		0			
Sulfate	29.75	0.50	10	19.81	99.5	80-120		0			
Surr: Selenate (surr)	5.659	0.10	5	0	113	85-115		0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1108743
 Object: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115391 Instrument ID ICS3000 Method: E300

MSD		Sample ID: 1108713-01BMSD				Units: mg/L		Analysis Date: 8/30/2011 07:49 PM		
Client ID:	Run ID: ICS3000_110830A			SeqNo: 2510323		Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.07	0.50	10	1.702	104	80-120	11.79	2.36	20	
Sulfate	18.63	0.50	10	8.776	98.5	80-120	18.1	2.85	20	
<i>Surr: Selenate (surr)</i>	<i>5.568</i>	<i>0.10</i>	<i>5</i>	<i>0</i>	<i>111</i>	<i>85-115</i>	<i>5.721</i>	<i>2.71</i>	<i>20</i>	

MSD		Sample ID: 1108948-01AMSD				Units: mg/L		Analysis Date: 8/30/2011 09:48 PM		
Client ID:	Run ID: ICS3000_110830A			SeqNo: 2510328		Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.38	0.50	10	8.106	103	80-120	18.5	0.634	20	
Sulfate	29.64	0.50	10	19.81	98.4	80-120	29.75	0.367	20	
<i>Surr: Selenate (surr)</i>	<i>5.619</i>	<i>0.10</i>	<i>5</i>	<i>0</i>	<i>112</i>	<i>85-115</i>	<i>5.659</i>	<i>0.709</i>	<i>20</i>	

The following samples were analyzed in this batch:

1108743-01C

Client: Navajo Refining Company
 Work Order: 1108743
 Object: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R115420 Instrument ID Balance1 Method: M2540C

MBLK		Sample ID: BLANK-R115420				Units: mg/L		Analysis Date: 8/30/2011 08:00 AM		
Client ID:	Run ID: BALANCE1_110830B	SeqNo: 2511071	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS		Sample ID: LCS-R115420				Units: mg/L		Analysis Date: 8/30/2011 08:00 AM		
Client ID:	Run ID: BALANCE1_110830B	SeqNo: 2511072	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1050	10	1000	0	105	85-115	0			

DUP		Sample ID: 1108743-01CDUP				Units: mg/L		Analysis Date: 8/30/2011 08:00 AM		
Client ID: Injection Well Effluent	Run ID: BALANCE1_110830B	SeqNo: 2511070	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	4180	10	0	0	0	0-0	4320	3.29	20	

The following samples were analyzed in this batch: 1108743-01C

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1108743

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
°F	Fahrenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	



ALS Laboratory Group
 10450 Stancliff Rd. #210
 Houston, Texas 77099
 (Tel) 281.530.5656
 (Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

1108743

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly



ALS Project Manager: Chris Bryson

Customer Information		Project Information		Parameter/Method Request for Analysis			
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select		
Work Order		Project Number		B	SVOC (8270) Select		
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020 / 7000) Select		
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange	D	R.C.I. Profile		
Address	P. O. Box 159	Address	501 East Main	E	Anions (300) Cl, SO4		
				F	Alkalinity		
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	pH		
Phone	(575) 748-3311	Phone	(575) 748-3311	H	Conductivity		
Fax	(575) 746-5451	Fax	(575) 746-5451	I	TDS		
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	J			

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Injection Well Effluent	8/23/11	9:10	Liquid	Yes	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank																
3	Temperature Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign <i>Aaron Strange</i>		Shipment Method: Federal Express		Required Turnaround Time: <input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		Results Due Date:	
Relinquished by: <i>Aaron Strange</i>	Date: 8/23/11	Time: 10:15	Received by:	Notes:			
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>JF 8-24-11 6920</i>	Cooler Temp.	QC Package: (Check Box Below)		
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		<input type="checkbox"/> Level II: Standard QC	<input type="checkbox"/> TRRP-Checklist	
					<input type="checkbox"/> Level III: Std QC + Raw Data	<input type="checkbox"/> TRRP Level IV	
					<input type="checkbox"/> Level IV: SW846 CLP-Like		
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035				Other:			

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **24-Aug-11 09:20**

Work Order: **1108743**

Received by: **PMG**

Checklist completed by Raymond N Gamba 24-Aug-11
eSignature Date

Reviewed by: Chris Bryson 24-Aug-11
eSignature Date

Matrices: Liquid

Carrier name: FedEx

Shipping container/cooler in good condition? Yes No Not Present

Custody seals intact on shipping container/cooler? Yes No Not Present

Custody seals intact on sample bottles? Yes No Not Present

Chain of custody present? Yes No

Chain of custody signed when relinquished and received? Yes No

Chain of custody agrees with sample labels? Yes No

Samples in proper container/bottle? Yes No

Sample containers intact? Yes No

Sufficient sample volume for indicated test? Yes No

All samples received within holding time? Yes No

Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 1.4c 002

Cooler(s)/Kit(s): 3486

Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by: _____

Login Notes:



Client Contacted: _____ Date Contacted: _____ Person Contacted: _____
Contacted By: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Client: ALS Environmental
Project: 1108743
Work Order: 1108786

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1108786-01	1108743-01F	Liquid		8/23/2011 09:10	8/25/2011 10:00	<input type="checkbox"/>

Client: ALS Environmental
Project: 1108743
WorkOrder: 1108786**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
TDL	Target Detection Limit

<u>Units Reported</u>	<u>Description</u>
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: 06-Sep-11

Client: ALS Environmental
Project: 1108743
Sample ID: 1108743-01F
Collection Date: 8/23/2011 09:10 AM

Work Order: 1108786
Lab ID: 1108786-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE Cyanide, Reactive	ND		SW7.3.3.2 40.0	mg/Kg	1	Analyst: EE 9/1/2011 12:00 PM
SULFIDE, REACTIVE Sulfide, Reactive	ND		SW7.3.4.2 40.0	mg/Kg	1	Analyst: EE 9/1/2011 12:00 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: ALS Environmental

QC BATCH REPORT

Work Order: 1108786

Project: 1108743

Batch ID: R94168

Instrument ID WETCHEM

Method: SW7.3.4.2

MBLK Sample ID: WBLKW1-090111-R94168 Units: mg/Kg Analysis Date: 9/1/2011 12:00 PM

Client ID: Run ID: WETCHEM_110901E SeqNo: 1723562 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch:

1108786-01A

Client: ALS Environmental
 Work Order: 1108786
 Project: 1108743

QC BATCH REPORT

Batch ID: R94169 Instrument ID WETCHEM Method: SW7.3.3.2

MBLK	Sample ID: WBLKW1-090111-R94169	Units: mg/Kg	Analysis Date: 9/1/2011 12:00 PM							
Client ID:	Run ID: WETCHEM_110901F	SeqNo: 1723570	Prep Date: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS	Sample ID: WLCSW1-090111-R94169	Units: mg/Kg	Analysis Date: 9/1/2011 12:00 PM							
Client ID:	Run ID: WETCHEM_110901F	SeqNo: 1723571	Prep Date: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	75-125	0			

LCSD	Sample ID: WLCSDW1-090111-R94169	Units: mg/Kg	Analysis Date: 9/1/2011 12:00 PM							
Client ID:	Run ID: WETCHEM_110901F	SeqNo: 1723579	Prep Date: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	75-125	234.9	0	35	

MS	Sample ID: 1108786-01A MS	Units: mg/Kg	Analysis Date: 9/1/2011 12:00 PM							
Client ID: 1108743-01F	Run ID: WETCHEM_110901F	SeqNo: 1723575	Prep Date: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	50-150	0			

MSD	Sample ID: 1108786-01A MSD	Units: mg/Kg	Analysis Date: 9/1/2011 12:00 PM							
Client ID: 1108743-01F	Run ID: WETCHEM_110901F	SeqNo: 1723576	Prep Date: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	50-150	234.9	0	35	

The following samples were analyzed in this batch: 1108786-01A

ORIGIN ID: SGRA (281) 530-5657
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 24AUG11
ACT WT: 19.2 LB
C#: 300130/CAFE2507

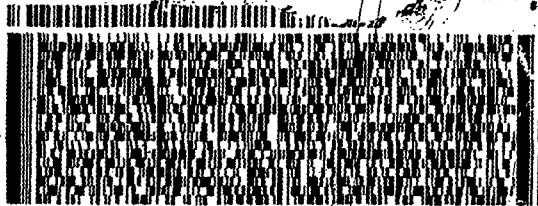
BILL SENDER

TO **LES ARNOLD**
ALS ENVIRONMENTAL
3352 128TH

HOLLAND MI

(201) 630-6666

REF: SUB - CONTRACT



FedEx
Express



JG A4

TRK# 4340 2166 2609
0201

THU - 25 AM NIGHT
PRIORITY OVER

49424

us GRR

NI GRR



4021 134 134 589 2912 134 134

5001/FF7/108

10000125

ORIGIN ID: SGRA (281) 530-55576
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77039
UNITED STATES US

SHIP DATE: 24AUG11
ACT WT: 19.2 LB
CP: 300130/CAFE2507

BILL SENDER

TO LES ARNOLD
ALS ENVIRONMENTAL
3352 128TH

HOLLAND MI

(281) 630-5556

REF: SUB - CONTRACT



FedEx
Express



JUL A4

THU - 25 AIRNIGHT
PRIORITY OVER 49424

US GRR

TRK# 4340 2166 2609
0201

NI GRR



MI-

150140-339 NAT V01 12-01

RDS:1/FEF7/106

Sample Receipt Checklist

Client Name: **ALS - HOUSTON**

Date/Time Received: **25-Aug-11 10:00**

Work Order: **1108786**

Received by: **DS**

Checklist completed by Diane Shaw 25-Aug-11
eSignature Date

Reviewed by: Bill Carey 26-Aug-11
eSignature Date

Matrices: **Liquid**

Carrier name: **FedEx**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):

Cooler(s)/Kit(s):

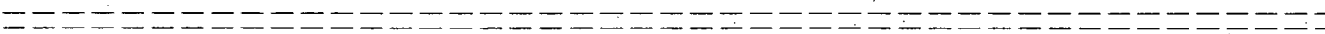
Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by:

Login Notes:



Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



19-Jan-2012

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: 1111583

Dear Aaron,

ALS Environmental received 2 samples on 17-Nov-2011 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Hector Coronado

Patricia L. Lynch
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company



www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1111583

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1111583-01	Wastewater Effluent	Water		11/16/2011 09:55	11/17/2011 09:20	<input type="checkbox"/>
1111583-02	Trip Blank - 081911-19	Water		11/16/2011	11/17/2011 09:20	<input type="checkbox"/>

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1111583

Case Narrative

As the pH analyses were performed in the laboratory, the results are H-flagged as appropriate.

Batch 57057, Metals, Sample 1111390-08 : MS/MSD is for an unrelated sample.

Batch 57057, Metals, Sample 1111390-08 : Duplicate RPD is for an unrelated sample.

Batch R119531, Volatile Organics, Sample 1111486-07 : MS/MSD is for an unrelated sample.

Batch R119835, Anions, Sample 1010159-05 : MS/MSD is for an unrelated sample.

Client: Navajo Refining Company
 Project: Injection Well Quarterly
 Sample ID: Wastewater Effluent
 Collection Date: 11/16/2011 09:55 AM

Work Order: 1111583
 Lab ID: 1111583-01
 Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
MERCURY			SW7470				Analyst: JCJ
Mercury	ND		0.000200	mg/L	1	11/21/2011	11/21/2011 04:27 PM
METALS			SW6020				Analyst: ALR
Aluminum	0.752		0.0100	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Arsenic	0.0365		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Barium	0.0182		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Boron	0.243		0.0500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Cadmium	ND		0.00200	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Chromium	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Copper	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Lead	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Manganese	0.0213		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Molybdenum	0.0443		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Nickel	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Selenium	0.990		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Silver	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Zinc	0.0120		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
SEMI-VOLATILES - SW8270D			SW8270				Analyst: JLJ
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2-Methylnaphthalene	0.040		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2-Methylphenol	0.29		0.050	mg/L	10	11/22/2011	11/28/2011 02:41 PM
2-Nitroaniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2-Nitrophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
3&4-Methylphenol	0.52		0.050	mg/L	10	11/22/2011	11/28/2011 02:41 PM
3-Nitroaniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
4-Nitroaniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
4-Nitrophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Acenaphthene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Acenaphthylene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Aniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Anthracene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Benzidine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Hexachloroethane	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 19-Jan-12

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Wastewater Effluent
Collection Date: 11/16/2011 09:55 AM

Work Order: 1111583
Lab ID: 1111583-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Isophorone	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Naphthalene	0.038		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Nitrobenzene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Pentachlorophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Phenanthrene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Phenol	0.99		0.050	mg/L	10	11/22/2011	11/28/2011 02:41 PM
Pyrene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Pyridine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Surr: 2,4,6-Tribromophenol	67.3		42-124	%REC	1	11/22/2011	11/26/2011 05:52 PM
Surr: 2,4,6-Tribromophenol	71.1		42-124	%REC	10	11/22/2011	11/28/2011 02:41 PM
Surr: 2-Fluorobiphenyl	81.2		48-120	%REC	10	11/22/2011	11/28/2011 02:41 PM
Surr: 2-Fluorobiphenyl	61.3		48-120	%REC	1	11/22/2011	11/26/2011 05:52 PM
Surr: 2-Fluorophenol	64.9		20-120	%REC	10	11/22/2011	11/28/2011 02:41 PM
Surr: 2-Fluorophenol	60.3		20-120	%REC	1	11/22/2011	11/26/2011 05:52 PM
Surr: 4-Terphenyl-d14	62.6		51-135	%REC	1	11/22/2011	11/26/2011 05:52 PM
Surr: 4-Terphenyl-d14	84.7		51-135	%REC	10	11/22/2011	11/28/2011 02:41 PM
Surr: Nitrobenzene-d5	78.1		41-120	%REC	10	11/22/2011	11/28/2011 02:41 PM
Surr: Nitrobenzene-d5	69.3		41-120	%REC	1	11/22/2011	11/26/2011 05:52 PM
Surr: Phenol-d6	64.0		20-120	%REC	1	11/22/2011	11/26/2011 05:52 PM
Surr: Phenol-d6	73.8		20-120	%REC	10	11/22/2011	11/28/2011 02:41 PM
VOLATILES			SW8260			Analyst: PC	
1,1,1-Trichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
2-Butanone	0.010		0.010	mg/L	1		11/18/2011 04:11 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1		11/18/2011 04:11 PM
2-Hexanone	ND		0.010	mg/L	1		11/18/2011 04:11 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1		11/18/2011 04:11 PM
Acetone	0.20		0.010	mg/L	1		11/18/2011 04:11 PM
Benzene	0.20		0.0050	mg/L	1		11/18/2011 04:11 PM
Bromodichloromethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Bromoform	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Bromomethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Carbon disulfide	ND		0.010	mg/L	1		11/18/2011 04:11 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 19-Jan-12

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Wastewater Effluent
Collection Date: 11/16/2011 09:55 AM

Work Order: 1111583
Lab ID: 1111583-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Carbon tetrachloride	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chlorobenzene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chloroform	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chloromethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Dibromochloromethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Ethylbenzene	0.19		0.025	mg/L	5		11/20/2011 02:55 PM
m,p-Xylene	0.36		0.050	mg/L	5		11/20/2011 02:55 PM
Methylene chloride	ND		0.010	mg/L	1		11/18/2011 04:11 PM
Styrene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Tetrachloroethene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Toluene	0.51		0.025	mg/L	5		11/20/2011 02:55 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Trichloroethene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Vinyl acetate	ND		0.010	mg/L	1		11/18/2011 04:11 PM
Vinyl chloride	ND		0.0020	mg/L	1		11/18/2011 04:11 PM
Xylenes, Total	0.56		0.075	mg/L	5		11/20/2011 02:55 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	98.9		70-125	%REC	1		11/18/2011 04:11 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	105		70-125	%REC	5		11/20/2011 02:55 PM
<i>Surr: 4-Bromofluorobenzene</i>	99.2		72-125	%REC	1		11/18/2011 04:11 PM
<i>Surr: 4-Bromofluorobenzene</i>	104		72-125	%REC	5		11/20/2011 02:55 PM
<i>Surr: Dibromofluoromethane</i>	95.1		71-125	%REC	1		11/18/2011 04:11 PM
<i>Surr: Dibromofluoromethane</i>	96.3		71-125	%REC	5		11/20/2011 02:55 PM
<i>Surr: Toluene-d8</i>	104		75-125	%REC	1		11/18/2011 04:11 PM
<i>Surr: Toluene-d8</i>	96.6		75-125	%REC	5		11/20/2011 02:55 PM
REACTIVE CYANIDE			SW-846				Analyst: HN
Reactive Cyanide	ND		40.0	mg/Kg	1		11/28/2011 11:00 AM
REACTIVE SULFIDE			SW-846				Analyst: HN
Reactive Sulfide	ND		40.0	mg/Kg	1		11/28/2011 11:00 AM
ANIONS - EPA 300.0 (1993)			E300				Analyst: JKP
Chloride	332		5.00	mg/L	10		11/26/2011 07:07 PM
Sulfate	2,350		500	mg/L	1000		11/26/2011 07:21 PM
<i>Surr: Selenate (surr)</i>	101		85-115	%REC	10		11/26/2011 07:07 PM
<i>Surr: Selenate (surr)</i>	103		85-115	%REC	1000		11/26/2011 07:21 PM
ALKALINITY			SM2320B				Analyst: DM
Alkalinity, Bicarbonate (As CaCO3)	217		5.00	mg/L	1		11/23/2011 07:55 AM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1		11/23/2011 07:55 AM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1		11/23/2011 07:55 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 19-Jan-12

Client: Navajo Refining Company
 Project: Injection Well Quarterly
 Sample ID: Wastewater Effluent
 Collection Date: 11/16/2011 09:55 AM

Work Order: 1111583
 Lab ID: 1111583-01
 Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Alkalinity, Total (As CaCO3)	217		5.00	mg/L	1		11/23/2011 07:55 AM
SPECIFIC CONDUCTIVITY			M2510 B				Analyst: TDW
Specific Conductivity	5,430		1.00	µmhos/cm	1		11/17/2011 11:00 AM
IGNITIBILITY			SW1010				Analyst: KAH
Ignitability	> 212		50.0	°F	1		11/22/2011 02:00 PM
PH			SW9040				Analyst: TDW
pH	7.52	H	0.100	pH units	1		11/17/2011 05:00 PM
TOTAL DISSOLVED SOLIDS			M2540C				Analyst: TDW
Total Dissolved Solids (Residue, Filterable)	4,840		10.0	mg/L	1		11/22/2011 01:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 19-Jan-12

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 57057 Instrument ID ICP7500 Method: SW6020

MBLK Sample ID: MBLKW2-111811-57057 Units: mg/L Analysis Date: 11/22/2011 10:34 AM
 Client ID: Run ID: ICP7500_111121A SeqNo: 2605832 Prep Date: 11/18/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Boron	ND	0.050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.0050								

CS Sample ID: MLCSW2-111811-57057 Units: mg/L Analysis Date: 11/22/2011 10:41 AM
 Client ID: Run ID: ICP7500_111121A SeqNo: 2605833 Prep Date: 11/18/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.08542	0.010	0.1	0	85.4	80-120	0			
Arsenic	0.04772	0.0050	0.05	0	95.4	80-120	0			
Barium	0.04664	0.0050	0.05	0	93.3	80-120	0			
Boron	0.4456	0.050	0.5	0	89.1	80-120	0			
Cadmium	0.04654	0.0020	0.05	0	93.1	80-120	0			
Chromium	0.04816	0.0050	0.05	0	96.3	80-120	0			
Copper	0.04947	0.0050	0.05	0	98.9	80-120	0			
Lead	0.04699	0.0050	0.05	0	94	80-120	0			
Manganese	0.04675	0.0050	0.05	0	93.5	80-120	0			
Molybdenum	0.04685	0.0050	0.05	0	93.7	80-120	0			
Nickel	0.04932	0.0050	0.05	0	98.6	80-120	0			
Selenium	0.04761	0.0050	0.05	0	95.2	80-120	0			
Silver	0.04781	0.0050	0.05	0	95.6	80-120	0			
Zinc	0.0496	0.0050	0.05	0	99.2	80-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 57057 Instrument ID ICP7500 Method: SW6020

MS Sample ID: 1111390-08AMS Units: mg/L Analysis Date: 11/22/2011 11:05 AM

Client ID: Run ID: ICP7500_111121A SeqNo: 2605837 Prep Date: 11/18/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.244	0.010	0.1	0.9386	305	80-120	0			SO
Arsenic	0.04959	0.0050	0.05	0.0003986	98.4	80-120	0			
Barium	0.1512	0.0050	0.05	0.09717	108	80-120	0			
Boron	0.5634	0.050	0.5	0.0937	93.9	80-120	0			
Cadmium	0.0498	0.0020	0.05	-0.00005398	99.7	80-120	0			
Chromium	0.05153	0.0050	0.05	0.002447	98.2	80-120	0			
Copper	0.0508	0.0050	0.05	0.0001189	101	80-120	0			
Lead	0.05001	0.0050	0.05	0.0005021	99	80-120	0			
Manganese	0.07247	0.0050	0.05	0.02521	94.5	80-120	0			
Molybdenum	0.05705	0.0050	0.05	0.008842	96.4	80-120	0			
Nickel	0.05106	0.0050	0.05	0.001692	98.7	80-120	0			
Selenium	0.0478	0.0050	0.05	-0.0002051	96	80-120	0			
Silver	0.04711	0.0050	0.05	-0.00001074	94.2	80-120	0			
Zinc	0.07134	0.0050	0.05	0.0102	122	80-120	0			S

MSD Sample ID: 1111390-08AMSD Units: mg/L Analysis Date: 11/22/2011 11:11 AM

Client ID: Run ID: ICP7500_111121A SeqNo: 2605838 Prep Date: 11/18/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.257	0.010	0.1	0.9386	318	80-120	1.244	1.04	15	SO
Arsenic	0.04691	0.0050	0.05	0.0003986	93	80-120	0.04959	5.55	15	
Barium	0.1373	0.0050	0.05	0.09717	80.3	80-120	0.1512	9.64	15	
Boron	0.531	0.050	0.5	0.0937	87.5	80-120	0.5634	5.92	15	
Cadmium	0.04426	0.0020	0.05	-0.00005398	88.6	80-120	0.0498	11.8	15	
Chromium	0.04706	0.0050	0.05	0.002447	89.2	80-120	0.05153	9.07	15	
Copper	0.04582	0.0050	0.05	0.0001189	91.4	80-120	0.0508	10.3	15	
Lead	0.04571	0.0050	0.05	0.0005021	90.4	80-120	0.05001	8.98	15	
Manganese	0.06794	0.0050	0.05	0.02521	85.5	80-120	0.07247	6.45	15	
Molybdenum	0.05391	0.0050	0.05	0.008842	90.1	80-120	0.05705	5.66	15	
Nickel	0.04777	0.0050	0.05	0.001692	92.2	80-120	0.05106	6.66	15	
Selenium	0.04411	0.0050	0.05	-0.0002051	88.6	80-120	0.0478	8.03	15	
Silver	0.04425	0.0050	0.05	-0.00001074	88.5	80-120	0.04711	6.26	15	
Zinc	0.08208	0.0050	0.05	0.0102	144	80-120	0.07134	14	15	S

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 57057 Instrument ID ICP7500 Method: SW6020

DUP		Sample ID: 1111390-08ADUP			Units: mg/L		Analysis Date: 11/22/2011 10:53 AM			
Client ID:		Run ID: ICP7500_111121A			SeqNo: 2605835		Prep Date: 11/18/2011		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.8653	0.010	0	0	0	0-0	0.9386	8.13	25	
Arsenic	ND	0.0050	0	0	0	0-0	0.0003986	0	25	
Barium	0.09977	0.0050	0	0	0	0-0	0.09717	2.64	25	
Boron	0.09386	0.050	0	0	0	0-0	0.0937	0.171	25	
Cadmium	ND	0.0020	0	0	0	0-0	-0.00005398	0	25	
Chromium	0.001914	0.0050	0	0	0	0-0	0.002447	0	25	J
Copper	ND	0.0050	0	0	0	0-0	0.0001189	0	25	
Lead	ND	0.0050	0	0	0	0-0	0.0005021	0	25	
Manganese	0.02533	0.0050	0	0	0	0-0	0.02521	0.475	25	
Molybdenum	0.008869	0.0050	0	0	0	0-0	0.008842	0.305	25	
Nickel	0.001596	0.0050	0	0	0	0-0	0.001692	0	25	J
Selenium	ND	0.0050	0	0	0	0-0	-0.0002051	0	25	
Silver	ND	0.0050	0	0	0	0-0	-0.00001074	0	25	
Zinc	0.007601	0.0050	0	0	0	0-0	0.0102	29.2	25	R

The following samples were analyzed in this batch:

1111583-01B

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 57092 Instrument ID Mercury Method: SW7470

MBLK	Sample ID: GBLKW1-112111-57092	Units: mg/L					Analysis Date: 11/21/2011 03:41 PM				
Client ID:	Run ID: MERCURY_111121A	SeqNo: 2604989	Prep Date: 11/21/2011	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	ND	0.00020									

LCS	Sample ID: GLCSW1-112111-57092	Units: mg/L					Analysis Date: 11/21/2011 03:43 PM				
Client ID:	Run ID: MERCURY_111121A	SeqNo: 2604990	Prep Date: 11/21/2011	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	0.0051	0.00020	0.005	0	102	85-115	0				

MS	Sample ID: 1111650-06CMS	Units: mg/L					Analysis Date: 11/21/2011 03:52 PM				
Client ID:	Run ID: MERCURY_111121A	SeqNo: 2604993	Prep Date: 11/21/2011	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	0.00495	0.00020	0.005	0.000003	98.9	85-115	0				

MSD	Sample ID: 1111650-06CMSD	Units: mg/L					Analysis Date: 11/21/2011 03:54 PM				
Client ID:	Run ID: MERCURY_111121A	SeqNo: 2604994	Prep Date: 11/21/2011	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	0.00494	0.00020	0.005	0.000003	98.7	85-115	0.00495	0.202	20		

DUP	Sample ID: 1111650-06CDUP	Units: mg/L					Analysis Date: 11/21/2011 03:50 PM				
Client ID:	Run ID: MERCURY_111121A	SeqNo: 2604992	Prep Date: 11/21/2011	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Mercury	ND	0.00020	0	0	0	0-0	0.000003	0	20		

The following samples were analyzed in this batch: 1111583-01B

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 57144 Instrument ID SV-3 Method: SW8270

MBLK Sample ID: SBLKW2-111122-57144 Units: µg/L Analysis Date: 11/26/2011 12:20 PM
 Client ID: Run ID: SV-3_111126A SeqNo: 2610980 Prep Date: 11/22/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Hexachlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	63.24	5.0	100	0	63.2	42-124	0			
Surr: 2-Fluorobiphenyl	69.15	5.0	100	0	69.1	48-120	0			
Surr: 2-Fluorophenol	63.19	5.0	100	0	63.2	20-120	0			
Surr: 4-Terphenyl-d14	74.18	5.0	100	0	74.2	51-135	0			
Surr: Nitrobenzene-d5	79.25	5.0	100	0	79.2	41-120	0			
Surr: Phenol-d6	64.16	5.0	100	0	64.2	20-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 57144 Instrument ID SV-3 Method: SW8270

LCS	Sample ID: SLCSW2-111122-57144	Units: µg/L					Analysis Date: 11/26/2011 12:44 PM				
Client ID:	Run ID: SV-3_111126A	SeqNo: 2610981			Prep Date: 11/22/2011		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,2,4-Trichlorobenzene	43.7	5.0	50	0	87.4	50-120	0				
2,4,5-Trichlorophenol	76.5	5.0	100	0	76.5	50-120	0				
2,4,6-Trichlorophenol	73.36	5.0	100	0	73.4	50-120	0				
2,4-Dinitrotoluene	44.89	5.0	50	0	89.8	50-120	0				
2-Methylnaphthalene	44.2	5.0	50	0	88.4	55-120	0				
2-Methylphenol	81.1	5.0	100	0	81.1	50-120	0				
2-Nitroaniline	48.86	5.0	50	0	97.7	55-120	0				
2-Nitrophenol	81.31	5.0	100	0	81.3	55-120	0				
3&4-Methylphenol	118.5	5.0	150	0	79	55-120	0				
3-Nitroaniline	35.31	5.0	50	0	70.6	40-120	0				
4-Nitroaniline	40.52	5.0	50	0	81	50-120	0				
4-Nitrophenol	107.2	5.0	100	0	107	45-120	0				
Acenaphthene	47.07	5.0	50	0	94.1	55-120	0				
Acenaphthylene	44.62	5.0	50	0	89.2	55-120	0				
Aniline	19.65	5.0	50	0	39.3	30-120	0				
Anthracene	49.81	5.0	50	0	99.6	55-120	0				
Benzo(a)anthracene	45.96	5.0	50	0	91.9	55-120	0				
Benzo(b)fluoranthene	15.78	5.0	50	0	31.6	10-120	0				
Benzo(k)fluoranthene	43.44	5.0	50	0	86.9	55-120	0				
Hexachloroethane	47.28	5.0	50	0	94.6	55-120	0				
Indeno(1,2,3-cd)pyrene	47.86	5.0	50	0	95.7	55-120	0				
Isophorone	46.51	5.0	50	0	93	55-120	0				
Naphthalene	45.36	5.0	50	0	90.7	55-120	0				
Nitrobenzene	48.59	5.0	50	0	97.2	55-120	0				
N-Nitrosodimethylamine	41.92	5.0	50	0	83.8	45-120	0				
N-Nitrosodi-n-propylamine	38.49	5.0	50	0	77	50-120	0				
N-Nitrosodiphenylamine	50.64	5.0	50	0	101	55-120	0				
Pentachlorophenol	75.27	5.0	100	0	75.3	55-120	0				
Phenanthrene	47.17	5.0	50	0	94.3	55-120	0				
Phenol	79.61	5.0	100	0	79.6	50-120	0				
Pyrene	48.99	5.0	50	0	98	55-120	0				
Pyridine	33.5	5.0	50	0	67	35-120	0				
Surr: 2,4,6-Tribromophenol	65.97	5.0	100	0	66	42-124	0				
Surr: 2-Fluorobiphenyl	73.06	5.0	100	0	73.1	48-120	0				
Surr: 2-Fluorophenol	80.4	5.0	100	0	80.4	20-120	0				
Surr: 4-Terphenyl-d14	69.78	5.0	100	0	69.8	51-135	0				
Surr: Nitrobenzene-d5	84.41	5.0	100	0	84.4	41-120	0				
Surr: Phenol-d6	75.11	5.0	100	0	75.1	20-120	0				

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 57144 Instrument ID SV-3 Method: SW8270

LCSD	Sample ID: SLCSDW2-111122-57144	Units: µg/L		Analysis Date: 11/26/2011 01:55 PM						
Client ID:	Run ID: SV-3_111126A	SeqNo: 2610982	Prep Date: 11/22/2011	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.14	5.0	50	0	88.3	50-120	43.7	1.01	20	
2,4,5-Trichlorophenol	81.01	5.0	100	0	81	50-120	76.5	5.73	20	
2,4,6-Trichlorophenol	73.32	5.0	100	0	73.3	50-120	73.36	0.0553	20	
2,4-Dinitrotoluene	41.89	5.0	50	0	83.8	50-120	44.89	6.92	20	
2-Methylnaphthalene	43.62	5.0	50	0	87.2	55-120	44.2	1.33	20	
2-Methylphenol	80.35	5.0	100	0	80.4	50-120	81.1	0.932	20	
2-Nitroaniline	48	5.0	50	0	96	55-120	48.86	1.79	20	
2-Nitrophenol	80.26	5.0	100	0	80.3	55-120	81.31	1.29	20	
3&4-Methylphenol	115.5	5.0	150	0	77	55-120	118.5	2.57	20	
3-Nitroaniline	31.72	5.0	50	0	63.4	40-120	35.31	10.7	20	
4-Nitroaniline	39.87	5.0	50	0	79.7	50-120	40.52	1.63	20	
4-Nitrophenol	91.52	5.0	100	0	91.5	45-120	107.2	15.8	20	
Acenaphthene	46	5.0	50	0	92	55-120	47.07	2.28	20	
Acenaphthylene	43.81	5.0	50	0	87.6	55-120	44.62	1.84	20	
Aniline	20.19	5.0	50	0	40.4	30-120	19.65	2.7	20	
Anthracene	49.76	5.0	50	0	99.5	55-120	49.81	0.0999	20	
Benzo(a)anthracene	44.47	5.0	50	0	88.9	55-120	45.96	3.31	20	
Benzo(b)fluoranthene	18.44	5.0	50	0	36.9	10-120	15.78	15.6	20	
Benzo(k)fluoranthene	43.97	5.0	50	0	87.9	55-120	43.44	1.19	20	
Hexachloroethane	48.09	5.0	50	0	96.2	55-120	47.28	1.7	20	
Indeno(1,2,3-cd)pyrene	50.61	5.0	50	0	101	55-120	47.86	5.59	20	
Isophorone	45.94	5.0	50	0	91.9	55-120	46.51	1.23	20	
Naphthalene	45.79	5.0	50	0	91.6	55-120	45.36	0.941	20	
Nitrobenzene	48.04	5.0	50	0	96.1	55-120	48.59	1.13	20	
N-Nitrosodimethylamine	41.76	5.0	50	0	83.5	45-120	41.92	0.379	20	
N-Nitrosodi-n-propylamine	39.98	5.0	50	0	80	50-120	38.49	3.8	20	
N-Nitrosodiphenylamine	51.99	5.0	50	0	104	55-120	50.64	2.62	20	
Pentachlorophenol	75.11	5.0	100	0	75.1	55-120	75.27	0.209	20	
Phenanthrene	47.52	5.0	50	0	95	55-120	47.17	0.75	20	
Phenol	79.27	5.0	100	0	79.3	50-120	79.61	0.433	20	
Pyrene	44.21	5.0	50	0	88.4	55-120	48.99	10.3	20	
Pyridine	32.9	5.0	50	0	65.8	35-120	33.5	1.81	20	
Surr: 2,4,6-Tribromophenol	63.56	5.0	100	0	63.6	42-124	65.97	3.72	20	
Surr: 2-Fluorobiphenyl	76.86	5.0	100	0	76.9	48-120	73.06	5.07	20	
Surr: 2-Fluorophenol	81.88	5.0	100	0	81.9	20-120	80.4	1.81	20	
Surr: 4-Terphenyl-d14	67.27	5.0	100	0	67.3	51-135	69.78	3.66	20	
Surr: Nitrobenzene-d5	83.57	5.0	100	0	83.6	41-120	84.41	0.997	20	
Surr: Phenol-d6	74.67	5.0	100	0	74.7	20-120	75.11	0.58	20	

The following samples were analyzed in this batch:

1111583-01E

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119531 Instrument ID VOA1 Method: SW8260

MBLK	Sample ID: VBLKW-111811-R119531	Units: µg/L		Analysis Date: 11/18/2011 11:30 AM						
Client ID:	Run ID: VOA1_111118A	SeqNo: 2603465		Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
o-Bromobenzene	ND	5.0								
o-Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Surr: 1,2-Dichloroethane-d4	52.89	5.0	50	0	106	70-125	0			
Surr: 4-Bromofluorobenzene	47.57	5.0	50	0	95.1	72-125	0			
Surr: Dibromofluoromethane	49.37	5.0	50	0	98.7	71-125	0			
Surr: Toluene-d8	50.55	5.0	50	0	101	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119531 Instrument ID VOA1 Method: SW8260

LCS	Sample ID: VLCSW-111811-R119531	Units: µg/L					Analysis Date: 11/18/2011 10:39 AM				
Client ID:	Run ID: VOA1_111118A	SeqNo: 2603464			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	48.08	5.0	50	0	96.2	80-120	0				
1,1,2,2-Tetrachloroethane	47.11	5.0	50	0	94.2	72-120	0				
1,1,2-Trichloroethane	48.34	5.0	50	0	96.7	80-120	0				
1,1-Dichloroethane	52.07	5.0	50	0	104	76-120	0				
1,1-Dichloroethene	51.37	5.0	50	0	103	73-124	0				
1,2-Dichloroethane	49.44	5.0	50	0	98.9	78-120	0				
2-Butanone	94.48	10	100	0	94.5	58-132	0				
2-Chloroethyl vinyl ether	95.22	10	100	0	95.2	74-120	0				
2-Hexanone	90.38	10	100	0	90.4	61-130	0				
4-Methyl-2-pentanone	102.4	10	100	0	102	65-127	0				
Acetone	80.79	10	100	0	80.8	59-137	0				
Benzene	48.71	5.0	50	0	97.4	73-121	0				
Bromodichloromethane	49.34	5.0	50	0	98.7	80-120	0				
Bromoform	46.9	5.0	50	0	93.8	79-120	0				
Bromomethane	51.42	5.0	50	0	103	66-137	0				
Carbon disulfide	99.99	10	100	0	100	68-141	0				
Carbon tetrachloride	48.22	5.0	50	0	96.4	75-124	0				
Chlorobenzene	48.41	5.0	50	0	96.8	80-120	0				
Chloroethane	53.54	5.0	50	0	107	76-121	0				
Chloroform	51.08	5.0	50	0	102	80-120	0				
Chloromethane	45.6	5.0	50	0	91.2	67-123	0				
cis-1,3-Dichloropropene	52.66	5.0	50	0	105	80-120	0				
Dibromochloromethane	53.64	5.0	50	0	107	80-120	0				
Methylene chloride	44.96	10	50	0	89.9	65-133	0				
Styrene	50.95	5.0	50	0	102	80-120	0				
Tetrachloroethene	48.08	5.0	50	0	96.2	79-120	0				
trans-1,3-Dichloropropene	46.09	5.0	50	0	92.2	80-120	0				
Trichloroethene	49.24	5.0	50	0	98.5	80-120	0				
Vinyl acetate	97.51	10	100	0	97.5	67-139	0				
Vinyl chloride	47.95	2.0	50	0	95.9	70-127	0				
Surr: 1,2-Dichloroethane-d4	48.56	5.0	50	0	97.1	70-125	0				
Surr: 4-Bromofluorobenzene	49.45	5.0	50	0	98.9	72-125	0				
Surr: Dibromofluoromethane	49.06	5.0	50	0	98.1	71-125	0				
Surr: Toluene-d8	51.1	5.0	50	0	102	75-125	0				

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119531 Instrument ID VOA1 Method: SW8260

MS	Sample ID: 1111486-07AMS	Units: µg/L					Analysis Date: 11/18/2011 02:03 PM				
Client ID:	Run ID: VOA1_111118A	SeqNo: 2603470			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	45.49	5.0	50	0	91	80-120	0				
1,1,2,2-Tetrachloroethane	47.57	5.0	50	0	95.1	72-120	0				
1,1,2-Trichloroethane	51.12	5.0	50	0	102	80-120	0				
1,1-Dichloroethane	50.47	5.0	50	0	101	76-120	0				
1,1-Dichloroethene	43.64	5.0	50	0	87.3	73-124	0				
1,2-Dichloroethane	50.25	5.0	50	0	100	78-120	0				
2-Butanone	92.2	10	100	0	92.2	58-132	0				
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0			S	
2-Hexanone	96.22	10	100	0	96.2	61-130	0				
4-Methyl-2-pentanone	110.5	10	100	0	110	65-127	0				
Acetone	70.04	10	100	0	70	59-137	0				
Benzene	49	5.0	50	0	98	73-121	0				
Bromodichloromethane	51.57	5.0	50	0	103	80-120	0				
Bromoform	47.36	5.0	50	0	94.7	79-120	0				
Bromomethane	38.91	5.0	50	0	77.8	66-137	0				
Carbon disulfide	90.98	10	100	0	91	68-141	0				
Carbon tetrachloride	43.95	5.0	50	0	87.9	75-124	0				
o-bromobenzene	46.83	5.0	50	0	93.7	80-120	0				
o-chloroethane	45.49	5.0	50	0	91	76-121	0				
Chloroform	51.98	5.0	50	0	104	80-120	0				
Chloromethane	42.62	5.0	50	0	85.2	67-123	0				
cis-1,3-Dichloropropene	51.24	5.0	50	0	102	80-120	0				
Dibromochloromethane	52.88	5.0	50	0	106	80-120	0				
Methylene chloride	48.91	10	50	0	97.8	65-133	0				
Styrene	51.07	5.0	50	0	102	80-120	0				
Tetrachloroethene	45.21	5.0	50	0	90.4	79-120	0				
trans-1,3-Dichloropropene	45.32	5.0	50	0	90.6	80-120	0				
Trichloroethene	49.06	5.0	50	0	98.1	80-120	0				
Vinyl acetate	99.24	10	100	0	99.2	67-139	0				
Vinyl chloride	44.28	2.0	50	0	88.6	70-127	0				
Surr: 1,2-Dichloroethane-d4	51.74	5.0	50	0	103	70-125	0				
Surr: 4-Bromofluorobenzene	50.48	5.0	50	0	101	72-125	0				
Surr: Dibromofluoromethane	51.01	5.0	50	0	102	71-125	0				
Surr: Toluene-d8	48.63	5.0	50	0	97.3	75-125	0				

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119531 Instrument ID VOA1 Method: SW8260

MSD	Sample ID: 1111486-07AMSD	Units: µg/L						Analysis Date: 11/18/2011 02:29 PM			
Client ID:	Run ID: VOA1_111118A	SeqNo: 2603471		Prep Date:		DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	48.74	5.0	50	0	97.5	80-120	45.49	6.88	20		
1,1,2,2-Tetrachloroethane	48.94	5.0	50	0	97.9	72-120	47.57	2.83	20		
1,1,2-Trichloroethane	51.1	5.0	50	0	102	80-120	51.12	0.0563	20		
1,1-Dichloroethane	53.13	5.0	50	0	106	76-120	50.47	5.12	20		
1,1-Dichloroethene	48.9	5.0	50	0	97.8	73-124	43.64	11.4	20		
1,2-Dichloroethane	50.75	5.0	50	0	102	78-120	50.25	1	20		
2-Butanone	89	10	100	0	89	58-132	92.2	3.53	20		
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S	
2-Hexanone	95.51	10	100	0	95.5	61-130	96.22	0.74	20		
4-Methyl-2-pentanone	110.3	10	100	0	110	65-127	110.5	0.208	20		
Acetone	69.56	10	100	0	69.6	59-137	70.04	0.686	20		
Benzene	48.98	5.0	50	0	98	73-121	49	0.0449	20		
Bromodichloromethane	51.44	5.0	50	0	103	80-120	51.57	0.257	20		
Bromoform	47.7	5.0	50	0	95.4	79-120	47.36	0.719	20		
Bromomethane	47.39	5.0	50	0	94.8	66-137	38.91	19.7	20		
Carbon disulfide	98.16	10	100	0	98.2	68-141	90.98	7.59	20		
Carbon tetrachloride	47.55	5.0	50	0	95.1	75-124	43.95	7.87	20		
Chlorobenzene	50.29	5.0	50	0	101	80-120	46.83	7.14	20		
Chloroethane	50.05	5.0	50	0	100	76-121	45.49	9.54	20		
Chloroform	50.43	5.0	50	0	101	80-120	51.98	3.03	20		
Chloromethane	43.85	5.0	50	0	87.7	67-123	42.62	2.86	20		
cis-1,3-Dichloropropene	52.56	5.0	50	0	105	80-120	51.24	2.54	20		
Dibromochloromethane	53.58	5.0	50	0	107	80-120	52.88	1.31	20		
Methylene chloride	48.7	10	50	0	97.4	65-133	48.91	0.434	20		
Styrene	51.58	5.0	50	0	103	80-120	51.07	0.997	20		
Tetrachloroethene	48.19	5.0	50	0	96.4	79-120	45.21	6.38	20		
trans-1,3-Dichloropropene	48.66	5.0	50	0	97.3	80-120	45.32	7.1	20		
Trichloroethene	47.91	5.0	50	0	95.8	80-120	49.06	2.37	20		
Vinyl acetate	104.3	10	100	0	104	67-139	99.24	4.99	20		
Vinyl chloride	46.25	2.0	50	0	92.5	70-127	44.28	4.35	20		
Surr: 1,2-Dichloroethane-d4	51.88	5.0	50	0	104	70-125	51.74	0.281	20		
Surr: 4-Bromofluorobenzene	50.71	5.0	50	0	101	72-125	50.48	0.461	20		
Surr: Dibromofluoromethane	51.28	5.0	50	0	103	71-125	51.01	0.514	20		
Surr: Toluene-d8	50.04	5.0	50	0	100	75-125	48.63	2.85	20		

The following samples were analyzed in this batch: 1111583-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119544 Instrument ID VOA6 Method: SW8260

MBLK		Sample ID: VBLKW-112011-R119544				Units: µg/L		Analysis Date: 11/20/2011 12:42 PM			
Client ID:		Run ID: VOA6_111120A				SeqNo: 2603885		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Xylenes, Total	ND	15									
Surr: 1,2-Dichloroethane-d4	54.48	5.0	50	0	109	70-125	0				
Surr: 4-Bromofluorobenzene	52.03	5.0	50	0	104	72-125	0				
Surr: Dibromofluoromethane	49.01	5.0	50	0	98	71-125	0				
Surr: Toluene-d8	49.03	5.0	50	0	98.1	75-125	0				

LCS		Sample ID: VLCSW-112011-R119544				Units: µg/L		Analysis Date: 11/20/2011 11:50 AM			
Client ID:		Run ID: VOA6_111120A				SeqNo: 2603884		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Ethylbenzene	46.04	5.0	50	0	92.1	80-120	0				
m,p-Xylene	91.66	10	100	0	91.7	78-121	0				
o-Xylene	45.82	5.0	50	0	91.6	80-120	0				
Toluene	46.25	5.0	50	0	92.5	80-120	0				
Xylenes, Total	137.5	15	150	0	91.7	80-120	0				
Surr: 1,2-Dichloroethane-d4	50.48	5.0	50	0	101	70-125	0				
Surr: 4-Bromofluorobenzene	51.71	5.0	50	0	103	72-125	0				
Surr: Dibromofluoromethane	47.84	5.0	50	0	95.7	71-125	0				
Surr: Toluene-d8	48.55	5.0	50	0	97.1	75-125	0				

MS		Sample ID: 1111481-01ZMS				Units: µg/L		Analysis Date: 11/20/2011 02:02 PM			
Client ID:		Run ID: VOA6_111120A				SeqNo: 2603888		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Ethylbenzene	44.88	5.0	50	0	89.8	80-120	0				
m,p-Xylene	90.2	10	100	0	90.2	78-121	0				
o-Xylene	45.02	5.0	50	0	90	80-120	0				
Toluene	45.08	5.0	50	0	90.2	80-120	0				
Xylenes, Total	135.2	15	150	0	90.1	80-120	0				
Surr: 1,2-Dichloroethane-d4	51.1	5.0	50	0	102	70-125	0				
Surr: 4-Bromofluorobenzene	51.96	5.0	50	0	104	72-125	0				
Surr: Dibromofluoromethane	47.94	5.0	50	0	95.9	71-125	0				
Surr: Toluene-d8	48.69	5.0	50	0	97.4	75-125	0				

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119544 Instrument ID VOA6 Method: SW8260

MSD		Sample ID: 1111481-01ZMSD			Units: µg/L			Analysis Date: 11/20/2011 02:28 PM		
Client ID:		Run ID: VOA6_111120A			SeqNo: 2603889		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	44.03	5.0	50	0	88.1	80-120	44.88	1.91	20	
m,p-Xylene	87.66	10	100	0	87.7	78-121	90.2	2.85	20	
o-Xylene	44.45	5.0	50	0	88.9	80-120	45.02	1.28	20	
Toluene	45	5.0	50	0	90	80-120	45.08	0.171	20	
Xylenes, Total	132.1	15	150	0	88.1	80-120	135.2	2.32	20	
<i>Surr. 1,2-Dichloroethane-d4</i>	51.4	5.0	50	0	103	70-125	51.1	0.585	20	
<i>Surr. 4-Bromofluorobenzene</i>	51.23	5.0	50	0	102	72-125	51.96	1.4	20	
<i>Surr. Dibromofluoromethane</i>	48.14	5.0	50	0	96.3	71-125	47.94	0.414	20	
<i>Surr. Toluene-d8</i>	48.74	5.0	50	0	97.5	75-125	48.69	0.102	20	

The following samples were analyzed in this batch: 1111583-01A

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119462 Instrument ID WetChem Method: M2510 B

MBLK	Sample ID: WBLKW1-111711-R119462	Units: μ mhos/cm					Analysis Date: 11/17/2011 11:00 AM				
Client ID:	Run ID: WETCHEM_111117F	SeqNo: 2601279			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Specific Conductivity	ND	1.0									

LCS	Sample ID: WLCSW1-111711-R119462	Units: μ mhos/cm					Analysis Date: 11/17/2011 11:00 AM				
Client ID:	Run ID: WETCHEM_111117F	SeqNo: 2601280			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Specific Conductivity	1450	1.0	1413	0	103	80-120	0				

DUP	Sample ID: 1111560-01BDUP	Units: μ mhos/cm					Analysis Date: 11/17/2011 11:00 AM				
Client ID:	Run ID: WETCHEM_111117F	SeqNo: 2601306			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Specific Conductivity	624	1.0	0	0	0		616	1.29	20		

The following samples were analyzed in this batch:

1111583-01D

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119505** Instrument ID: **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-111711-R119505** Units: **pH units** Analysis Date: **11/17/2011 05:00 PM**

Client ID: Run ID: **WETCHEM_111117I** SeqNo: **2602234** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.04	0.10	6	0	101	90-110	0			

DUP Sample ID: **1111611-01ADUPZ** Units: **pH units** Analysis Date: **11/17/2011 05:00 PM**

Client ID: Run ID: **WETCHEM_111117I** SeqNo: **2602239** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.36	0.10	0	0	0	0-0	8.43	0.834	20	H

The following samples were analyzed in this batch: 1111583-01D

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119643** Instrument ID **WetChem** Method: **SW1010**

LCS		Sample ID: WLCS-112211-R119643				Units: °F		Analysis Date: 11/22/2011 02:00 PM		
Client ID:		Run ID: WETCHEM_111122G				SeqNo: 2606058		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	86	50	83	0	104	80-120	0			

LCSD		Sample ID: WLCSD-112211-R119643				Units: °F		Analysis Date: 11/22/2011 02:00 PM		
Client ID:		Run ID: WETCHEM_111122G				SeqNo: 2606066		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	85	50	83	0	102	80-120	86	1.17	25	

DUP		Sample ID: 1111664-01DDUP				Units: °F		Analysis Date: 11/22/2011 02:00 PM		
Client ID:		Run ID: WETCHEM_111122G				SeqNo: 2606067		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	123	50	0	0	0	0-0	124	0.81	25	

The following samples were analyzed in this batch:

1111583-01D

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119716 Instrument ID WetChem Method: SM2320B

MBLK		Sample ID: WBLKW1-112311-R119716				Units: mg/L		Analysis Date: 11/23/2011 07:55 AM		
Client ID:		Run ID: WETCHEM_111123A			SeqNo: 2606956		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS		Sample ID: WLCSW1-112311-R119716				Units: mg/L		Analysis Date: 11/23/2011 07:55 AM		
Client ID:		Run ID: WETCHEM_111123A			SeqNo: 2606957		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1046	5.0	1000	0	105	80-120		0		

DUP		Sample ID: 1111583-01CDUP				Units: mg/L		Analysis Date: 11/23/2011 07:55 AM		
Client ID: Wastewater Effluent		Run ID: WETCHEM_111123A			SeqNo: 2606981		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	223.8	5.0	0	0	0	0-0	217.2	3	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	223.8	5.0	0	0	0	0-0	217.2	3	20	

The following samples were analyzed in this batch:

1111583-01C

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119738** Instrument ID **Balanc01** Method: **M2540C**

MBLK	Sample ID: BLANK-R119738	Units: mg/L					Analysis Date: 11/22/2011 01:00 PM				
Client ID:		Run ID: BALANCE1_111122C	SeqNo: 2607823	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Filt)	ND	10									

LCS	Sample ID: LCS-R119738	Units: mg/L					Analysis Date: 11/22/2011 01:00 PM				
Client ID:		Run ID: BALANCE1_111122C	SeqNo: 2607824	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Filt)	1016	10	1000	0	102	85-115	0				

DUP	Sample ID: 1111630-12ADUP	Units: mg/L					Analysis Date: 11/22/2011 01:00 PM				
Client ID:		Run ID: BALANCE1_111122C	SeqNo: 2607806	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Filt)	1396	10	0	0	0	0-0	1312	6.2	20		

DUP	Sample ID: 1111679-01BDUP	Units: mg/L					Analysis Date: 11/22/2011 01:00 PM				
Client ID:		Run ID: BALANCE1_111122C	SeqNo: 2607821	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Filt)	1230	10	0	0	0	0-0	1212	1.47	20		

The following samples were analyzed in this batch: 1111583-01C

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1111583
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R119835 Instrument ID ICS2100 Method: E300

MBLK		Sample ID: WBLKS1-112611-R119835				Units: mg/L		Analysis Date: 11/26/2011 04:12 PM			
Client ID:		Run ID: ICS2100_111126A				SeqNo: 2610644		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	ND	0.50									
Sulfate	ND	0.50									
Surr: Selenate (surr)	4.527	0.10	5	0	90.5	85-115	0				

LCS		Sample ID: WLCSS1-112611-R119835				Units: mg/L		Analysis Date: 11/26/2011 04:27 PM			
Client ID:		Run ID: ICS2100_111126A				SeqNo: 2610645		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	20.79	0.50	20	0	104	90-110	0				
Sulfate	21.22	0.50	20	0	106	90-110	0				
Surr: Selenate (surr)	4.853	0.10	5	0	97.1	85-115	0				

LCSD		Sample ID: WLCSDS1-112611-R119835				Units: mg/L		Analysis Date: 11/26/2011 04:41 PM			
Client ID:		Run ID: ICS2100_111126A				SeqNo: 2610647		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	20.68	0.50	20	0	103	90-110	20.79	0.535	20		
Sulfate	21.28	0.50	20	0	106	90-110	21.22	0.268	20		
Surr: Selenate (surr)	4.672	0.10	5	0	93.4	85-115	4.853	3.8	20		

MS		Sample ID: 1111407-01EMS				Units: mg/L		Analysis Date: 11/26/2011 05:11 PM			
Client ID:		Run ID: ICS2100_111126A				SeqNo: 2610649		Prep Date:		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	394.3	5.0	100	255	139	80-120	0			S	
Sulfate	104.4	5.0	100	2.266	102	80-120	0				
Surr: Selenate (surr)	48.02	1.0	50	0	96	85-115	0				

MSD		Sample ID: 1111407-01EMSD				Units: mg/L		Analysis Date: 11/26/2011 05:25 PM			
Client ID:		Run ID: ICS2100_111126A				SeqNo: 2610650		Prep Date:		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	395.4	5.0	100	255	140	80-120	394.3	0.273	20	S	
Sulfate	104.5	5.0	100	2.266	102	80-120	104.4	0.0651	20		
Surr: Selenate (surr)	49.57	1.0	50	0	99.1	85-115	48.02	3.19	20		

The following samples were analyzed in this batch: 1111583-01C

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1111583

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
°F	Fahrenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	



ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

1111583

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly



ALS Project Manager: Chris Bryson

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select											
Work Order		Project Number		B	SVOC (8270) Select											
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020 / 7000) Select											
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	R.C.I. Profile											
Address	P. O. Box 159	Address	501 East Main	E	Anions (300) Cl, SO4											
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	F	Alkalinity											
Phone	(575) 748-3311	Phone	(575) 748-3311	G	pH											
Fax	(575) 746-5451	Fax	(575) 746-5451	H	Conductivity											
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	I	TDS											
				J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Wastewater Effluent	11/16/11	9:55	Liquid	Yes	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank					2											
3	Temperature Blank					1											
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign *Aaron Strange* Shipment Method: **Federal Express** Required Turnaround Time: STD 10 Wk Days 5 Wk Days 2 Wk Days 24 Hour Results Due Date:

Relinquished by: *Aaron Strange* Date: 11-16-2011 Time: 16:15 Received by: *[Signature]* Notes:

Relinquished by: *[Signature]* Date: Date: Time: Time: Received by (Laboratory): *[Signature]* Cooler Temp: QC Package: (Check Box Below)

Logged by (Laboratory): Date: Date: Time: Time: Checked by (Laboratory): Level II: Standard QC TRRP-Checklist
Level III: Std QC + Raw Data TRRP Level IV
Level IV: SW846 CLP-Like

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035 Other:

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group. Copyright 2008 by ALS Laboratory Group

28 of 30



ALS Environmental

10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5858
Fax. +1 281 530 5887

Date:
Name:
Compa

CUSTODY SEAL

Date: 11-16-11 Time: 1620

Name: Jim Rhodes for A. Strange
Company: NAVATO REFINING CO.

Seal Broken By:
AKG
Date:
11/17/11

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **17-Nov-11 09:20**

Work Order: **1111583**

Received by: **RNG**

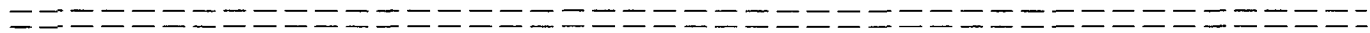
Checklist completed by Pareek M. Gya 17-Nov-11
eSignature Date

Reviewed by: Mary H. Knowles 18-Nov-11
eSignature Date

Matrices: Water
 Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<input type="text" value="1.5"/> <input type="text" value="002"/>		
Cooler(s)/Kit(s):	<input type="text" value="3897"/>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<input type="text"/>		

Login Notes:



Client Contacted: _____ Date Contacted: _____ Person Contacted: _____
 Contacted By: _____ Regarding: _____

Comments:

Corrective Action:



08-Mar-2012

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: 1202979

Dear Aaron,

ALS Environmental received 2 samples on 29-Feb-2012 09:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 37.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Chris Bryson".

Electronically approved by: Yvan K. Ty

Chris Bryson
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Standliff Rd. Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

EMAIL als@alsglobal.com | www.alsglobal.com | www.alsglobal.com



www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNERS

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1202979

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1202979-01	Injection Well Effluent	Water		2/28/2012 09:40	2/29/2012 09:10	<input type="checkbox"/>
1202979-02	Trip Blank - 110711-11	Water		2/28/2012	2/29/2012 09:10	<input checked="" type="checkbox"/>

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1202979

Case Narrative

As the pH analyses were performed in the laboratory, the results are H-flagged as appropriate.

Sample was received outside of holding time for pH.

Batch 59229, Metals, Sample 1202950-04 : MS/MSD is for an unrelated sample.

Batch 59263, Semivolatile Organics, Insufficient sample to perform MS/MSD. LCS/LCSD provided as batch quality control.

Batch 59263, Semivolatile Organics : LCSD RPD was above the control limits for several analytes. The individual recoveries were in control.

Batch R124295, Volatile Organics, Sample 1202919-01 : MS/MSD is for an unrelated sample.

Batch R124295, Volatile Organics : CCV %D was above the control limits for Acetone. The associated sample results are Non Detect.

The analysis for Reactive Sulfide and Reactive Cyanide was subcontracted to ALS Laboratory Group, Inc. in Holland, MI.

ALS Environmental

Date: 26-Apr-12

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 2/28/2012 09:40 AM

Work Order: 1202979
Lab ID: 1202979-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY						
			SW7470		Prep Date: 3/2/2012	Analyst: JCJ
Mercury	ND		0.000200	mg/L	1	3/2/2012 02:14 PM
METALS						
			SW6020		Prep Date: 2/29/2012	Analyst: IGF
Aluminum	1.87		0.100	mg/L	10	3/2/2012 12:04 AM
Arsenic	0.141		0.00500	mg/L	1	3/1/2012 11:24 AM
Barium	0.0282		0.00500	mg/L	1	3/1/2012 11:24 AM
Boron	0.335		0.0500	mg/L	1	3/1/2012 11:24 AM
Cadmium	ND		0.00200	mg/L	1	3/1/2012 11:24 AM
Chromium	0.00598		0.00500	mg/L	1	3/1/2012 11:24 AM
Copper	0.0117		0.00500	mg/L	1	3/1/2012 11:24 AM
Lead	ND		0.00500	mg/L	1	3/1/2012 11:24 AM
Manganese	0.0555		0.00500	mg/L	1	3/1/2012 11:24 AM
Molybdenum	0.0987		0.00500	mg/L	1	3/1/2012 11:24 AM
Nickel	0.106		0.00500	mg/L	1	3/1/2012 11:24 AM
Selenium	0.312		0.00500	mg/L	1	3/1/2012 11:24 AM
Silver	ND		0.00500	mg/L	1	3/1/2012 11:24 AM
Zinc	0.0746		0.00500	mg/L	1	3/1/2012 11:24 AM
SEMIVOLATILES - SW8270D						
			SW8270		Prep Date: 3/2/2012	Analyst: JLJ
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Methylphenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Nitroaniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Nitrophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
3-Nitroaniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
4-Nitroaniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
4-Nitrophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Acenaphthene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Acenaphthylene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Aniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Anthracene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Benzidine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Hexachloroethane	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 26-Apr-12

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 2/28/2012 09:40 AM

Work Order: 1202979
Lab ID: 1202979-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isophorone	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Naphthalene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Nitrobenzene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Pentachlorophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Phenanthrene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Phenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Pyrene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Pyridine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Surr: 2,4,6-Tribromophenol	80.7		42-124	%REC	1	3/3/2012 06:22 PM
Surr: 2-Fluorobiphenyl	71.4		48-120	%REC	1	3/3/2012 06:22 PM
Surr: 2-Fluorophenol	56.2		20-120	%REC	1	3/3/2012 06:22 PM
Surr: 4-Terphenyl-d14	84.5		51-135	%REC	1	3/3/2012 06:22 PM
Surr: Nitrobenzene-d5	69.8		41-120	%REC	1	3/3/2012 06:22 PM
Surr: Phenol-d6	60.0		20-120	%REC	1	3/3/2012 06:22 PM
VOLATILES			SW8260		Analyst: PC	
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
2-Butanone	ND		0.010	mg/L	1	3/2/2012 01:16 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	3/2/2012 01:16 PM
2-Hexanone	ND		0.010	mg/L	1	3/2/2012 01:16 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Acetone	0.12		0.010	mg/L	1	3/5/2012 08:40 PM
Benzene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Bromodichloromethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Bromoform	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Bromomethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Carbon disulfide	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chlorobenzene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chloroform	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chloromethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 26-Apr-12

Client: Navajo Refining Company

Project: Injection Well Quarterly

Work Order: 1202979

Sample ID: Injection Well Effluent

Lab ID: 1202979-01

Collection Date: 2/28/2012 09:40 AM

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Ethylbenzene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
m,p-Xylene	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Methylene chloride	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Styrene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Tetrachloroethene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Toluene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Trichloroethene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Vinyl acetate	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Vinyl chloride	ND		0.0020	mg/L	1	3/2/2012 01:16 PM
Xylenes, Total	ND		0.015	mg/L	1	3/2/2012 01:16 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	91.8		70-125	%REC	1	3/2/2012 01:16 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	94.6		70-125	%REC	1	3/5/2012 08:40 PM
<i>Surr: 4-Bromofluorobenzene</i>	97.9		72-125	%REC	1	3/2/2012 01:16 PM
<i>Surr: 4-Bromofluorobenzene</i>	101		72-125	%REC	1	3/5/2012 08:40 PM
<i>Surr: Dibromofluoromethane</i>	95.8		71-125	%REC	1	3/2/2012 01:16 PM
<i>Surr: Dibromofluoromethane</i>	97.3		71-125	%REC	1	3/5/2012 08:40 PM
<i>Surr: Toluene-d8</i>	99.5		75-125	%REC	1	3/2/2012 01:16 PM
<i>Surr: Toluene-d8</i>	106		75-125	%REC	1	3/5/2012 08:40 PM
REACTIVE CYANIDE			SW-846			Analyst: HN
Reactive Cyanide	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM
REACTIVE SULFIDE			SW-846			Analyst: HN
Reactive Sulfide	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM
ANIONS - EPA 300.0 (1993)			E300			Analyst: JKP
Chloride	519		50.0	mg/L	100	3/6/2012 06:51 AM
Sulfate	1,870		50.0	mg/L	100	3/6/2012 06:51 AM
<i>Surr: Selenate (surr)</i>	110		85-115	%REC	100	3/6/2012 06:51 AM
ALKALINITY			SM2320B			Analyst: DM
Alkalinity, Bicarbonate (As CaCO3)	466		5.00	mg/L	1	3/6/2012 04:36 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	3/6/2012 04:36 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	3/6/2012 04:36 PM
Alkalinity, Total (As CaCO3)	466		5.00	mg/L	1	3/6/2012 04:36 PM
SPECIFIC CONDUCTIVITY			M2510 B			Analyst: TDW
Specific Conductivity	5,990		1.00	µmhos/cm	1	2/29/2012 04:00 PM
IGNITIBILITY			SW1010			Analyst: KAH
Ignitability	> 212		50.0	°F	1	3/6/2012 05:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 26-Apr-12

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 2/28/2012 09:40 AM

Work Order: 1202979
Lab ID: 1202979-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PH			SW9040			Analyst: TDW
pH	7.30	HHH	0.100	pH units	1	2/29/2012 03:00 PM
TOTAL DISSOLVED SOLIDS			M2540C			Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	3,890		10.0	mg/L	1	3/5/2012 07:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-12

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 59229 Instrument ID ICPMS04 Method: SW6020

MBLK Sample ID: MBLKW2-022912-59229 Units: mg/L Analysis Date: 3/1/2012 05:17 AM
 Client ID: Run ID: ICPMS04_120229A SeqNo: 2704057 Prep Date: 2/29/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	ND	0.050								

MBLK Sample ID: MBLKW2-022912-59229 Units: mg/L Analysis Date: 3/1/2012 03:20 PM
 Client ID: Run ID: ICPMS04_120229A SeqNo: 2704747 Prep Date: 2/29/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.0050								

LCS Sample ID: MLCW2-022912-59229 Units: mg/L Analysis Date: 3/1/2012 05:24 AM
 Client ID: Run ID: ICPMS04_120229A SeqNo: 2704058 Prep Date: 2/29/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0488	0.0050	0.05	0	97.6	80-120	0			
Barium	0.05138	0.0050	0.05	0	103	80-120	0			
Boron	0.4962	0.050	0.5	0	99.2	80-120	0			
Cadmium	0.0483	0.0020	0.05	0	96.6	80-120	0			
Chromium	0.04778	0.0050	0.05	0	95.6	80-120	0			
Copper	0.04836	0.0050	0.05	0	96.7	80-120	0			
Lead	0.048	0.0050	0.05	0	96	80-120	0			
Manganese	0.04857	0.0050	0.05	0	97.1	80-120	0			
Molybdenum	0.04679	0.0050	0.05	0	93.6	80-120	0			
Selenium	0.04774	0.0050	0.05	0	95.5	80-120	0			
Silver	0.04807	0.0050	0.05	0	96.1	80-120	0			
Zinc	0.05356	0.0050	0.05	0	107	80-120	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 59229 Instrument ID ICPMS04 Method: SW6020

LCS		Sample ID: MLC5W2-022912-59229			Units: mg/L		Analysis Date: 3/1/2012 06:13 PM			
Client ID:		Run ID: ICPMS04_120229A			SeqNo: 2705146		Prep Date: 2/29/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1038	0.010	0.1	0	104	80-120	0			
Nickel	0.04988	0.0050	0.05	0	99.8	80-120	0			

MS		Sample ID: 1202950-04DMS			Units: mg/L		Analysis Date: 3/2/2012 05:51 PM			
Client ID:		Run ID: ICPMS04_120302A			SeqNo: 2706306		Prep Date: 2/29/2012		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09861	0.050	0.1	0.002997	95.6	80-120	0			
Arsenic	0.05556	0.025	0.05	0.001822	107	80-120	0			
Barium	0.1618	0.025	0.05	0.104	116	80-120	0			
Boron	3.21	0.25	0.5	2.517	138	80-120	0			SO
Cadmium	0.05037	0.010	0.05	0.000047	101	80-120	0			
Chromium	0.04882	0.025	0.05	0.000132	97.4	80-120	0			
Copper	0.04803	0.025	0.05	0.000783	94.5	80-120	0			
Lead	0.05087	0.025	0.05	0.000348	101	80-120	0			
Manganese	2.699	0.025	0.05	2.628	143	80-120	0			SO
Molybdenum	0.05442	0.025	0.05	0.005527	97.8	80-120	0			
Nickel	0.06232	0.025	0.05	0.017	90.8	80-120	0			
Selenium	0.0567	0.025	0.05	0.001873	110	80-120	0			
Silver	0.04727	0.025	0.05	-0.000916	96.4	80-120	0			
Zinc	0.0523	0.025	0.05	0.01637	71.9	80-120	0			S

MSD		Sample ID: 1202950-04DMSD			Units: mg/L		Analysis Date: 3/2/2012 05:58 PM			
Client ID:		Run ID: ICPMS04_120302A			SeqNo: 2706307		Prep Date: 2/29/2012		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09298	0.050	0.1	0.002997	90	80-120	0.09861	5.88	15	
Arsenic	0.05498	0.025	0.05	0.001822	106	80-120	0.05556	1.05	15	
Barium	0.153	0.025	0.05	0.104	97.9	80-120	0.1618	5.63	15	
Boron	3.068	0.25	0.5	2.517	110	80-120	3.21	4.5	15	O
Cadmium	0.04955	0.010	0.05	0.000047	99	80-120	0.05037	1.64	15	
Chromium	0.047	0.025	0.05	0.000132	93.7	80-120	0.04882	3.8	15	
Copper	0.04538	0.025	0.05	0.000783	89.2	80-120	0.04803	5.67	15	
Lead	0.0477	0.025	0.05	0.000348	94.7	80-120	0.05087	6.43	15	
Manganese	2.5	0.025	0.05	2.628	-255	80-120	2.699	7.66	15	SO
Molybdenum	0.05147	0.025	0.05	0.005527	91.9	80-120	0.05442	5.56	15	
Nickel	0.05891	0.025	0.05	0.017	83.8	80-120	0.06232	5.62	15	
Selenium	0.05922	0.025	0.05	0.001873	115	80-120	0.0567	4.34	15	
Silver	0.04563	0.025	0.05	-0.000916	93.1	80-120	0.04727	3.54	15	
Zinc	0.04801	0.025	0.05	0.01637	63.3	80-120	0.0523	8.55	15	S

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 59229 Instrument ID ICPMS04 Method: SW6020

DUP Sample ID: 1202950-04DDUP Units: mg/L Analysis Date: 3/2/2012 05:38 PM

Client ID: Run ID: ICPMS04_120302A SeqNo: 2706299 Prep Date: 2/29/2012 DF: 5

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.050	0	0	0	0-0	0.002997	0	25	
Arsenic	ND	0.025	0	0	0	0-0	0.001822	0	25	
Barium	0.09946	0.025	0	0	0	0-0	0.104	4.51	25	
Boron	2.473	0.25	0	0	0	0-0	2.517	1.79	25	
Cadmium	ND	0.010	0	0	0	0-0	0.000047	0	25	
Chromium	ND	0.025	0	0	0	0-0	0.000132	0	25	
Copper	ND	0.025	0	0	0	0-0	0.000783	0	25	
Lead	ND	0.025	0	0	0	0-0	0.000348	0	25	
Manganese	2.536	0.025	0	0	0	0-0	2.628	3.54	25	
Molybdenum	ND	0.025	0	0	0	0-0	0.005527	0	25	
Nickel	0.01368	0.025	0	0	0	0-0	0.017	0	25	J
Selenium	ND	0.025	0	0	0	0-0	0.001873	0	25	
Silver	ND	0.025	0	0	0	0-0	-0.000916	0	25	
Zinc	ND	0.025	0	0	0	0-0	0.01637	0	25	

The following samples were analyzed in this batch:

1202979-01B

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 59276 Instrument ID Mercury Method: SW7470

MBLK Sample ID: GBLKW1-030212-59276 Units: mg/L Analysis Date: 3/2/2012 01:33 PM

Client ID: Run ID: MERCURY_120302A SeqNo: 2706040 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: GLCSW1-030212-59276 Units: mg/L Analysis Date: 3/2/2012 01:39 PM

Client ID: Run ID: MERCURY_120302A SeqNo: 2706041 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.00020	0.005	0	100	85-115	0			

MS Sample ID: 12021005-01BMS Units: mg/L Analysis Date: 3/2/2012 01:47 PM

Client ID: Run ID: MERCURY_120302A SeqNo: 2706044 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00486	0.00020	0.005	0.000152	94.2	85-115	0			

MSD Sample ID: 12021005-01BMSD Units: mg/L Analysis Date: 3/2/2012 01:49 PM

Client ID: Run ID: MERCURY_120302A SeqNo: 2706045 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00488	0.00020	0.005	0.000152	94.6	85-115	0.00486	0.411	20	

DUP Sample ID: 12021005-01BDUP Units: mg/L Analysis Date: 3/2/2012 01:45 PM

Client ID: Run ID: MERCURY_120302A SeqNo: 2706043 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000152	0.00020	0	0	0	0-0	0.000152	0	20	J

The following samples were analyzed in this batch:

1202979-01B

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 59263 Instrument ID SV-5 Method: SW8270

MBLK Sample ID: SBLKW1-120302-59263 Units: µg/L Analysis Date: 3/2/2012 06:03 PM
 Client ID: Run ID: SV-5_120302B SeqNo: 2706512 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	87.1	5.0	100	0	87.1	42-124	0			
Surr: 2-Fluorobiphenyl	92.22	5.0	100	0	92.2	48-120	0			
Surr: 2-Fluorophenol	83.39	5.0	100	0	83.4	20-120	0			
Surr: 4-Terphenyl-d14	97.18	5.0	100	0	97.2	51-135	0			
Surr: Nitrobenzene-d5	99.51	5.0	100	0	99.5	41-120	0			
Surr: Phenol-d6	88.38	5.0	100	0	88.4	20-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 59263 Instrument ID SV-5 Method: SW8270

LCS Sample ID: SLC5W1-120302-59263 Units: µg/L Analysis Date: 3/3/2012 03:21 PM

Client ID: Run ID: SV-5_120302B SeqNo: 2706514 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	45.27	5.0	50	0	90.5	50-120	0			
2,4,5-Trichlorophenol	92.16	5.0	100	0	92.2	50-120	0			
2,4,6-Trichlorophenol	90.96	5.0	100	0	91	50-120	0			
2,4-Dinitrotoluene	38.29	5.0	50	0	76.6	50-120	0			
2-Methylnaphthalene	39.61	5.0	50	0	79.2	55-120	0			
2-Methylphenol	74.26	5.0	100	0	74.3	50-120	0			
2-Nitroaniline	52.63	5.0	50	0	105	55-120	0			
2-Nitrophenol	87.28	5.0	100	0	87.3	55-120	0			
3&4-Methylphenol	105.2	5.0	150	0	70.1	55-120	0			
3-Nitroaniline	27.71	5.0	50	0	55.4	40-120	0			
4-Nitroaniline	36.86	5.0	50	0	73.7	50-120	0			
4-Nitrophenol	84.36	5.0	100	0	84.4	45-120	0			
Acenaphthene	44.06	5.0	50	0	88.1	55-120	0			
Acenaphthylene	45.54	5.0	50	0	91.1	55-120	0			
Aniline	26.29	5.0	50	0	52.6	30-120	0			
Anthracene	40.62	5.0	50	0	81.2	55-120	0			
Benzo(a)anthracene	43.63	5.0	50	0	87.3	55-120	0			
Benzo(b)fluoranthene	11.44	5.0	50	0	22.9	10-120	0			
Benzo(k)fluoranthene	39.92	5.0	50	0	79.8	55-120	0			
Hexachloroethane	39.99	5.0	50	0	80	55-120	0			
Indeno(1,2,3-cd)pyrene	47.75	5.0	50	0	95.5	55-120	0			
Isophorone	42.35	5.0	50	0	84.7	55-120	0			
Naphthalene	43.74	5.0	50	0	87.5	55-120	0			
Nitrobenzene	42.17	5.0	50	0	84.3	55-120	0			
N-Nitrosodimethylamine	41.7	5.0	50	0	83.4	45-120	0			
N-Nitrosodi-n-propylamine	32.06	5.0	50	0	64.1	50-120	0			
N-Nitrosodiphenylamine	40.45	5.0	50	0	80.9	55-120	0			
Pentachlorophenol	87.63	5.0	100	0	87.6	55-120	0			
Phenanthrene	40.23	5.0	50	0	80.5	55-120	0			
Phenol	74.23	5.0	100	0	74.2	50-120	0			
Pyrene	46.04	5.0	50	0	92.1	55-120	0			
Pyridine	34.85	5.0	50	0	69.7	35-120	0			
Surr: 2,4,6-Tribromophenol	84.73	5.0	100	0	84.7	42-124	0			
Surr: 2-Fluorobiphenyl	99.43	5.0	100	0	99.4	48-120	0			
Surr: 2-Fluorophenol	85.9	5.0	100	0	85.9	20-120	0			
Surr: 4-Terphenyl-d14	103.1	5.0	100	0	103	51-135	0			
Surr: Nitrobenzene-d5	88.42	5.0	100	0	88.4	41-120	0			
Surr: Phenol-d6	74.58	5.0	100	0	74.6	20-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: 59263 Instrument ID SV-5 Method: SW8270

LCSD Sample ID: SLCSDW1-120302-59263 Units: µg/L Analysis Date: 3/2/2012 06:49 PM
 Client ID: Run ID: SV-5_120302B SeqNo: 2706513 Prep Date: 3/2/2012 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	41.89	5.0	50	0	83.8	50-120	45.27	7.76	20	
2,4,5-Trichlorophenol	80.69	5.0	100	0	80.7	50-120	92.16	13.3	20	
2,4,6-Trichlorophenol	77.47	5.0	100	0	77.5	50-120	90.96	16	20	
2,4-Dinitrotoluene	42.66	5.0	50	0	85.3	50-120	38.29	10.8	20	
2-Methylnaphthalene	42.33	5.0	50	0	84.7	55-120	39.61	6.65	20	
2-Methylphenol	91.95	5.0	100	0	91.9	50-120	74.26	21.3	20	R
2-Nitroaniline	56.76	5.0	50	0	114	55-120	52.63	7.54	20	
2-Nitrophenol	84.86	5.0	100	0	84.9	55-120	87.28	2.81	20	
3&4-Methylphenol	138.1	5.0	150	0	92.1	55-120	105.2	27	20	R
3-Nitroaniline	44.32	5.0	50	0	88.6	40-120	27.71	46.1	20	R
4-Nitroaniline	37.54	5.0	50	0	75.1	50-120	36.86	1.83	20	
4-Nitrophenol	86.49	5.0	100	0	86.5	45-120	84.36	2.49	20	
Acenaphthene	42.96	5.0	50	0	85.9	55-120	44.06	2.52	20	
Acenaphthylene	44.33	5.0	50	0	88.7	55-120	45.54	2.69	20	
Aniline	30.73	5.0	50	0	61.5	30-120	26.29	15.5	20	
Anthracene	43.85	5.0	50	0	87.7	55-120	40.62	7.64	20	
Benzo(a)anthracene	43.62	5.0	50	0	87.2	55-120	43.63	0.00412	20	
Benzenzidine	17.59	5.0	50	0	35.2	10-120	11.44	42.4	20	R
Benzhexachlorobenzene	40.72	5.0	50	0	81.4	55-120	39.92	1.98	20	
Hexachloroethane	43.3	5.0	50	0	86.6	55-120	39.99	7.95	20	
Indeno(1,2,3-cd)pyrene	39.89	5.0	50	0	79.8	55-120	47.75	17.9	20	
Isophorone	46.75	5.0	50	0	93.5	55-120	42.35	9.88	20	
Naphthalene	41.93	5.0	50	0	83.9	55-120	43.74	4.22	20	
Nitrobenzene	44.79	5.0	50	0	89.6	55-120	42.17	6.04	20	
N-Nitrosodimethylamine	41.58	5.0	50	0	83.2	45-120	41.7	0.296	20	
N-Nitrosodi-n-propylamine	42.78	5.0	50	0	85.6	50-120	32.06	28.6	20	R
N-Nitrosodiphenylamine	42.93	5.0	50	0	85.9	55-120	40.45	5.95	20	
Pentachlorophenol	82.5	5.0	100	0	82.5	55-120	87.63	6.04	20	
Phenanthrene	42.58	5.0	50	0	85.2	55-120	40.23	5.69	20	
Phenol	94.54	5.0	100	0	94.5	50-120	74.23	24.1	20	R
Pyrene	46.57	5.0	50	0	93.1	55-120	46.04	1.14	20	
Pyridine	31.79	5.0	50	0	63.6	35-120	34.85	9.19	20	
Surr: 2,4,6-Tribromophenol	75.93	5.0	100	0	75.9	42-124	84.73	11	20	
Surr: 2-Fluorobiphenyl	83.5	5.0	100	0	83.5	48-120	99.43	17.4	20	
Surr: 2-Fluorophenol	88.37	5.0	100	0	88.4	20-120	85.9	2.83	20	
Surr: 4-Terphenyl-d14	90.74	5.0	100	0	90.7	51-135	103.1	12.8	20	
Surr: Nitrobenzene-d5	87.53	5.0	100	0	87.5	41-120	88.42	1.01	20	
Surr: Phenol-d6	93.3	5.0	100	0	93.3	20-120	74.58	22.3	20	R

The following samples were analyzed in this batch:

1202979-01E

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124295 Instrument ID VOA1 Method: SW8260

MBLK Sample ID: VBLKW-030212-R124295 Units: µg/L Analysis Date: 3/2/2012 11:05 AM
 Client ID: Run ID: VOA1_120302A SeqNo: 2706973 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	45.76	5.0	50	0	91.5	70-125	0			
Surr: 4-Bromofluorobenzene	45.65	5.0	50	0	91.3	72-125	0			
Surr: Dibromofluoromethane	49.47	5.0	50	0	98.9	71-125	0			
Surr: Toluene-d8	50.92	5.0	50	0	102	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124295 Instrument ID VOA1 Method: SW8260

LCS Sample ID: VLCSW-030212-R124295 Units: µg/L Analysis Date: 3/2/2012 11:31 AM

Client ID: Run ID: VOA1_120302A SeqNo: 2706974 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	48.34	5.0	50	0	96.7	80-120	0			
1,1,2,2-Tetrachloroethane	47.47	5.0	50	0	94.9	72-120	0			
1,1,2-Trichloroethane	50.06	5.0	50	0	100	80-120	0			
1,1-Dichloroethane	46.7	5.0	50	0	93.4	76-120	0			
1,1-Dichloroethene	48.45	5.0	50	0	96.9	73-124	0			
1,2-Dichloroethane	48.43	5.0	50	0	96.9	78-120	0			
2-Butanone	115.5	10	100	0	116	58-132	0			
2-Chloroethyl vinyl ether	100.3	10	100	0	100	74-120	0			
2-Hexanone	104.3	10	100	0	104	61-130	0			
4-Methyl-2-pentanone	104.3	10	100	0	104	65-127	0			
Benzene	49.34	5.0	50	0	98.7	73-121	0			
Bromodichloromethane	49.78	5.0	50	0	99.6	80-120	0			
Bromoform	51.85	5.0	50	0	104	79-120	0			
Bromomethane	46.68	5.0	50	0	93.4	66-137	0			
Carbon disulfide	91.46	10	100	0	91.5	68-141	0			
Carbon tetrachloride	49.44	5.0	50	0	98.9	75-124	0			
Chlorobenzene	48.66	5.0	50	0	97.3	80-120	0			
Chloroethane	48.59	5.0	50	0	97.2	76-121	0			
Chloroform	46.27	5.0	50	0	92.5	80-120	0			
Chloromethane	42.5	5.0	50	0	85	67-123	0			
cis-1,3-Dichloropropene	49.7	5.0	50	0	99.4	80-120	0			
Dibromochloromethane	50.25	5.0	50	0	100	80-120	0			
Ethylbenzene	50.31	5.0	50	0	101	80-120	0			
m,p-Xylene	106.4	10	100	0	106	78-121	0			
Methylene chloride	46.29	10	50	0	92.6	65-133	0			
Styrene	50.6	5.0	50	0	101	80-120	0			
Tetrachloroethene	53.03	5.0	50	0	106	79-120	0			
Toluene	51.14	5.0	50	0	102	80-120	0			
trans-1,3-Dichloropropene	47.71	5.0	50	0	95.4	80-120	0			
Trichloroethene	50.72	5.0	50	0	101	80-120	0			
Vinyl acetate	96.6	10	100	0	96.6	67-139	0			
Vinyl chloride	48.68	2.0	50	0	97.4	70-127	0			
Xylenes, Total	157.5	15	150	0	105	80-120	0			
Surr: 1,2-Dichloroethane-d4	46.36	5.0	50	0	92.7	70-125	0			
Surr: 4-Bromofluorobenzene	45.51	5.0	50	0	91	72-125	0			
Surr: Dibromofluoromethane	48.29	5.0	50	0	96.6	71-125	0			
Surr: Toluene-d8	50.53	5.0	50	0	101	75-125	0			

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124295 Instrument ID VOA1 Method: SW8260

MS Sample ID: 1202919-01AMS Units: µg/L Analysis Date: 3/2/2012 05:40 PM

Client ID: Run ID: VOA1_120302A SeqNo: 2706987 Prep Date: DF: 5

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	245.2	25	250	0	98.1	80-120	0			
1,1,2,2-Tetrachloroethane	235.7	25	250	0	94.3	72-120	0			
1,1,2-Trichloroethane	252.6	25	250	0	101	80-120	0			
1,1-Dichloroethane	247.9	25	250	0	99.2	76-120	0			
1,1-Dichloroethene	247.7	25	250	0	99.1	73-124	0			
1,2-Dichloroethane	229.1	25	250	0	91.7	78-120	0			
2-Butanone	491.1	50	500	0	98.2	58-132	0			
2-Chloroethyl vinyl ether	13.89	50	500	0	2.78	74-120	0			JS
2-Hexanone	503.1	50	500	0	101	61-130	0			
4-Methyl-2-pentanone	546.8	50	500	0	109	65-127	0			
Benzene	231.6	25	250	0	92.6	73-121	0			
Bromodichloromethane	245.5	25	250	0	98.2	80-120	0			
Bromoform	256	25	250	0	102	79-120	0			
Bromomethane	233.1	25	250	0	93.2	66-137	0			
Carbon disulfide	469.2	50	500	0	93.8	68-141	0			
Carbon tetrachloride	232.8	25	250	0	93.1	75-124	0			
Chlorobenzene	235.7	25	250	0	94.3	80-120	0			
Chloroethane	244.7	25	250	0	97.9	76-121	0			
Chloroform	235.3	25	250	0	94.1	80-120	0			
Chloromethane	236.2	25	250	0	94.5	67-123	0			
cis-1,3-Dichloropropene	250.5	25	250	0	100	80-120	0			
Dibromochloromethane	244	25	250	0	97.6	80-120	0			
Ethylbenzene	270.4	25	250	0	108	80-120	0			
m,p-Xylene	509.1	50	500	0	102	78-121	0			
Methylene chloride	239.2	50	250	0	95.7	65-133	0			
Styrene	251.4	25	250	0	101	80-120	0			
Tetrachloroethene	257.9	25	250	0	103	79-120	0			
Toluene	249.8	25	250	0	99.9	80-120	0			
trans-1,3-Dichloropropene	249.9	25	250	0	100	80-120	0			
Trichloroethene	266	25	250	19.06	98.8	80-120	0			
Vinyl acetate	504.2	50	500	0	101	67-139	0			
Vinyl chloride	311.6	10	250	63.38	99.3	70-127	0			
Xylenes, Total	765.9	75	750	0	102	80-120	0			
Surr: 1,2-Dichloroethane-d4	236.9	25	250	0	94.8	70-125	0			
Surr: 4-Bromofluorobenzene	243.9	25	250	0	97.6	72-125	0			
Surr: Dibromofluoromethane	254.3	25	250	0	102	71-125	0			
Surr: Toluene-d8	245	25	250	0	98	75-125	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124295 Instrument ID VOA1 Method: SW8260

MSD	Sample ID: 1202919-01AMSD	Units: µg/L		Analysis Date: 3/2/2012 06:06 PM						
Client ID:	Run ID: VOA1_120302A	SeqNo: 2706988	Prep Date:	DF: 5						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	209	25	250	0	83.6	80-120	245.2	15.9	20	
1,1,2,2-Tetrachloroethane	238.7	25	250	0	95.5	72-120	235.7	1.3	20	
1,1,2-Trichloroethane	234.6	25	250	0	93.8	80-120	252.6	7.41	20	
1,1-Dichloroethane	242.7	25	250	0	97.1	76-120	247.9	2.12	20	
1,1-Dichloroethene	242.5	25	250	0	97	73-124	247.7	2.13	20	
1,2-Dichloroethane	217.3	25	250	0	86.9	78-120	229.1	5.31	20	
2-Butanone	500.3	50	500	0	100	58-132	491.1	1.86	20	
2-Chloroethyl vinyl ether	ND	50	500	0	0	74-120	13.89	0	20	S
2-Hexanone	493.5	50	500	0	98.7	61-130	503.1	1.93	20	
4-Methyl-2-pentanone	553	50	500	0	111	65-127	546.8	1.14	20	
Benzene	223.9	25	250	0	89.6	73-121	231.6	3.37	20	
Bromodichloromethane	227	25	250	0	90.8	80-120	245.5	7.83	20	
Bromoform	244.1	25	250	0	97.6	79-120	256	4.74	20	
Bromomethane	243.7	25	250	0	97.5	66-137	233.1	4.47	20	
Carbon disulfide	437	50	500	0	87.4	68-141	469.2	7.11	20	
Carbon tetrachloride	207	25	250	0	82.8	75-124	232.8	11.8	20	
Chlorobenzene	223.4	25	250	0	89.4	80-120	235.7	5.35	20	
Chloroethane	230.6	25	250	0	92.2	76-121	244.7	5.96	20	
Chloroform	218.6	25	250	0	87.4	80-120	235.3	7.39	20	
Chloromethane	212.5	25	250	0	85	67-123	236.2	10.6	20	
cis-1,3-Dichloropropene	227	25	250	0	90.8	80-120	250.5	9.84	20	
Dibromochloromethane	241.5	25	250	0	96.6	80-120	244	1.03	20	
Ethylbenzene	229.4	25	250	0	91.7	80-120	270.4	16.4	20	
m,p-Xylene	471.2	50	500	0	94.2	78-121	509.1	7.74	20	
Methylene chloride	228.2	50	250	0	91.3	65-133	239.2	4.71	20	
Styrene	221.8	25	250	0	88.7	80-120	251.4	12.5	20	
Tetrachloroethene	227.9	25	250	0	91.2	79-120	257.9	12.4	20	
Toluene	235.5	25	250	0	94.2	80-120	249.8	5.9	20	
trans-1,3-Dichloropropene	215.2	25	250	0	86.1	80-120	249.9	14.9	20	
Trichloroethene	255.9	25	250	19.06	94.7	80-120	266	3.85	20	
Vinyl acetate	489.3	50	500	0	97.9	67-139	504.2	3	20	
Vinyl chloride	291.3	10	250	63.38	91.2	70-127	311.6	6.72	20	
Xylenes, Total	705.9	75	750	0	94.1	80-120	765.9	8.15	20	
Surr: 1,2-Dichloroethane-d4	229	25	250	0	91.6	70-125	236.9	3.42	20	
Surr: 4-Bromofluorobenzene	233.3	25	250	0	93.3	72-125	243.9	4.47	20	
Surr: Dibromofluoromethane	237.5	25	250	0	95	71-125	254.3	6.83	20	
Surr: Toluene-d8	246	25	250	0	98.4	75-125	245	0.431	20	

The following samples were analyzed in this batch:

1202979-01A

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124374 Instrument ID VOA6 Method: SW8260

MBLK		Sample ID: VBLKW-030512-R124374			Units: µg/L		Analysis Date: 3/5/2012 01:12 PM			
Client ID:		Run ID: VOA6_120305A			SeqNo: 2708657		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	ND	10								
Surr: 1,2-Dichloroethane-d4	46.97	5.0	50	0	93.9	70-125	0			
Surr: 4-Bromofluorobenzene	49.1	5.0	50	0	98.2	72-125	0			
Surr: Dibromofluoromethane	47.94	5.0	50	0	95.9	71-125	0			
Surr: Toluene-d8	51.92	5.0	50	0	104	75-125	0			

LCS		Sample ID: VLCSW-030512-R124374			Units: µg/L		Analysis Date: 3/5/2012 01:38 PM			
Client ID:		Run ID: VOA6_120305A			SeqNo: 2708660		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	89.15	10	100	0	89.2	59-137	0			
Surr: 1,2-Dichloroethane-d4	45.74	5.0	50	0	91.5	70-125	0			
Surr: 4-Bromofluorobenzene	51.35	5.0	50	0	103	72-125	0			
Surr: Dibromofluoromethane	48.18	5.0	50	0	96.4	71-125	0			
Surr: Toluene-d8	50.13	5.0	50	0	100	75-125	0			

MS		Sample ID: 1203095-01AMS			Units: µg/L		Analysis Date: 3/5/2012 03:24 PM			
Client ID:		Run ID: VOA6_120305A			SeqNo: 2708667		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	65.81	10	100	0	65.8	59-137	0			
Surr: 1,2-Dichloroethane-d4	45.57	5.0	50	0	91.1	70-125	0			
Surr: 4-Bromofluorobenzene	51.48	5.0	50	0	103	72-125	0			
Surr: Dibromofluoromethane	48.3	5.0	50	0	96.6	71-125	0			
Surr: Toluene-d8	50.11	5.0	50	0	100	75-125	0			

MSD		Sample ID: 1203095-01AMSD			Units: µg/L		Analysis Date: 3/5/2012 03:50 PM			
Client ID:		Run ID: VOA6_120305A			SeqNo: 2708669		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	62.66	10	100	0	62.7	59-137	65.81	4.9	20	
Surr: 1,2-Dichloroethane-d4	44.77	5.0	50	0	89.5	70-125	45.57	1.78	20	
Surr: 4-Bromofluorobenzene	51.89	5.0	50	0	104	72-125	51.48	0.796	20	
Surr: Dibromofluoromethane	47.44	5.0	50	0	94.9	71-125	48.3	1.81	20	
Surr: Toluene-d8	50.58	5.0	50	0	101	75-125	50.11	0.945	20	

The following samples were analyzed in this batch: 1202979-01A

Client: Navajo Refining Company
 Work Order: 1202979
 roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124101 Instrument ID WetChem Method: SW9040

LCS		Sample ID: WLCSW1-120229-R124101				Units: pH units		Analysis Date: 2/29/2012 03:00 PM			
Client ID:		Run ID: WETCHEM_120229I				SeqNo: 2703606		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	6	0.10	6	0	100	90-110	0				

DUP		Sample ID: 1202991-04A dup				Units: pH units		Analysis Date: 2/29/2012 03:00 PM			
Client ID:		Run ID: WETCHEM_120229I				SeqNo: 2703776		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	6.29	0.10	0	0	0	0-0	6.28	0.159	20	H	

The following samples were analyzed in this batch: 1202979-01D

Client: Navajo Refining Company
Work Order: 1202979
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124103 **Instrument ID:** WetChem **Method:** M2510 B

MBLK Sample ID: **WBLKW1-120229-R124103** Units: **µmhos/cm** Analysis Date: **2/29/2012 04:00 PM**
 Client ID: Run ID: **WETCHEM_120229J** SeqNo: **2703614** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **WLCSW1-120229-R124103** Units: **µmhos/cm** Analysis Date: **2/29/2012 04:00 PM**
 Client ID: Run ID: **WETCHEM_120229J** SeqNo: **2703615** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1420	1.0	1413		0	100	80-120	0		

DUP Sample ID: **1202979-01DDUP** Units: **µmhos/cm** Analysis Date: **2/29/2012 04:00 PM**
 Client ID: **Injection Well Effluent** Run ID: **WETCHEM_120229J** SeqNo: **2703645** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	6030	1.0	0		0	0	5990	0.666	20	

The following samples were analyzed in this batch: 1202979-01D

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124408 Instrument ID Balance1 Method: M2540C

MBLK	Sample ID: WBLK-030512-R124408	Units: mg/L					Analysis Date: 3/5/2012 07:30 PM				
Client ID:	Run ID: BALANCE1_120305E	SeqNo: 2709353	Prep Date:	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Fil	ND	10									

LCS	Sample ID: WLCS-030512-R124408	Units: mg/L					Analysis Date: 3/5/2012 07:30 PM				
Client ID:	Run ID: BALANCE1_120305E	SeqNo: 2709354	Prep Date:	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Fil	984	10	1000	0	98.4	85-115	0				

DUP	Sample ID: 12021002-09DDUP	Units: mg/L					Analysis Date: 3/5/2012 07:30 PM				
Client ID:	Run ID: BALANCE1_120305E	SeqNo: 2709332	Prep Date:	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Fil	4040	10	0	0	0	0-0	4020	0.496	20		

DUP	Sample ID: 1203052-04DDUP	Units: mg/L					Analysis Date: 3/5/2012 07:30 PM				
Client ID:	Run ID: BALANCE1_120305E	SeqNo: 2709378	Prep Date:	DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Total Dissolved Solids (Residue, Fil	1692	10	0	0	0	0-0	1720	1.64	20		

The following samples were analyzed in this batch: 1202979-01C

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124409 Instrument ID ICS3K2 Method: E300

MBLK		Sample ID: WBLKW1-030512-R124409				Units: mg/L		Analysis Date: 3/5/2012 06:53 PM		
Client ID:		Run ID: ICS3K2_120305A				SeqNo: 2709381		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.4	0.50								J
Sulfate	0.301	0.50								J
Surr: Selenate (surr)		5.473	0.10	5	0	109	85-115	0		

LCS		Sample ID: WLC5W1-030512-R124409				Units: mg/L		Analysis Date: 3/5/2012 07:15 PM		
Client ID:		Run ID: ICS3K2_120305A				SeqNo: 2709355		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.32	0.50	20	0	91.6	90-110	0			
Sulfate	18.76	0.50	20	0	93.8	90-110	0			
Surr: Selenate (surr)		5.392	0.10	5	0	108	85-115	0		

LCSD		Sample ID: WLC5DW1-030512-R124409				Units: mg/L		Analysis Date: 3/5/2012 07:37 PM		
Client ID:		Run ID: ICS3K2_120305A				SeqNo: 2709356		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.37	0.50	20	0	91.9	90-110	18.32	0.311	20	
Sulfate	18.76	0.50	20	0	93.8	90-110	18.76	0.016	20	
Surr: Selenate (surr)		5.368	0.10	5	0	107	85-115	5.392	0.446	20

MS		Sample ID: 1202769-01EMS				Units: mg/L		Analysis Date: 3/6/2012 02:52 AM		
Client ID:		Run ID: ICS3K2_120305A				SeqNo: 2709371		Prep Date:		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	235.4	5.0	100	135.3	100	80-120	0			
Sulfate	117.7	5.0	100	22.67	95	80-120	0			
Surr: Selenate (surr)		54.24	1.0	50	0	108	85-115	0		

MSD		Sample ID: 1202769-01EMSD				Units: mg/L		Analysis Date: 3/6/2012 03:14 AM		
Client ID:		Run ID: ICS3K2_120305A				SeqNo: 2709373		Prep Date:		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	232.1	5.0	100	135.3	96.8	80-120	235.4	1.4	20	
Sulfate	115.5	5.0	100	22.67	92.8	80-120	117.7	1.87	20	
Surr: Selenate (surr)		53.19	1.0	50	0	106	85-115	54.24	1.95	20

The following samples were analyzed in this batch:

1202979-01C

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124418 Instrument ID WetChem Method: SW1010

LCS		Sample ID: WLCS-030612-R124418				Units: °F		Analysis Date: 3/6/2012 05:00 PM		
Client ID:		Run ID: WETCHEM_120306G			SeqNo: 2709537		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	84	50	83	0	101	80-120		0		

LCSD		Sample ID: WLCSD-030612-R124418				Units: °F		Analysis Date: 3/6/2012 05:00 PM		
Client ID:		Run ID: WETCHEM_120306G			SeqNo: 2709547		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	86	50	83	0	104	80-120	84	2.35	25	

DUP		Sample ID: 1202958-01ADUP				Units: °F		Analysis Date: 3/6/2012 05:00 PM		
Client ID:		Run ID: WETCHEM_120306G			SeqNo: 2709548		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	78	50	0	0	0	0-0	78	0	25	

The following samples were analyzed in this batch: 1202979-01D

Client: Navajo Refining Company
 Work Order: 1202979
 Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R124421 Instrument ID WetChem Method: SM2320B

MBLK Sample ID: WBLKW1-030612-R124421 Units: mg/L Analysis Date: 3/6/2012 04:36 PM

Client ID: Run ID: WETCHEM_120306H SeqNo: 2709574 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: WLCSW1-030612-R124421 Units: mg/L Analysis Date: 3/6/2012 04:36 PM

Client ID: Run ID: WETCHEM_120306H SeqNo: 2709575 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1056	5.0	1000	0	106	80-120	0			

DUP Sample ID: 1202769-01EDUP Units: mg/L Analysis Date: 3/6/2012 04:36 PM

Client ID: Run ID: WETCHEM_120306H SeqNo: 2709587 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	191	5.0	0	0	0	0-0	190.4	0.315	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	191	5.0	0	0	0	0-0	190.4	0.315	20	

The following samples were analyzed in this batch: 1202979-01C

Client: Navajo Refining Company
 Project: Injection Well Quarterly
 WorkOrder: 1202979

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
°F	Fahrenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING**

Date/Time Received: **29-Feb-12 09:10**

Work Order: **1202979**

Received by: **RNG**

Checklist completed by *Parash M. Ciga* 29-Feb-12
eSignature Date

Reviewed by: *Mary H. Knaulis* 29-Feb-12
eSignature Date

Matrices: **Water**

Carrier name: **FedEx**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 2.2 002

Cooler(s)/Kit(s): 4246

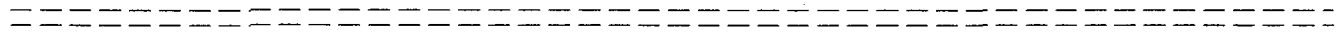
Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by: _____

Login Notes:



Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments: _____

Corrective Action: _____



ALS Laboratory Group
 10450 Stancliff Rd. #210
 Houston, Texas 77099
 (Tel) 281.530.5656
 (Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

1202979

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly



RT
 DING
 ME

ALS Project Manager: Chris Bryson

Customer Information		Project Information		
Purchase Order		Project Name	Injection Well Quarterly	A VOC (8260) Select
Work Order		Project Number		B SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C Total Metals (6020 / 7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D R.C.I. Profile
Address	P. O. Box 159	Address	501 East Main	E Anions (300) Cl, SO4
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexlco 88210	F Alkalinity
Phone	(575) 748-3311	Phone	(575) 748-3311	G pH
Fax	(575) 746-5451	Fax	(575) 746-5451	H Conductivity
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	I TDS
				J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Injection Well Effluent	2/28/11	0940	Liquid	Yes	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank																
3	Temperature Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Aaron Strange Shipment Method: Federal Express Required Turnaround Time: STD 10 Wk Days 5 Wk Days 2 Wk Days 24 Hour Other _____ Results Due Date: _____

Relinquished by: <u>Aaron Strange</u>	Date: <u>2-29-12</u>	Time: <u>16:15</u>	Received by: <u>[Signature]</u>	Notes:
Relinquished by:	Date:	Time:	Checked by (Laboratory): <u>[Signature]</u>	QC Package: (Check Box Below)
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Level II: Standard QC
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NAOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035				Level III: Std QC + Raw Data
				Level IV: SW846 CLP-Like
				Other: _____

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group. Copyright 2008 by ALS Laboratory Group



ALS Environmental

10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

D
N
C

CUSTODY SEAL

date: 2-28-12 Time: 1635
name: Aaron Stegert
company: Navajo Retrieval Co

Seal Broken By: ALS

Date: 2/28/12

Client: ALS Environmental
Project: 1202979
Work Order: 1203018

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1203018-01	1202979-01F	Water		2/28/2012 09:40	3/1/2012 10:30	<input type="checkbox"/>

Client: ALS Environmental
 Project: 1202979
 WorkOrder: 1203018

**QUALIFIERS,
 ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

<u>Units Reported</u>	<u>Description</u>
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: 06-Mar-12

Client: ALS Environmental
Project: 1202979
Sample ID: 1202979-01F
Collection Date: 2/28/2012 09:40 AM

Work Order: 1203018
Lab ID: 1203018-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			SW7.3.3.2			Analyst: NZ
Cyanide, Reactive	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM
SULFIDE, REACTIVE			SW7.3.4.2			Analyst: NZ
Sulfide, Reactive	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 06-Mar-12

Client: ALS Environmental
Work Order: 1203018
Project: 1202979

QC BATCH REPORT

Batch ID: R101907 Instrument ID WETCHEM Method: SW7.3.4.2

MBLK	Sample ID: MB-R101907-R101907	Units: mg/Kg	Analysis Date: 3/2/2012 11:30 AM							
Client ID:	Run ID: WETCHEM_120302F	SeqNo: 1913904	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch: 1203018-01A

Client: ALS Environmental
 Work Order: 1203018
 Project: 1202979

QC BATCH REPORT

Batch ID: R101909 Instrument ID WETCHEM Method: SW7.3.3.2

MBLK	Sample ID: WBLKW1-120301-R101909	Units: mg/Kg					Analysis Date: 3/2/2012 11:30 AM				
Client ID:	Run ID: WETCHEM_120302G	SeqNo: 1913931			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Cyanide, Reactive	ND	40									

LCS	Sample ID: WLCSW1-120301-R101909	Units: mg/Kg					Analysis Date: 3/2/2012 11:30 AM				
Client ID:	Run ID: WETCHEM_120302G	SeqNo: 1913946			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	0				

LCSD	Sample ID: WLCSDW1-120301-R101909	Units: mg/Kg					Analysis Date: 3/2/2012 11:30 AM				
Client ID:	Run ID: WETCHEM_120302G	SeqNo: 1913958			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	249.6	0	35		

MS	Sample ID: 1202727-01A MS	Units: mg/Kg					Analysis Date: 3/2/2012 11:30 AM				
Client ID:	Run ID: WETCHEM_120302G	SeqNo: 1913948			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	0				

MSD	Sample ID: 1202727-01A MSD	Units: mg/Kg					Analysis Date: 3/2/2012 11:30 AM				
Client ID:	Run ID: WETCHEM_120302G	SeqNo: 1913949			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	249.6	0	35		

The following samples were analyzed in this batch: 1203018-01A

: See Qualifiers Page for a list of Qualifiers and their explanation.

120 218



Subcontractor:

ALS Laboratory Group
3352 128th Ave.

TEL: (616) 399-6070

FAX: (616) 399-6185

Holland, MI 49424

Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 28-Feb-12

COC ID: 11546

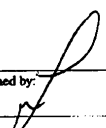
Due Date: 06-Mar-12

Salesperson: Jeffrey L Croston

Customer Information		Project Information		Parameter/Method Request for Analysis																	
Purchase Order		Project Name	1202979	A	Reactive Cyanide (SW-846)																
Work Order		Project Number		B	Reactive Sulfide (SW-846)																
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C																	
Send Report To	Patricia L. Lynch	Inv Attn	Accounts Payable	D																	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E																	
				F																	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G																	
Phone	(281) 530-5656	Phone	(281) 530-5656	H																	
Fax	(281) 530-5887	Fax	(281) 530-5887	I																	
eMail Address	pat.lynch@alsglobal.com	eMail CC		J																	
Sample ID		Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J							
1202979-01F (Injection Well Effluent)		Water	28/feb/2012 9:40	(1) 1LPNEAT	X	X															

Comments: Please analyze for reactive cyanide & reactive sulfide. cc Mary.knowles & Yvan.ty@alsglobal.com

WV

Relinquished by: 	Date/Time: <u>Feb 27 11:2</u>	Received by: <u>Josim Basan</u>	Date/Time: <u>3/1/12 1030</u>	Cooler IDs: <u>4.2°C</u>	Report/QC Level: <u>Std</u>
Relinquished by:	Date/Time:	Received by:	Date/Time:	Cooler IDs:	Report/QC Level:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: ALS - HOUSTON

Date/Time Received: 01-Mar-12 10:30

Work Order: 1203018

Received by: JB

Checklist completed by Jessica Bacon
eSignature

01-Mar-12
Date

Reviewed by: Bill Carey
eSignature

01-Mar-12
Date

Matrices: water

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):

4.2 C

Cooler(s)/Kit(s):

Water - VOA vials have zero headspace?

Yes No No VOA vials submitted

Water - pH acceptable upon receipt?

Yes No N/A

pH adjusted?

Yes No N/A

pH adjusted by:

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:

Seal Broken By:	Date:
CUSTODY SEAL	
ALS Environmental 10450 Standcliff Rd., Suite 210 Houston, Texas 77059 Tel. +1 281 530 5866 Fax. +1 281 530 5887	

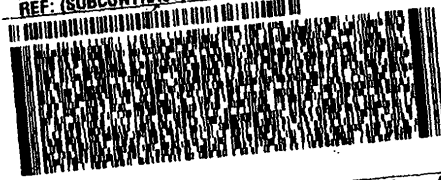
 ALS Environmental 10450 Standcliff Rd., Suite 210 Houston, Texas 77059 Tel. +1 281 530 5866 Fax. +1 281 530 5887	
Date: 3-28-12 Name: J. Glaser Company: ALS	CUSTODY SEAL
Seal Broken By:	Date:

ORIGIN ID: SGRA (281) 530-5856
 SHIPPING DEPT
 ALS LABORATORY GROUP
 10450 STANCLIFF
 SUITE 210
 HOUSTON, TX 77099
 UNITED STATES US

SHIP DATE: 29FEB12
 ACTWGT: 15.5 LB
 CRD: 300130/CAFE2511
 BILL SENDER

TO JEFF GLASER
 ALS ENVIRONMENTAL
 3352 128TH AVE.

HOLLAND MI 49424
 (281) 580-6866
 REF: (SUBCONTRACT) PMG



TRK 4340 2168 6113
 (0201)

THU - 01 MAR A4
 PRIORITY OVERNIGHT

NK GRRR

49424
 MI-US GRR



APPENDIX E

FLUIDS AND PRESSURE CALCULATIONS

APPENDIX E-1

HISTORICAL INJECTION RATE AND SURFACE INJECTION PRESSURE

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
12/22/00	247.39	301.38	133.21	340.57			
12/23/00	247.39	301.38	133.21	340.57			
12/24/00	245.43	298.88	132.60	343.28			
12/25/00	216.37	244.75	118.89	293.54			
12/26/00	205.09	268.31	119.17	314.73			
12/27/00	246.65	339.95	218.50	394.81			
12/28/00	284.01	412.33	302.08	397.96			
12/29/00	269.25	373.63	159.25	374.19			
12/30/00	237.31	317.49	147.29	333.14			
12/31/00	245.52	319.49	146.88	338.87			
01/01/01	208.64	252.54	126.59	303.59			
01/02/01	190.40	220.50	118.58	265.76			
01/03/01	213.36	277.24	128.84	328.92			
01/04/01	229.65	303.23	124.63	332.92			
01/05/01	219.32	293.21	131.58	346.80			
01/06/01	207.76	258.86	124.20	309.94			
01/07/01	220.15	280.53	129.51	335.89			
01/08/01	221.79	294.05	129.79	350.21			
01/09/01	217.30	287.62	125.50	344.64			
01/10/01	225.57	305.26	131.11	362.87			
01/11/01	220.17	290.04	127.76	346.24			
01/12/01	084.91	118.56	144.46	441.50			
01/13/01	110.59	099.81	104.37	327.97			
01/14/01	218.03	162.39	050.45	156.08			
01/15/01	148.39	086.36	129.68	374.57			
01/16/01	317.66	194.30	105.15	260.97			
01/17/01	297.76	164.24	101.80	232.42			
01/18/01	257.36	127.62	083.25	170.04			
01/19/01	292.31	145.25	000.88	000.65			
01/20/01	235.38	146.03	071.80	242.69			
01/21/01	287.67	187.20	094.63	246.83			
01/22/01	272.21	154.15	074.36	194.41			
01/23/01	246.76	132.72	066.83	184.09			
01/24/01	268.03	188.38	078.78	248.18			
01/25/01	218.40	138.08	059.42	184.75			
01/26/01	239.49	165.40	070.51	215.64			
01/27/01	223.67	099.14	050.16	130.13			
01/28/01	260.83	165.56	006.20	015.37			
01/29/01	249.94	179.21	058.82	199.34			
01/30/01	257.02	163.88	066.15	223.54			
01/31/01	295.61	227.47	035.00	130.09			
02/01/01	258.84	183.56	078.10	077.46			
02/02/01	285.62	206.51	122.20	134.60			
02/03/01	256.49	226.72	000.72	000.01			
02/04/01	252.78	186.67	054.59	060.14			
02/05/01	208.59	116.73	145.70	140.57			
02/06/01	273.39	233.95	050.66	060.05			
02/07/01	234.12	164.45	064.57	056.09			
02/08/01	255.61	201.51	057.40	059.25			
02/09/01	290.26	265.23	000.43	000.00			
02/10/01	261.31	246.48	000.63	000.00			
02/11/01	283.16	246.65	000.51	000.01			
02/12/01	293.91	277.74	000.47	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/30/00	247.39	301.38	133.21	340.57			
10/31/00	247.39	301.38	133.21	340.57			
11/01/00	247.39	301.38	133.21	340.57			
11/02/00	247.39	301.38	133.21	340.57			
11/03/00	247.39	301.38	133.21	340.57			
11/04/00	247.39	301.38	133.21	340.57			
11/05/00	247.39	301.38	133.21	340.57			
11/06/00	247.39	301.38	133.21	340.57			
11/07/00	247.39	301.38	133.21	340.57			
11/08/00	247.39	301.38	133.21	340.57			
11/09/00	247.39	301.38	133.21	340.57			
11/10/00	247.39	301.38	133.21	340.57			
11/11/00	247.39	301.38	133.21	340.57			
11/12/00	247.39	301.38	133.21	340.57			
11/13/00	247.39	301.38	133.21	340.57			
11/14/00	247.39	301.38	133.21	340.57			
11/15/00	247.39	301.38	133.21	340.57			
11/16/00	247.39	301.38	133.21	340.57			
11/17/00	247.39	301.38	133.21	340.57			
11/18/00	247.39	301.38	133.21	340.57			
11/19/00	247.39	301.38	133.21	340.57			
11/20/00	247.39	301.38	133.21	340.57			
11/21/00	247.39	301.38	133.21	340.57			
11/22/00	247.39	301.38	133.21	340.57			
11/23/00	247.39	301.38	133.21	340.57			
11/24/00	247.39	301.38	133.21	340.57			
11/25/00	247.39	301.38	133.21	340.57			
11/26/00	247.39	301.38	133.21	340.57			
11/27/00	247.39	301.38	133.21	340.57			
11/28/00	247.39	301.38	133.21	340.57			
11/29/00	247.39	301.38	133.21	340.57			
11/30/00	247.39	301.38	133.21	340.57			
12/01/00	247.39	301.38	133.21	340.57			
12/02/00	247.39	301.38	133.21	340.57			
12/03/00	247.39	301.38	133.21	340.57			
12/04/00	247.39	301.38	133.21	340.57			
12/05/00	247.39	301.38	133.21	340.57			
12/06/00	247.39	301.38	133.21	340.57			
12/07/00	247.39	301.38	133.21	340.57			
12/08/00	247.39	301.38	133.21	340.57			
12/09/00	247.39	301.38	133.21	340.57			
12/10/00	247.39	301.38	133.21	340.57			
12/11/00	247.39	301.38	133.21	340.57			
12/12/00	247.39	301.38	133.21	340.57			
12/13/00	247.39	301.38	133.21	340.57			
12/14/00	247.39	301.38	133.21	340.57			
12/15/00	247.39	301.38	133.21	340.57			
12/16/00	247.39	301.38	133.21	340.57			
12/17/00	247.39	301.38	133.21	340.57			
12/18/00	247.39	301.38	133.21	340.57			
12/19/00	247.39	301.38	133.21	340.57			
12/20/00	247.39	301.38	133.21	340.57			
12/21/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
 Navajo Refining Company, L.L.C.
 Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
09/07/00	247.39	301.38	133.21	340.57			
09/08/00	247.39	301.38	133.21	340.57			
09/09/00	247.39	301.38	133.21	340.57			
09/10/00	247.39	301.38	133.21	340.57			
09/11/00	247.39	301.38	133.21	340.57			
09/12/00	247.39	301.38	133.21	340.57			
09/13/00	247.39	301.38	133.21	340.57			
09/14/00	247.39	301.38	133.21	340.57			
09/15/00	247.39	301.38	133.21	340.57			
09/16/00	247.39	301.38	133.21	340.57			
09/17/00	247.39	301.38	133.21	340.57			
09/18/00	247.39	301.38	133.21	340.57			
09/19/00	247.39	301.38	133.21	340.57			
09/20/00	247.39	301.38	133.21	340.57			
09/21/00	247.39	301.38	133.21	340.57			
09/22/00	247.39	301.38	133.21	340.57			
09/23/00	247.39	301.38	133.21	340.57			
09/24/00	247.39	301.38	133.21	340.57			
09/25/00	247.39	301.38	133.21	340.57			
09/26/00	247.39	301.38	133.21	340.57			
09/27/00	247.39	301.38	133.21	340.57			
09/28/00	247.39	301.38	133.21	340.57			
09/29/00	247.39	301.38	133.21	340.57			
09/30/00	247.39	301.38	133.21	340.57			
10/01/00	247.39	301.38	133.21	340.57			
10/02/00	247.39	301.38	133.21	340.57			
10/03/00	247.39	301.38	133.21	340.57			
10/04/00	247.39	301.38	133.21	340.57			
10/05/00	247.39	301.38	133.21	340.57			
10/06/00	247.39	301.38	133.21	340.57			
10/07/00	247.39	301.38	133.21	340.57			
10/08/00	247.39	301.38	133.21	340.57			
10/09/00	247.39	301.38	133.21	340.57			
10/10/00	247.39	301.38	133.21	340.57			
10/11/00	247.39	301.38	133.21	340.57			
10/12/00	247.39	301.38	133.21	340.57			
10/13/00	247.39	301.38	133.21	340.57			
10/14/00	247.39	301.38	133.21	340.57			
10/15/00	247.39	301.38	133.21	340.57			
10/16/00	247.39	301.38	133.21	340.57			
10/17/00	247.39	301.38	133.21	340.57			
10/18/00	247.39	301.38	133.21	340.57			
10/19/00	247.39	301.38	133.21	340.57			
10/20/00	247.39	301.38	133.21	340.57			
10/21/00	247.39	301.38	133.21	340.57			
10/22/00	247.39	301.38	133.21	340.57			
10/23/00	247.39	301.38	133.21	340.57			
10/24/00	247.39	301.38	133.21	340.57			
10/25/00	247.39	301.38	133.21	340.57			
10/26/00	247.39	301.38	133.21	340.57			
10/27/00	247.39	301.38	133.21	340.57			
10/28/00	247.39	301.38	133.21	340.57			
10/29/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
 Navajo Refining Company, L.L.C.
 Artesia, New Mexico

WDW-1			WDW-2		WDW-3		
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/16/00	247.39	301.38	133.21	340.57			
07/17/00	247.39	301.38	133.21	340.57			
07/18/00	247.39	301.38	133.21	340.57			
07/19/00	247.39	301.38	133.21	340.57			
07/20/00	247.39	301.38	133.21	340.57			
07/21/00	247.39	301.38	133.21	340.57			
07/22/00	247.39	301.38	133.21	340.57			
07/23/00	247.39	301.38	133.21	340.57			
07/24/00	247.39	301.38	133.21	340.57			
07/25/00	247.39	301.38	133.21	340.57			
07/26/00	247.39	301.38	133.21	340.57			
07/27/00	247.39	301.38	133.21	340.57			
07/28/00	247.39	301.38	133.21	340.57			
07/29/00	247.39	301.38	133.21	340.57			
07/30/00	247.39	301.38	133.21	340.57			
07/31/00	247.39	301.38	133.21	340.57			
08/01/00	247.39	301.38	133.21	340.57			
08/02/00	247.39	301.38	133.21	340.57			
08/03/00	247.39	301.38	133.21	340.57			
08/04/00	247.39	301.38	133.21	340.57			
08/05/00	247.39	301.38	133.21	340.57			
08/06/00	247.39	301.38	133.21	340.57			
08/07/00	247.39	301.38	133.21	340.57			
08/08/00	247.39	301.38	133.21	340.57			
08/09/00	247.39	301.38	133.21	340.57			
08/10/00	247.39	301.38	133.21	340.57			
08/11/00	247.39	301.38	133.21	340.57			
08/12/00	247.39	301.38	133.21	340.57			
08/13/00	247.39	301.38	133.21	340.57			
08/14/00	247.39	301.38	133.21	340.57			
08/15/00	247.39	301.38	133.21	340.57			
08/16/00	247.39	301.38	133.21	340.57			
08/17/00	247.39	301.38	133.21	340.57			
08/18/00	247.39	301.38	133.21	340.57			
08/19/00	247.39	301.38	133.21	340.57			
08/20/00	247.39	301.38	133.21	340.57			
08/21/00	247.39	301.38	133.21	340.57			
08/22/00	247.39	301.38	133.21	340.57			
08/23/00	247.39	301.38	133.21	340.57			
08/24/00	247.39	301.38	133.21	340.57			
08/25/00	247.39	301.38	133.21	340.57			
08/26/00	247.39	301.38	133.21	340.57			
08/27/00	247.39	301.38	133.21	340.57			
08/28/00	247.39	301.38	133.21	340.57			
08/29/00	247.39	301.38	133.21	340.57			
08/30/00	247.39	301.38	133.21	340.57			
08/31/00	247.39	301.38	133.21	340.57			
09/01/00	247.39	301.38	133.21	340.57			
09/02/00	247.39	301.38	133.21	340.57			
09/03/00	247.39	301.38	133.21	340.57			
09/04/00	247.39	301.38	133.21	340.57			
09/05/00	247.39	301.38	133.21	340.57			
09/06/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
05/24/00	247.39	301.38	133.21	340.57			
05/25/00	247.39	301.38	133.21	340.57			
05/26/00	247.39	301.38	133.21	340.57			
05/27/00	247.39	301.38	133.21	340.57			
05/28/00	247.39	301.38	133.21	340.57			
05/29/00	247.39	301.38	133.21	340.57			
05/30/00	247.39	301.38	133.21	340.57			
05/31/00	247.39	301.38	133.21	340.57			
06/01/00	247.39	301.38	133.21	340.57			
06/02/00	247.39	301.38	133.21	340.57			
06/03/00	247.39	301.38	133.21	340.57			
06/04/00	247.39	301.38	133.21	340.57			
06/05/00	247.39	301.38	133.21	340.57			
06/06/00	247.39	301.38	133.21	340.57			
06/07/00	247.39	301.38	133.21	340.57			
06/08/00	247.39	301.38	133.21	340.57			
06/09/00	247.39	301.38	133.21	340.57			
06/10/00	247.39	301.38	133.21	340.57			
06/11/00	247.39	301.38	133.21	340.57			
06/12/00	247.39	301.38	133.21	340.57			
06/13/00	247.39	301.38	133.21	340.57			
06/14/00	247.39	301.38	133.21	340.57			
06/15/00	247.39	301.38	133.21	340.57			
06/16/00	247.39	301.38	133.21	340.57			
06/17/00	247.39	301.38	133.21	340.57			
06/18/00	247.39	301.38	133.21	340.57			
06/19/00	247.39	301.38	133.21	340.57			
06/20/00	247.39	301.38	133.21	340.57			
06/21/00	247.39	301.38	133.21	340.57			
06/22/00	247.39	301.38	133.21	340.57			
06/23/00	247.39	301.38	133.21	340.57			
06/24/00	247.39	301.38	133.21	340.57			
06/25/00	247.39	301.38	133.21	340.57			
06/26/00	247.39	301.38	133.21	340.57			
06/27/00	247.39	301.38	133.21	340.57			
06/28/00	247.39	301.38	133.21	340.57			
06/29/00	247.39	301.38	133.21	340.57			
06/30/00	247.39	301.38	133.21	340.57			
07/01/00	247.39	301.38	133.21	340.57			
07/02/00	247.39	301.38	133.21	340.57			
07/03/00	247.39	301.38	133.21	340.57			
07/04/00	247.39	301.38	133.21	340.57			
07/05/00	247.39	301.38	133.21	340.57			
07/06/00	247.39	301.38	133.21	340.57			
07/07/00	247.39	301.38	133.21	340.57			
07/08/00	247.39	301.38	133.21	340.57			
07/09/00	247.39	301.38	133.21	340.57			
07/10/00	247.39	301.38	133.21	340.57			
07/11/00	247.39	301.38	133.21	340.57			
07/12/00	247.39	301.38	133.21	340.57			
07/13/00	247.39	301.38	133.21	340.57			
07/14/00	247.39	301.38	133.21	340.57			
07/15/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
04/01/00	247.39	301.38	133.21	340.57			
04/02/00	247.39	301.38	133.21	340.57			
04/03/00	247.39	301.38	133.21	340.57			
04/04/00	247.39	301.38	133.21	340.57			
04/05/00	247.39	301.38	133.21	340.57			
04/06/00	247.39	301.38	133.21	340.57			
04/07/00	247.39	301.38	133.21	340.57			
04/08/00	247.39	301.38	133.21	340.57			
04/09/00	247.39	301.38	133.21	340.57			
04/10/00	247.39	301.38	133.21	340.57			
04/11/00	247.39	301.38	133.21	340.57			
04/12/00	247.39	301.38	133.21	340.57			
04/13/00	247.39	301.38	133.21	340.57			
04/14/00	247.39	301.38	133.21	340.57			
04/15/00	247.39	301.38	133.21	340.57			
04/16/00	247.39	301.38	133.21	340.57			
04/17/00	247.39	301.38	133.21	340.57			
04/18/00	247.39	301.38	133.21	340.57			
04/19/00	247.39	301.38	133.21	340.57			
04/20/00	247.39	301.38	133.21	340.57			
04/21/00	247.39	301.38	133.21	340.57			
04/22/00	247.39	301.38	133.21	340.57			
04/23/00	247.39	301.38	133.21	340.57			
04/24/00	247.39	301.38	133.21	340.57			
04/25/00	247.39	301.38	133.21	340.57			
04/26/00	247.39	301.38	133.21	340.57			
04/27/00	247.39	301.38	133.21	340.57			
04/28/00	247.39	301.38	133.21	340.57			
04/29/00	247.39	301.38	133.21	340.57			
04/30/00	247.39	301.38	133.21	340.57			
05/01/00	247.39	301.38	133.21	340.57			
05/02/00	247.39	301.38	133.21	340.57			
05/03/00	247.39	301.38	133.21	340.57			
05/04/00	247.39	301.38	133.21	340.57			
05/05/00	247.39	301.38	133.21	340.57			
05/06/00	247.39	301.38	133.21	340.57			
05/07/00	247.39	301.38	133.21	340.57			
05/08/00	247.39	301.38	133.21	340.57			
05/09/00	247.39	301.38	133.21	340.57			
05/10/00	247.39	301.38	133.21	340.57			
05/11/00	247.39	301.38	133.21	340.57			
05/12/00	247.39	301.38	133.21	340.57			
05/13/00	247.39	301.38	133.21	340.57			
05/14/00	247.39	301.38	133.21	340.57			
05/15/00	247.39	301.38	133.21	340.57			
05/16/00	247.39	301.38	133.21	340.57			
05/17/00	247.39	301.38	133.21	340.57			
05/18/00	247.39	301.38	133.21	340.57			
05/19/00	247.39	301.38	133.21	340.57			
05/20/00	247.39	301.38	133.21	340.57			
05/21/00	247.39	301.38	133.21	340.57			
05/22/00	247.39	301.38	133.21	340.57			
05/23/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/13/01	250.72	177.73	139.56	170.14			
02/14/01	246.00	179.86	152.98	193.68			
02/15/01	222.58	153.33	176.46	189.72			
02/16/01	207.06	142.05	163.06	175.16			
02/17/01	232.05	172.86	095.93	114.48			
02/18/01	271.89	294.57	000.30	000.00			
02/19/01	249.28	249.01	000.42	000.00			
02/20/01	283.89	297.82	000.38	000.02			
02/21/01	263.62	258.16	000.33	000.05			
02/22/01	270.52	239.51	000.36	000.04			
02/23/01	247.20	211.70	000.29	000.07			
02/24/01	276.57	288.67	000.35	000.06			
02/25/01	260.10	271.37	000.23	000.08			
02/26/01	283.43	292.77	000.27	000.05			
02/27/01	289.80	282.94	000.21	000.08			
02/28/01	292.19	290.97	000.24	000.06			
03/01/01	260.34	198.19	113.76	152.48			
03/02/01	223.39	153.02	139.22	161.24			
03/03/01	261.12	219.34	071.16	082.20			
03/04/01	284.43	264.53	000.46	000.00			
03/05/01	290.66	291.97	000.41	000.00			
03/06/01	270.16	267.50	000.50	000.00			
03/07/01	272.28	276.84	000.44	000.00			
03/08/01	281.18	287.93	007.09	008.98			
03/09/01	218.86	140.38	171.96	190.35			
03/10/01	201.34	130.85	165.72	178.13			
03/11/01	279.93	282.07	031.72	035.16			
03/12/01	235.91	195.27	000.48	000.00			
03/13/01	225.04	170.99	000.60	000.01			
03/14/01	281.18	292.66	000.52	000.00			
03/15/01	248.54	236.45	000.58	000.00			
03/16/01	268.93	270.18	000.58	000.00			
03/17/01	252.53	211.38	000.55	000.01			
03/18/01	236.25	200.19	000.64	000.00			
03/19/01	247.16	222.54	000.62	000.00			
03/20/01	223.04	176.78	000.54	000.00			
03/21/01	229.29	172.86	000.54	000.00			
03/22/01	214.62	148.81	000.40	000.00			
03/23/01	248.56	226.23	000.09	000.00			
03/24/01	261.44	253.57	000.14	000.00			
03/25/01	232.89	224.83	000.23	000.00			
03/26/01	214.79	154.48	000.18	000.00			
03/27/01	192.47	104.77	000.19	000.00			
03/28/01	214.73	184.36	000.19	000.00			
03/29/01	220.44	173.66	000.21	000.00			
03/30/01	230.92	210.87	000.17	000.00			
03/31/01	226.26	177.12	000.11	000.00			
04/01/01	188.74	139.94	000.15	000.00			
04/02/01	231.66	210.76	000.12	000.00			
04/03/01	227.31	207.72	000.15	000.00			
04/04/01	234.71	264.45	000.16	000.00			
04/05/01	258.22	298.35	000.11	000.00			
04/06/01	257.11	264.45	000.16	000.00			

Historical Injection Rates and Surface Injection Pressures
 Navajo Refining Company, L.L.C.
 Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
04/07/01	251.26	254.50	000.19	000.00			
04/08/01	265.43	301.80	000.17	000.00			
04/09/01	258.45	266.39	040.59	052.90			
04/10/01	145.18	063.74	138.99	091.92			
04/11/01	200.51	192.68	090.48	103.12			
04/12/01	272.27	302.27	000.54	000.00			
04/13/01	196.07	157.76	131.83	127.81			
04/14/01	245.89	246.22	062.38	073.22			
04/15/01	207.32	191.68	000.84	000.00			
04/16/01	214.61	206.11	000.98	000.00			
04/17/01	245.94	274.21	000.70	000.00			
04/18/01	248.23	282.57	000.43	000.00			
04/19/01	264.78	313.33	000.40	000.00			
04/20/01	218.01	224.87	000.50	000.00			
04/21/01	250.72	262.75	000.52	000.00			
04/22/01	255.07	284.21	000.28	000.00			
04/23/01	233.33	234.61	000.15	000.00			
04/24/01	219.61	219.61	000.18	000.00			
04/25/01	256.39	307.97	000.18	000.00			
04/26/01	261.07	318.71	000.14	000.00			
04/27/01	257.23	295.76	000.19	000.00			
04/28/01	240.87	265.02	000.21	000.00			
04/29/01	257.61	299.68	000.27	000.00			
04/30/01	246.12	267.95	039.50	045.49			
05/01/01	237.32	271.48	087.81	111.95			
05/02/01	206.29	188.03	139.84	153.55			
05/03/01	205.22	160.97	130.25	163.06			
05/04/01	195.11	172.99	147.63	163.78			
05/05/01	230.46	247.15	057.78	074.81			
05/06/01	251.73	304.30	000.69	000.00			
05/07/01	177.12	162.26	084.94	108.02			
05/08/01	244.91	290.15	031.15	044.86			
05/09/01	222.80	238.54	149.48	205.58			
05/10/01	239.53	275.78	000.60	000.00			
05/11/01	222.65	247.98	063.70	061.96			
05/12/01	171.34	136.86	156.85	179.94			
05/13/01	193.09	193.36	169.94	242.32			
05/14/01	163.36	117.80	154.83	160.80			
05/15/01	200.72	210.83	079.56	102.38			
05/16/01	246.26	294.90	000.85	000.17			
05/17/01	100.34	121.34	124.32	217.28			
05/18/01	149.54	189.21	090.98	159.32			
05/19/01	188.30	189.06	086.40	092.52			
05/20/01	199.50	181.00	184.21	249.74			
05/21/01	195.03	201.07	179.45	245.88			
05/22/01	176.62	168.13	168.10	214.98			
05/23/01	163.30	162.22	142.05	179.28			
05/24/01	223.72	297.06	077.18	119.70			
05/25/01	193.46	205.52	170.76	236.87			
05/26/01	172.38	177.51	164.76	218.27			
05/27/01	199.15	224.41	142.03	221.85			
05/28/01	173.76	173.51	166.94	223.32			
05/29/01	142.96	114.97	142.59	154.26			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
05/30/01	164.45	155.54	154.34	190.94			
05/31/01	129.92	136.51	123.13	147.57			
06/01/01	133.24	122.92	130.35	151.61			
06/02/01	164.83	167.05	158.65	201.13			
06/03/01	159.56	151.29	154.06	181.32			
06/04/01	142.08	122.29	139.33	149.34			
06/05/01	132.99	131.47	133.49	154.71			
06/06/01	176.68	204.43	163.10	232.96			
06/07/01	176.46	211.39	160.96	236.68			
06/08/01	189.41	232.77	166.04	254.31			
06/09/01	167.15	209.30	103.72	153.67			
06/10/01	177.24	192.29	161.86	231.62			
06/11/01	177.50	193.55	163.49	232.61			
06/12/01	163.38	159.17	152.84	196.56			
06/13/01	223.92	308.65	035.01	037.39			
06/14/01	177.68	188.54	152.31	222.31			
06/15/01	162.71	144.23	152.49	183.30			
06/16/01	162.87	157.03	151.91	194.86			
06/17/01	191.71	213.16	168.02	258.21			
06/18/01	177.97	187.05	146.54	205.30			
06/19/01	168.96	157.62	152.26	195.06			
06/20/01	145.46	130.39	137.64	161.05			
06/21/01	119.45	082.00	113.14	097.02			
06/22/01	154.83	155.40	139.12	167.38			
06/23/01	129.85	104.16	118.80	124.37			
06/24/01	159.47	163.20	143.47	186.57			
06/25/01	162.47	191.31	141.67	209.81			
06/26/01	148.19	141.51	133.10	159.96			
06/27/01	151.74	160.78	145.16	192.61			
06/28/01	162.29	183.26	156.10	223.46			
06/29/01	174.30	232.68	033.99	046.82			
06/30/01	233.64	338.07	000.68	000.00			
07/01/01	236.84	332.45	044.15	069.43			
07/02/01	182.12	210.17	163.92	244.73			
07/03/01	178.09	212.84	149.10	228.00			
07/04/01	192.39	228.46	170.32	266.81			
07/05/01	208.80	295.45	041.53	043.31			
07/06/01	221.15	292.34	073.86	130.29			
07/07/01	212.38	285.64	044.57	065.49			
07/08/01	218.45	305.08	045.36	075.23			
07/09/01	240.83	348.64	000.91	000.00			
07/10/01	226.36	335.37	000.84	000.00			
07/11/01	162.10	190.82	127.20	204.21			
07/12/01	173.73	200.81	133.30	217.06			
07/13/01	226.99	329.08	000.86	000.00			
07/14/01	199.17	247.50	135.75	207.88			
07/15/01	194.30	237.39	171.51	275.45			
07/16/01	194.83	236.24	172.53	275.09			
07/17/01	174.03	211.59	160.68	247.80			
07/18/01	179.46	214.83	165.15	254.63			
07/19/01	201.73	259.13	172.07	279.61			
07/20/01	181.00	225.52	171.68	272.37			
07/21/01	164.43	178.61	157.09	221.80			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
07/22/01	195.09	255.17	074.30	103.08			
07/23/01	201.71	265.19	000.74	000.00			
07/24/01	193.29	233.04	000.93	000.00			
07/25/01	240.17	349.68	000.96	000.00			
07/26/01	205.53	260.66	083.01	124.15			
07/27/01	200.58	232.79	097.78	138.47			
07/28/01	214.40	295.98	075.19	131.41			
07/29/01	183.44	210.03	135.08	206.41			
07/30/01	179.86	213.92	100.75	146.85			
07/31/01	215.35	309.62	000.15	000.00			
08/01/01	220.28	308.54	075.02	136.09			
08/02/01	217.29	312.60	029.83	032.24			
08/03/01	250.09	375.93	000.39	000.00			
08/04/01	248.94	373.39	000.27	000.00			
08/05/01	214.15	277.18	090.29	154.50			
08/06/01	152.06	147.30	135.72	185.78			
08/07/01	218.67	305.36	015.65	014.50			
08/08/01	229.17	330.86	000.18	000.00			
08/09/01	214.39	278.82	115.49	211.74			
08/10/01	211.01	274.90	120.51	176.65			
08/11/01	186.61	247.18	165.42	297.05			
08/12/01	169.17	204.03	152.96	255.70			
08/13/01	210.21	312.10	058.88	114.14			
08/14/01	218.87	319.20	011.16	020.12			
08/15/01	218.22	296.37	162.82	308.11			
08/16/01	227.98	353.60	187.78	379.39			
08/17/01	249.32	419.40	204.15	423.82			
08/18/01	228.68	348.42	181.19	362.94			
08/19/01	197.29	244.29	166.70	287.04			
08/20/01	168.45	177.54	103.72	130.38			
08/21/01	214.79	276.81	000.19	000.00			
08/22/01	208.04	259.24	056.82	090.51			
08/23/01	180.82	214.28	155.62	249.07			
08/24/01	195.70	256.89	168.29	293.63			
08/25/01	188.80	247.38	162.43	284.32			
08/26/01	176.47	234.97	149.45	269.86			
08/27/01	206.16	286.25	145.21	281.10			
08/28/01	119.33	150.53	149.12	292.99			
08/29/01	060.98	077.56	091.51	182.93			
08/30/01	122.81	149.54	031.88	067.36			
08/31/01	123.75	051.06	092.12	181.61			
09/01/01	171.86	117.21	172.83	294.73			
09/02/01	262.47	182.88	153.36	237.62			
09/03/01	220.24	158.02	128.00	184.89			
09/04/01	239.48	154.88	043.03	062.46			
09/05/01	268.04	208.25	000.19	000.01			
09/06/01	256.06	212.04	000.14	000.01			
09/07/01	290.11	237.35	000.24	000.04			
09/08/01	218.59	146.76	078.86	097.13			
09/09/01	252.38	178.59	055.69	079.50			
09/10/01	272.81	205.50	000.17	000.00			
09/11/01	286.01	228.38	000.20	000.00			
09/12/01	276.33	218.14	000.17	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/13/01	295.88	246.95	000.20	000.00			
09/14/01	256.43	203.26	000.17	000.00			
09/15/01	279.35	228.75	000.16	000.00			
09/16/01	257.19	200.56	000.14	000.00			
09/17/01	270.73	229.18	000.12	000.00			
09/18/01	263.80	207.66	000.12	000.01			
09/19/01	263.89	206.07	000.18	000.02			
09/20/01	283.32	240.89	000.18	000.03			
09/21/01	271.43	224.52	000.17	000.02			
09/22/01	261.69	186.69	087.67	139.65			
09/23/01	286.85	242.24	000.20	000.00			
09/24/01	243.15	182.54	000.13	000.00			
09/25/01	272.09	227.65	000.29	000.00			
09/26/01	250.31	191.31	072.23	103.47			
09/27/01	158.59	107.80	098.53	134.89			
09/28/01	270.46	211.72	061.39	093.90			
09/29/01	282.02	255.77	000.28	000.00			
09/30/01	285.37	265.64	000.30	000.00			
10/01/01	297.68	276.25	000.18	000.00			
10/02/01	264.63	199.94	078.61	121.91			
10/03/01	240.71	165.20	136.95	207.54			
10/04/01	206.22	144.60	127.18	178.84			
10/05/01	262.25	220.10	047.55	065.70			
10/06/01	282.99	245.60	000.17	000.02			
10/07/01	255.76	217.22	040.44	063.17			
10/08/01	249.72	186.33	074.72	117.67			
10/09/01	263.39	239.15	000.23	000.00			
10/10/01	245.11	187.01	077.96	115.02			
10/11/01	193.77	148.21	138.74	211.11			
10/12/01	240.90	190.33	147.08	238.09			
10/13/01	270.95	245.84	071.57	122.68			
10/14/01	268.43	237.68	082.75	145.84			
10/15/01	249.18	201.30	084.00	143.40			
10/16/01	289.41	292.69	000.14	000.00			
10/17/01	274.07	268.16	000.17	000.00			
10/18/01	259.25	242.97	000.16	000.00			
10/19/01	261.69	257.21	000.13	000.00			
10/20/01	290.44	293.75	000.17	000.00			
10/21/01	267.88	266.71	000.16	000.00			
10/22/01	291.53	301.48	000.13	000.00			
10/23/01	277.98	272.10	000.15	000.00			
10/24/01	272.66	260.93	000.22	000.00			
10/25/01	282.89	285.21	000.18	000.00			
10/26/01	290.73	307.42	000.15	000.00			
10/27/01	285.46	293.39	000.16	000.00			
10/28/01	231.61	178.43	100.66	164.56			
10/29/01	295.08	300.43	000.17	000.00			
10/30/01	259.65	239.24	000.15	000.00			
10/31/01	241.40	233.84	041.47	072.61			
11/01/01	243.69	200.71	141.48	243.98			
11/02/01	241.29	202.57	151.29	251.05			
11/03/01	231.46	183.62	146.16	234.28			
11/04/01	212.15	175.52	109.53	170.90			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
11/05/01	283.58	305.59	000.12	000.00			
11/06/01	245.35	240.51	000.15	000.00			
11/07/01	265.57	270.84	000.21	000.00			
11/08/01	254.88	269.18	000.19	000.00			
11/09/01	268.20	303.54	000.17	000.00			
11/10/01	270.91	306.33	000.21	000.00			
11/11/01	253.44	269.88	000.09	000.00			
11/12/01	277.64	308.74	000.20	000.00			
11/13/01	269.76	304.80	000.14	000.00			
11/14/01	270.91	306.08	000.18	000.00			
11/15/01	218.47	212.15	145.68	258.73			
11/16/01	211.27	198.43	139.02	245.07			
11/17/01	185.13	163.06	118.67	192.59			
11/18/01	229.29	229.84	046.16	088.18			
11/19/01	266.12	302.63	000.20	000.00			
11/20/01	254.99	277.02	000.21	000.00			
11/21/01	241.74	281.52	000.17	000.00			
11/22/01	269.11	305.22	020.62	039.02			
11/23/01	170.91	150.26	117.52	189.05			
11/24/01	164.88	142.42	109.27	168.30			
11/25/01	223.35	222.19	122.14	216.95			
11/26/01	188.48	184.72	122.94	216.10			
11/27/01	230.15	244.12	094.09	174.95			
11/28/01	210.95	218.71	143.04	272.64			
11/29/01	071.29	066.04	038.18	071.54			
11/30/01	026.75	049.12	000.00	019.40			
12/01/01	049.27	090.38	000.00	035.57			
12/02/01	071.80	131.64	000.00	051.74			
12/03/01	094.32	172.91	000.00	067.91			
12/04/01	116.85	214.17	000.00	084.08			
12/05/01	139.37	255.43	000.00	100.25			
12/06/01	161.90	296.70	000.00	116.42			
12/07/01	184.42	337.96	000.00	132.59			
12/08/01	206.95	379.23	000.00	148.76			
12/09/01	229.47	420.49	000.00	164.93			
12/10/01	252.00	461.75	000.00	181.10			
12/11/01	254.08	496.16	011.32	217.05			
12/12/01	189.09	499.86	118.00	387.70			
12/13/01	205.27	499.86	137.00	440.25			
12/14/01	213.31	499.86	143.72	457.50			
12/15/01	214.67	499.86	128.72	424.48			
12/16/01	223.28	499.86	137.23	441.90			
12/17/01	212.74	499.86	139.03	440.08			
12/18/01	213.03	499.86	153.50	474.93			
12/19/01	210.56	499.86	133.39	437.32			
12/20/01	203.53	499.86	132.11	430.24			
12/21/01	241.52	499.86	155.14	463.95			
12/22/01	244.45	499.86	168.38	489.21			
12/23/01	229.74	499.86	166.31	479.50			
12/24/01	218.10	499.86	158.52	469.50			
12/25/01	223.52	499.86	162.10	473.16			
12/26/01	203.23	499.86	217.02	470.23			
12/27/01	188.56	499.86	144.21	451.04			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/28/01	221.47	499.86	159.13	471.84			
12/29/01	226.86	499.86	160.73	474.25			
12/30/01	225.64	499.86	159.74	476.04			
12/31/01	228.19	499.86	162.33	484.57			
01/01/02	333.38	499.86	145.08	484.92			
01/02/02	207.39	499.86	143.74	454.84			
01/03/02	226.39	499.86	155.76	481.56			
01/04/02	227.09	499.86	143.62	468.48			
01/05/02	211.99	499.86	147.46	462.33			
01/06/02	228.97	499.86	159.83	484.14			
01/07/02	226.49	499.86	158.69	480.87			
01/08/02	223.51	499.86	154.33	475.56			
01/09/02	222.67	499.86	152.35	476.65			
01/10/02	221.09	499.86	151.58	472.51			
01/11/02	210.97	499.86	144.82	463.16			
01/12/02	229.85	499.86	157.02	484.28			
01/13/02	227.71	499.86	156.80	481.54			
01/14/02	211.20	499.86	149.40	463.49			
01/15/02	220.14	499.86	151.26	471.75			
01/16/02	220.07	499.86	152.19	478.42			
01/17/02	212.07	499.86	133.49	447.68			
01/18/02	210.48	499.86	147.62	474.40			
01/19/02	212.15	499.86	146.61	468.50			
01/20/02	223.70	499.86	154.47	484.98			
01/21/02	200.01	499.86	139.02	450.31			
01/22/02	206.71	499.86	145.73	469.24			
01/23/02	169.97	499.86	121.37	424.07			
01/24/02	215.93	499.86	151.08	479.88			
01/25/02	199.39	499.86	138.40	465.24			
01/26/02	195.86	499.86	134.08	447.67			
01/27/02	209.42	499.86	146.70	466.74			
01/28/02	204.02	499.86	140.33	461.57			
02/01/02	257.80	310.10	041.53	092.91			
02/02/02	210.13	245.38	111.43	244.19			
02/03/02	249.93	285.78	145.88	324.11			
02/04/02	262.40	330.63	154.12	368.77			
02/05/02	258.69	319.26	148.14	357.58			
02/06/02	259.67	326.96	152.38	366.86			
02/07/02	267.47	358.46	136.73	333.39			
02/08/02	304.60	424.89	093.27	229.56			
02/09/02	310.54	426.79	176.71	427.88			
02/10/02	296.15	391.45	168.07	400.22			
02/11/02	260.62	349.09	148.41	341.78			
02/12/02	239.12	339.64	123.86	280.32			
02/13/02	200.23	179.34	099.38	247.80			
02/14/02	245.91	146.19	045.73	000.46			
02/15/02	196.24	003.16	092.96	003.81			
02/16/02	344.50	006.80	094.11	008.19			
02/17/02	387.41	010.45	095.25	012.57			
02/18/02	370.93	014.09	096.40	016.95			
02/19/02	339.26	017.73	097.54	021.32			
02/20/02	291.34	021.37	098.69	025.70			
02/21/02	236.58	025.01	099.84	030.08			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
02/22/02	238.61	028.65	100.98	034.46			
02/23/02	206.46	032.29	102.13	038.84			
02/24/02	224.62	035.93	103.28	043.22			
02/25/02	216.36	039.58	104.42	047.59			
02/26/02	199.50	043.22	105.57	051.97			
02/27/02	246.02	046.86	106.71	056.35			
02/28/02	352.61	050.50	107.86	060.73			
03/01/02	357.34	054.14	109.01	065.11			
03/02/02	351.61	057.78	110.15	069.49			
03/03/02	370.63	061.42	111.30	073.86			
03/04/02	329.05	065.06	112.45	078.24			
03/05/02	297.14	068.71	113.59	082.62			
03/06/02	254.39	072.35	114.74	087.00			
03/07/02	256.84	075.99	115.88	091.38			
03/08/02	258.40	079.63	117.03	095.76			
03/09/02	309.84	083.27	118.18	100.14			
03/10/02	308.87	086.91	119.32	104.51			
03/11/02	250.75	090.55	120.47	108.89			
03/12/02	259.87	094.19	121.62	113.27			
03/13/02	318.62	097.84	122.76	117.65			
03/14/02	266.33	101.48	123.91	122.03			
03/15/02	260.40	105.12	125.05	126.41			
03/16/02	223.02	108.76	126.20	130.78			
03/17/02	264.38	112.40	127.35	135.16			
03/18/02	210.99	116.04	128.49	139.54			
03/19/02	184.90	119.68	129.64	143.92			
03/20/02	221.73	123.32	130.78	148.30			
03/21/02	268.11	126.97	131.93	152.68			
03/22/02	223.07	130.61	133.08	157.05			
03/23/02	184.58	134.25	134.22	161.43			
03/24/02	227.72	137.89	135.37	165.81			
03/25/02	262.80	141.53	136.52	170.19			
03/26/02	184.75	145.17	137.66	174.57			
03/27/02	188.34	148.81	138.81	178.95			
03/28/02	205.80	152.45	139.95	183.33			
03/29/02	245.05	156.10	141.10	187.70			
03/30/02	235.80	159.74	142.25	192.08			
03/31/02	242.48	163.38	143.39	196.46			
04/01/02	273.07	167.02	144.54	200.84			
04/02/02	203.40	170.66	145.69	205.22			
04/03/02	211.11	174.30	146.83	209.60			
04/04/02	231.56	177.94	147.98	213.97			
04/05/02	177.92	181.01	148.94	217.66			
06/04/02	120.40	314.95	122.46	146.22			
06/05/02	181.96	499.86	109.48	107.25			
06/06/02	220.53	499.86	062.43	061.51			
06/07/02	275.03	499.86	000.57	000.04			
06/08/02	243.12	499.86	081.86	106.61			
06/09/02	242.65	499.86	146.63	236.60			
06/10/02	209.91	499.86	136.68	182.41			
06/11/02	241.80	499.86	149.20	225.49			
06/12/02	223.58	499.86	141.12	194.49			
06/13/02	229.94	486.81	140.34	201.91			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
06/14/02	244.62	499.86	146.83	218.09			
06/15/02	220.90	499.86	119.95	174.84			
06/16/02	248.92	499.86	158.43	257.14			
06/17/02	249.44	499.86	151.25	251.53			
06/18/02	219.68	499.86	137.70	193.19			
06/19/02	206.75	499.86	121.65	140.38			
06/20/02	226.99	357.63	133.16	173.36			
06/21/02	283.76	266.44	060.00	091.55			
06/22/02	263.02	205.94	148.76	245.09			
06/23/02	229.46	132.50	094.70	137.24			
06/24/02	350.43	059.06	067.82	106.79			
06/25/02	404.59	003.40	003.90	006.14			
06/26/02	391.67	000.00	000.00	000.00			
06/27/02	355.36	000.00	000.00	000.00			
06/28/02	397.00	000.00	000.00	000.00			
06/29/02	400.70	000.00	000.00	000.00			
06/30/02	321.32	000.00	000.00	000.00			
07/01/02	287.03	000.00	000.00	000.00			
07/02/02	276.47	018.40	000.29	000.46			
07/03/02	269.87	000.00	000.00	000.00			
07/04/02	226.30	240.73	072.58	110.78			
07/05/02	230.23	499.86	161.08	272.13			
07/06/02	226.77	499.86	153.31	253.27			
07/07/02	193.64	499.86	131.26	200.46			
07/08/02	173.61	499.86	115.42	165.13			
07/09/02	199.34	499.86	133.01	196.85			
07/10/02	177.99	499.86	117.31	173.79			
07/11/02	201.03	499.86	131.19	195.17			
07/12/02	192.99	499.86	127.16	205.59			
07/13/02	218.05	499.86	140.60	220.71			
07/14/02	203.75	499.86	132.31	202.14			
07/15/02	167.22	499.86	109.86	137.87			
07/16/02	186.50	499.86	119.84	166.62			
07/17/02	198.82	499.86	131.43	198.89			
07/18/02	222.52	499.86	142.18	226.33			
07/19/02	204.57	499.86	132.12	203.61			
07/20/02	207.04	499.86	130.54	210.92			
07/21/02	209.08	499.86	134.52	215.74			
07/22/02	196.62	499.86	125.67	187.36			
07/23/02	189.65	499.86	121.68	197.53			
07/24/02	199.80	499.86	128.47	197.30			
07/25/02	227.32	499.86	134.38	231.29			
07/26/02	198.91	499.86	132.40	203.66			
07/27/02	181.64	499.86	116.23	162.83			
07/28/02	186.28	499.86	119.69	166.22			
07/29/02	169.99	499.86	105.79	142.25			
07/30/02	163.51	499.86	108.15	132.76			
07/31/02	177.07	499.86	112.74	151.65			
08/01/02	231.55	499.86	147.10	250.45			
08/02/02	231.55	499.86	129.15	203.36			
08/03/02	231.55	499.86	145.77	251.43			
08/04/02	231.55	499.86	122.12	182.22			
08/05/02	231.55	499.86	110.11	141.27			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
08/06/02	231.55	499.86	104.00	136.35			
08/07/02	222.00	393.84	075.68	111.99			
08/08/02	214.13	272.45	057.62	103.66			
08/09/02	165.07	156.74	126.19	192.11			
08/10/02	184.41	202.99	142.78	239.70			
08/11/02	180.06	202.51	140.09	248.75			
08/12/02	213.28	269.55	159.61	303.19			
08/13/02	222.72	288.13	085.37	166.61			
08/14/02	202.12	250.25	078.09	122.09			
08/15/02	181.86	218.38	141.09	247.02			
08/16/02	194.09	227.97	150.83	258.91			
08/17/02	202.65	235.58	154.70	267.57			
08/18/02	175.61	197.64	136.22	226.82			
08/19/02	203.11	258.47	154.65	290.97			
08/20/02	231.85	306.33	135.59	268.84			
08/21/02	168.71	193.92	132.24	229.52			
08/22/02	186.38	232.21	148.27	269.91			
08/23/02	198.06	253.95	155.24	293.57			
08/24/02	174.17	205.54	139.89	241.94			
08/25/02	182.04	203.19	145.00	242.45			
08/26/02	166.76	178.51	131.71	216.85			
08/27/02	178.11	193.61	141.34	233.82			
08/28/02	161.66	166.30	131.84	204.35			
08/29/02	166.81	175.84	132.94	215.70			
08/30/02	149.10	159.99	122.43	197.21			
09/01/02	159.27	166.72	125.52	190.35			
09/02/02	138.55	147.59	110.93	171.56			
09/03/02	152.14	148.81	121.59	178.10			
09/04/02	158.92	157.41	125.00	187.52			
09/05/02	133.83	121.69	106.50	149.02			
09/06/02	149.71	180.81	119.84	212.96			
09/07/02	139.92	155.30	113.20	186.54			
09/08/02	116.63	097.22	094.00	127.85			
09/09/02	161.35	181.81	123.70	203.43			
09/10/02	176.80	217.38	129.22	227.13			
09/11/02	197.50	251.43	153.74	287.15			
09/12/02	191.03	235.37	148.57	271.41			
09/13/02	172.97	217.64	135.13	250.25			
09/14/02	187.53	236.52	145.46	271.21			
09/15/02	177.88	216.01	140.98	250.89			
09/16/02	175.84	213.93	139.77	249.41			
09/17/02	171.75	205.54	134.86	240.32			
09/18/02	168.51	197.35	134.56	232.87			
09/19/02	164.04	203.95	132.27	237.34			
09/20/02	172.75	206.06	136.48	244.66			
09/21/02	193.26	245.27	153.37	287.34			
09/22/02	165.82	200.82	131.66	236.82			
09/23/02	163.04	188.82	117.47	196.88			
09/24/02	151.30	177.60	120.95	210.70			
09/25/02	176.13	215.27	138.16	248.12			
09/26/02	198.59	261.16	139.19	264.97			
09/27/02	164.22	206.99	127.32	237.20			
09/28/02	176.13	227.13	134.68	259.23			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/29/02	180.01	220.22	137.74	255.56			
09/30/02	184.70	232.26	141.63	268.79			
10/01/02	182.59	235.65	140.59	272.79			
10/02/02	176.35	232.83	135.03	268.51			
10/03/02	179.99	233.41	137.11	271.39			
10/04/02	193.13	251.94	147.60	293.72			
10/05/02	163.65	199.72	126.01	237.88			
10/06/02	164.12	197.91	127.69	238.11			
10/07/02	155.94	176.18	112.95	186.07			
10/08/02	197.62	307.39	132.37	289.75			
10/09/02	234.88	386.00	177.90	419.91			
10/10/02	190.31	255.12	051.74	095.38			
10/11/02	200.63	287.07	010.42	021.18			
10/12/02	222.04	314.73	108.23	215.00			
10/13/02	212.47	292.22	159.60	326.04			
10/14/02	177.96	229.47	133.92	259.94			
10/15/02	185.44	249.55	138.08	278.11			
10/16/02	169.82	218.48	127.65	246.31			
10/17/02	175.19	234.27	133.59	263.92			
10/18/02	170.99	222.12	127.47	249.85			
10/19/02	187.58	246.84	131.17	252.00			
10/20/02	149.86	179.66	114.41	208.94			
10/21/02	139.44	164.21	106.50	191.95			
10/22/02	139.70	137.58	107.25	169.00			
10/23/02	113.21	115.33	088.08	140.96			
10/24/02	140.40	142.63	102.42	219.38			
10/25/02	222.14	206.05	021.89	032.00			
10/26/02	240.35	199.16	169.77	233.24			
10/27/02	213.67	179.26	153.10	206.74			
10/27/02	234.62	189.73	164.08	221.24			
10/28/02	229.61	213.23	105.50	137.93			
10/29/02	196.02	137.00	145.95	177.66			
10/30/02	158.86	099.43	124.21	133.72			
10/31/02	163.10	099.26	125.90	136.05			
11/01/02	179.21	120.51	132.25	147.21			
11/02/02	189.18	134.08	087.24	089.43			
11/03/02	201.63	134.12	000.00	000.03			
11/04/02	217.34	167.04	000.00	000.07			
11/05/02	242.22	218.55	000.00	000.07			
11/06/02	224.19	207.47	000.00	000.08			
11/07/02	237.87	230.61	000.00	000.07			
11/08/02	256.96	252.25	000.00	000.05			
11/09/02	265.46	259.42	000.00	000.04			
11/10/02	219.11	205.87	000.00	000.06			
11/11/02	264.03	278.43	000.00	000.06			
11/12/02	266.14	277.44	000.00	000.10			
11/13/02	250.29	247.83	000.00	000.10			
11/14/02	193.72	155.86	114.97	148.76			
11/15/02	207.76	162.63	150.26	198.27			
11/16/02	183.11	131.19	139.30	169.14			
11/17/02	153.36	077.86	115.92	114.23			
11/18/02	146.88	078.55	114.35	112.64			
11/19/02	156.27	126.02	073.42	092.08			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
11/20/02	195.62	149.07	147.11	189.45			
11/21/02	169.03	100.53	129.68	141.22			
11/22/02	143.39	080.35	114.79	115.52			
11/23/02	141.21	076.74	113.94	112.27			
11/24/02	164.19	085.76	125.57	129.18			
11/25/02	173.49	122.15	133.10	164.12			
11/26/02	164.25	131.51	127.05	169.78			
11/27/02	169.27	135.39	123.79	163.28			
11/28/02	175.53	151.50	144.27	187.80			
11/29/02	191.14	144.34	142.40	181.40			
11/30/02	181.72	140.55	134.78	175.53			
12/01/02	163.82	125.28	124.09	157.71			
12/02/02	163.78	125.29	124.07	157.66			
12/03/02	166.11	125.31	126.39	157.69			
12/04/02	129.18	167.55					
12/05/02	135.69	202.50					
12/06/02	145.84	204.79					
12/07/02	190.47	179.23	137.49	205.66			
12/08/02	206.39	193.91	144.37	211.20			
12/09/02	195.76	183.60	137.51	199.90			
12/10/02	200.85	195.71	149.73	233.26			
12/11/02	184.02	157.37	139.88	198.52			
12/12/02	183.30	140.47	133.38	171.60			
12/13/02	148.65	097.02	117.02	128.59			
12/14/02	197.92	179.14	150.35	215.41			
12/15/02	195.45	182.58	146.01	220.74			
12/16/02	177.49	130.06	134.41	169.66			
12/17/02	148.81	100.70	116.98	134.18			
12/18/02	174.74	130.29	135.32	168.73			
12/19/02	169.39	134.15	129.04	170.98			
12/20/02	175.36	120.94	133.95	161.62			
12/21/02	200.98	177.47	151.22	219.50			
12/22/02	193.99	166.34	132.57	183.77			
12/23/02	176.86	149.24	132.56	182.37			
12/24/02	155.74	158.30	135.47	192.87			
12/25/02	077.79	177.36	145.54	214.18			
12/26/02	115.55	147.03	123.72	168.50			
12/27/02	159.98	196.62	131.09	199.48			
12/28/02	199.86	184.00	149.35	224.04			
12/29/02	193.27	175.49	144.30	214.32			
12/30/02	204.02	178.21	148.38	220.06			
12/31/02	176.97	139.65	130.94	177.39			
01/01/03	196.08	167.65	144.89	207.67			
01/02/03	165.87	128.86	122.09	164.20			
01/03/03	175.45	152.79	071.82	092.65			
01/04/03	209.31	189.74	152.98	227.18			
01/05/03	200.95	169.93	145.75	207.20			
01/06/03	184.01	164.81	135.66	197.52			
01/07/03	168.71	142.06	121.06	172.43			
01/08/03	211.29	200.15	116.77	162.87			
01/09/03	224.38	230.89	087.80	136.29			
01/10/03	176.94	154.01	131.67	187.80			
01/11/03	181.39	159.83	133.41	196.24			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/12/03	195.84	179.40	138.04	200.47			
01/13/03	185.59	154.20	132.31	179.97			
01/14/03	232.68	131.45	118.54	155.90			
01/15/03	200.04	178.39	143.58	209.42			
01/16/03	171.11	153.13	122.61	181.02			
01/17/03	197.96	183.26	140.93	214.91			
01/18/03	181.78	161.60	109.30	158.86			
01/19/03	109.77	421.75	129.97	203.18			
01/20/03	172.85	499.86	139.79	213.50			
01/21/03	184.45	499.86	136.15	205.41			
01/22/03	161.74	499.86	120.23	181.85			
01/23/03	188.02	287.35	145.18	208.18			
01/24/03	127.97	451.81	163.91	279.23			
01/25/03	142.35	499.86	159.83	244.40			
01/26/03	177.38	499.86	175.22	277.14			
01/27/03	223.03	499.86	168.03	252.60			
01/28/03	216.79	499.86	161.54	237.79			
01/29/03	217.94	499.86	170.05	259.44			
01/30/03	204.90	498.13	162.68	236.74			
01/31/03	210.48	499.86	164.48	250.40			
02/01/03	220.72	499.86	174.36	274.56			
02/02/03	194.46	499.86	157.72	229.34			
02/03/03	206.26	499.86	159.99	231.45			
02/04/03	205.28	499.86	155.94	226.10			
02/05/03	197.23	499.86	155.59	213.93			
02/06/03	232.15	499.86	145.51	220.28			
02/07/03	190.83	499.86	166.26	258.73			
02/08/03	124.15	499.86	161.61	248.89			
02/09/03	142.52	499.86	172.77	283.43			
02/10/03	233.18	499.86	175.57	280.12			
02/11/03	211.91	499.86	189.36	347.92			
02/12/03	280.02	499.86	199.49	387.53			
02/13/03	217.93	499.86	150.01	231.94			
02/14/03	268.41	499.86	197.67	381.79			
02/15/03	227.29	499.86	167.93	294.89			
02/16/03	219.71	499.86	161.00	262.58			
02/17/03	208.67	499.86	132.64	186.50			
02/18/03	212.49	365.06	161.63	246.74			
02/19/03	202.61	186.10	157.32	228.36			
02/20/03	209.41	204.63	144.16	205.72			
02/21/03	221.99	226.86	163.90	259.85			
02/22/03	230.95	239.65	169.90	273.15			
02/23/03	202.67	188.94	152.43	218.58			
02/24/03	214.02	208.75	158.49	237.20			
02/25/03	119.88	189.56	185.52	224.40			
02/26/03	059.07	200.79	328.71	415.86			
02/27/03	147.99	264.54	160.16	499.86			
02/28/03	214.97	242.01	161.93	434.48			
03/01/03	092.51	103.91	069.78	186.88			
03/02/03	228.47	239.90	175.29	499.86			
03/03/03	241.04	271.01	172.10	499.86			
03/04/03	310.08	414.59	153.21	499.86			
03/05/03	210.46	210.64	161.03	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
03/06/03	241.35	298.09	178.78	499.86			
03/07/03	272.99	373.78	199.83	499.86			
03/08/03	198.11	212.81	150.46	499.86			
03/09/03	181.32	150.55	144.27	499.86			
03/10/03	178.38	152.58	142.42	499.86			
03/11/03	191.78	174.68	150.11	499.86			
03/12/03	214.66	225.46	166.65	499.86			
03/13/03	201.93	209.70	157.69	499.86			
03/14/03	206.91	209.86	160.55	387.46			
03/15/03	204.10	204.03	159.85	250.42			
03/16/03	194.28	189.51	152.17	230.89			
03/17/03	186.49	176.73	147.74	220.05			
03/18/03	188.89	187.95	148.75	229.81			
03/19/03	191.82	190.89	143.37	209.62			
03/20/03	195.13	195.38	142.92	206.84			
03/21/03	203.15	209.81	149.47	225.41			
03/22/03	219.72	242.83	155.77	258.02			
03/23/03	211.24	232.42	159.96	263.89			
03/24/03	211.39	220.39	160.29	254.04			
03/25/03	208.17	221.45	094.71	098.84			
03/26/03	133.23	116.05	084.72	089.54			
03/27/03	132.69	129.67	112.91	133.78			
03/28/03	240.23	295.07	112.30	160.39			
03/29/03	263.07	354.59	193.59	392.77			
03/30/03	256.89	359.18	184.84	390.75			
03/31/03	199.88	200.31	154.81	236.56			
04/01/03	196.36	187.51	151.94	224.95			
04/02/03	197.40	181.08	153.19	219.52			
04/03/03	179.87	151.36	143.78	191.27			
04/04/03	199.02	192.28	156.54	235.90			
04/05/03	165.79	122.91	135.12	163.79			
04/06/03	163.75	120.69	132.43	159.63			
04/07/03	188.99	173.21	149.16	216.16			
04/08/03	198.89	199.22	155.75	245.00			
04/09/03	207.70	219.74	156.36	242.93			
04/10/03	189.67	181.16	142.25	199.23			
04/11/03	177.65	173.38	135.27	190.74			
04/12/03	215.44	232.92	160.97	255.97			
04/13/03	168.86	145.56	131.70	167.01			
04/14/03	161.39	128.31	127.53	151.03			
04/15/03	177.58	158.83	138.07	182.84			
04/16/03	176.70	162.58	129.96	167.98			
04/17/03	157.62	122.85	131.14	165.11			
04/18/03	211.40	228.12	164.20	285.32			
04/19/03	184.50	180.76	147.79	227.42			
04/20/03	188.39	192.93	155.83	239.15			
04/21/03	175.70	167.69	148.93	213.90			
04/22/03	160.02	136.88	138.55	180.05			
04/23/03	172.09	151.90	146.65	198.90			
04/24/03	169.91	149.17	144.84	195.71			
04/25/03	200.30	216.12	159.90	248.02			
04/26/03	175.19	161.90	143.29	190.66			
04/27/03	171.32	146.98	140.86	176.63			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
04/28/03	151.75	113.19	128.85	140.46			
04/29/03	202.64	227.33	083.04	058.52			
04/30/03	142.95	094.35	125.56	125.81			
05/01/03	137.25	086.57	122.11	118.32			
05/02/03	141.93	089.22	124.18	123.21			
05/03/03	128.31	067.73	116.14	099.52			
05/04/03	142.49	089.61	124.42	124.29			
05/05/03	143.27	098.41	125.26	131.17			
05/06/03	129.96	104.54	115.20	129.40			
05/07/03	187.13	194.60	153.67	230.38			
05/08/03	210.62	234.60	167.43	271.46			
05/09/03	190.07	201.25	134.72	186.76			
05/10/03	163.78	149.70	128.57	158.53			
05/11/03	194.62	197.30	147.67	218.57			
05/12/03	165.03	137.53	142.12	179.35			
05/13/03	144.43	098.00	128.97	135.97			
05/14/03	157.67	130.08	110.69	102.88			
05/15/03	195.11	199.45	159.88	238.00			
05/16/03	169.57	156.69	137.02	169.24			
05/17/03	176.15	170.30	150.26	211.24			
05/18/03	200.17	218.02	150.26	217.38			
05/19/03	203.93	227.56	156.23	237.12			
05/20/03	193.48	206.27	158.14	241.63			
05/21/03	180.03	186.02	146.52	210.32			
05/22/03	203.56	223.17	132.45	188.31			
05/23/03	166.22	160.61	143.63	203.47			
05/24/03	171.94	176.44	146.04	213.49			
05/25/03	202.51	220.49	152.24	230.08			
05/26/03	202.31	228.71	161.08	261.94			
05/27/03	189.21	205.91	152.65	235.98			
05/28/03	163.06	143.79	131.94	166.07			
05/29/03	172.42	174.95	144.64	208.74			
05/30/03	178.75	187.39	148.71	219.92			
05/31/03	192.79	205.67	154.31	238.31			
06/01/03	169.69	177.00	140.42	201.60			
06/02/03	191.14	212.77	150.15	228.98			
06/03/03	183.93	197.20	141.55	201.85			
06/04/03	176.18	182.49	148.01	218.76			
06/05/03	181.95	190.20	143.72	208.83			
06/06/03	182.53	197.61	151.68	232.51			
06/07/03	198.55	225.17	161.13	267.10			
06/08/03	185.05	203.24	150.72	232.51			
06/09/03	192.18	219.93	146.65	235.77			
06/10/03	199.16	222.89	154.71	251.03			
06/11/03	189.58	207.19	156.10	248.98			
06/12/03	163.07	163.07	138.40	195.14			
06/13/03	171.61	159.99	141.73	196.02			
06/14/03	190.69	213.48	101.10	106.44			
06/15/03	194.40	214.16	130.02	185.68			
06/16/03	153.84	134.64	132.77	169.09			
06/17/03	162.23	149.05	137.79	186.19			
06/18/03	148.06	149.97	140.15	203.88			
06/19/03	181.26	188.29	149.06	228.90			

Historical Injection Rates and Surface Injection Pressures
 Navajo Refining Company, L.L.C.
 Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
06/20/03	189.92	218.37	141.85	213.41			
06/21/03	177.60	176.14	146.87	212.21			
06/22/03	126.49	092.75	116.69	120.70			
06/23/03	144.91	119.41	125.38	146.66			
06/24/03	168.50	169.98	130.17	169.89			
06/25/03	167.25	165.45	140.91	199.45			
06/26/03	196.09	230.58	158.94	267.19			
06/27/03	167.51	177.09	137.85	198.44			
06/28/03	178.49	189.99	140.74	207.99			
06/29/03	199.58	249.08	086.02	127.54			
06/30/03	232.97	317.41	000.00	000.05			
07/01/03	190.91	224.42	104.03	132.79			
07/02/03	162.97	150.18	131.13	166.32			
07/03/03	154.90	141.20	132.88	173.41			
07/04/03	192.42	226.18	153.01	248.99			
07/05/03	170.74	189.35	141.35	210.91			
07/06/03	182.88	207.64	146.51	225.56			
07/07/03	158.36	159.03	133.97	182.29			
07/08/03	173.14	177.24	145.10	212.56			
07/09/03	151.87	134.82	132.35	169.57			
07/10/03	149.92	137.28	134.92	182.28			
07/11/03	151.06	131.05	128.79	154.17			
07/12/03	168.15	173.38	134.30	181.54			
07/13/03	179.57	187.96	140.78	193.00			
07/14/03	173.29	179.47	144.60	210.71			
07/15/03	171.43	188.29	127.66	171.10			
07/16/03	189.32	209.43	125.27	156.67			
07/17/03	217.08	273.62	120.78	146.54			
07/18/03	207.68	252.89	145.92	223.59			
07/19/03	191.64	223.79	126.09	182.02			
07/20/03	194.34	229.51	159.72	265.62			
07/21/03	157.91	154.03	135.23	182.68			
07/22/03	168.34	178.41	137.25	192.44			
07/23/03	173.84	185.63	140.53	198.22			
07/24/03	167.10	170.34	141.97	201.48			
07/25/03	132.44	155.54	150.24	242.48			
07/26/03	178.25	197.46	140.23	202.87			
07/27/03	181.10	208.17	133.20	185.82			
07/28/03	210.92	268.84	131.32	198.04			
07/29/03	201.58	246.25	159.71	276.66			
07/30/03	162.86	174.27	134.45	187.38			
07/31/03	170.47	189.53	143.98	223.44			
08/01/03	202.36	249.41	154.26	257.29			
08/02/03	183.50	210.38	151.53	241.27			
08/03/03	187.67	215.93	143.02	219.10			
08/04/03	120.83	085.06	112.16	113.44			
08/05/03	153.82	145.60	132.21	178.44			
08/06/03	177.57	195.95	142.55	218.49			
08/07/03	101.66	063.25	148.33	239.66			
08/08/03	221.32	181.83	120.89	145.05			
08/09/03	191.15	126.58	122.93	095.90			
08/10/03	159.98	074.17	129.28	105.33			
08/11/03	145.69	055.60	120.01	077.84			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/12/03	145.61	051.93	115.93	071.63			
08/13/03	150.11	066.13	120.76	081.93			
08/14/03	178.47	116.08	139.10	134.09			
08/15/03	181.41	125.63	138.15	141.51			
08/16/03	195.94	146.86	144.54	158.72			
08/17/03	176.38	147.58	107.22	096.89			
08/18/03	204.47	166.93	157.25	195.98			
08/19/03	232.53	204.23	145.61	186.41			
08/20/03	208.00	174.54	162.53	210.51			
08/21/03	238.18	215.12	167.53	230.11			
08/22/03	210.78	181.13	167.88	231.93			
08/23/03	192.78	162.09	155.36	196.17			
08/24/03	210.50	184.75	164.07	220.39			
08/25/03	185.60	149.16	149.10	183.31			
08/26/03	204.49	166.78	080.46	095.12			
08/27/03	114.16	076.03	122.83	221.75			
08/28/03	156.89	158.62	109.96	219.85			
08/29/03	244.59	251.30	083.67	130.68			
08/30/03	237.86	229.56	172.34	261.36			
08/31/03	236.67	227.61	174.35	273.77			
09/01/03	234.66	224.52	173.49	270.02			
09/02/03	223.91	215.52	164.52	249.38			
09/03/03	238.77	240.60	174.40	277.71			
09/04/03	226.79	219.59	168.47	258.99			
09/05/03	257.00	303.93	184.75	329.66			
09/06/03	283.98	352.58	202.94	389.48			
09/07/03	258.40	319.19	189.92	356.80			
09/08/03	228.46	262.33	175.46	302.75			
09/09/03	110.09	203.01	043.34	056.55			
09/10/03	222.36	208.45	162.21	228.79			
09/11/03	214.76	217.63	165.48	250.85			
09/12/03	207.36	213.28	163.19	243.09			
09/13/03	173.79	148.62	142.23	175.62			
09/14/03	160.02	113.29	131.57	139.39			
09/15/03	176.39	136.61	140.72	164.07			
09/16/03	169.59	129.73	135.30	151.46			
09/17/03	178.51	150.10	137.86	168.02			
09/18/03	213.98	201.09	156.43	221.26			
09/19/03	206.15	190.29	156.55	221.61			
09/20/03	183.86	159.35	149.04	193.97			
09/21/03	184.19	147.14	146.42	182.57			
09/22/03	171.24	144.40	140.40	174.22			
09/23/03	151.50	113.69	122.12	137.82			
09/24/03	178.27	144.80	136.14	162.98			
09/25/03	180.58	143.98	147.43	180.86			
09/26/03	211.78	208.30	168.27	251.37			
09/27/03	186.81	152.73	152.41	198.61			
09/28/03	171.43	142.58	147.00	185.03			
09/29/03	175.04	138.95	147.19	184.03			
09/30/03	171.84	139.64	141.95	170.50			
10/01/03	195.82	168.31	151.54	192.21			
10/02/03	185.78	180.50	151.39	204.63			
10/03/03	218.48	228.64	169.22	258.25			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
10/04/03	216.49	236.54	168.89	266.37			
10/05/03	221.86	240.07	170.31	269.95			
10/06/03	232.55	249.71	173.64	280.89			
10/07/03	223.36	239.73	161.65	251.98			
10/08/03	248.67	293.22	184.98	332.44			
10/09/03	290.68	391.82	205.56	417.62			
10/10/03	283.09	380.46	204.31	403.55			
10/11/03	311.02	414.15	209.72	431.38			
10/12/03	263.88	351.21	200.33	402.51			
10/13/03	197.68	199.31	158.42	245.52			
10/14/03	157.34	109.65	132.39	154.84			
10/15/03	171.11	128.06	140.92	175.61			
10/16/03	138.84	097.49	122.53	135.58			
10/17/03	151.59	101.88	132.71	145.20			
10/18/03	137.87	074.60	124.11	119.52			
10/19/03	162.15	114.19	137.88	164.28			
10/20/03	160.43	130.41	141.02	179.03			
10/21/03	180.30	163.83	150.91	216.68			
10/22/03	156.13	143.43	141.37	190.98			
10/23/03	183.32	158.06	149.41	197.16			
10/24/03	218.47	222.62	164.59	249.35			
10/25/03	207.49	209.48	159.72	240.09			
10/26/03	175.32	151.45	144.58	183.03			
10/27/03	165.27	136.01	138.44	167.15			
10/28/03	181.56	148.95	145.52	183.97			
10/29/03	174.42	133.79	141.34	169.63			
10/30/03	177.95	152.72	145.41	187.06			
10/31/03	161.14	123.43	136.52	157.22			
11/01/03	169.08	134.01	135.44	155.85			
11/02/03	169.61	148.58	141.35	180.60			
11/03/03	213.93	226.57	167.72	265.46			
11/04/03	176.43	169.39	148.14	204.86			
11/05/03	197.21	190.54	158.44	230.89			
11/06/03	190.52	187.10	156.30	227.49			
11/07/03	184.54	173.15	149.82	199.78			
11/08/03	153.22	109.85	126.17	128.49			
11/09/03	148.29	108.83	126.65	129.98			
11/10/03	153.47	130.62	130.78	152.30			
11/11/03	183.26	171.72	144.41	193.65			
11/12/03	170.28	157.33	147.29	202.70			
11/13/03	158.35	141.36	141.78	184.04			
11/14/03	211.21	219.87	170.90	277.84			
11/15/03	191.63	189.80	154.12	224.78			
11/16/03	186.41	186.66	150.33	213.77			
11/17/03	159.35	142.71	135.98	170.34			
11/18/03	177.23	167.57	144.92	198.44			
11/19/03	199.41	208.23	158.02	240.62			
11/20/03	224.56	260.59	174.32	299.35			
11/21/03	222.93	291.52	072.01	056.51			
11/22/03	179.02	248.98	029.87	000.00			
11/23/03	085.62	119.08	014.29	000.00			
11/24/03	121.08	146.07	088.14	160.10			
11/25/03	162.48	195.62	108.74	201.78			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/26/03	226.92	292.95	177.98	330.00			
11/27/03	309.87	472.08	225.23	499.86			
11/28/03	243.27	350.69	180.75	359.35			
11/29/03	152.28	291.98	121.97	328.96			
11/30/03	205.66	225.99	159.37	263.21			
12/01/03	116.16	058.40	109.98	096.19			
12/02/03	092.81	030.35	094.10	063.89			
12/03/03	118.69	053.93	110.85	102.50			
12/04/03	187.12	192.31	139.11	206.87			
12/05/03	188.23	187.24	136.56	198.48			
12/06/03	187.54	186.90	133.91	199.13			
12/07/03	202.31	236.85	121.51	271.77			
12/08/03	198.65	219.00	144.12	255.89			
12/09/03	197.73	222.87	140.32	257.13			
12/10/03	197.33	212.94	130.18	220.29			
12/11/03	182.08	188.23	130.57	210.26			
12/12/03	145.18	202.28	105.43	228.02			
12/13/03	149.81	139.22	118.70	175.00			
12/14/03	096.15	142.68	093.27	173.68			
12/15/03	169.21	172.76	119.68	200.52			
12/16/03	162.15	168.94	113.43	197.90			
12/17/03	128.87	236.11	093.56	289.99			
12/18/03	140.61	285.69	095.81	330.91			
12/19/03	219.10	287.06	137.52	305.85			
12/20/03	184.62	285.29	123.55	327.40			
12/21/03	171.90	291.67	113.14	335.63			
12/22/03	197.35	264.73	133.40	304.19			
12/23/03	216.67	289.28	145.85	332.10			
12/24/03	233.15	404.93	137.30	419.49			
12/25/03	280.29	458.49	175.27	459.51			
12/26/03	279.16	453.49	152.68	453.83			
12/27/03	274.43	441.15	166.94	441.76			
12/28/03	259.98	446.23	161.17	439.49			
12/29/03	133.80	439.43	083.53	451.86			
12/30/03	202.44	404.63	110.09	499.86			
12/31/03	196.45	441.96	110.84	499.86			
01/01/04	248.08	434.47	137.69	499.86			
01/02/04	280.59	394.42	150.86	499.86			
01/03/04	290.73	417.59	160.30	499.86			
01/04/04	285.63	406.41	155.95	499.86			
01/05/04	289.11	409.00	156.15	499.86			
01/06/04	183.30	395.70	113.00	499.86			
01/07/04	164.53	414.19	113.23	499.86			
01/08/04	298.33	450.62	165.82	499.86			
01/09/04	273.02	399.27	141.07	499.86			
01/10/04	301.66	457.29	162.27	499.86			
01/11/04	302.05	460.29	162.46	499.86			
01/12/04	307.13	474.61	167.81	499.86			
01/13/04	275.75	407.15	142.20	499.86			
01/14/04	296.12	443.48	152.59	499.86			
01/15/04	299.39	453.69	162.71	499.86			
01/16/04	280.01	410.61	148.42	499.86			
01/17/04	288.11	430.32	155.01	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
01/18/04	262.94	378.74	136.54	499.86			
01/19/04	291.41	451.88	157.73	499.86			
01/20/04	262.75	383.61	133.82	499.86			
01/21/04	246.20	347.42	121.45	499.86			
01/22/04	298.43	465.09	160.69	499.86			
01/23/04	270.66	398.79	134.96	499.86			
01/24/04	280.16	421.33	142.36	499.86			
01/25/04	212.04	257.95	098.23	499.86			
01/26/04	203.82	240.69	093.69	499.86			
01/27/04	255.68	373.48	129.53	499.86			
01/28/04	279.85	425.21	141.44	468.33			
01/29/04	321.72	482.99	166.52	275.57			
01/30/04	267.35	407.84	138.95	053.26			
01/31/04	274.69	423.19	144.21	000.00			
02/01/04	280.07	425.53	144.92	000.00			
02/02/04	264.78	395.87	135.45	000.00			
02/03/04	261.82	392.92	133.00	000.00			
02/04/04	254.66	368.98	119.59	000.00			
02/05/04	240.85	329.99	127.30	000.00			
02/06/04	257.55	372.91	134.15	000.00			
02/07/04	262.69	346.20	137.28	042.06			
02/08/04	288.54	248.13	159.06	270.64			
02/09/04	250.81	247.91	130.26	219.35			
02/10/04	246.77	247.89	124.62	206.41			
02/11/04	196.72	247.88	091.20	128.86			
02/12/04	227.57	247.92	118.27	165.37			
02/13/04	148.61	247.55	126.29	289.01			
02/14/04	279.39	247.79	134.60	451.81			
02/15/04	162.95	247.80	249.24	348.26			
02/16/04	297.28	248.01	166.62	278.97			
02/17/04	290.86	248.03	162.39	271.08			
02/18/04	298.75	247.98	166.90	279.73			
02/19/04	287.30	248.20	158.13	263.99			
02/20/04	291.24	191.13	162.40	268.20			
02/21/04	251.68	159.89	131.81	260.61			
02/22/04	271.14	427.06	146.90	428.31			
02/23/04	235.56	361.73	119.77	364.54			
02/24/04	251.98	396.81	133.56	399.69			
02/25/04	266.58	420.40	144.83	421.77			
02/26/04	252.03	395.00	134.24	397.56			
02/27/04	246.55	377.26	124.51	379.48			
02/28/04	236.52	351.11	103.88	326.16			
02/29/04	240.50	386.37	125.52	389.55			
03/01/04	239.96	373.39	124.97	375.03			
03/02/04	255.89	420.61	135.84	429.74			
03/03/04	263.43	463.08	103.94	370.83			
03/04/04	253.55	433.05	135.65	463.66			
03/05/04	252.04	431.87	134.46	463.68			
03/06/04	243.28	412.37	127.09	441.95			
03/07/04	239.43	405.98	124.38	434.52			
03/08/04	203.46	330.11	096.25	354.41			
03/09/04	232.83	386.71	119.88	417.07			
03/10/04	237.16	397.85	123.58	429.74			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
03/11/04	262.23	452.46	139.99	477.43			
03/12/04	212.98	351.02	102.05	370.42			
03/13/04	232.02	388.96	116.67	412.18			
03/14/04	233.99	396.08	118.38	419.49			
03/15/04	256.60	441.50	135.80	468.94			
03/16/04	222.90	356.35	099.92	355.55			
03/17/04	250.56	427.49	132.32	454.43			
03/18/04	239.78	404.54	123.24	429.72			
03/19/04	225.69	262.85	112.13	280.94			
03/20/04	237.64	188.87	118.06	195.04			
03/21/04	242.18	193.25	125.43	206.05			
03/22/04	238.84	191.80	122.76	204.36			
03/23/04	226.97	179.78	112.44	191.08			
03/24/04	244.27	196.32	127.82	210.22			
03/25/04	123.12	044.69	000.00	000.00			
03/26/04	101.41	016.90	012.90	018.82			
03/27/04	293.61	266.82	170.46	290.35			
03/28/04	272.25	243.77	150.58	258.55			
03/29/04	260.28	229.92	138.57	235.51			
03/30/04	251.30	217.01	136.13	232.23			
03/31/04	227.09	176.98	117.59	191.05			
04/01/04	184.37	112.18	088.06	123.95			
04/02/04	195.97	125.37	101.00	138.82			
04/03/04	192.17	121.63	090.89	127.15			
04/04/04	203.55	139.06	112.27	164.17			
04/05/04	289.54	272.31	160.56	277.62			
04/06/04	257.59	228.29	141.16	243.06			
04/07/04	285.93	265.50	160.86	275.69			
04/08/04	277.68	253.71	154.84	263.06			
04/09/04	256.25	225.92	137.30	234.24			
04/10/04	212.41	163.64	106.47	177.74			
04/11/04	221.11	174.22	114.99	190.68			
04/12/04	208.97	160.81	104.80	176.26			
04/13/04	187.66	124.22	089.23	138.22			
04/14/04	166.34	091.65	074.13	104.13			
04/15/04	195.82	127.79	101.55	143.93			
04/16/04	216.18	153.20	120.73	171.67			
04/17/04	208.22	143.56	108.80	154.81			
04/18/04	213.69	155.69	118.87	171.38			
04/19/04	208.52	154.20	115.63	169.80			
04/20/04	209.61	160.73	117.86	175.88			
04/21/04	208.87	158.78	117.76	174.72			
04/22/04	201.74	149.26	111.35	165.06			
04/23/04	225.35	186.73	126.80	204.12			
04/24/04	270.15	250.51	154.74	271.54			
04/25/04	242.71	214.02	131.76	225.60			
04/26/04	231.53	194.71	122.77	205.12			
04/27/04	208.51	152.31	108.00	164.69			
04/28/04	171.73	102.13	078.69	111.81			
04/29/04	208.97	147.57	112.64	161.89			
04/30/04	203.12	142.17	108.47	155.96			
05/01/04	200.57	141.31	099.89	145.74			
05/02/04	211.04	154.95	117.14	171.60			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/03/04	212.77	159.30	118.84	175.86			
05/04/04	208.72	154.91	116.04	170.42			
05/05/04	213.38	161.22	121.22	177.49			
05/06/04	212.17	158.21	120.82	177.00			
05/07/04	220.05	170.41	123.25	178.92			
05/08/04	237.40	210.17	123.59	211.06			
05/09/04	257.12	233.18	144.97	249.84			
05/10/04	246.23	219.72	133.92	233.37			
05/11/04	224.55	188.71	114.92	197.42			
05/12/04	197.93	139.50	099.15	150.78			
05/13/04	187.47	122.51	094.27	135.85			
05/14/04	188.99	125.94	092.07	133.46			
05/15/04	186.92	124.76	094.13	137.61			
05/16/04	197.22	139.84	103.49	153.77			
05/17/04	197.18	141.67	104.22	155.34			
05/18/04	207.93	154.01	113.30	168.86			
05/19/04	197.23	137.97	105.19	152.45			
05/20/04	183.25	119.37	090.61	132.27			
05/21/04	202.01	143.75	108.98	160.06			
05/22/04	205.43	139.18	112.30	166.23			
05/23/04	191.48	129.45	099.47	145.71			
05/24/04	200.77	141.16	109.72	161.03			
05/25/04	206.34	150.60	109.55	161.50			
05/26/04	191.43	110.24	112.31	168.88			
05/27/04	238.41	141.83	064.68	091.22			
05/28/04	215.75	116.93	118.67	133.98			
05/29/04	218.95	121.70	119.62	135.39			
05/30/04	198.96	103.75	106.86	116.68			
05/31/04	202.64	109.75	110.87	122.92			
06/01/04	180.40	088.55	092.80	099.96			
06/02/04	186.15	091.42	100.78	104.18			
06/03/04	186.14	096.45	098.10	107.67			
06/04/04	206.66	120.64	117.61	133.55			
06/05/04	190.20	100.27	104.71	112.71			
06/06/04	183.82	093.06	099.41	104.94			
06/07/04	191.50	103.69	108.22	118.02			
06/08/04	198.43	114.33	111.56	128.37			
06/09/04	198.43	114.33	012.42	014.49			
06/10/04	214.31	129.52	127.10	147.93			
06/11/04	216.39	133.44	128.71	149.69			
06/12/04	207.62	126.96	116.50	134.99			
06/13/04	214.55	135.30	127.61	153.71			
06/14/04	202.17	120.08	120.69	139.13			
06/15/04	207.81	129.94	120.17	140.06			
06/16/04	207.81	129.94	120.96	158.43			
06/17/04	187.75	108.40	111.05	133.82			
06/18/04	244.66	186.48	144.46	198.08			
06/19/04	280.77	235.72	174.34	251.22			
06/20/04	257.39	211.03	151.09	219.48			
06/21/04	241.82	190.03	139.91	203.36			
06/22/04	178.63	098.82	104.96	121.48			
06/23/04	201.13	129.32	118.57	139.81			
06/24/04	184.13	107.21	101.01	114.89			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
06/25/04	205.57	131.99	121.09	141.92			
06/26/04	196.67	120.41	109.31	127.45			
06/27/04	214.18	140.45	130.97	159.51			
06/28/04	194.08	117.86	114.95	139.33			
06/29/04	200.89	124.40	117.08	138.64			
06/30/04	160.80	077.85	078.75	086.75			
07/01/04	205.39	127.96	119.30	139.81			
07/02/04	207.07	127.98	121.40	138.99			
07/03/04	210.75	134.37	124.11	140.94			
07/04/04	211.70	138.55	131.39	152.79			
07/05/04	211.13	136.99	131.96	152.46			
07/06/04	207.55	135.09	129.94	150.66			
07/07/04	190.68	113.60	113.63	129.05			
07/08/04	197.40	125.68	115.15	136.98			
07/09/04	193.04	117.67	118.75	134.99			
07/10/04	183.85	109.93	107.02	120.62			
07/11/04	193.71	123.46	114.30	132.90			
07/12/04	202.47	135.96	125.80	146.78			
07/13/04	172.11	101.65	094.61	110.23			
07/14/04	203.24	135.91	128.09	146.29			
07/15/04	204.90	139.93	141.17	167.83			
07/16/04	176.79	104.89	106.43	124.53			
07/17/04	199.66	135.89	134.11	161.34			
07/18/04	197.62	134.02	127.59	148.42			
07/19/04	188.92	124.02	113.97	132.61			
07/20/04	196.72	135.24	128.92	147.26			
07/21/04	175.40	107.40	105.19	118.37			
07/22/04	197.12	137.07	119.17	139.99			
07/23/04	204.57	145.68	126.66	150.87			
07/24/04	204.62	145.67	135.30	162.12			
07/25/04	208.53	152.88	141.72	171.20			
07/26/04	208.40	157.53	129.71	173.00			
07/27/04	258.32	225.64	152.45	219.85			
07/28/04	257.27	225.27	149.11	215.57			
07/29/04	259.47	230.25	154.54	227.56			
07/30/04	263.11	237.79	169.19	252.82			
07/31/04	237.40	206.86	132.85	199.70			
08/01/04	203.71	150.71	132.26	170.79			
08/02/04	195.24	145.54	122.27	158.93			
08/03/04	184.61	133.47	113.99	146.42			
08/04/04	196.55	148.87	119.64	154.55			
08/05/04	202.68	159.49	131.31	171.92			
08/06/04	195.10	148.67	118.54	154.59			
08/07/04	213.46	174.06	134.95	185.07			
08/08/04	259.62	238.31	165.55	246.84			
08/09/04	251.58	220.85	169.24	245.47			
08/10/04	213.15	163.73	128.90	171.36			
08/11/04	212.51	164.13	126.11	171.05			
08/12/04	229.15	194.96	129.36	195.02			
08/13/04	244.22	215.36	153.19	235.81			
08/14/04	245.90	220.95	149.92	230.85			
08/15/04	259.05	242.29	162.21	254.63			
08/16/04	233.24	207.60	147.93	229.49			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
08/17/04	244.10	219.69	141.28	219.35			
08/18/04	223.28	189.87	128.31	197.92			
08/19/04	242.36	214.40	149.83	229.19			
08/20/04	124.22	051.45	031.55	047.42			
08/21/04	235.04	204.74	134.30	202.53			
08/22/04	268.95	250.10	176.30	265.76			
08/23/04	189.05	140.23	095.64	139.24			
08/24/04	242.25	214.07	134.55	198.70			
08/25/04	209.45	162.37	115.22	158.63			
08/26/04	182.52	120.36	112.65	137.70			
08/27/04	203.93	150.18	128.09	159.82			
08/28/04	189.87	131.73	117.38	146.10			
08/29/04	200.98	147.66	127.54	160.13			
08/30/04	198.05	145.77	128.43	163.80			
08/31/04	206.77	158.28	140.00	177.64			
09/01/04	178.42	122.34	109.16	137.95			
09/02/04	190.96	137.70	124.78	156.23			
09/03/04	179.69	122.60	112.49	139.22			
09/04/04	189.66	135.50	121.68	151.73			
09/05/04	201.07	150.97	132.75	167.19			
09/06/04	191.51	136.96	125.77	153.49			
09/07/04	193.01	140.59	122.80	149.84			
09/08/04	198.41	147.99	127.79	159.09			
09/09/04	197.26	144.28	127.13	155.28			
09/10/04	178.57	121.16	105.13	128.80			
09/11/04	200.93	153.97	134.28	169.53			
09/12/04	185.62	133.35	120.18	149.96			
09/13/04	175.10	119.57	106.05	130.90			
09/14/04	184.99	131.92	120.29	148.64			
09/15/04	183.25	128.11	118.13	147.01			
09/16/04	188.70	136.94	124.57	155.67			
09/17/04	196.89	147.14	127.25	158.40			
09/18/04	195.35	144.73	122.15	153.18			
09/19/04	196.45	146.80	130.11	165.22			
09/20/04	195.44	145.21	126.64	159.53			
09/21/04	195.34	145.83	126.74	161.32			
09/22/04	196.80	145.48	128.65	161.34			
09/23/04	189.75	136.52	116.10	145.12			
09/24/04	194.43	144.54	128.76	162.25			
09/25/04	190.36	141.26	122.90	153.26			
09/26/04	183.63	134.28	114.17	142.01			
09/27/04	187.17	141.98	103.02	129.74			
09/28/04	190.28	147.87	125.09	162.49			
09/29/04	191.18	147.10	121.90	156.08			
09/30/04	175.10	126.16	107.99	138.63			
10/01/04	239.12	219.10	140.00	199.06			
10/02/04	249.66	229.25	163.07	241.30			
10/03/04	251.77	230.07	151.69	227.77			
10/04/04	195.47	142.33	120.99	158.57			
10/05/04	187.70	128.20	107.36	132.94			
10/06/04	214.78	165.16	140.80	183.09			
10/07/04	257.95	242.37	153.09	234.87			
10/08/04	253.49	241.02	151.77	238.24			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/09/04	256.17	247.12	152.03	244.35			
10/10/04	234.14	218.18	141.79	229.22			
10/11/04	195.55	148.36	122.48	168.50			
10/12/04	193.74	149.63	120.69	167.85			
10/13/04	190.39	145.33	110.84	152.26			
10/14/04	193.13	150.86	114.96	160.97			
10/15/04	186.24	141.68	102.75	144.99			
10/16/04	191.34	148.88	115.86	162.88			
10/17/04	183.51	138.57	107.49	152.46			
10/18/04	169.92	120.14	096.19	133.37			
10/19/04	190.69	149.80	119.50	166.13			
10/20/04	171.31	123.44	099.96	138.26			
10/21/04	182.07	137.26	109.79	153.48			
10/22/04	190.37	148.91	119.15	166.22			
10/23/04	193.59	154.86	121.36	171.71			
10/24/04	189.65	151.54	110.91	156.53			
10/25/04	198.79	165.08	118.97	169.23			
10/26/04	193.36	157.35	118.39	168.51			
10/27/04	190.23	152.15	116.39	166.48			
10/28/04	189.10	150.80	117.21	165.36			
10/29/04	193.41	158.63	121.08	173.06			
10/30/04	196.16	163.55	124.40	178.32			
10/31/04	188.54	154.50	114.81	167.31			
11/01/04	196.03	165.38	122.27	178.50			
11/02/04	194.34	163.82	119.54	176.27			
11/03/04	190.30	159.45	115.06	171.63			
11/04/04	190.58	158.09	115.59	170.82			
11/05/04	240.55	241.61	152.09	256.53			
11/06/04	254.53	263.68	137.15	239.73			
11/07/04	280.69	301.79	160.14	280.12			
11/08/04	260.81	273.69	165.64	290.75			
11/09/04	228.47	225.58	137.21	241.07			
11/10/04	187.49	147.81	111.72	163.38			
11/11/04	193.41	159.25	118.29	174.77			
11/12/04	198.05	170.91	122.43	186.63			
11/13/04	197.13	169.48	120.13	184.79			
11/14/04	213.33	203.86	126.94	218.63			
11/15/04	242.47	254.03	147.27	271.19			
11/16/04	261.03	283.63	163.07	301.96			
11/17/04	263.41	288.84	163.29	305.64			
11/18/04	252.78	271.64	154.30	289.23			
11/19/04	246.89	264.79	148.51	281.10			
11/20/04	259.06	282.52	158.77	300.80			
11/21/04	257.73	279.40	156.77	297.46			
11/22/04	257.57	280.21	155.34	297.75			
11/23/04	236.52	250.52	137.77	266.06			
11/24/04	236.40	248.59	137.02	265.21			
11/25/04	215.00	209.96	122.04	225.44			
11/26/04	185.82	150.61	103.51	165.49			
11/27/04	177.02	140.14	093.38	150.50			
11/28/04	187.51	158.70	101.61	165.97			
11/29/04	183.13	151.86	097.77	160.27			
11/30/04	188.07	160.69	102.84	171.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/01/04	164.96	170.10	104.39	251.78			
12/02/04	154.07	280.89	150.81	341.34			
12/03/04	174.98	228.23	125.26	244.83			
12/04/04	182.86	273.64	136.33	290.11			
12/05/04	252.44	265.58	143.53	281.59			
12/06/04	252.28	268.03	145.14	283.62			
12/07/04	218.46	211.17	115.02	223.26			
12/08/04	255.20	269.72	147.71	284.29			
12/09/04	246.25	254.93	140.52	268.17			
12/10/04	243.72	249.39	137.28	261.93			
12/11/04	240.12	245.62	134.21	258.34			
12/12/04	215.86	200.03	115.90	212.07			
12/13/04	189.11	147.30	099.45	159.49			
12/14/04	187.05	148.79	098.39	160.62			
12/15/04	154.88	148.78	096.28	160.25			
12/16/04	166.33	211.48	123.19	223.63			
12/17/04	250.17	269.50	144.26	283.94			
12/18/04	202.94	273.41	149.91	287.46			
12/19/04	188.93	271.25	150.45	284.90			
12/20/04	220.87	287.18	160.30	301.52			
12/21/04	218.78	218.79	110.11	208.67			
12/22/04	256.25	279.27	155.07	295.83			
12/23/04	092.05	228.87	126.67	272.13			
12/24/04	000.02	277.06	138.73	499.86			
12/25/04	071.82	410.06	414.47	426.07			
12/26/04	109.92	319.66	312.02	365.48			
12/27/04	195.98	296.84	157.13	267.62			
12/28/04	293.06	267.38	142.71	279.29			
12/29/04	304.27	291.13	155.50	304.60			
12/30/04	308.22	300.62	160.33	314.89			
12/31/04	305.67	294.79	157.54	308.25			
01/01/05	297.28	277.11	147.58	289.00			
01/02/05	298.75	279.72	149.27	291.24			
01/03/05	284.89	250.45	132.44	259.69			
01/04/05	275.04	229.14	121.97	238.73			
01/05/05	281.83	243.74	131.24	254.19			
01/06/05	283.29	251.11	132.01	261.23			
01/07/05	286.79	258.65	136.01	269.61			
01/08/05	266.32	212.15	111.81	221.44			
01/09/05	254.79	184.79	101.88	193.63			
01/10/05	259.89	195.97	105.00	203.82			
01/11/05	256.94	186.21	102.41	198.72			
01/12/05	272.43	223.52	125.69	241.49			
01/13/05	258.65	195.94	105.11	198.73			
01/14/05	205.68	206.83	112.37	221.67			
01/15/05	229.96	202.12	109.00	215.03			
01/16/05	241.79	222.55	124.16	238.93			
01/17/05	132.32	156.66	099.50	209.71			
01/18/05	145.70	164.86	104.95	182.01			
01/19/05	158.94	159.56	102.38	188.96			
01/20/05	227.30	263.95	147.36	285.55			
01/21/05	233.56	228.25	123.81	243.98			
01/22/05	236.62	231.47	124.79	247.49			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
01/23/05	230.09	217.94	122.90	235.51			
01/24/05	192.09	148.06	093.24	162.86			
01/25/05	202.75	166.96	103.58	182.21			
01/26/05	202.76	168.29	104.33	185.19			
01/27/05	233.64	233.64	123.72	250.87			
01/28/05	252.49	265.95	140.08	284.97			
01/29/05	249.23	258.81	135.97	276.27			
01/30/05	246.66	255.76	132.30	272.67			
01/31/05	240.99	247.80	127.54	264.31			
02/01/05	191.76	160.00	081.93	170.47			
02/02/05	249.79	265.90	133.88	279.24			
02/03/05	251.86	268.11	132.95	275.74			
02/04/05	182.53	230.09	114.25	257.01			
02/05/05	253.03	238.36	118.31	245.71			
02/06/05	241.33	214.61	106.35	221.34			
02/07/05	233.58	194.85	104.55	202.90			
02/08/05	248.80	228.45	108.39	221.97			
02/09/05	255.77	240.92	123.48	255.66			
02/10/05	261.49	251.63	127.51	264.24			
02/11/05	248.17	225.41	115.99	237.30			
02/12/05	255.53	240.23	123.23	253.24			
02/13/05	243.20	215.85	111.01	227.77			
02/14/05	232.61	195.34	099.82	205.63			
02/15/05	230.16	187.71	097.44	198.45			
02/16/05	228.88	186.87	095.06	197.38			
02/17/05	264.96	261.94	132.27	276.60			
02/18/05	253.88	239.50	119.66	250.91			
02/19/05	237.32	207.43	102.38	215.21			
02/20/05	226.68	183.40	092.77	191.63			
02/21/05	237.45	202.09	105.28	211.96			
02/22/05	245.44	220.61	112.65	231.50			
02/23/05	246.30	222.05	114.09	234.04			
02/24/05	244.92	222.56	113.79	235.32			
02/25/05	260.05	258.54	134.08	274.20			
02/26/05	250.84	236.92	122.29	251.65			
02/27/05	257.16	250.51	130.94	266.71			
02/28/05	251.28	239.15	124.78	253.82			
03/01/05	257.16	250.17	131.40	267.93			
03/02/05	236.16	207.22	110.16	222.90			
03/03/05	196.02	126.81	067.38	136.64			
03/04/05	254.12	247.14	123.91	252.43			
03/05/05	237.32	208.37	106.87	216.67			
03/06/05	226.27	186.32	097.17	195.63			
03/07/05	243.24	221.01	112.70	232.62			
03/08/05	231.79	198.26	100.98	209.14			
03/09/05	195.97	122.10	062.35	129.43			
03/10/05	237.69	210.57	106.58	220.06			
03/11/05	271.83	277.41	138.32	281.46			
03/12/05	236.95	207.92	105.45	214.14			
03/13/05	253.47	239.13	122.60	247.23			
03/14/05	234.25	200.27	104.33	207.90			
03/15/05	213.13	160.00	083.60	166.38			
03/16/05	257.86	250.23	129.74	261.18			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
03/17/05	241.78	219.41	112.16	244.33			
03/18/05	227.70	190.82	098.03	199.60			
03/19/05	239.76	212.61	110.24	223.12			
03/20/05	246.34	224.09	116.95	235.70			
03/21/05	232.54	197.53	103.13	209.04			
03/22/05	233.59	201.68	088.59	180.25			
03/23/05	224.58	183.54	095.02	192.15			
03/24/05	250.75	238.95	109.38	224.58			
03/25/05	239.99	218.64	112.11	230.29			
03/26/05	244.43	229.56	113.21	230.22			
03/27/05	245.81	240.40	123.00	249.05			
03/28/05	252.89	251.79	119.02	242.64			
03/29/05	232.33	210.10	099.92	202.43			
03/30/05	247.91	244.71	127.47	256.81			
04/01/05	245.58	242.23	127.05	261.61			
04/02/05	262.05	283.02	142.19	294.01			
04/03/05	256.33	267.11	134.67	276.76			
04/04/05	256.77	270.85	132.74	271.23			
04/05/05	220.63	189.94	091.65	185.29			
04/06/05	243.68	247.35	109.43	224.03			
04/07/05	254.21	279.50	136.24	283.64			
04/08/05	229.15	227.00	104.11	216.61			
04/09/05	261.07	297.66	093.86	202.74			
04/10/05	245.45	276.45	141.66	298.66			
04/11/05	219.35	212.40	103.20	218.88			
04/12/05	206.71	178.74	088.07	184.77			
04/13/05	227.06	232.06	112.93	235.44			
04/14/05	227.84	233.98	118.24	244.98			
04/15/05	231.10	240.49	107.41	225.16			
04/16/05	220.51	215.08	103.26	217.99			
04/17/05	213.56	197.98	096.08	200.41			
04/18/05	231.91	240.45	119.84	247.54			
04/19/05	238.42	250.12	124.44	255.95			
04/20/05	238.78	244.79	123.64	253.33			
04/21/05	253.01	273.23	140.43	287.08			
04/22/05	248.86	260.70	135.75	271.02			
04/23/05	253.44	269.31	128.03	260.13			
04/24/05	249.36	257.22	134.81	273.83			
04/25/05	262.57	287.06	147.53	299.23			
04/26/05	267.19	293.73	152.54	309.07			
04/27/05	262.42	284.16	144.13	291.59			
04/28/05	271.95	304.67	155.37	312.48			
04/29/05	278.14	313.53	162.25	324.83			
04/30/05	269.53	291.30	148.88	299.67			
05/01/05	276.92	310.32	163.35	332.69			
05/02/05	269.85	291.58	153.66	310.47			
05/03/05	268.63	290.68	152.24	309.70			
05/04/05	256.75	265.51	138.79	282.70			
05/05/05	249.84	244.65	128.65	260.70			
05/06/05	267.13	279.34	147.57	296.44			
05/07/05	232.62	204.54	108.36	217.64			
05/08/05	265.47	270.42	144.89	288.22			
05/09/05	246.60	232.16	123.18	246.13			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
05/10/05	253.19	243.28	129.57	258.33			
05/11/05	273.79	285.08	153.83	303.36			
05/12/05	261.91	261.64	138.64	277.15			
05/13/05	260.49	259.01	136.50	273.92			
05/14/05	254.37	245.86	129.81	260.68			
05/15/05	246.28	230.65	125.49	245.08			
05/16/05	272.27	285.72	149.22	302.91			
05/17/05	274.17	287.29	147.43	296.96			
05/18/05	275.16	288.62	147.39	297.39			
05/19/05	253.01	241.38	125.25	250.40			
05/20/05	276.71	289.40	143.95	289.09			
05/21/05	266.26	265.22	140.12	281.19			
05/22/05	261.92	256.19	136.42	272.80			
05/23/05	259.76	251.06	133.12	268.69			
05/24/05	264.50	257.73	136.20	275.24			
05/25/05	271.98	275.44	142.84	289.59			
05/26/05	277.11	285.39	144.26	293.20			
05/27/05	277.60	285.86	145.03	296.76			
05/28/05	270.04	269.23	136.39	280.09			
05/29/05	278.07	284.55	144.60	296.56			
05/30/05	271.02	269.87	136.88	281.40			
05/31/05	259.99	246.11	124.15	256.99			
06/01/05	267.34	257.99	122.06	252.54			
06/02/05	273.79	267.43	136.19	284.44			
06/03/05	262.21	241.09	113.33	235.29			
06/04/05	263.30	244.66	126.58	261.82			
06/05/05	209.26	140.69	073.08	151.92			
06/06/05	283.13	282.83	147.31	304.96			
06/07/05	276.90	273.94	138.98	289.95			
06/08/05	279.08	270.53	197.60	288.12			
06/09/05	276.36	254.86	129.59	272.92			
06/10/05	265.46	251.60	128.93	270.83			
06/11/05	269.62	257.95	127.47	267.73			
06/12/05	283.51	284.68	145.89	305.13			
06/13/05	279.70	277.23	140.24	290.77			
06/14/05	285.37	289.07	143.47	298.52			
06/15/05	282.59	281.92	140.50	292.01			
06/16/05	283.25	282.01	138.36	288.94			
06/17/05	274.25	265.07	138.18	289.39			
06/18/05	288.78	291.10	147.65	305.56			
06/19/05	279.94	271.64	136.95	281.94			
06/20/05	288.09	285.68	144.13	297.08			
06/21/05	282.06	274.30	138.69	287.05			
06/22/05	277.88	263.70	131.73	271.19			
06/23/05	291.92	289.08	147.73	309.21			
06/24/05	307.06	319.50	159.03	335.44			
06/25/05	303.95	312.31	152.80	322.36			
06/26/05	300.63	304.49	152.21	323.12			
06/27/05	302.87	309.29	153.60	329.02			
06/28/05	273.82	255.14	125.60	272.25			
06/29/05	297.40	296.90	146.27	314.40			
06/30/05	294.69	292.51	145.71	312.59			
07/01/05	283.89	271.33	136.28	291.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
07/02/05	274.89	254.62	128.22	269.38			
07/03/05	269.09	248.49	124.06	257.99			
07/04/05	277.77	260.45	134.81	272.58			
07/05/05	241.63	195.55	101.44	209.06			
07/06/05	281.76	264.66	136.56	281.00			
07/07/05	252.60	213.82	105.11	217.42			
07/08/05	279.90	258.71	133.30	276.10			
07/09/05	255.93	219.04	111.53	233.80			
07/10/05	270.18	242.57	122.60	260.39			
07/11/05	233.88	200.20	112.55	241.83			
07/12/05	282.93	266.41	134.11	289.14			
07/13/05	283.06	267.48	132.77	285.01			
07/14/05	260.15	227.34	109.92	236.37			
07/15/05	280.03	262.79	127.91	276.15			
07/16/05	254.35	217.46	106.15	230.44			
07/17/05	263.35	235.12	120.27	263.57			
07/18/05	263.28	233.68	109.53	242.05			
07/19/05	280.79	264.17	125.92	270.54			
07/20/05	262.08	214.23	116.19	241.07			
07/21/05	267.47	236.55	125.01	258.66			
07/22/05	267.70	236.38	124.28	258.45			
07/23/05	272.35	244.46	128.31	265.69			
07/24/05	240.94	190.33	131.87	272.41			
07/25/05	275.94	250.75	127.87	263.41			
07/26/05	257.61	218.60	109.56	226.70			
07/27/05	278.54	261.38	127.09	260.24			
07/28/05	278.65	253.93	132.09	272.24			
07/29/05	272.98	244.04	126.74	260.28			
07/30/05	280.23	256.24	129.98	266.60			
07/31/05	264.06	225.38	115.83	238.07			
08/01/05	282.05	257.16	131.47	272.27			
08/02/05	280.58	253.35	130.36	269.70			
08/03/05	234.15	172.11	102.26	212.40			
08/04/05	263.01	218.13	131.27	270.19			
08/05/05	269.04	225.38	117.72	238.62			
08/06/05	250.36	209.17	113.06	236.26			
08/07/05	298.44	275.94	123.37	259.36			
08/08/05	249.22	193.93	102.09	211.70			
08/09/05	246.92	189.98	096.87	200.08			
08/10/05	199.07	108.34	059.65	118.80			
08/11/05	278.47	234.41	124.99	253.60			
08/12/05	274.56	226.93	121.77	245.06			
08/13/05	289.73	252.58	131.80	265.00			
08/14/05	266.51	214.51	114.21	226.71			
08/15/05	274.95	225.47	123.35	241.51			
08/16/05	271.92	220.64	123.04	238.70			
08/17/05	254.00	192.48	101.94	197.45			
08/18/05	277.03	227.28	129.73	242.20			
08/19/05	230.29	162.88	103.18	192.72			
08/20/05	233.37	167.64	101.36	180.37			
08/21/05	245.57	172.84	106.01	193.20			
08/22/05	261.06	198.10	119.34	218.27			
08/23/05	260.02	197.67	118.40	215.59			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
10/16/05	226.18	154.50	098.01	170.79			
10/17/05	229.55	160.76	103.73	180.05			
10/18/05	233.95	168.35	104.51	184.33			
10/19/05	229.55	160.28	096.54	172.16			
10/20/05	244.02	186.09	115.50	201.03			
10/21/05	247.12	186.18	113.89	200.98			
10/22/05	246.49	181.22	109.10	196.09			
10/23/05	248.11	192.17	119.59	208.53			
10/24/05	240.14	182.07	111.42	198.26			
10/25/05	229.34	162.92	098.67	177.26			
10/26/05	253.59	195.40	119.11	212.82			
10/27/05	250.78	193.83	119.03	211.23			
10/28/05	254.16	202.10	123.03	219.04			
10/29/05	253.06	199.70	126.63	223.78			
10/30/05	259.55	210.89	127.63	223.59			
10/30/05	253.94	199.93	122.63	214.72			
11/01/05	244.29	188.27	120.95	213.29			
11/02/05	234.60	172.99	109.44	191.51			
11/03/05	230.36	167.93	102.39	179.46			
11/04/05	250.67	201.58	122.75	216.61			
11/05/05	241.55	188.65	114.25	202.09			
11/06/05	253.94	207.56	112.29	196.95			
11/07/05	231.19	173.20	104.42	188.12			
11/08/05	239.21	189.60	110.28	197.95			
11/09/05	244.73	191.26	116.50	207.99			
11/10/05	246.83	198.06	123.35	217.38			
11/11/05	240.54	190.33	118.64	211.01			
11/12/05	241.07	189.64	111.58	197.41			
11/13/05	237.52	188.41	118.18	213.33			
11/14/05	239.72	192.58	114.19	207.19			
11/15/05	237.96	185.90	107.48	196.90			
11/16/05	234.58	186.04	111.78	203.71			
11/17/05	232.79	179.27	110.63	201.79			
11/18/05	234.74	180.81	111.38	205.04			
11/19/05	248.54	210.55	124.48	228.03			
11/20/05	237.69	190.65	107.16	197.43			
11/21/05	234.81	183.16	104.07	192.16			
11/22/05	237.10	189.67	107.34	198.63			
11/23/05	234.09	191.87	114.59	211.01			
11/24/05	266.41	244.19	128.97	245.19			
11/25/05	263.52	234.51	120.28	232.55			
11/26/05	275.06	257.78	136.00	265.29			
11/27/05	266.49	238.69	128.42	250.21			
11/28/05	213.64	195.95	131.84	255.99			
11/29/05	262.11	238.63	126.29	244.39			
11/30/05	219.20	258.02	136.18	236.46			
12/01/05	227.74	231.10	115.98	222.26			
12/02/05	210.36	207.51	085.94	172.49			
12/03/05	266.03	281.41	104.48	217.86			
12/04/05	236.37	249.87	130.28	255.35			
12/05/05	222.71	248.68	121.93	238.95			
12/06/05	234.36	259.14	125.71	235.51			
12/07/05	156.35	302.96	131.18	359.35			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
12/08/05	183.09	370.13	165.65	476.81			
12/09/05	302.51	367.05	312.98	499.86			
12/10/05	304.82	345.28	091.07	499.86			
12/11/05	271.53	292.10	137.59	499.86			
12/12/05	268.42	283.79	134.08	499.86			
12/13/05	259.64	258.44	121.27	499.86			
12/14/05	267.90	275.24	129.35	499.86			
12/15/05	269.46	282.98	143.72	499.86			
12/16/05	243.90	269.71	088.11	499.86			
12/17/05	244.25	264.03	041.90	499.86			
12/18/05	255.59	287.29	123.18	499.86			
12/19/05	222.16	253.05	098.32	499.86			
12/20/05	181.08	145.24	056.51	499.86			
12/21/05	242.25	287.78	120.61	499.86			
12/22/05	212.77	248.39	094.82	499.86			
12/23/05	233.33	253.40	119.02	499.86			
12/24/05	223.25	221.18	098.73	499.86			
12/25/05	232.03	234.00	113.40	499.86			
12/26/05	227.66	221.17	111.83	499.86			
12/27/05	224.12	208.90	106.36	499.86			
12/28/05	235.83	226.72	111.01	499.86			
12/29/05	228.30	212.05	103.48	499.86			
12/30/05	231.05	213.14	106.25	499.86			
12/31/05	230.21	209.31	105.69	499.86			
01/01/06	237.34	220.12	113.08	499.86			
01/02/06	204.91	170.58	100.72	499.86			
01/03/06	229.63	199.97	104.02	499.86			
01/04/06	241.01	215.53	114.44	499.86			
01/05/06	235.89	205.65	108.62	499.86			
01/06/06	221.09	181.27	095.18	499.86			
01/07/06	227.39	185.94	093.72	499.86			
01/08/06	238.51	200.14	109.59	499.86			
01/09/06	236.80	194.88	107.18	499.86			
01/10/06	231.37	187.84	110.61	499.86			
01/11/06	247.14	234.90	105.06	499.86			
01/12/06	243.24	200.89	106.82	499.86			
01/13/06	259.79	235.04	123.44	499.86			
01/14/06	254.61	226.95	118.09	499.86			
01/15/06	254.22	217.00	121.98	499.86			
01/16/06	263.65	232.50	131.94	499.86			
01/17/06	272.46	248.79	141.59	499.86			
01/18/06	280.75	253.84	144.70	499.86			
01/19/06	280.66	229.88	141.31	499.86			
01/20/06	273.72	212.96	133.58	499.86			
01/21/06	268.96	206.87	129.24	499.86			
01/22/06	285.31	239.09	144.49	499.86			
01/23/06	286.48	240.12	143.89	499.86			
01/24/06	288.53	245.08	143.10	499.86			
01/25/06	281.69	229.21	136.75	499.86			
01/26/06	273.06	213.87	128.45	499.86			
01/27/06	270.41	208.28	135.96	499.86			
01/28/06	270.98	214.25	126.73	499.86			
01/29/06	278.64	231.64	126.94	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/30/06	276.49	235.44	140.96	499.86			
01/31/06	260.72	214.46	118.37	499.86			
02/01/06	255.36	214.67	121.56	499.86			
02/02/06	251.59	210.32	128.80	499.86			
02/03/06	264.37	237.98	129.42	499.86			
02/04/06	265.17	248.65	140.01	391.84			
02/05/06	262.90	243.46	137.10	260.61			
02/06/06	258.93	233.16	131.21	248.93			
02/07/06	263.07	245.63	133.07	263.00			
02/08/06	230.62	192.44	099.17	193.81			
02/09/06	266.53	253.36	130.22	264.54			
02/10/06	256.75	236.51	124.01	241.46			
02/11/06	205.16	141.94	072.15	142.52			
02/12/06	227.15	185.07	099.76	184.01			
02/13/06	200.02	228.85	093.31	099.45			
02/14/06	240.13	210.11	112.61	218.96			
02/15/06	224.41	178.78	097.58	189.15			
02/16/06	237.00	196.52	106.08	201.58			
02/17/06	223.66	174.20	095.51	180.57			
02/18/06	210.89	158.64	087.56	138.75			
02/19/06	218.14	171.36	091.31	144.41			
02/20/06	231.93	196.14	110.13	305.10			
02/21/06	240.72	203.65	112.26	210.82			
02/22/06	206.32	140.17	080.20	151.60			
02/23/06	229.52	179.72	101.70	190.52			
02/24/06	244.93	205.81	117.57	219.77			
02/25/06	232.41	181.75	105.75	196.85			
02/26/06	218.13	157.82	087.13	161.45			
02/27/06	212.21	148.45	084.85	156.29			
02/28/06	228.94	173.55	096.84	178.49			
03/01/06	214.00	146.29	080.57	147.64			
03/02/06	216.53	150.74	089.19	162.93			
03/03/06	213.92	149.05	092.03	170.75			
03/04/06	219.52	160.79	095.94	178.78			
03/05/06	232.71	182.98	106.63	197.36			
03/06/06	242.14	196.40	113.48	208.21			
03/07/06	221.31	157.57	090.02	164.89			
03/08/06	216.46	153.24	090.45	158.37			
03/09/06	224.88	163.28	100.45	181.61			
03/10/06	247.90	203.49	116.11	210.76			
03/11/06	211.67	140.20	079.37	144.26			
03/12/06	217.31	147.45	089.80	161.54			
03/13/06	225.31	160.94	096.36	173.32			
03/14/06	237.56	180.81	114.27	203.32			
03/15/06	199.55	119.98	071.50	128.94			
03/16/06	264.64	221.22	133.54	239.00			
03/17/06	263.41	218.42	131.77	235.17			
03/18/06	260.50	214.18	129.13	230.46			
03/19/06	236.70	176.23	106.27	190.93			
03/20/06	250.24	197.08	119.66	214.92			
03/21/06	221.93	154.13	093.80	169.58			
03/22/06	242.61	187.83	108.28	217.51			
03/23/06	223.91	159.18	092.26	166.23			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
03/24/06	245.29	187.66	110.09	234.85			
03/25/06	247.25	190.67	115.26	207.53			
03/26/06	242.95	182.45	106.20	189.80			
03/27/06	251.77	194.80	118.89	212.55			
03/28/06	235.25	168.62	104.10	186.61			
03/29/06	256.61	201.97	118.28	210.93			
03/30/06	243.80	182.59	107.34	192.32			
03/31/06	254.33	196.98	116.61	206.91			
04/01/06	244.92	183.71	108.06	191.34			
04/02/06	255.31	198.84	117.97	210.53			
04/03/06	259.64	205.18	126.30	227.24			
04/04/06	233.20	164.21	039.34	071.26			
04/05/06	162.69	057.49	118.76	235.20			
04/06/06	225.50	159.64	102.32	201.95			
04/07/06	282.14	243.71	056.89	101.17			
04/08/06	266.62	216.21	131.53	235.30			
04/09/06	246.24	183.81	112.48	199.87			
04/10/06	269.45	220.40	135.71	242.98			
04/11/06	275.61	231.72	134.55	239.58			
04/12/06	251.92	193.26	112.04	200.15			
04/13/06	245.43	181.63	105.65	189.12			
04/14/06	238.99	167.11	102.90	180.89			
04/15/06	246.88	181.44	111.88	198.00			
04/16/06	263.70	211.77	129.30	228.00			
04/17/06	271.47	227.44	134.95	243.54			
04/18/06	276.60	236.97	138.34	249.83			
04/19/06	263.09	214.62	124.13	223.24			
04/20/06	268.62	226.05	129.52	235.76			
04/21/06	266.05	221.92	126.40	231.40			
04/22/06	246.21	188.31	108.21	196.72			
04/23/06	241.85	182.30	104.54	190.60			
04/24/06	259.79	208.76	120.71	217.55			
04/25/06	261.63	212.24	124.78	227.37			
04/26/06	252.54	202.58	118.83	217.86			
04/27/06	244.39	188.83	110.24	203.42			
04/28/06	243.48	184.85	107.38	199.22			
04/29/06	249.27	195.08	115.81	213.98			
05/01/06	246.60	188.89	111.64	201.86			
05/02/06	244.64	184.77	110.29	199.08			
05/03/06	267.34	220.32	129.34	236.17			
05/04/06	266.65	222.06	130.28	239.30			
05/05/06	248.71	194.28	114.86	211.87			
05/06/06	259.16	214.06	127.67	235.49			
05/07/06	253.39	207.28	119.41	221.19			
05/08/06	268.37	231.62	134.17	247.64			
05/09/06	261.37	217.59	125.88	231.34			
05/10/06	266.19	226.63	130.21	238.08			
05/11/06	263.75	224.43	129.48	238.04			
05/12/06	263.46	226.16	128.79	237.50			
05/13/06	259.42	217.63	124.38	227.45			
05/14/06	264.72	226.83	133.38	243.95			
05/15/06	260.38	221.56	133.21	246.23			
05/16/06	299.70	295.00	156.29	305.35			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
05/17/06	266.64	234.06	116.79	227.82			
05/18/06	297.39	296.38	147.22	291.75			
05/19/06	285.14	278.70	136.38	270.72			
05/20/06	280.64	281.47	141.21	282.88			
05/21/06	284.45	298.32	132.86	269.47			
05/22/06	249.65	227.50	116.99	235.56			
05/23/06	284.50	311.66	149.12	305.93			
05/24/06	265.92	271.44	116.04	238.47			
05/25/06	252.86	272.69	133.64	275.70			
05/26/06	263.61	261.57	135.95	274.31			
05/27/06	267.81	268.13	126.98	255.76			
05/28/06	278.45	286.03	139.90	281.41			
05/29/06	263.40	255.80	131.60	264.57			
05/30/06	268.88	266.24	139.56	279.84			
05/31/06	270.19	260.34	135.79	270.98			
06/01/06	263.67	251.66	132.42	266.65			
06/02/06	284.00	285.84	151.20	304.51			
06/03/06	262.06	243.45	123.99	253.88			
06/04/06	264.72	245.63	126.04	257.91			
06/05/06	268.76	252.55	129.36	265.75			
06/06/06	266.02	240.94	124.01	254.85			
06/07/06	270.22	246.31	128.11	261.24			
06/08/06	287.97	281.17	145.68	297.39			
06/09/06	255.80	221.09	114.96	235.16			
06/10/06	275.71	252.90	132.38	269.18			
06/11/06	250.45	209.97	109.53	223.81			
06/12/06	252.93	208.51	109.80	224.64			
06/13/06	220.05	152.81	086.91	169.42			
06/14/06	231.57	173.94	095.19	184.41			
06/15/06	227.41	167.59	088.30	173.33			
06/16/06	281.81	261.43	130.09	269.95			
06/17/06	281.40	260.90	130.40	269.79			
06/18/06	258.14	221.72	111.11	231.98			
06/19/06	275.43	250.15	125.95	260.23			
06/20/06	270.92	240.47	120.31	249.86			
06/21/06	273.59	247.41	123.17	257.40			
06/22/06	248.16	202.23	099.01	209.19			
06/23/06	282.29	268.82	136.14	286.05			
06/24/06	263.98	241.60	118.48	252.51			
06/25/06	276.96	265.30	128.56	274.03			
06/26/06	271.33	261.40	125.10	268.39			
06/27/06	303.63	326.30	160.18	345.40			
06/28/06	306.92	332.60	159.52	341.44			
06/29/06	311.30	338.63	164.31	350.49			
06/30/06	295.94	314.19	148.20	320.32			
07/01/06	253.08	234.94	136.46	293.87			
07/02/06	280.52	280.22	134.34	290.80			
07/03/06	304.15	325.00	138.93	300.15			
07/04/06	248.67	223.03	102.90	226.06			
07/05/06	277.08	275.54	133.41	286.92			
07/06/06	256.23	232.87	108.11	233.95			
07/07/06	219.13	162.37	077.77	175.02			
07/08/06	264.72	243.25	116.49	248.28			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/09/06	256.11	228.87	112.65	239.04			
07/10/06	279.66	268.92	128.97	272.94			
07/11/06	250.24	215.09	108.44	232.49			
07/12/06	267.88	248.20	126.09	267.14			
07/13/06	253.19	221.27	105.67	225.85			
07/14/06	259.54	234.44	117.25	257.71			
07/15/06	257.01	229.61	113.62	243.71			
07/16/06	270.40	251.37	121.37	260.77			
07/17/06	264.25	241.96	118.68	258.00			
07/18/06	253.40	220.30	108.80	236.24			
07/19/06	249.12	215.07	108.08	235.23			
07/20/06	225.11	170.28	095.65	208.44			
07/21/06	217.94	156.28	115.03	249.07			
07/22/06	274.99	257.03	125.28	268.95			
07/23/06	252.38	217.35	104.62	227.43			
07/24/06	279.97	267.82	127.86	277.23			
07/25/06	261.50	234.78	111.84	244.08			
07/26/06	263.43	239.48	113.45	248.19			
07/27/06	244.35	202.63	097.64	214.09			
07/28/06	280.64	272.33	131.36	287.27			
07/29/06	258.19	230.68	107.79	236.62			
07/30/06	224.29	173.04	110.36	243.09			
07/31/06	274.93	258.81	127.14	279.87			
08/01/06	251.50	218.45	119.86	263.48			
08/02/06	271.34	248.96	109.74	241.57			
08/03/06	299.50	295.64	117.96	258.56			
08/04/06	193.82	101.60	106.25	231.97			
08/05/06	226.52	142.71	097.46	213.54			
08/06/06	265.74	216.23	116.79	253.72			
08/07/06	235.75	172.93	093.90	205.26			
08/08/06	244.53	189.89	095.24	207.64			
08/09/06	231.53	172.23	086.45	189.39			
08/10/06	243.52	192.37	096.67	210.29			
08/11/06	265.84	231.08	115.82	249.74			
08/12/06	255.18	216.29	095.63	209.25			
08/13/06	263.54	234.46	113.90	250.19			
08/14/06	216.47	156.17	089.07	199.70			
08/15/06	263.08	240.17	110.74	246.24			
08/16/06	249.14	212.76	099.84	222.42			
08/17/06	234.02	183.13	111.33	246.88			
08/18/06	272.00	242.66	127.99	281.40			
08/19/06	279.22	263.56	117.10	256.12			
08/20/06	292.69	282.06	088.20	198.87			
08/21/06	293.08	284.93	101.90	224.17			
08/22/06	281.68	268.79	115.77	254.14			
08/23/06	311.93	328.09	123.92	272.38			
08/24/06	251.54	223.89	106.06	234.17			
08/25/06	196.88	280.70	000.00	005.45			
08/26/06	133.04	040.35	000.05	004.83			
08/27/06	294.62	289.86	140.65	307.38			
08/28/06	298.19	298.42	123.37	277.40			
08/29/06	270.85	248.79	106.29	233.65			
08/30/06	279.46	261.74	131.04	286.27			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
08/31/06	240.92	191.26	099.00	215.60			
09/01/06	216.94	151.42	064.19	145.13			
09/02/06	249.61	207.46	106.49	233.99			
09/03/06	235.17	188.09	095.18	210.84			
09/04/06	264.57	241.72	118.49	193.92			
09/05/06	284.42	274.70	145.31	217.45			
09/06/06	279.13	264.26	130.54	181.33			
09/07/06	266.70	243.77	118.04	126.86			
09/08/06	255.18	224.98	108.96	362.30			
09/09/06	229.68	177.57	088.39	410.17			
09/10/06	209.98	142.86	070.79	313.82			
09/11/06	232.03	180.56	088.46	230.67			
09/12/06	230.95	181.03	084.28	258.25			
09/13/06	257.06	228.54	110.65	446.89			
09/14/06	163.68	061.32	030.83	489.92			
09/15/06	177.27	084.65	042.54	495.31			
09/16/06	287.19	293.05	148.53	490.24			
09/17/06	299.65	308.41	153.00	496.41			
09/18/06	277.67	274.39	116.03	458.31			
09/19/06	286.07	287.09	109.42	479.11			
09/20/06	261.41	240.85	078.61	499.86			
09/21/06	250.99	221.86	083.75	496.54			
09/22/06	243.76	205.82	099.29	496.05			
09/23/06	251.43	222.16	098.07	471.75			
09/24/06	242.51	208.06	079.42	371.03			
09/25/06	237.10	197.60	091.02	408.91			
09/26/06	240.76	204.99	099.64	439.61			
09/27/06	142.17	058.92	000.00	383.97			
09/28/06	129.68	001.94	000.00	427.75			
09/29/06	204.27	141.27	066.78	427.61			
09/30/06	300.50	319.08	163.28	495.38			
10/01/06	264.95	251.29	127.05	460.32			
10/02/06	260.06	243.80	123.13	446.81			
10/03/06	272.31	267.63	121.17	434.67			
10/04/06	267.33	255.31	114.27	397.36			
10/05/06	248.90	223.87	092.00	357.89			
10/06/06	248.27	220.14	104.17	421.38			
10/07/06	229.62	185.05	086.74	439.16			
10/08/06	223.27	179.30	080.85	480.98			
10/09/06	216.58	172.26	083.04	494.70			
10/10/06	211.06	167.54	075.19	492.56			
10/11/06	217.93	180.65	071.84	499.86			
10/12/06	212.05	172.33	071.41	499.86			
10/13/06	144.22	104.77	000.00	487.31			
10/14/06	125.29	006.93	000.00	499.86			
10/15/06	144.19	034.45	011.99	499.86			
10/16/06	312.33	351.90	134.13	499.86			
10/17/06	302.86	338.32	150.49	499.86			
10/18/06	248.57	232.80	096.38	499.86			
10/19/06	309.11	352.81	130.06	499.86			
10/20/06	286.49	313.75	130.76	499.86			
10/21/06	296.21	335.37	135.64	499.86			
10/22/06	291.61	326.80	132.68	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/23/06	271.49	292.69	126.22	499.86			
10/24/06	256.74	263.30	108.88	499.86			
10/25/06	282.51	316.14	110.04	499.86			
10/26/06	263.17	276.31	106.62	499.86			
10/27/06	256.35	264.22	102.07	499.86			
10/28/06	229.30	217.90	089.75	499.86			
10/29/06	211.33	192.33	080.65	499.86			
10/29/06	207.49	189.28	066.69	499.86			
10/30/06	202.59	176.00	063.01	499.86			
11/01/06	177.82	119.78	016.06	499.28			
11/02/06	161.62	076.97	032.66	446.85			
11/03/06	298.11	361.88	154.31	497.94			
11/04/06	273.04	309.73	130.69	474.35			
11/05/06	282.65	336.20	146.90	499.86			
11/06/06	279.09	329.10	135.05	499.86			
11/07/06	268.90	311.81	130.00	499.86			
11/08/06	262.36	296.63	124.44	499.86			
11/09/06	266.85	304.58	123.18	499.86			
11/10/06	263.44	297.77	106.75	499.86			
11/11/06	248.30	267.16	108.46	499.86			
11/12/06	249.19	271.22	112.14	499.86			
11/13/06	245.34	261.63	108.31	499.86			
11/14/06	247.11	267.07	111.64	499.86			
11/15/06	133.75	068.31	000.00	499.86			
11/16/06	122.17	035.59	000.00	499.86			
11/17/06	286.97	358.63	143.70	499.86			
11/18/06	285.26	359.65	141.22	499.86			
11/19/06	285.31	368.03	152.99	499.86			
11/20/06	266.19	329.39	132.20	499.86			
11/21/06	273.55	351.24	140.01	499.86			
11/22/06	271.81	346.30	125.56	499.86			
11/23/06	271.96	354.24	119.23	499.86			
11/24/06	253.29	307.76	120.19	499.86			
11/25/06	257.22	314.72	122.24	499.86			
11/26/06	247.83	296.70	110.90	499.86			
11/27/06	237.79	269.17	103.52	499.86			
11/28/06	240.38	274.77	103.70	499.86			
11/29/06	236.63	267.39	103.55	499.86			
11/30/06	235.40	271.22	108.85	482.94			
12/01/06	341.61	322.34	069.48	205.12			
12/02/06	155.97	365.23	109.52	300.35			
12/03/06	211.07	313.94	118.16	441.47			
12/04/06	128.93	350.03	114.31	423.53			
12/05/06	147.83	372.01	120.98	483.94			
12/06/06	148.58	294.21	103.71	496.74			
12/07/06	270.33	372.64	139.79	499.86			
12/08/06	269.50	383.96	134.00	499.86			
12/09/06	193.23	402.19	137.65	322.78			
12/10/06	263.46	379.12	138.71	499.86			
12/11/06	264.73	383.11	139.97	499.86			
12/12/06	256.55	362.65	122.80	499.86			
12/13/06	257.22	365.29	129.00	499.86			
12/14/06	259.28	364.77	126.85	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
12/15/06	257.90	357.16	130.00	499.86			
12/16/06	251.99	333.35	115.54	499.86			
12/17/06	241.69	311.56	110.02	499.86			
12/18/06	254.77	341.08	117.58	499.86			
12/19/06	235.53	305.19	108.33	499.86			
12/20/06	231.40	297.08	106.92	499.86			
12/21/06	157.35	310.90	112.35	240.73			
12/22/06	236.51	302.72	112.60	499.84			
12/23/06	253.45	339.93	123.64	318.65			
12/24/06	191.94	347.12	122.49	484.91			
12/25/06	203.64	370.17	136.91	300.86			
12/26/06	257.11	359.39	125.72	213.70			
12/27/06	264.78	375.95	137.70	264.53			
12/28/06	250.14	336.11	123.86	265.16			
12/29/06	263.63	370.83	137.73	269.36			
12/30/06	253.81	351.17	129.28	265.08			
12/31/06	258.61	363.77	134.37	289.45			
01/01/07	188.73	362.06	128.23	151.73			
01/02/07	182.94	359.51	123.77	118.76			
01/03/07	253.59	356.37	124.61	227.00			
01/04/07	245.54	339.68	119.66	270.01			
01/05/07	243.25	355.94	117.53	336.75			
01/06/07	245.77	358.30	120.48	404.30			
01/07/07	246.15	364.40	117.24	369.12			
01/08/07	243.64	362.76	122.72	218.35			
01/09/07	230.33	363.63	119.53	219.77			
01/10/07	233.00	338.65	108.71	272.00			
01/11/07	242.48	358.15	119.78	360.48			
01/12/07	253.90	386.59	124.21	425.33			
01/13/07	235.82	339.19	114.82	352.86			
01/14/07	243.02	364.12	116.33	455.03			
01/15/07	132.56	364.99	111.72	418.53			
01/16/07	104.44	345.25	112.74	109.28			
01/17/07	067.68	380.62	116.72	074.54			
01/18/07	070.51	373.17	128.77	052.04			
01/19/07	149.15	369.62	116.87	173.96			
01/20/07	192.86	387.55	128.29	333.06			
01/21/07	242.76	377.43	125.71	129.85			
01/22/07	243.31	379.52	128.07	164.99			
01/23/07	039.95	381.21	120.31	074.74			
01/24/07	135.07	389.95	125.25	027.67			
01/25/07	149.08	417.28	112.91	153.33			
01/26/07	179.38	403.77	125.34	145.37			
01/27/07	262.54	414.49	110.74	212.17			
01/28/07	254.18	410.62	123.83	166.78			
01/29/07	236.64	400.20	115.49	142.30			
01/30/07	175.81	388.86	104.50	191.22			
01/31/07	243.45	385.18	113.10	158.56			
02/01/07	178.50	378.08	112.13	319.97			
02/02/07	200.27	257.90	080.94	295.48			
02/03/07	199.98	340.85	089.80	255.48			
02/04/07	223.82	388.10	128.08	184.86			
02/05/07	249.69	379.76	123.65	207.38			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/06/07	253.22	370.01	121.87	288.46			
02/07/07	216.47	223.86	074.56	385.48			
02/08/07	350.92	361.59	078.82	499.86			
02/09/07	296.82	295.59	157.80	499.86			
02/10/07	298.90	317.37	150.24	499.86			
02/11/07	296.91	325.04	114.41	499.86			
02/12/07	269.01	273.13	127.86	499.86			
02/13/07	294.63	315.77	125.56	499.86			
02/14/07	247.16	232.32	113.82	499.86			
02/15/07	016.92	263.00	114.42	182.48			
02/16/07	122.05	264.30	115.68	259.07			
02/17/07	180.64	255.28	133.36	333.12			
02/18/07	296.55	304.63	144.03	382.82			
02/19/07	299.00	302.98	157.41	213.60			
02/20/07	293.82	279.76	140.51	345.14			
02/21/07	283.49	255.95	132.76	499.86			
02/22/07	279.50	249.18	121.42	495.80			
02/23/07	283.47	252.77	126.79	468.39			
02/24/07	293.67	269.17	124.08	192.56			
02/25/07	280.34	253.39	134.52	000.00			
02/26/07	269.98	239.72	134.58	000.00			
02/27/07	271.03	242.84	137.89	000.00			
02/28/07	255.76	222.20	128.29	000.00			
03/01/07	260.84	231.04	123.60	012.25			
03/02/07	283.68	271.46	154.78	021.01			
03/03/07	264.20	243.55	130.93	046.06			
03/04/07	253.27	277.72	141.14	109.51			
03/05/07	233.89	229.31	169.73	049.34			
03/06/07	245.43	221.18	155.34	111.97			
03/07/07	266.24	249.79	145.25	001.90			
03/08/07	277.19	265.38	147.24	011.41			
03/09/07	275.66	267.65	149.65	048.76			
03/10/07	294.62	294.82	158.44	002.03			
03/11/07	276.38	271.57	149.34	010.34			
03/12/07	273.40	265.81	148.91	011.62			
03/13/07	278.39	275.61	153.17	031.54			
03/14/07	275.07	271.09	144.21	034.23			
03/15/07	262.91	249.70	151.26	164.04			
03/16/07	289.25	294.09	133.99	075.11			
03/17/07	283.98	290.75	147.17	187.59			
03/18/07	285.18	293.80	154.59	132.71			
03/19/07	277.62	287.41	147.56	019.49			
03/20/07	283.09	301.29	143.56	000.00			
03/21/07	278.74	293.27	149.09	000.00			
03/22/07	275.25	290.51	141.72	000.00			
03/23/07	271.56	299.95	149.99	000.00			
03/24/07	285.10	335.14	160.06	000.06			
03/25/07	288.97	339.82	133.70	000.04			
03/26/07	277.22	318.46	138.55	000.21			
03/27/07	290.36	335.37	160.72	003.49			
03/28/07	283.86	328.67	159.75	006.18			
03/29/07	282.56	321.90	166.55	000.01			
03/30/07	273.04	300.02	147.06	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
04/01/07	271.84	288.46	120.97	010.05			
04/02/07	260.49	266.37	095.03	027.78			
04/03/07	203.87	175.17	058.64	006.05			
04/04/07	201.30	171.55	049.34	070.51			
04/05/07	199.33	174.07	042.34	467.18			
04/06/07	288.21	313.50	154.39	499.86			
04/07/07	290.65	313.88	160.35	499.86			
04/08/07	188.75	297.39	148.83	499.86			
04/09/07	161.56	303.92	152.87	422.79			
04/10/07	279.55	296.15	152.50	499.86			
04/11/07	283.88	299.04	146.31	499.86			
04/12/07	290.53	310.22	146.09	499.86			
04/13/07	278.67	286.56	150.45	499.86			
04/14/07	273.98	279.11	147.96	499.86			
04/15/07	282.67	292.78	144.56	499.86			
04/16/07	265.10	262.17	138.89	499.85			
04/17/07	274.42	275.34	139.25	345.20			
04/18/07	282.17	291.69	125.67	266.86			
04/19/07	287.68	297.54	153.67	321.01			
04/20/07	261.83	259.44	128.27	274.28			
04/21/07	258.18	250.19	121.44	262.66			
04/22/07	249.80	250.63	135.45	294.63			
04/23/07	272.24	281.15	123.18	275.67			
04/24/07	255.54	254.04	104.61	234.37			
04/25/07	258.24	257.81	126.26	273.43			
04/26/07	253.78	249.58	123.08	261.93			
04/27/07	223.20	197.97	101.43	210.30			
04/28/07	214.19	183.08	097.30	201.65			
04/29/07	228.45	207.29	110.50	229.22			
04/30/07	292.33	325.84	135.91	301.19			
05/01/07	282.54	302.78	150.38	321.47			
05/02/07	285.39	521.69	149.28	538.99			
05/03/07	276.18	604.57	164.10	705.19			
05/04/07	239.78	499.77	156.90	679.50			
05/05/07	298.54	681.63	169.23	721.01			
05/06/07	283.07	637.76	153.14	670.21			
05/07/07	288.14	653.07	155.80	679.91			
05/08/07	268.95	596.83	138.13	621.78			
05/09/07	285.52	645.71	162.18	714.35			
05/10/07	280.38	633.49	144.66	650.60			
05/11/07	299.86	687.11	153.91	684.31			
05/12/07	296.78	687.20	153.22	675.48			
05/13/07	273.11	620.97	143.07	644.35			
05/14/07	273.80	616.87	140.43	635.70			
05/15/07	275.63	629.87	143.27	655.46			
05/16/07	279.87	646.66	128.56	602.34			
05/17/07	280.97	660.95	147.80	679.25			
05/18/07	285.29	675.51	154.07	696.67			
05/19/07	272.53	637.11	142.10	654.47			
05/20/07	278.69	650.65	141.29	652.63			
05/21/07	273.97	638.89	141.41	655.33			
05/22/07	271.35	629.95	135.38	642.18			
05/23/07	277.08	655.28	147.29	689.38			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/24/07	272.06	637.50	143.17	673.13			
05/25/07	271.56	641.67	144.13	682.31			
05/26/07	272.01	646.96	146.03	693.50			
05/27/07	273.69	653.88	139.67	663.51			
05/28/07	271.87	643.32	143.42	678.61			
05/29/07	274.38	648.94	143.79	681.44			
05/30/07	275.03	645.60	153.85	720.18			
05/31/07	278.57	656.12	148.66	696.91			
06/01/07	273.74	640.95	142.89	676.15			
06/02/07	281.21	664.08	148.12	693.92			
06/03/07	293.47	704.21	162.60	746.23			
06/04/07	286.06	684.75	155.94	724.62			
06/05/07	270.94	640.80	142.20	673.70			
06/06/07	111.54	158.11	000.00	148.86			
06/07/07	127.00	216.02	032.91	275.66			
06/08/07	295.22	722.86	168.13	721.02			
06/09/07	291.54	721.80	176.86	744.45			
06/10/07	293.63	726.19	180.95	761.72			
06/11/07	286.50	711.34	175.68	745.10			
06/12/07	279.57	684.68	178.53	750.63			
06/13/07	296.56	738.33	156.01	690.86			
06/14/07	277.86	676.76	148.53	648.14			
06/15/07	242.95	558.59	157.01	683.56			
06/16/07	249.40	580.34	139.31	617.21			
06/17/07	245.27	567.38	124.55	572.82			
06/18/07	264.41	627.10	146.28	648.44			
06/19/07	259.64	612.65	136.70	620.93			
06/20/07	256.11	604.39	124.83	597.74			
06/21/07	257.58	617.51	144.01	649.99			
06/22/07	264.15	643.23	156.40	689.88			
06/23/07	244.28	580.46	131.30	610.39			
06/24/07	284.09	717.84	137.12	643.35			
06/25/07	284.23	723.29	147.55	676.07			
06/26/07	257.97	639.35	157.18	696.66			
06/27/07	271.58	688.83	158.22	696.33			
06/28/07	275.46	713.13	153.98	684.82			
06/29/07	276.98	724.00	129.84	617.61			
06/30/07	274.05	712.08	167.27	710.10			
07/01/07	274.62	717.95	163.72	698.40			
07/02/07	258.91	657.44	163.12	699.21			
07/03/07	260.68	665.49	162.23	694.03			
07/04/07	255.88	647.11	151.52	656.90			
07/05/07	264.36	676.82	166.52	706.76			
07/06/07	261.44	663.22	154.80	668.58			
07/07/07	247.77	612.01	152.43	665.07			
07/08/07	269.83	684.86	169.86	718.20			
07/09/07	257.68	643.49	150.32	655.85			
07/10/07	260.92	645.52	152.11	667.19			
07/11/07	264.01	667.38	166.00	723.45			
07/12/07	267.07	681.93	139.12	630.36			
07/13/07	263.38	663.34	150.71	677.54			
07/14/07	252.45	616.68	142.69	646.59			
07/15/07	264.20	658.52	153.59	684.88			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
07/16/07	256.60	627.28	143.43	646.80			
07/17/07	272.03	683.32	159.93	703.67			
07/18/07	255.13	584.39	138.96	588.94			
07/19/07	281.04	355.87	162.68	354.99			
07/20/07	267.71	330.30	153.42	344.86			
07/21/07	264.52	322.69	144.02	332.16			
07/22/07	272.71	342.75	150.87	356.39			
07/23/07	267.34	332.67	138.91	335.97			
07/24/07	275.47	345.25	127.62	313.40			
07/25/07	264.35	322.70	146.73	355.42			
07/26/07	272.85	336.71	147.18	351.95			
07/27/07	268.73	332.17	144.20	348.66			
07/28/07	265.54	320.49	141.25	343.21			
07/29/07	265.41	326.12	137.11	338.53			
07/30/07	254.41	307.17	128.48	322.50			
07/31/07	230.51	261.97	100.99	264.60			
08/01/07	265.10	329.52	111.05	303.65			
08/02/07	257.51	309.87	111.35	287.57			
08/03/07	222.26	241.79	098.34	256.31			
08/04/07	265.96	328.65	134.85	339.29			
08/05/07	266.30	327.75	118.18	300.78			
08/06/07	254.03	305.70	132.29	338.98			
08/07/07	270.03	335.90	131.20	337.74			
08/08/07	279.64	322.76	127.24	328.03			
08/09/07	261.30	321.77	131.92	339.90			
08/10/07	255.69	306.02	124.76	320.62			
08/11/07	274.70	348.20	146.14	372.60			
08/12/07	258.49	316.84	121.62	315.35			
08/13/07	268.18	333.67	138.15	352.93			
08/14/07	256.89	312.41	106.60	296.01			
08/15/07	251.84	302.93	119.52	315.17			
08/16/07	234.73	265.87	123.71	323.34			
08/17/07	245.82	289.91	113.51	297.06			
08/18/07	239.04	279.63	109.46	288.07			
08/19/07	237.18	273.87	109.09	287.19			
08/20/07	239.96	277.31	109.38	288.56			
08/21/07	246.32	291.87	092.25	266.58			
08/22/07	248.47	294.56	079.69	247.41			
08/23/07	242.40	287.68	108.02	303.73			
08/24/07	252.46	306.06	115.61	319.22			
08/25/07	245.63	296.29	111.92	310.69			
08/26/07	254.45	314.57	117.74	324.31			
08/27/07	253.16	313.37	119.31	326.50			
08/28/07	244.06	295.90	115.35	319.28			
08/29/07	251.44	302.76	125.76	337.82			
08/30/07	227.93	260.21	100.23	290.05			
08/31/07	247.34	299.81	113.13	313.58			
09/01/07	256.72	316.43	123.77	328.49			
09/02/07	261.70	326.95	131.63	341.54			
09/03/07	255.09	315.43	129.02	330.66			
09/04/07	249.80	305.29	124.19	318.51			
09/05/07	269.03	344.89	141.63	357.53			
09/06/07	258.65	321.42	135.13	341.90			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
09/07/07	257.23	322.25	135.31	340.53			
09/08/07	269.88	345.78	149.93	370.65			
09/09/07	254.62	318.21	135.17	338.77			
09/10/07	256.30	322.50	142.04	355.92			
09/11/07	252.19	317.34	131.32	332.31			
09/12/07	282.13	388.43	048.17	238.66			
09/13/07	285.45	387.19	066.64	246.29			
09/14/07	277.05	358.03	111.08	282.68			
09/15/07	109.01	072.98	019.04	071.66			
09/16/07	082.60	062.24	020.77	075.79			
09/17/07	270.69	351.97	128.67	330.66			
09/18/07	266.04	342.59	153.98	381.41			
09/19/07	274.02	362.66	156.31	384.44			
09/20/07	268.82	351.37	139.16	345.36			
09/21/07	274.13	363.54	140.80	358.02			
09/22/07	270.43	423.41	149.80	372.66			
09/23/07	272.83	493.34	154.10	382.75			
09/24/07	267.75	431.17	146.37	364.34			
09/25/07	258.18	396.94	138.98	347.13			
09/26/07	258.69	324.06	135.74	338.10			
09/27/07	267.64	338.45	143.89	355.03			
09/28/07	265.37	304.90	134.97	334.09			
09/29/07	271.64	289.12	132.92	327.67			
09/30/07	259.88	256.93	131.69	325.66			
10/01/07	282.86	289.12	143.95	353.59			
10/02/07	297.88	242.65	128.73	320.27			
10/03/07	282.73	163.13	086.79	226.28			
10/04/07	301.34	266.36	135.38	333.73			
10/05/07	304.36	289.81	131.07	326.91			
10/06/07	303.10	285.49	132.06	325.15			
10/07/07	292.99	270.37	136.04	336.44			
10/08/07	301.91	306.99	127.43	320.84			
10/09/07	291.79	296.94	130.25	329.32			
10/10/07	300.97	296.87	135.29	341.58			
10/11/07	295.16	296.03	132.93	334.20			
10/12/07	291.39	283.36	124.61	320.11			
10/13/07	196.75	068.47	032.53	108.89			
10/14/07	161.68	001.36	000.00	029.99			
10/15/07	288.57	288.46	142.83	367.34			
10/16/07	284.52	297.65	155.85	399.30			
10/17/07	285.12	300.67	149.32	381.91			
10/18/07	287.26	302.41	159.52	405.81			
10/19/07	280.31	287.32	153.03	390.41			
10/20/07	286.71	296.65	155.89	394.36			
10/21/07	291.36	305.32	147.09	370.46			
10/22/07	287.09	314.15	155.28	397.80			
10/23/07	272.99	292.14	143.08	374.37			
10/24/07	285.12	316.17	152.25	392.01			
10/25/07	281.14	308.45	149.04	374.62			
10/26/07	277.98	304.41	149.90	385.89			
10/27/07	281.16	277.49	148.11	380.04			
10/28/07	274.41	291.04	142.64	369.81			
10/29/07	276.90	305.38	142.49	370.85			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
10/30/07	280.28	309.67	142.62	372.67			
10/31/07	276.22	295.91	144.00	370.03			
11/01/07	278.66	300.59	141.37	371.35			
11/02/07	271.98	285.68	142.03	371.98			
11/03/07	273.30	279.87	136.26	357.48			
11/04/07	278.18	303.15	139.21	367.49			
11/04/07	266.88	281.20	137.01	365.66			
11/05/07	188.02	114.00	039.48	167.16			
11/06/07	170.43	086.91	036.09	120.77			
11/07/07	270.43	297.79	151.20	380.31			
11/08/07	277.47	303.84	156.27	388.14			
11/09/07	279.92	318.35	146.15	366.99			
11/10/07	270.21	294.73	166.43	401.43			
11/11/07	269.82	286.05	136.20	324.12			
11/12/07	274.94	305.81	159.81	368.08			
11/13/07	270.24	303.05	163.62	377.41			
11/14/07	263.36	287.21	157.11	364.91			
11/15/07	258.50	285.24	154.71	358.25			
11/16/07	256.52	272.78	151.09	348.81			
11/17/07	261.37	274.65	150.68	346.33			
11/18/07	259.03	278.22	148.63	342.22			
11/19/07	259.32	288.96	151.35	350.95			
11/20/07	252.44	270.06	135.68	315.78			
11/21/07	242.62	264.45	130.45	306.60			
11/22/07	212.31	316.66	144.77	340.31			
11/23/07	063.71	322.01	140.97	333.50			
11/24/07	155.65	324.61	139.61	329.25			
11/25/07	201.17	381.87	171.82	390.68			
11/26/07	181.09	385.81	176.11	399.84			
11/27/07	257.57	382.99	173.83	395.80			
11/28/07	237.20	331.14	156.19	360.27			
11/29/07	257.87	375.30	175.27	397.49			
12/01/07	257.77	443.82	178.03	400.90			
12/02/07	263.54	467.88	175.25	394.46			
12/03/07	260.79	397.92	179.59	402.28			
12/04/07	257.82	409.43	177.42	399.94			
12/05/07	256.40	418.26	181.08	406.99			
12/06/07	256.65	416.11	180.38	406.50			
12/07/07	253.44	386.25	169.02	382.17			
12/08/07	261.73	389.84	152.89	366.54			
12/09/07	259.47	386.72	172.92	390.83			
12/10/07	252.84	396.01	182.93	414.51			
12/11/07	246.73	377.39	172.84	392.81			
12/12/07	244.65	376.83	172.23	388.18			
12/13/07	252.30	400.42	183.59	411.56			
12/14/07	255.98	397.10	179.53	402.34			
12/15/07	255.32	395.23	181.71	408.53			
12/16/07	252.33	389.25	180.68	408.95			
12/17/07	194.58	374.81	168.88	408.84			
12/18/07	236.34	391.93	178.87	421.71			
12/19/07	250.33	369.86	168.11	400.31			
12/20/07	254.18	385.52	176.44	419.70			
12/21/07	247.12	370.24	167.68	404.49			

Historical Injection Rates and Surface Injection Pressures
 Navajo Refining Company, L.L.C.
 Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/22/07	253.54	387.13	177.72	423.43			
12/23/07	245.90	381.10	169.49	410.58			
12/24/07	172.03	390.45	176.56	434.17			
12/25/07	190.04	368.15	162.36	396.50			
12/26/07	247.12	395.37	175.84	424.29			
12/27/07	246.28	399.43	178.61	432.49			
12/28/07	198.47	401.05	181.96	440.90			
12/29/07	145.84	396.00	187.49	442.83			
12/30/07	166.79	399.24	175.22	435.32			
12/31/07	184.65	398.10	172.83	430.78			
01/01/08	000.00	000.00	000.00	000.00			
01/02/08	000.00	000.00	000.00	000.00			
01/03/08	000.00	000.00	000.00	000.00			
01/04/08	000.00	000.00	000.00	000.00			
01/05/08	000.00	000.00	000.00	000.00			
01/06/08	000.00	000.00	000.00	000.00			
01/07/08	000.00	000.00	000.00	000.00			
01/08/08	000.00	000.00	000.00	000.00			
01/09/08	000.00	000.00	000.00	000.00			
01/10/08	000.00	000.00	000.00	000.00			
01/11/08	000.00	000.00	000.00	000.00			
01/12/08	000.00	000.00	000.00	000.00			
01/13/08	000.00	000.00	000.00	000.00			
01/14/08	000.00	000.00	000.00	000.00			
01/15/08	000.00	000.00	000.00	000.00			
01/16/08	000.00	000.00	000.00	000.00			
01/17/08	000.00	000.00	000.00	000.00			
01/18/08	000.00	000.00	000.00	000.00			
01/19/08	000.00	000.00	000.00	000.00			
01/20/08	000.00	000.00	000.00	000.00			
01/21/08	000.00	000.00	000.00	000.00			
01/22/08	000.00	000.00	000.00	000.00			
01/23/08	000.00	000.00	000.00	000.00			
01/24/08	000.00	000.00	000.00	000.00			
01/25/08	000.00	000.00	000.00	000.00			
01/26/08	000.00	000.00	000.00	000.00			
01/27/08	000.00	000.00	000.00	000.00			
01/28/08	000.00	000.00	000.00	000.00			
01/29/08	000.00	000.00	000.00	000.00			
01/30/08	000.00	000.00	000.00	000.00			
01/31/08	000.00	000.00	000.00	000.00			
02/01/08	000.00	000.00	000.00	000.00			
02/02/08	000.00	000.00	000.00	000.00			
02/03/08	000.00	000.00	000.00	000.00			
02/04/08	000.00	000.00	000.00	000.00			
02/05/08	000.00	000.00	000.00	000.00			
02/06/08	000.00	000.00	000.00	000.00			
02/07/08	000.00	000.00	000.00	000.00			
02/08/08	000.00	000.00	000.00	000.00			
02/09/08	000.00	000.00	000.00	000.00			
02/10/08	000.00	000.00	000.00	000.00			
02/11/08	000.00	000.00	000.00	000.00			
02/12/08	000.00	000.00	000.00	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/13/08	000.00	000.00	000.00	000.00			
02/14/08	000.00	000.00	000.00	000.00			
02/15/08	000.00	000.00	000.00	000.00			
02/16/08	000.00	000.00	000.00	000.00			
02/17/08	000.00	000.00	000.00	000.00			
02/18/08	000.00	000.00	000.00	000.00			
02/19/08	000.00	000.00	000.00	000.00			
02/20/08	000.00	000.00	000.00	000.00			
02/21/08	000.00	000.00	000.00	000.00			
02/22/08	000.00	000.00	000.00	000.00			
02/23/08	000.00	000.00	000.00	000.00			
02/24/08	000.00	000.00	000.00	000.00			
02/25/08	000.00	000.00	000.00	000.00			
02/26/08	000.00	000.00	000.00	000.00			
02/27/08	000.00	000.00	000.00	000.00			
02/28/08	000.00	000.00	000.00	000.00			
02/29/08	000.00	000.00	000.00	000.00			
03/01/08	387.36	900.00	403.00	900.00	03/01/08	234.84	474.53
03/02/08	387.36	900.00	403.00	900.00	03/02/08	222.24	456.35
03/03/08	387.36	900.00	403.00	900.00	03/03/08	217.86	451.64
03/04/08	387.36	900.00	403.00	900.00	03/04/08	247.86	539.51
03/05/08	387.36	900.00	403.00	900.00	03/05/08	000.00	963.15
03/06/08	387.36	900.00	403.00	900.00	03/06/08	000.00	923.70
03/07/08	387.36	900.00	403.00	900.00	03/07/08	000.00	617.52
03/08/08	387.36	900.00	403.00	900.00	03/08/08	000.00	-00.25
03/09/08	387.36	900.00	403.00	900.00	03/09/08	000.00	-00.25
03/10/08	387.36	900.00	403.00	900.00	03/10/08	207.23	437.11
03/11/08	387.36	900.00	403.00	900.00	03/11/08	243.49	518.87
03/12/08	387.36	900.00	403.00	900.00	03/12/08	243.46	517.82
03/13/08	387.36	900.00	403.00	900.00	03/13/08	253.93	550.06
03/14/08	387.36	900.00	403.00	900.00	03/14/08	242.72	524.60
03/15/08	387.36	900.00	403.00	900.00	03/15/08	249.02	540.51
03/16/08	387.36	900.00	403.00	900.00	03/16/08	239.09	520.02
03/17/08	387.36	900.00	403.00	900.00	03/17/08	214.73	487.14
03/18/08	387.36	900.00	403.00	900.00	03/18/08	234.25	524.16
03/19/08	387.36	900.00	403.00	900.00	03/19/08	233.53	519.07
03/20/08	387.36	900.00	403.00	900.00	03/20/08	238.37	528.92
03/21/08	387.36	900.00	403.00	900.00	03/21/08	220.59	502.07
03/22/08	387.36	900.00	403.00	900.00	03/22/08	223.71	521.65
03/23/08	387.36	900.00	403.00	900.00	03/23/08	206.37	494.71
03/24/08	387.36	900.00	403.00	900.00	03/24/08	210.57	505.25
03/25/08	387.36	900.00	403.00	900.00	03/25/08	214.73	513.23
03/26/08	387.36	900.00	403.00	900.00	03/26/08	218.62	522.07
03/27/08	387.36	900.00	403.00	900.00	03/27/08	219.06	521.16
03/28/08	387.36	900.00	403.00	900.00	03/28/08	224.73	556.69
03/29/08	387.36	900.00	403.00	900.00	03/29/08	230.70	567.91
03/30/08	387.36	900.00	403.00	900.00	03/30/08	228.17	576.81
03/31/08	387.36	900.00	403.00	900.00	03/31/08	265.80	655.15
04/01/08	387.36	900.00	403.00	900.00	04/01/08	274.81	664.59
04/02/08	387.36	900.00	403.00	900.00	04/02/08	233.28	583.11
04/03/08	387.36	900.00	403.00	900.00	04/03/08	232.77	588.41
04/04/08	387.36	900.00	403.00	900.00	04/04/08	236.15	584.76
04/05/08	387.36	900.00	403.00	900.00	04/05/08	227.10	561.65

Historical Injection Rates and Surface Injection Pressures
 Navajo Refining Company, L.L.C.
 Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
04/06/08	387.36	900.00	403.00	900.00	04/06/08	219.39	557.37
04/07/08	387.36	900.00	403.00	900.00	04/07/08	222.21	569.98
04/08/08	387.36	900.00	403.00	900.00	04/08/08	216.18	559.99
04/09/08	387.36	900.00	403.00	900.00	04/09/08	206.88	551.09
04/10/08	387.36	900.00	403.00	900.00	04/10/08	212.74	587.18
04/11/08	387.36	900.00	403.00	900.00	04/11/08	188.94	525.84
04/12/08	387.36	900.00	403.00	900.00	04/12/08	186.90	523.31
04/13/08	387.36	900.00	403.00	900.00	04/13/08	189.58	527.80
04/14/08	387.36	900.00	403.00	900.00	04/14/08	186.29	514.22
04/15/08	387.36	900.00	403.00	900.00	04/15/08	188.28	521.77
04/16/08	387.36	900.00	403.00	900.00	04/16/08	168.74	501.83
04/17/08	387.36	900.00	403.00	900.00	04/17/08	142.21	477.47
04/18/08	387.36	900.00	403.00	900.00	04/18/08	134.07	457.47
04/19/08	387.36	900.00	403.00	900.00	04/19/08	120.74	422.19
04/20/08	387.36	900.00	403.00	900.00	04/20/08	119.57	425.81
04/21/08	387.36	900.00	403.00	900.00	04/21/08	096.61	404.17
04/22/08	387.36	900.00	403.00	900.00	04/22/08	105.09	434.05
04/23/08	387.36	900.00	403.00	900.00	04/23/08	105.15	437.94
04/24/08	387.36	900.00	403.00	900.00	04/24/08	101.80	439.32
04/25/08	387.36	900.00	403.00	900.00	04/25/08	099.19	438.39
04/26/08	387.36	900.00	403.00	900.00	04/26/08	097.45	440.96
04/27/08	387.36	900.00	403.00	900.00	04/27/08	093.86	442.06
04/28/08	387.36	900.00	403.00	900.00	04/28/08	088.71	443.01
04/29/08	387.36	900.00	403.00	900.00	04/29/08	094.19	444.61
04/30/08	387.36	900.00	403.00	900.00	04/30/08	094.53	444.74
05/01/08	387.36	900.00	403.00	900.00	05/01/08	137.72	551.80
05/02/08	387.36	900.00	403.00	900.00	05/02/08	171.72	621.77
05/03/08	387.36	900.00	403.00	900.00	05/03/08	150.47	551.13
05/04/08	387.36	900.00	403.00	900.00	05/04/08	166.71	591.50
05/05/08	387.36	900.00	403.00	900.00	05/05/08	168.48	588.22
05/06/08	387.36	900.00	403.00	900.00	05/06/08	164.38	569.63
05/07/08	387.36	900.00	403.00	900.00	05/07/08	155.77	543.75
05/08/08	387.36	900.00	403.00	900.00	05/08/08	175.83	583.84
05/09/08	387.36	900.00	403.00	900.00	05/09/08	183.81	571.93
05/10/08	387.36	900.00	403.00	900.00	05/10/08	174.36	535.60
05/11/08	387.36	900.00	403.00	900.00	05/11/08	177.54	562.95
05/12/08	387.36	900.00	403.00	900.00	05/12/08	155.53	508.32
05/13/08	387.36	900.00	403.00	900.00	05/13/08	170.48	541.86
05/14/08	387.36	900.00	403.00	900.00	05/14/08	173.33	545.59
05/15/08	387.36	900.00	403.00	900.00	05/15/08	162.32	518.41
05/16/08	387.36	900.00	403.00	900.00	05/16/08	167.82	532.09
05/17/08	387.36	900.00	403.00	900.00	05/17/08	138.34	477.91
05/18/08	387.36	900.00	403.00	900.00	05/18/08	162.39	537.82
05/19/08	387.36	900.00	403.00	900.00	05/19/08	138.87	464.83
05/20/08	387.36	900.00	403.00	900.00	05/20/08	128.20	436.78
05/21/08	387.36	900.00	403.00	900.00	05/21/08	156.46	513.30
05/22/08	387.36	900.00	403.00	900.00	05/22/08	126.11	415.97
05/23/08	387.36	900.00	403.00	900.00	05/23/08	155.47	485.80
05/24/08	387.36	900.00	403.00	900.00	05/24/08	190.60	567.16
05/25/08	387.36	900.00	403.00	900.00	05/25/08	170.22	501.02
05/26/08	387.36	900.00	403.00	900.00	05/26/08	174.53	514.30
05/27/08	387.36	900.00	403.00	900.00	05/27/08	153.93	458.44
05/28/08	387.36	900.00	403.00	900.00	05/28/08	172.96	516.52

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
05/29/08	387.36	900.00	403.00	900.00	05/29/08	157.67	470.49
05/30/08	387.36	900.00	403.00	900.00	05/30/08	162.98	487.18
05/31/08	387.36	900.00	403.00	900.00	05/31/08	157.63	482.24
06/01/08	387.36	900.00	403.00	900.00	06/01/08	163.22	503.48
06/02/08	387.36	900.00	403.00	900.00	06/02/08	163.87	522.37
06/03/08	387.36	900.00	403.00	900.00	06/03/08	175.12	562.02
06/04/08	387.36	900.00	403.00	900.00	06/04/08	178.16	583.21
06/05/08	387.36	900.00	403.00	900.00	06/05/08	185.85	615.26
06/06/08	387.36	900.00	403.00	900.00	06/06/08	190.67	638.14
06/07/08	387.36	900.00	403.00	900.00	06/07/08	191.39	640.12
06/08/08	387.36	900.00	403.00	900.00	06/08/08	191.46	641.68
06/09/08	387.36	900.00	403.00	900.00	06/09/08	191.40	642.08
06/10/08	387.36	900.00	403.00	900.00	06/10/08	192.87	630.58
06/11/08	387.36	900.00	403.00	900.00	06/11/08	191.21	618.20
06/12/08	387.36	900.00	403.00	900.00	06/12/08	193.23	626.26
06/13/08	387.36	900.00	403.00	900.00	06/13/08	191.60	603.51
06/14/08	387.36	900.00	403.00	900.00	06/14/08	190.97	587.48
06/15/08	387.36	900.00	403.00	900.00	06/15/08	178.52	549.31
06/16/08	387.36	900.00	403.00	900.00	06/16/08	175.07	542.84
06/17/08	387.36	900.00	403.00	900.00	06/17/08	181.45	564.11
06/18/08	387.36	900.00	403.00	900.00	06/18/08	190.80	585.52
06/19/08	387.36	900.00	403.00	900.00	06/19/08	191.64	581.62
06/20/08	387.36	900.00	403.00	900.00	06/20/08	191.21	592.87
06/21/08	387.36	900.00	403.00	900.00	06/21/08	193.10	598.58
06/22/08	387.36	900.00	403.00	900.00	06/22/08	172.24	528.93
06/23/08	387.36	900.00	403.00	900.00	06/23/08	177.64	547.04
06/24/08	387.36	900.00	403.00	900.00	06/24/08	154.49	483.87
06/25/08	387.36	900.00	403.00	900.00	06/25/08	149.30	476.99
06/26/08	387.36	900.00	403.00	900.00	06/26/08	165.10	523.40
06/27/08	387.36	900.00	403.00	900.00	06/27/08	184.48	582.00
06/28/08	387.36	900.00	403.00	900.00	06/28/08	190.63	603.39
06/29/08	387.36	900.00	403.00	900.00	06/29/08	188.21	604.16
06/30/08	387.36	900.00	403.00	900.00	06/30/08	193.49	600.79
07/01/08	387.36	900.00	403.00	900.00	07/01/08	195.85	616.04
07/02/08	387.36	900.00	403.00	900.00	07/02/08	197.33	617.94
07/03/08	387.36	900.00	403.00	900.00	07/03/08	196.35	622.85
07/04/08	387.36	900.00	403.00	900.00	07/04/08	197.18	620.78
07/05/08	387.36	900.00	403.00	900.00	07/05/08	193.06	619.51
07/06/08	387.36	900.00	403.00	900.00	07/06/08	195.85	618.42
07/07/08	387.36	900.00	403.00	900.00	07/07/08	189.20	602.41
07/08/08	387.36	900.00	403.00	900.00	07/08/08	174.28	557.94
07/09/08	387.36	900.00	403.00	900.00	07/09/08	177.19	555.44
07/10/08	387.36	900.00	403.00	900.00	07/10/08	197.83	620.43
07/11/08	387.36	900.00	403.00	900.00	07/11/08	196.31	617.70
07/12/08	387.36	900.00	403.00	900.00	07/12/08	199.22	621.26
07/13/08	387.36	900.00	403.00	900.00	07/13/08	196.93	619.60
07/14/08	387.36	900.00	403.00	900.00	07/14/08	195.69	617.34
07/15/08	387.36	900.00	403.00	900.00	07/15/08	192.96	609.10
07/16/08	387.36	900.00	403.00	900.00	07/16/08	186.27	580.92
07/17/08	387.36	900.00	403.00	900.00	07/17/08	168.04	522.77
07/18/08	387.36	900.00	403.00	900.00	07/18/08	173.96	542.80
07/19/08	387.36	900.00	403.00	900.00	07/19/08	174.62	546.85
07/20/08	387.36	900.00	403.00	900.00	07/20/08	161.58	506.02

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1			WDW-2			WDW-3		
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres	
07/21/08	387.36	900.00	403.00	900.00	07/21/08	154.71	489.81	
07/22/08	387.36	900.00	403.00	900.00	07/22/08	153.42	490.66	
07/23/08	387.36	900.00	403.00	900.00	07/23/08	170.78	545.81	
07/24/08	387.36	900.00	403.00	900.00	07/24/08	156.90	508.50	
07/25/08	387.36	900.00	403.00	900.00	07/25/08	163.32	536.57	
07/26/08	387.36	900.00	403.00	900.00	07/26/08	173.36	568.01	
07/27/08	387.36	900.00	403.00	900.00	07/27/08	186.16	605.63	
07/28/08	387.36	900.00	403.00	900.00	07/28/08	190.93	605.84	
07/29/08	387.36	900.00	403.00	900.00	07/29/08	192.22	601.83	
07/30/08	387.36	900.00	403.00	900.00	07/30/08	194.33	611.02	
07/31/08	387.36	900.00	403.00	900.00	07/31/08	192.91	603.78	
08/01/08	387.36	900.00	403.00	900.00	08/01/08	190.27	601.44	
08/02/08	387.36	900.00	403.00	900.00	08/02/08	197.77	626.68	
08/03/08	387.36	900.00	403.00	900.00	08/03/08	195.86	623.31	
08/04/08	387.36	900.00	403.00	900.00	08/04/08	194.97	610.46	
08/05/08	387.36	900.00	403.00	900.00	08/05/08	192.91	600.97	
08/06/08	387.36	900.00	403.00	900.00	08/06/08	188.47	596.50	
08/07/08	387.36	900.00	403.00	900.00	08/07/08	193.73	609.30	
08/08/08	387.36	900.00	403.00	900.00	08/08/08	191.54	596.26	
08/09/08	387.36	900.00	403.00	900.00	08/09/08	196.95	613.82	
08/10/08	387.36	900.00	403.00	900.00	08/10/08	189.52	604.11	
08/11/08	387.36	900.00	403.00	900.00	08/11/08	190.06	609.04	
08/12/08	387.36	900.00	403.00	900.00	08/12/08	199.08	636.22	
08/13/08	387.36	900.00	403.00	900.00	08/13/08	197.82	630.79	
08/14/08	387.36	900.00	403.00	900.00	08/14/08	208.02	664.70	
08/15/08	387.36	900.00	403.00	900.00	08/15/08	213.38	674.51	
08/16/08	387.36	900.00	403.00	900.00	08/16/08	212.87	675.54	
08/17/08	387.36	900.00	403.00	900.00	08/17/08	208.88	668.74	
08/18/08	387.36	900.00	403.00	900.00	08/18/08	211.92	676.86	
08/19/08	387.36	900.00	403.00	900.00	08/19/08	209.19	665.37	
08/20/08	387.36	900.00	403.00	900.00	08/20/08	218.50	686.97	
08/21/08	387.36	900.00	403.00	900.00	08/21/08	221.04	682.85	
08/22/08	387.36	900.00	403.00	900.00	08/22/08	222.72	683.78	
08/23/08	387.36	900.00	403.00	900.00	08/23/08	218.88	676.51	
08/24/08	387.36	900.00	403.00	900.00	08/24/08	216.42	675.93	
08/25/08	387.36	900.00	403.00	900.00	08/25/08	213.83	672.70	
08/26/08	387.36	900.00	403.00	900.00	08/26/08	205.19	642.78	
08/27/08	387.36	900.00	403.00	900.00	08/27/08	211.45	663.04	
08/28/08	387.36	900.00	403.00	900.00	08/28/08	218.52	678.19	
08/29/08	387.36	900.00	403.00	900.00	08/29/08	200.02	654.82	
08/30/08	387.36	900.00	403.00	900.00	08/30/08	213.31	688.09	
08/31/08	387.36	900.00	403.00	900.00	08/31/08	212.16	687.97	
09/01/08	387.36	900.00	403.00	900.00	09/01/08	210.66	691.01	
09/02/08	387.36	900.00	403.00	900.00	09/02/08	212.67	691.39	
09/03/08	387.36	900.00	403.00	900.00	09/03/08	215.06	685.65	
09/04/08	387.36	900.00	403.00	900.00	09/04/08	216.43	691.88	
09/05/08	387.36	900.00	403.00	900.00	09/05/08	215.41	682.56	
09/06/08	387.36	900.00	403.00	900.00	09/06/08	218.15	690.45	
09/07/08	387.36	900.00	403.00	900.00	09/07/08	216.96	696.14	
09/08/08	387.36	900.00	403.00	900.00	09/08/08	209.87	673.23	
09/09/08	387.36	900.00	403.00	900.00	09/09/08	211.47	689.42	
09/10/08	387.36	900.00	403.00	900.00	09/10/08	207.61	676.03	
09/11/08	387.36	900.00	403.00	900.00	09/11/08	211.20	690.40	

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/12/08	387.36	900.00	403.00	900.00	09/12/08	207.06	680.22
09/13/08	387.36	900.00	403.00	900.00	09/13/08	210.71	695.46
09/14/08	387.36	900.00	403.00	900.00	09/14/08	211.69	691.14
09/15/08	387.36	900.00	403.00	900.00	09/15/08	206.04	691.48
09/16/08	387.36	900.00	403.00	900.00	09/16/08	202.49	672.49
09/17/08	387.36	900.00	403.00	900.00	09/17/08	204.92	671.83
09/18/08	312.66	879.23	326.00	887.59	09/18/08	211.64	695.50
09/19/08	190.10	672.34	204.53	704.83	09/19/08	212.08	697.96
09/20/08	187.55	667.53	203.89	706.75	09/20/08	212.33	705.54
09/21/08	184.48	661.74	203.63	714.81	09/21/08	211.27	705.94
09/22/08	189.52	662.67	203.16	712.20	09/22/08	209.25	696.60
09/23/08	181.54	687.65	207.80	715.94	09/23/08	202.34	676.26
09/24/08	188.92	669.28	197.69	683.67	09/24/08	201.48	669.35
09/25/08	139.37	607.60	169.06	686.91	09/25/08	205.76	671.60
09/26/08	122.14	641.18	130.39	680.98	09/26/08	208.74	670.62
09/27/08	126.92	648.82	129.25	676.97	09/27/08	204.69	664.17
09/28/08	124.33	632.00	131.54	687.02	09/28/08	202.16	656.12
09/29/08	112.11	591.71	132.25	698.03	09/29/08	209.45	678.67
09/30/08	076.00	440.28	097.16	508.50	09/30/08	142.78	491.96
10/01/08	114.50	574.55	121.88	643.17	10/01/08	189.29	626.08
10/02/08	135.70	682.57	132.35	684.54	10/02/08	201.80	670.10
10/03/08	136.54	688.22	133.15	691.44	10/03/08	198.64	671.26
10/04/08	136.52	689.75	134.40	693.48	10/04/08	199.69	674.67
10/05/08	133.65	691.41	132.96	696.49	10/05/08	197.71	677.19
10/06/08	131.22	682.90	130.71	688.07	10/06/08	204.32	689.43
10/07/08	130.85	685.51	130.58	690.65	10/07/08	206.42	688.17
10/08/08	131.67	688.61	130.76	692.33	10/08/08	205.70	687.25
10/09/08	131.75	690.39	130.39	691.39	10/09/08	205.09	687.71
10/10/08	132.16	691.20	130.49	691.45	10/10/08	205.46	689.21
10/11/08	130.77	692.65	129.36	692.43	10/11/08	206.30	691.00
10/12/08	128.99	687.79	129.24	697.12	10/12/08	212.90	685.25
10/13/08	127.99	687.72	124.82	674.27	10/13/08	210.56	685.60
10/14/08	122.89	682.33	130.61	709.15	10/14/08	209.27	680.39
10/15/08	123.80	685.24	129.71	708.29	10/15/08	206.27	681.43
10/16/08	123.31	686.65	129.36	706.09	10/16/08	205.57	683.31
10/17/08	123.43	683.15	127.90	698.20	10/17/08	208.59	700.28
10/18/08	122.23	683.62	124.75	683.73	10/18/08	207.80	704.04
10/19/08	121.82	688.18	122.74	677.49	10/19/08	208.12	704.77
10/20/08	119.53	672.40	120.20	664.16	10/20/08	211.93	701.03
10/21/08	116.87	670.39	127.21	693.86	10/21/08	209.77	691.70
10/22/08	107.86	637.64	124.95	678.78	10/22/08	203.70	672.32
10/23/08	108.48	641.70	122.26	662.51	10/23/08	203.98	674.21
10/24/08	113.12	635.99	124.39	661.08	10/24/08	200.89	659.36
10/25/08	104.74	601.41	119.15	638.67	10/25/08	189.93	623.35
10/26/08	107.84	618.58	118.50	631.86	10/26/08	186.03	613.01
10/27/08	096.43	575.64	111.37	602.22	10/27/08	181.70	603.59
10/28/08	103.04	598.65	119.25	641.01	10/28/08	195.78	644.12
10/29/08	115.00	648.51	125.58	669.60	10/29/08	201.88	676.45
10/30/08	120.30	689.40	122.57	666.42	10/30/08	215.37	714.36
10/31/08	124.79	704.45	087.50	525.94	10/31/08	227.43	750.00
11/01/08	116.88	654.14	129.09	713.61	11/01/08	213.04	702.81
11/02/08	119.88	685.11	126.64	698.68	11/02/08	211.48	699.19
11/03/08	118.04	672.31	126.56	695.23	11/03/08	213.17	706.29

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
11/04/08	116.51	670.11	109.15	625.92	11/04/08	219.17	726.89
11/05/08	118.23	671.42	109.95	622.42	11/05/08	215.12	710.08
11/06/08	119.58	695.16	104.71	602.05	11/06/08	209.01	693.19
11/07/08	112.98	651.41	123.67	676.70	11/07/08	214.25	691.83
11/08/08	116.38	663.62	125.99	686.37	11/08/08	197.71	650.81
11/09/08	113.75	651.88	125.70	685.43	11/09/08	204.19	666.95
11/10/08	111.13	624.32	123.93	664.32	11/10/08	204.92	665.28
11/11/08	114.78	658.39	123.80	674.36	11/11/08	206.15	676.80
11/12/08	112.95	651.81	122.70	677.74	11/12/08	207.21	682.92
11/13/08	111.37	638.49	125.09	687.53	11/13/08	204.26	670.48
11/14/08	111.64	649.03	123.63	682.11	11/14/08	204.79	674.85
11/15/08	115.19	679.31	125.74	703.60	11/15/08	208.67	698.11
11/16/08	114.86	665.52	125.68	700.19	11/16/08	206.75	699.36
11/17/08	117.13	670.28	126.56	706.37	11/17/08	206.14	692.37
11/18/08	114.93	661.09	125.95	700.17	11/18/08	210.12	703.75
11/19/08	117.53	666.77	127.12	703.38	11/19/08	205.81	694.20
11/20/08	111.66	652.81	126.19	704.88	11/20/08	208.92	701.21
11/21/08	113.35	655.59	127.78	705.43	11/21/08	193.20	679.57
11/22/08	116.71	674.23	127.83	704.91	11/22/08	198.15	696.45
11/23/08	118.26	667.11	127.77	710.52	11/23/08	193.91	693.82
11/24/08	119.60	686.22	123.82	710.54	11/24/08	192.23	693.57
11/25/08	118.59	680.02	125.96	727.08	11/25/08	196.56	700.43
11/26/08	120.97	684.68	125.25	720.94	11/26/08	198.47	699.69
11/27/08	119.23	682.28	124.57	720.90	11/27/08	197.81	698.90
11/28/08	117.34	670.92	123.80	717.91	11/28/08	194.72	701.99
11/29/08	120.60	694.06	124.99	725.66	11/29/08	189.62	695.24
11/30/08	119.91	674.87	125.91	721.94	11/30/08	188.05	692.63
12/01/08	120.10	688.58	123.88	722.41	12/01/08	195.89	712.40
12/02/08	120.45	672.50	126.29	723.56	12/02/08	196.57	715.55
12/03/08	117.73	685.89	126.02	738.18	12/03/08	194.31	728.56
12/04/08	114.21	684.45	123.82	736.48	12/04/08	193.21	728.48
12/05/08	115.02	688.28	122.78	764.27	12/05/08	192.80	728.45
12/06/08	118.22	694.63	123.60	736.88	12/06/08	188.99	721.64
12/07/08	119.87	690.65	121.71	727.06	12/07/08	172.53	680.80
12/08/08	120.00	675.64	116.98	695.04	12/08/08	180.38	701.67
12/09/08	111.95	655.19	110.03	665.00	12/09/08	171.89	677.43
12/10/08	110.82	652.47	109.03	791.13	12/10/08	177.81	700.38
12/11/08	119.33	685.41	113.34	682.43	12/11/08	183.08	708.19
12/12/08	118.20	675.64	117.46	709.08	12/12/08	180.85	701.15
12/13/08	119.81	688.91	115.83	701.47	12/13/08	183.43	708.27
12/14/08	120.40	682.95	112.63	678.01	12/14/08	188.95	716.66
12/15/08	117.83	687.51	112.73	699.65	12/15/08	183.56	713.08
12/16/08	218.36	707.61	110.43	803.78	12/16/08	190.36	729.56
12/17/08	123.67	705.07	117.35	720.21	12/17/08	194.92	732.46
12/18/08	123.57	696.69	118.13	723.36	12/18/08	192.01	722.51
12/19/08	121.81	707.22	113.64	712.05	12/19/08	199.55	742.68
12/20/08	121.77	697.10	113.55	702.89	12/20/08	196.37	732.23
12/21/08	118.44	708.79	112.23	717.28	12/21/08	196.50	739.14
12/22/08	253.98	754.98	111.44	824.84	12/22/08	197.21	752.04
12/23/08	118.22	691.29	116.01	723.78	12/23/08	201.13	746.72
12/24/08	121.57	711.22	117.00	732.20	12/24/08	198.10	740.74
12/25/08	124.08	713.03	117.33	723.30	12/25/08	195.33	729.00
12/26/08	126.23	716.47	117.39	720.00	12/26/08	177.95	683.05

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
12/27/08	121.27	715.32	119.41	749.70	12/27/08	187.03	720.52
12/28/08	117.74	691.13	120.33	750.12	12/28/08	189.26	719.43
12/29/08	119.82	698.99	121.57	747.66	12/29/08	194.08	731.09
12/30/08	121.21	685.61	120.97	729.48	12/30/08	194.08	713.71
12/31/08	123.23	691.30	119.85	721.60	12/31/08	198.66	710.36
01/01/09	124.34	679.71	191.45	686.92	01/01/09	191.45	686.92
01/02/09	120.60	658.22	194.89	701.11	01/02/09	194.89	701.11
01/03/09	126.04	674.33	192.34	686.89	01/03/09	192.34	686.89
01/04/09	124.89	666.88	184.17	673.65	01/04/09	184.17	673.65
01/05/09	124.11	690.66	196.44	712.76	01/05/09	196.44	712.76
01/06/09	127.49	695.87	206.70	731.51	01/06/09	206.70	731.51
01/07/09	128.10	694.80	203.38	729.35	01/07/09	203.38	729.35
01/08/09	129.02	699.49	204.30	730.31	01/08/09	204.30	730.31
01/09/09	125.80	682.99	198.12	726.64	01/09/09	198.12	726.64
01/10/09	125.23	695.40	198.65	730.63	01/10/09	198.65	730.63
01/11/09	122.76	691.30	200.84	737.44	01/11/09	200.84	737.44
01/12/09	122.12	692.82	199.05	723.59	01/12/09	199.05	723.59
01/13/09	123.49	706.75	195.89	730.18	01/13/09	195.89	730.18
01/14/09	121.96	694.39	196.74	731.74	01/14/09	196.74	731.74
01/15/09	120.61	697.49	196.67	732.34	01/15/09	196.67	732.34
01/16/09	121.40	702.64	197.41	725.19	01/16/09	197.41	725.19
01/17/09	118.87	688.63	200.42	733.18	01/17/09	200.42	733.18
01/18/09	121.74	696.50	195.07	715.74	01/18/09	195.07	715.74
01/19/09	121.76	701.24	193.63	713.20	01/19/09	193.63	713.20
01/20/09	121.98	688.98	202.38	718.06	01/20/09	202.38	718.06
01/21/09	124.09	679.03	204.88	719.52	01/21/09	204.88	719.52
01/22/09	122.82	679.73	207.40	723.71	01/22/09	207.40	723.71
01/23/09	126.51	705.60	207.09	733.84	01/23/09	207.09	733.84
01/24/09	126.51	706.43	203.48	728.56	01/24/09	203.48	728.56
01/25/09	125.67	703.88	199.96	725.86	01/25/09	199.96	725.86
01/26/09	121.93	697.35	207.27	749.60	01/26/09	207.27	749.60
01/27/09	121.81	705.74	200.07	738.32	01/27/09	200.07	738.32
01/28/09	108.74	704.46	195.93	724.61	01/28/09	195.93	724.61
01/29/09	120.68	698.98	198.03	720.52	01/29/09	198.03	720.52
01/30/09	120.50	693.19	199.45	718.33	01/30/09	199.45	718.33
01/31/09	119.41	688.45	204.35	716.84	01/31/09	204.35	716.84
02/01/09	116.18	672.15	203.44	697.82	02/01/09	203.44	697.82
02/02/09	088.65	543.03	167.98	579.19	02/02/09	167.98	579.19
02/03/09	069.04	458.07	128.67	476.96	02/03/09	128.67	476.96
02/04/09	059.54	407.63	100.91	421.16	02/04/09	100.91	421.16
02/05/09	063.61	438.22	114.19	464.48	02/05/09	114.19	464.48
02/06/09	062.92	438.99	108.70	445.76	02/06/09	108.70	445.76
02/07/09	064.30	449.58	115.87	468.04	02/07/09	115.87	468.04
02/08/09	063.44	460.16	113.54	475.30	02/08/09	113.54	475.30
02/09/09	059.75	457.46	115.59	487.09	02/09/09	115.59	487.09
02/10/09	053.23	455.17	106.12	469.57	02/10/09	106.12	469.57
02/11/09	110.23	676.70	207.18	716.52	02/11/09	207.18	716.52
02/12/09	102.38	641.47	196.93	667.80	02/12/09	196.93	667.80
02/13/09	099.94	609.97	178.02	624.53	02/13/09	178.02	624.53
02/14/09	074.74	478.62	137.49	522.98	02/14/09	137.49	522.98
02/15/09	061.38	412.85	105.19	446.69	02/15/09	105.19	446.69
02/16/09	057.80	414.39	106.69	442.36	02/16/09	106.69	442.36
02/17/09	064.89	441.09	111.92	460.96	02/17/09	111.92	460.96

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1			WDW-2			WDW-3		
Date	Rate	Pres	Date	Rate	Pres	Date	Rate	Pres
02/18/09	071.11	483.56	126.26	504.53	02/18/09	126.26	504.53	
02/19/09	104.07	657.08	186.72	676.43	02/19/09	186.72	676.43	
02/20/09	091.78	581.93	160.03	595.51	02/20/09	160.03	595.51	
02/21/09	102.12	645.01	190.83	679.64	02/21/09	190.83	679.64	
02/22/09	100.60	629.53	181.28	641.86	02/22/09	181.28	641.86	
02/23/09	109.78	652.03	200.41	701.49	02/23/09	200.41	701.49	
02/24/09	112.04	652.59	197.16	688.00	02/24/09	197.16	688.00	
02/25/09	115.09	671.50	197.50	693.38	02/25/09	197.50	693.38	
02/26/09	110.07	630.78	185.08	656.14	02/26/09	185.08	656.14	
02/27/09	104.44	603.90	174.06	630.96	02/27/09	174.06	630.96	
02/28/09	098.51	585.44	161.47	612.92	02/28/09	161.47	612.92	
03/01/09	114.12	671.42	188.91	694.23	03/01/09	188.91	694.23	
03/02/09	111.67	645.99	186.04	685.34	03/02/09	186.04	685.34	
03/03/09	109.36	627.33	175.03	667.13	03/03/09	175.03	667.13	
03/04/09	109.97	628.26	172.08	654.33	03/04/09	172.08	654.33	
03/05/09	111.02	638.29	178.58	667.41	03/05/09	178.58	667.41	
03/06/09	115.04	645.00	179.22	668.40	03/06/09	179.22	668.40	
03/07/09	103.37	584.20	154.72	602.17	03/07/09	154.72	602.17	
03/08/09	103.26	615.60	166.08	631.91	03/08/09	166.08	631.91	
03/09/09	110.22	659.06	179.89	673.22	03/09/09	179.89	673.22	
03/10/09	107.37	640.14	176.58	659.77	03/10/09	176.58	659.77	
03/11/09	117.59	695.81	183.82	704.56	03/11/09	183.82	704.56	
03/12/09	116.50	676.95	183.37	701.82	03/12/09	183.37	701.82	
03/13/09	119.58	698.68	192.15	712.69	03/13/09	192.15	712.69	
03/14/09	122.52	687.50	191.99	712.08	03/14/09	191.99	712.08	
03/15/09	132.36	694.42	196.19	722.93	03/15/09	196.19	722.93	
03/16/09	125.29	699.97	198.87	723.21	03/16/09	198.87	723.21	
03/17/09	118.25	703.58	201.49	729.61	03/17/09	201.49	729.61	
03/18/09	118.67	704.09	202.80	727.37	03/18/09	202.80	727.37	
03/19/09	117.45	706.50	207.72	736.49	03/19/09	207.72	736.49	
03/20/09	117.88	711.50	202.30	718.08	03/20/09	202.30	718.08	
03/21/09	117.48	710.20	207.60	727.21	03/21/09	207.60	727.21	
03/22/09	117.87	722.27	198.11	704.54	03/22/09	198.11	704.54	
03/23/09	116.03	701.52	209.23	744.50	03/23/09	209.23	744.50	
03/24/09	119.06	724.72	195.80	704.72	03/24/09	195.80	704.72	
03/25/09	117.07	704.90	206.74	735.42	03/25/09	206.74	735.42	
03/26/09	119.12	704.59	205.27	730.91	03/26/09	205.27	730.91	
03/27/09	114.22	726.96	208.31	738.60	03/27/09	208.31	738.60	
03/28/09	139.06	704.83	207.01	746.32	03/28/09	207.01	746.32	
03/29/09	127.97	717.82	203.10	726.08	03/29/09	203.10	726.08	
03/30/09	116.10	704.74	204.93	740.87	03/30/09	204.93	740.87	
03/31/09	125.60	713.16	199.13	732.67	03/31/09	199.13	732.67	
04/01/09	116.07	708.52	201.16	746.01	04/01/09	201.16	746.01	
04/02/09	120.68	726.16	198.97	757.56	04/02/09	198.97	757.56	
04/03/09	117.23	730.80	195.66	753.25	04/03/09	195.66	753.25	
04/04/09	114.56	712.63	191.36	743.08	04/04/09	191.36	743.08	
04/05/09	127.78	737.05	191.58	758.60	04/05/09	191.58	758.60	
04/06/09	133.58	723.50	187.79	746.17	04/06/09	187.79	746.17	
04/07/09	143.80	732.16	189.72	758.33	04/07/09	189.72	758.33	
04/08/09	112.54	712.56	188.14	750.53	04/08/09	188.14	750.53	
04/09/09	114.29	728.54	191.95	754.90	04/09/09	191.95	754.90	
04/10/09	110.30	717.40	193.98	767.12	04/10/09	193.98	767.12	
04/11/09	112.93	735.34	196.35	769.26	04/11/09	196.35	769.26	

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
04/12/09	112.62	732.84	190.30	756.04	04/12/09	190.30	756.04
04/13/09	113.18	732.75	191.36	759.89	04/13/09	191.36	759.89
04/14/09	113.98	734.13	196.81	759.56	04/14/09	196.81	759.56
04/15/09	116.05	729.66	195.73	750.45	04/15/09	195.73	750.45
04/16/09	111.85	715.60	184.00	718.13	04/16/09	184.00	718.13
04/17/09	112.92	709.99	182.42	702.30	04/17/09	182.42	702.30
04/18/09	113.25	713.19	196.80	746.65	04/18/09	196.80	746.65
04/19/09	113.75	725.51	198.84	747.93	04/19/09	198.84	747.93
04/20/09	113.22	716.52	202.94	754.53	04/20/09	202.94	754.53
04/21/09	110.57	700.88	195.94	723.58	04/21/09	195.94	723.58
04/22/09	109.52	669.12	177.98	655.25	04/22/09	177.98	655.25
04/23/09	110.55	688.09	189.60	713.45	04/23/09	189.60	713.45
04/24/09	109.98	690.62	186.07	704.32	04/24/09	186.07	704.32
04/25/09	109.20	692.28	190.62	727.09	04/25/09	190.62	727.09
04/26/09	109.16	714.76	181.65	704.70	04/26/09	181.65	704.70
04/27/09	107.51	711.92	189.47	724.99	04/27/09	189.47	724.99
04/28/09	107.80	705.74	191.59	735.08	04/28/09	191.59	735.08
04/29/09	109.31	711.95	189.67	732.28	04/29/09	189.67	732.28
04/30/09	111.64	715.31	194.32	748.36	04/30/09	194.32	748.36
05/01/09	111.13	723.84	196.53	763.07	05/01/09	196.53	763.07
05/02/09	109.41	718.65	198.61	753.28	05/02/09	198.61	753.28
05/03/09	108.91	720.48	195.84	748.41	05/03/09	195.84	748.41
05/04/09	109.08	734.13	195.29	735.64	05/04/09	195.29	735.64
05/05/09	111.07	739.70	201.25	765.62	05/05/09	201.25	765.62
05/06/09	110.39	735.54	199.78	770.77	05/06/09	199.78	770.77
05/07/09	112.08	749.27	198.90	766.42	05/07/09	198.90	766.42
05/08/09	110.92	741.56	200.17	785.66	05/08/09	200.17	785.66
05/09/09	108.23	755.80	197.22	782.59	05/09/09	197.22	782.59
05/10/09	106.94	739.68	196.44	783.35	05/10/09	196.44	783.35
05/11/09	107.19	750.72	193.35	767.86	05/11/09	193.35	767.86
05/12/09	107.92	732.40	195.61	765.49	05/12/09	195.61	765.49
05/13/09	111.77	738.84	195.18	745.91	05/13/09	195.18	745.91
05/14/09	110.10	730.64	202.52	760.63	05/14/09	202.52	760.63
05/15/09	111.09	736.00	201.44	752.56	05/15/09	201.44	752.56
05/16/09	107.68	727.54	199.49	754.30	05/16/09	199.49	754.30
05/17/09	107.45	711.42	204.55	765.77	05/17/09	204.55	765.77
05/18/09	107.89	740.14	197.89	759.96	05/18/09	197.89	759.96
05/19/09	107.25	741.88	197.94	766.21	05/19/09	197.94	766.21
05/20/09	106.14	734.73	198.26	779.33	05/20/09	198.26	779.33
05/21/09	103.55	728.61	193.61	782.23	05/21/09	193.61	782.23
05/22/09	104.20	699.00	186.37	773.20	05/22/09	186.37	773.20
05/23/09	109.30	612.01	183.02	765.32	05/23/09	183.02	765.32
05/24/09	109.30	454.61	186.04	775.27	05/24/09	186.04	775.27
05/25/09	109.30	298.28	189.04	785.16	05/25/09	189.04	785.16
05/26/09	109.30	139.83	192.08	795.18	05/26/09	192.08	795.18
05/27/09	108.49	012.14	188.30	775.50	05/27/09	188.30	775.50
05/28/09	104.74	000.52	189.36	788.75	05/28/09	189.36	788.75
05/29/09	107.48	-00.05	190.42	778.35	05/29/09	190.42	778.35
05/30/09	105.32	000.03	191.99	779.71	05/30/09	191.99	779.71
05/31/09	106.05	000.08	191.67	768.42	05/31/09	191.67	768.42
06/01/09	109.86	000.18	194.27	776.42	06/01/09	194.27	776.42
06/02/09	094.27	000.04	202.92	806.78	06/02/09	202.92	806.78
06/03/09	197.98	-00.03	168.99	660.13	06/03/09	168.99	660.13

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
06/04/09	199.68	-00.25	106.98	625.00	06/04/09	106.98	625.00
06/05/09	169.64	000.02	195.09	471.83	06/05/09	195.09	471.83
06/06/09	186.84	-00.25	150.64	380.32	06/06/09	150.64	380.32
06/07/09	140.40	-00.25	183.88	421.65	06/07/09	183.88	421.65
06/08/09	134.02	-00.25	178.30	409.33	06/08/09	178.30	409.33
06/09/09	133.01	-00.25	176.08	403.13	06/09/09	176.08	403.13
06/10/09	150.37	-00.25	192.14	449.98	06/10/09	192.14	449.98
06/11/09	161.69	-00.25	202.33	472.90	06/11/09	202.33	472.90
06/12/09	158.36	-00.25	202.83	477.61	06/12/09	202.83	477.61
06/13/09	163.71	-00.25	196.33	465.09	06/13/09	196.33	465.09
06/14/09	160.94	-00.25	201.21	490.31	06/14/09	201.21	490.31
06/15/09	159.11	-00.25	200.13	490.52	06/15/09	200.13	490.52
06/16/09	160.21	-00.11	196.38	485.58	06/16/09	196.38	485.58
06/17/09	162.21	-00.25	201.25	502.57	06/17/09	201.25	502.57
06/18/09	167.14	-00.25	193.78	476.84	06/18/09	193.78	476.84
06/19/09	162.67	-00.25	206.02	510.51	06/19/09	206.02	510.51
06/20/09	163.01	001.87	210.91	522.18	06/20/09	210.91	522.18
06/21/09	167.24	-00.24	206.42	509.87	06/21/09	206.42	509.87
06/22/09	165.74	021.07	203.88	503.36	06/22/09	203.88	503.36
06/23/09	162.70	019.39	207.20	523.95	06/23/09	207.20	523.95
06/24/09	160.27	058.25	207.11	513.05	06/24/09	207.11	513.05
06/25/09	163.33	116.21	202.61	503.57	06/25/09	202.61	503.57
06/26/09	164.54	146.58	203.27	505.69	06/26/09	203.27	505.69
06/27/09	159.55	-00.19	204.98	513.03	06/27/09	204.98	513.03
06/28/09	148.60	000.48	195.10	493.77	06/28/09	195.10	493.77
06/29/09	156.07	-00.25	197.45	507.51	06/29/09	197.45	507.51
06/30/09	162.08	007.81	201.08	518.97	06/30/09	201.08	518.97
07/01/09	161.35	-00.24	195.55	514.82	07/01/09	195.55	514.82
07/02/09	160.91	-00.23	192.92	511.42	07/02/09	192.92	511.42
07/03/09	157.51	-00.25	197.92	526.16	07/03/09	197.92	526.16
07/04/09	154.33	-00.25	197.03	531.31	07/04/09	197.03	531.31
07/05/09	153.75	032.79	199.43	527.90	07/05/09	199.43	527.90
07/06/09	157.22	-00.25	199.95	528.57	07/06/09	199.95	528.57
07/07/09	160.74	-00.25	196.86	523.91	07/07/09	196.86	523.91
07/08/09	168.24	-00.25	190.03	490.75	07/08/09	190.03	490.75
07/09/09	163.66	106.16	197.78	518.91	07/09/09	197.78	518.91
07/10/09	165.40	-00.25	192.60	498.77	07/10/09	192.60	498.77
07/11/09	160.72	260.77	199.06	526.95	07/11/09	199.06	526.95
07/12/09	160.34	005.40	195.09	517.60	07/12/09	195.09	517.60
07/13/09	150.85	000.30	179.88	467.55	07/13/09	179.88	467.55
07/14/09	157.88	-00.25	193.18	506.58	07/14/09	193.18	506.58
07/15/09	151.79	-00.25	199.41	494.00	07/15/09	199.41	494.00
07/16/09	146.00	-00.25	206.15	481.43	07/16/09	206.15	481.43
07/17/09	155.25	078.63	175.84	429.36	07/17/09	175.84	429.36
07/18/09	147.04	002.26	205.49	474.75	07/18/09	205.49	474.75
07/19/09	144.99	-00.25	206.43	468.37	07/19/09	206.43	468.37
07/20/09	141.21	-00.25	204.34	460.00	07/20/09	204.34	460.00
07/21/09	141.40	-00.25	206.32	465.94	07/21/09	206.32	465.94
07/22/09	130.28	-00.25	198.73	456.22	07/22/09	198.73	456.22
07/23/09	145.88	-00.25	208.96	482.74	07/23/09	208.96	482.74
07/24/09	147.93	-00.25	204.78	480.78	07/24/09	204.78	480.78
07/25/09	151.12	-00.25	207.32	485.28	07/25/09	207.32	485.28
07/26/09	152.10	003.01	210.24	488.91	07/26/09	210.24	488.91

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
07/27/09	157.37	001.55	219.01	519.99	07/27/09	219.01	519.99
07/28/09	156.83	000.00	209.93	501.22	07/28/09	209.93	501.22
07/29/09	155.09	-00.24	215.13	513.58	07/29/09	215.13	513.58
07/30/09	155.74	-00.25	213.06	521.28	07/30/09	213.06	521.28
07/31/09	153.42	-00.07	209.09	514.31	07/31/09	209.09	514.31
08/01/09	149.63	-00.25	202.33	499.81	08/01/09	202.33	499.81
08/02/09	147.97	001.28	200.39	496.73	08/02/09	200.39	496.73
08/03/09	148.24	-00.18	208.62	517.12	08/03/09	208.62	517.12
08/04/09	139.99	-00.25	193.44	471.00	08/04/09	193.44	471.00
08/05/09	125.77	172.69	196.49	486.38	08/05/09	196.49	486.38
08/06/09	134.84	432.01	194.75	484.30	08/06/09	194.75	484.30
08/07/09	131.95	425.95	189.46	471.63	08/07/09	189.46	471.63
08/08/09	134.81	433.82	191.40	473.89	08/08/09	191.40	473.89
08/09/09	138.55	442.32	194.13	479.21	08/09/09	194.13	479.21
08/10/09	139.70	448.17	201.34	498.55	08/10/09	201.34	498.55
08/11/09	142.87	460.86	206.15	509.63	08/11/09	206.15	509.63
08/12/09	137.34	444.87	196.62	483.51	08/12/09	196.62	483.51
08/13/09	141.81	459.29	199.67	493.71	08/13/09	199.67	493.71
08/14/09	143.43	467.87	204.48	508.15	08/14/09	204.48	508.15
08/15/09	144.07	472.46	199.00	499.77	08/15/09	199.00	499.77
08/16/09	145.01	475.61	197.93	493.87	08/16/09	197.93	493.87
08/17/09	141.75	467.98	201.40	506.22	08/17/09	201.40	506.22
08/18/09	149.10	495.41	205.09	515.66	08/18/09	205.09	515.66
08/19/09	144.92	476.21	205.71	502.31	08/19/09	205.71	502.31
08/20/09	142.07	466.29	206.04	501.16	08/20/09	206.04	501.16
08/21/09	140.13	463.84	205.39	508.74	08/21/09	205.39	508.74
08/22/09	136.34	461.66	189.71	478.30	08/22/09	189.71	478.30
08/23/09	121.88	423.49	178.88	453.51	08/23/09	178.88	453.51
08/24/09	151.49	267.35	240.89	637.95	08/24/09	240.89	637.95
08/25/09	000.11	149.15	309.54	828.71	08/25/09	309.54	828.71
08/26/09	000.26	147.54	310.70	832.28	08/26/09	310.70	832.28
08/27/09	000.18	146.91	306.21	825.09	08/27/09	306.21	825.09
08/28/09	000.23	145.18	000.00	166.04	08/28/09	000.00	166.04
08/29/09	000.09	141.98	000.00	162.04	08/29/09	000.00	162.04
08/30/09	000.26	654.47	264.94	640.01	08/30/09	264.94	640.01
08/31/09	049.94	624.36	248.34	594.54	08/31/09	248.34	594.54
09/01/09	124.32	492.24	222.53	514.75	09/01/09	222.53	514.75
09/02/09	140.52	485.32	216.34	504.56	09/02/09	216.34	504.56
09/03/09	141.71	486.51	210.88	496.80	09/03/09	210.88	496.80
09/04/09	135.26	472.14	206.59	493.52	09/04/09	206.59	493.52
09/05/09	146.73	495.80	182.64	440.27	09/05/09	182.64	440.27
09/06/09	146.47	496.44	180.08	426.60	09/06/09	180.08	426.60
09/07/09	141.08	486.22	196.41	473.41	09/07/09	196.41	473.41
09/08/09	145.23	491.27	197.98	470.72	09/08/09	197.98	470.72
09/09/09	136.58	480.40	212.67	502.90	09/09/09	212.67	502.90
09/10/09	138.19	481.73	208.81	493.67	09/10/09	208.81	493.67
09/11/09	131.51	465.18	217.39	516.77	09/11/09	217.39	516.77
09/12/09	132.07	474.89	218.27	518.73	09/12/09	218.27	518.73
09/13/09	133.66	484.93	207.39	497.49	09/13/09	207.39	497.49
09/14/09	127.14	474.87	217.98	530.26	09/14/09	217.98	530.26
09/15/09	125.07	477.54	211.00	508.37	09/15/09	211.00	508.37
09/16/09	123.20	469.30	206.44	501.10	09/16/09	206.44	501.10
09/17/09	118.71	463.17	211.98	514.57	09/17/09	211.98	514.57

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
09/18/09	122.17	463.78	202.93	491.99	09/18/09	202.93	491.99
09/19/09	123.15	477.20	202.03	494.87	09/19/09	202.03	494.87
09/20/09	125.71	486.81	210.97	515.68	09/20/09	210.97	515.68
09/21/09	124.17	476.32	214.96	531.50	09/21/09	214.96	531.50
09/22/09	127.96	490.62	217.57	529.05	09/22/09	217.57	529.05
09/23/09	129.00	494.01	198.83	503.01	09/23/09	198.83	503.01
09/24/09	127.74	490.11	209.48	516.58	09/24/09	209.48	516.58
09/25/09	128.26	490.90	213.62	520.92	09/25/09	213.62	520.92
09/26/09	128.14	490.31	213.14	519.64	09/26/09	213.14	519.64
09/27/09	125.94	480.54	207.61	504.79	09/27/09	207.61	504.79
09/28/09	041.82	265.07	066.51	286.36	09/28/09	066.51	286.36
09/29/09	000.14	155.63	000.00	177.14	09/29/09	000.00	177.14
09/30/09	000.28	153.59	000.00	176.51	09/30/09	000.00	176.51
10/01/09	000.05	152.31	000.00	256.05	10/01/09	000.00	256.05
10/02/09	000.10	151.88	000.00	095.57	10/02/09	000.00	095.57
10/03/09	000.10	149.24	000.00	007.58	10/03/09	000.00	007.58
10/04/09	124.10	460.04	215.49	492.48	10/04/09	215.49	492.48
10/05/09	133.54	498.44	226.31	524.91	10/05/09	226.31	524.91
10/06/09	129.80	487.01	225.52	520.40	10/06/09	225.52	520.40
10/07/09	130.70	490.49	221.09	511.06	10/07/09	221.09	511.06
10/08/09	132.16	491.60	223.17	511.52	10/08/09	223.17	511.52
10/09/09	132.51	492.70	213.27	495.36	10/09/09	213.27	495.36
10/10/09	129.46	488.23	219.28	504.12	10/10/09	219.28	504.12
10/11/09	130.44	488.67	212.68	494.39	10/11/09	212.68	494.39
10/12/09	130.48	487.04	220.36	503.81	10/12/09	220.36	503.81
10/13/09	129.33	479.80	219.42	506.46	10/13/09	219.42	506.46
10/14/09	128.75	484.61	220.17	507.81	10/14/09	220.17	507.81
10/15/09	128.35	482.90	218.55	506.07	10/15/09	218.55	506.07
10/16/09	127.25	492.26	218.50	515.87	10/16/09	218.50	515.87
10/17/09	133.55	519.06	202.37	498.95	10/17/09	202.37	498.95
10/18/09	126.08	494.09	216.25	527.31	10/18/09	216.25	527.31
10/19/09	120.12	490.37	216.35	532.62	10/19/09	216.35	532.62
10/20/09	118.72	490.28	213.79	538.52	10/20/09	213.79	538.52
10/21/09	119.65	494.63	210.87	529.44	10/21/09	210.87	529.44
10/22/09	122.39	506.21	205.89	534.27	10/22/09	205.89	534.27
10/23/09	199.58	775.37	060.20	285.44	10/23/09	060.20	285.44
10/24/09	242.52	899.03	000.00	181.47	10/24/09	000.00	181.47
10/25/09	243.79	900.12	000.00	180.94	10/25/09	000.00	180.94
10/26/09	160.56	648.95	000.00	120.12	10/26/09	000.00	120.12
10/27/09	126.56	547.45	000.01	173.92	10/27/09	000.00	218.87
10/28/09	000.03	157.04	000.00	176.49	10/28/09	000.00	211.79
10/29/09	000.13	155.62	000.01	175.72	10/29/09	000.00	206.63
10/30/09	035.89	238.39	032.39	276.91	10/30/09	050.37	224.83
10/31/09	132.31	475.97	109.24	510.30	10/31/09	190.41	461.66
11/01/09	140.72	500.77	117.18	538.53	11/01/09	205.37	551.41
11/01/09	132.85	477.59	117.72	539.48	11/01/09	211.42	529.82
11/02/09	130.43	485.28	114.43	536.76	11/02/09	197.88	464.39
11/03/09	132.20	494.36	114.42	539.10	11/03/09	204.54	401.72
11/04/09	132.12	496.05	101.41	491.94	11/04/09	207.25	334.13
11/05/09	121.55	472.17	104.29	505.05	11/05/09	220.09	320.44
11/06/09	133.08	504.51	092.98	475.72	11/06/09	213.35	294.11
11/07/09	133.40	499.46	101.59	498.55	11/07/09	218.71	323.65
11/08/09	128.23	490.67	103.22	501.46	11/08/09	201.34	330.62

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
11/09/09	123.98	477.21	106.46	509.92	11/09/09	210.76	369.66
11/10/09	133.30	507.45	098.55	485.84	11/10/09	202.19	359.85
11/11/09	118.70	468.95	101.69	499.17	11/11/09	194.65	308.37
11/12/09	128.28	500.85	106.01	515.35	11/12/09	195.71	268.09
11/13/09	124.05	486.52	109.83	528.45	11/13/09	209.18	273.82
11/14/09	125.14	495.98	100.55	499.21	11/14/09	186.07	274.62
11/15/09	122.32	493.09	079.54	436.06	11/15/09	189.88	294.28
11/16/09	116.76	475.83	082.04	446.37	11/16/09	172.10	252.15
11/17/09	122.72	491.20	081.03	457.52	11/17/09	182.04	248.17
11/18/09	114.15	461.05	073.73	443.35	11/18/09	223.93	260.45
11/19/09	110.08	444.99	119.12	583.64	11/19/09	243.53	274.48
11/20/09	115.81	475.77	111.04	550.32	11/20/09	212.69	281.28
11/21/09	129.34	518.25	099.90	504.19	11/21/09	202.05	269.10
11/22/09	124.21	503.42	097.55	498.89	11/22/09	213.96	296.24
11/23/09	134.12	539.56	077.82	446.95	11/23/09	223.81	340.82
11/24/09	135.95	543.94	093.78	488.69	11/24/09	213.40	320.02
11/25/09	127.97	520.75	126.46	495.43	11/25/09	201.39	270.70
11/26/09	133.51	533.52	157.21	551.48	11/26/09	208.39	265.36
11/27/09	125.98	513.20	161.11	568.86	11/27/09	211.72	270.56
11/28/09	128.52	523.83	161.24	569.52	11/28/09	209.87	296.03
11/29/09	130.43	536.63	157.18	552.24	11/29/09	199.02	323.35
11/30/09	131.69	541.18	158.94	566.02	11/30/09	203.91	287.14
12/01/09	124.07	526.43	155.90	571.55	12/01/09	210.16	249.64
12/02/09	266.90	538.78	265.20	611.00	12/02/09	206.69	248.92
12/03/09	065.27	607.52	350.57	872.94	12/03/09	211.87	245.75
12/04/09	369.83	519.27	241.48	790.84	12/04/09	205.02	242.57
12/05/09	147.83	243.50	144.08	501.55	12/05/09	218.72	257.13
12/06/09	148.64	543.56	155.19	541.86	12/06/09	214.25	278.54
12/07/09	148.85	553.83	153.74	538.55	12/07/09	212.49	334.64
12/08/09	151.60	562.90	147.75	504.49	12/08/09	208.17	313.19
12/09/09	149.41	559.44	160.53	577.83	12/09/09	206.95	281.83
12/10/09	143.04	539.44	154.85	550.36	12/10/09	194.19	277.95
12/11/09	148.79	569.62	156.11	562.22	12/11/09	212.64	287.20
12/12/09	147.75	566.88	157.26	603.67	12/12/09	211.68	384.76
12/13/09	146.49	564.21	157.51	584.22	12/13/09	212.20	432.36
12/14/09	144.68	557.23	159.45	597.58	12/14/09	211.91	421.51
12/15/09	145.76	563.96	157.15	579.24	12/15/09	211.93	497.36
12/16/09	145.86	562.04	159.19	593.45	12/16/09	209.25	499.23
12/17/09	158.06	610.25	155.24	574.11	12/17/09	183.30	441.01
12/18/09	149.88	561.38	157.53	578.78	12/18/09	212.25	418.23
12/19/09	146.97	552.75	156.28	580.15	12/19/09	208.31	399.25
12/20/09	153.29	583.78	152.95	569.56	12/20/09	204.16	391.55
12/21/09	154.60	587.14	150.90	557.35	12/21/09	210.98	356.83
12/22/09	149.93	571.41	153.71	577.47	12/22/09	211.48	377.74
12/23/09	148.08	568.30	153.11	580.03	12/23/09	211.99	370.92
12/24/09	144.08	552.49	153.62	586.07	12/24/09	199.68	240.73
12/25/09	134.00	581.26	153.40	593.17	12/25/09	211.82	208.40
12/26/09	147.21	593.42	150.78	585.81	12/26/09	204.79	221.48
12/27/09	143.19	579.13	152.63	612.78	12/27/09	201.83	233.98
12/28/09	142.56	583.43	151.32	608.99	12/28/09	204.83	237.32
12/29/09	143.06	582.78	152.58	613.34	12/29/09	205.02	219.06
12/30/09	143.17	583.14	151.34	606.88	12/30/09	204.91	246.86
12/31/09	142.47	580.88	149.99	603.60	12/31/09	208.07	241.68

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
01/01/10	145.23	595.56	151.13	617.84	01/01/10	204.22	224.98
01/02/10	143.94	591.30	150.44	618.17	01/02/10	201.96	265.95
01/03/10	142.52	585.24	150.42	621.79	01/03/10	201.80	281.25
01/04/10	141.06	581.49	147.79	601.50	01/04/10	196.61	261.44
01/05/10	146.31	600.39	147.32	599.68	01/05/10	204.48	241.45
01/06/10	144.42	584.62	145.76	583.26	01/06/10	196.25	243.86
01/07/10	145.11	593.55	148.29	608.56	01/07/10	200.92	225.18
01/08/10	191.70	578.58	151.28	624.96	01/08/10	198.18	229.63
01/09/10	332.01	686.62	149.91	614.48	01/09/10	200.13	233.67
01/10/10	131.37	571.53	147.31	591.79	01/10/10	189.54	256.11
01/11/10	142.26	600.69	148.91	607.52	01/11/10	198.25	272.05
01/12/10	143.08	597.63	150.30	618.56	01/12/10	197.82	258.13
01/13/10	140.62	587.53	149.22	610.03	01/13/10	195.82	251.01
01/14/10	139.62	578.76	148.61	595.23	01/14/10	194.23	271.26
01/15/10	140.46	585.03	151.69	613.95	01/15/10	200.14	322.25
01/16/10	145.22	612.49	149.82	601.32	01/16/10	194.13	330.55
01/17/10	137.79	572.97	153.32	624.95	01/17/10	201.82	366.89
01/18/10	142.06	592.75	151.61	607.51	01/18/10	201.45	300.03
01/19/10	144.54	602.49	153.23	619.75	01/19/10	197.99	252.11
01/20/10	141.11	587.52	149.45	589.21	01/20/10	182.76	257.03
01/21/10	144.08	605.24	151.36	607.72	01/21/10	200.05	246.39
01/22/10	141.63	593.69	151.37	607.66	01/22/10	190.78	264.16
01/23/10	140.17	595.92	151.34	610.68	01/23/10	196.95	277.83
01/24/10	142.03	607.97	149.94	605.87	01/24/10	201.72	236.02
01/25/10	138.66	590.19	152.20	623.23	01/25/10	202.56	251.05
01/26/10	141.21	605.01	148.44	598.50	01/26/10	204.66	241.34
01/27/10	141.61	606.66	148.37	598.90	01/27/10	205.49	247.04
01/28/10	142.29	615.31	147.76	600.42	01/28/10	206.70	247.09
01/29/10	130.13	604.85	144.38	578.66	01/29/10	199.62	235.40
01/30/10	138.82	603.79	141.98	557.03	01/30/10	204.83	261.45
01/31/10	138.25	603.51	147.89	603.28	01/31/10	202.82	271.11
02/01/10	140.32	608.04	146.61	584.94	02/01/10	201.59	327.25
02/02/10	139.22	596.68	145.44	576.56	02/02/10	194.64	348.65
02/03/10	142.04	617.64	139.22	530.74	02/03/10	208.58	294.26
02/04/10	143.45	621.43	145.55	574.80	02/04/10	201.04	261.87
02/05/10	143.64	620.16	147.38	581.47	02/05/10	201.58	340.35
02/06/10	143.04	613.14	148.02	587.93	02/06/10	203.01	346.22
02/07/10	138.83	596.79	147.01	577.57	02/07/10	197.23	331.95
02/08/10	123.60	517.38	134.14	480.52	02/08/10	158.68	284.62
02/09/10	134.45	583.48	146.93	580.74	02/09/10	206.95	306.01
02/10/10	142.70	619.43	141.41	536.38	02/10/10	199.87	251.19
02/11/10	142.39	618.81	147.45	576.05	02/11/10	191.95	252.79
02/12/10	138.63	598.49	146.80	572.57	02/12/10	200.44	256.96
02/13/10	139.94	603.31	146.05	563.67	02/13/10	201.50	294.51
02/14/10	134.31	578.93	148.83	585.45	02/14/10	200.22	315.94
02/15/10	121.54	512.66	140.09	521.59	02/15/10	172.83	299.54
02/16/10	116.82	480.07	132.38	458.15	02/16/10	137.02	325.44
02/17/10	121.35	516.24	143.18	542.65	02/17/10	168.07	289.07
02/18/10	138.10	604.53	147.72	586.86	02/18/10	207.79	331.14
02/19/10	138.31	608.52	148.07	590.85	02/19/10	198.65	360.87
02/20/10	110.24	442.49	131.99	457.68	02/20/10	116.64	368.86
02/21/10	130.34	563.06	145.68	568.54	02/21/10	192.70	336.40
02/22/10	134.06	602.29	147.90	599.90	02/22/10	210.24	362.14

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
02/23/10	126.82	611.45	148.52	615.20	02/23/10	208.67	293.02
02/24/10	126.84	580.05	148.44	626.11	02/24/10	211.53	277.91
02/25/10	128.51	581.51	146.18	597.74	02/25/10	193.72	292.83
02/26/10	133.78	601.54	148.49	615.49	02/26/10	211.45	350.77
02/27/10	133.24	607.00	146.08	604.60	02/27/10	212.46	390.38
02/28/10	133.12	601.29	147.96	614.33	02/28/10	205.13	404.56
03/01/10	130.28	595.74	147.97	614.79	03/01/10	206.80	399.81
03/02/10	130.07	587.90	146.52	600.47	03/02/10	208.59	396.63
03/03/10	134.60	609.75	148.21	608.43	03/03/10	208.78	397.34
03/04/10	132.72	598.64	148.64	616.51	03/04/10	209.50	391.81
03/05/10	135.34	612.00	147.14	616.95	03/05/10	207.94	391.90
03/06/10	135.74	622.25	152.66	649.71	03/06/10	185.14	394.32
03/07/10	133.90	615.45	146.02	605.52	03/07/10	210.06	419.68
03/08/10	134.53	620.94	147.83	624.05	03/08/10	199.78	408.12
03/09/10	130.22	602.80	146.02	617.08	03/09/10	208.66	356.56
03/10/10	129.50	602.25	145.48	615.47	03/10/10	210.99	362.91
03/11/10	128.11	596.75	144.72	622.96	03/11/10	211.76	352.61
03/12/10	129.80	605.87	144.41	619.09	03/12/10	212.70	317.90
03/13/10	130.35	609.00	143.85	616.92	03/13/10	212.88	317.42
03/15/10	130.76	609.96	144.00	616.30	03/15/10	213.70	308.78
03/16/10	127.71	600.02	145.34	635.80	03/16/10	215.16	298.54
03/17/10	131.40	622.17	144.25	627.24	03/17/10	214.25	238.88
03/18/10	129.76	585.46	144.32	625.11	03/18/10	201.05	246.67
03/19/10	133.61	627.53	144.26	630.50	03/19/10	213.96	290.61
03/20/10	130.50	581.51	144.34	636.34	03/20/10	217.28	342.56
03/21/10	132.63	631.06	144.81	648.61	03/21/10	210.63	351.49
03/22/10	132.74	627.23	144.22	647.89	03/22/10	205.46	338.04
03/23/10	128.40	589.74	143.93	647.35	03/23/10	210.69	355.08
03/24/10	131.49	608.84	141.93	634.79	03/24/10	203.28	390.56
03/25/10	131.25	597.16	142.06	634.12	03/25/10	210.73	420.85
03/26/10	127.80	603.25	161.74	640.93	03/26/10	197.55	406.84
03/27/10	128.83	587.60	165.44	650.16	03/27/10	215.02	389.79
03/28/10	128.37	602.79	160.31	648.54	03/28/10	213.60	436.85
03/29/10	123.15	569.04	155.18	646.92	03/29/10	213.48	466.57
03/30/10	133.15	628.71	150.05	645.30	03/30/10	209.39	496.49
03/31/10	131.19	600.18	144.92	643.68	03/31/10	211.32	517.02
04/01/10	133.76	611.73	140.58	632.78	04/01/10	212.31	530.94
04/02/10	128.18	588.40	142.58	635.66	04/02/10	217.33	542.96
04/03/10	130.02	598.35	143.80	632.23	04/03/10	210.42	491.97
04/04/10	126.15	595.74	142.57	625.24	04/04/10	203.74	433.27
04/05/10	121.57	554.77	145.79	642.85	04/05/10	207.54	401.59
04/06/10	123.84	588.94	144.27	631.35	04/06/10	217.81	444.11
04/07/10	124.56	586.35	140.64	606.34	04/07/10	212.13	442.50
04/08/10	116.88	561.78	137.94	582.20	04/08/10	183.17	411.83
04/09/10	126.61	590.54	141.68	616.01	04/09/10	186.24	291.16
04/10/10	131.02	650.63	144.92	638.41	04/10/10	211.68	311.76
04/11/10	129.27	614.78	145.73	642.36	04/11/10	212.56	332.55
04/12/10	131.77	638.58	144.99	638.85	04/12/10	210.60	351.00
04/13/10	132.13	619.25	144.59	642.19	04/13/10	209.51	391.40
04/14/10	131.48	637.89	144.92	646.93	04/14/10	204.78	435.40
04/15/10	128.94	621.71	145.07	655.60	04/15/10	206.15	441.30
04/16/10	112.27	512.88	128.69	501.85	04/16/10	129.56	323.20
04/17/10	130.30	651.11	142.02	647.26	04/17/10	204.78	379.65

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
04/18/10	128.98	615.94	142.48	639.15	04/18/10	198.65	343.19
04/19/10	131.38	673.03	142.63	638.84	04/19/10	207.01	334.22
04/20/10	128.92	602.21	143.29	642.78	04/20/10	200.56	328.64
04/21/10	132.71	637.06	142.97	640.50	04/21/10	209.31	306.56
04/22/10	133.42	617.87	143.35	650.87	04/22/10	206.76	313.15
04/23/10	129.65	605.90	143.20	656.36	04/23/10	202.30	298.19
04/24/10	124.15	602.18	138.12	609.85	04/24/10	166.89	271.86
04/25/10	115.30	569.77	135.53	563.32	04/25/10	148.27	290.62
04/26/10	122.65	544.26	137.44	591.75	04/26/10	174.27	309.92
04/27/10	129.83	591.98	142.20	644.36	04/27/10	193.08	372.62
04/28/10	129.91	636.55	144.90	674.43	04/28/10	193.59	380.50
04/29/10	118.80	590.42	133.17	554.48	04/29/10	156.65	380.88
04/30/10	133.00	620.97	139.92	618.10	04/30/10	180.28	354.85
05/01/10	133.81	622.12	140.10	638.74	05/01/10	186.65	426.04
05/02/10	135.02	645.48	138.48	626.63	05/02/10	187.87	407.87
05/03/10	132.79	642.27	139.83	659.93	05/03/10	181.61	343.37
05/04/10	118.63	593.64	131.45	557.87	05/04/10	141.25	315.20
05/05/10	118.38	528.37	132.66	558.62	05/05/10	149.17	327.78
05/06/10	130.96	627.96	138.15	623.39	05/06/10	194.35	444.50
05/07/10	133.52	634.69	139.16	641.91	05/07/10	193.52	413.38
05/08/10	135.22	611.72	138.40	649.13	05/08/10	190.48	389.57
05/09/10	132.94	594.90	137.98	657.41	05/09/10	188.19	353.27
05/10/10	134.20	659.15	137.99	645.30	05/10/10	188.56	256.53
05/11/10	131.16	600.72	137.21	622.94	05/11/10	193.80	261.25
05/12/10	130.94	593.69	139.11	809.78	05/12/10	178.57	267.29
05/13/10	120.75	358.16	127.64	712.45	05/13/10	120.66	259.01
05/14/10	123.31	550.61	130.55	687.28	05/14/10	153.36	319.28
05/15/10	130.54	566.24	131.74	744.47	05/15/10	168.11	298.66
05/16/10	133.72	620.99	127.80	699.88	05/16/10	178.50	280.58
05/17/10	128.86	628.66	131.95	724.25	05/17/10	148.64	274.34
05/18/10	139.00	652.40	133.13	874.26	05/18/10	139.76	347.60
05/19/10	137.69	668.23	134.71	909.85	05/19/10	151.80	303.29
05/20/10	110.45	486.97	123.29	612.22	05/20/10	086.78	281.96
05/21/10	137.81	621.52	138.13	634.36	05/21/10	160.87	398.94
05/22/10	128.98	440.82	125.87	513.90	05/22/10	136.45	330.53
05/23/10	117.73	493.13	129.19	549.48	05/23/10	136.48	286.18
05/24/10	125.07	524.49	133.57	609.88	05/24/10	151.93	319.59
05/25/10	133.82	603.41	138.13	673.53	05/25/10	170.51	332.74
05/26/10	122.85	449.00	133.46	604.65	05/26/10	149.56	301.71
05/27/10	133.36	465.31	139.34	651.10	05/27/10	166.78	338.11
05/28/10	137.19	510.74	135.82	613.53	05/28/10	173.76	340.59
05/29/10	137.43	486.52	138.76	632.15	05/29/10	173.97	334.18
05/30/10	137.46	372.07	141.81	660.40	05/30/10	172.38	310.85
05/31/10	137.99	410.92	140.35	642.84	05/31/10	174.68	308.84
06/01/10	136.83	387.83	137.92	630.47	06/01/10	177.47	306.36
06/02/10	132.42	371.00	137.61	616.92	06/02/10	179.12	298.81
06/03/10	132.54	567.66	139.65	627.15	06/03/10	181.52	311.22
06/04/10	126.94	481.74	136.11	589.56	06/04/10	154.57	286.53
06/05/10	126.79	508.83	136.55	589.18	06/05/10	162.56	321.74
06/06/10	127.60	533.19	136.66	593.55	06/06/10	160.23	363.79
06/07/10	135.73	626.34	134.21	583.27	06/07/10	179.65	440.57
06/08/10	133.07	578.90	140.49	643.06	06/08/10	184.66	431.66
06/09/10	135.37	601.02	142.40	661.79	06/09/10	181.81	416.92

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
06/10/10	135.33	596.69	142.66	665.91	06/10/10	182.06	399.61
06/11/10	133.37	551.43	141.55	662.22	06/11/10	185.25	355.12
06/12/10	131.83	556.90	140.82	665.25	06/12/10	184.27	317.00
06/13/10	131.40	525.45	139.62	662.66	06/13/10	185.97	359.27
06/14/10	129.47	517.32	138.54	666.26	06/14/10	183.20	363.67
06/15/10	132.07	597.01	139.14	663.93	06/15/10	184.61	306.95
06/16/10	131.58	602.04	138.97	666.00	06/16/10	183.89	278.06
06/17/10	131.33	512.66	138.86	666.33	06/17/10	182.57	265.99
06/18/10	130.94	511.79	138.92	666.79	06/18/10	183.07	251.85
06/19/10	129.64	594.90	137.27	652.99	06/19/10	175.07	257.01
06/20/10	131.06	566.55	137.55	655.73	06/20/10	178.63	349.43
06/21/10	132.60	550.85	135.91	644.87	06/21/10	183.43	359.07
06/22/10	131.93	612.23	134.98	641.26	06/22/10	184.32	376.13
06/23/10	128.00	521.61	137.56	662.82	06/23/10	185.26	401.19
06/24/10	130.22	415.23	136.67	654.03	06/24/10	176.93	373.84
06/25/10	130.71	619.13	137.74	666.10	06/25/10	183.58	301.78
06/26/10	131.27	458.68	137.35	667.43	06/26/10	182.74	292.12
06/27/10	130.32	459.89	137.00	667.19	06/27/10	179.35	297.93
06/28/10	126.24	283.94	136.35	657.13	06/28/10	175.25	320.47
06/29/10	123.47	360.69	138.05	669.01	06/29/10	176.58	325.42
06/30/10	125.83	346.68	137.35	652.40	06/30/10	178.83	306.59
07/01/10	126.81	300.94	136.70	642.09	07/01/10	173.18	393.60
07/02/10	128.77	365.78	137.50	650.79	07/02/10	180.50	329.51
07/03/10	127.66	375.96	137.45	655.25	07/03/10	175.49	361.35
07/04/10	127.05	462.25	137.59	657.43	07/04/10	174.83	413.66
07/05/10	125.79	658.40	137.59	652.77	07/05/10	179.73	455.84
07/06/10	125.00	696.96	136.64	647.68	07/06/10	176.87	453.66
07/07/10	129.04	631.81	135.76	637.92	07/07/10	167.20	406.13
07/08/10	096.27	465.79	115.57	402.12	07/08/10	051.94	128.07
07/09/10	135.08	423.03	142.19	669.89	07/09/10	152.49	291.99
07/10/10	130.42	567.31	141.36	656.26	07/10/10	180.13	352.54
07/11/10	130.45	639.28	140.93	657.30	07/11/10	179.40	394.12
07/12/10	130.19	675.05	140.44	653.25	07/12/10	180.52	338.95
07/13/10	130.69	677.09	140.02	653.89	07/13/10	181.70	299.81
07/14/10	136.35	761.10	126.72	520.46	07/14/10	188.50	288.84
07/15/10	131.70	761.78	138.24	661.99	07/15/10	179.04	284.12
07/16/10	130.23	718.72	138.59	654.57	07/16/10	181.59	315.57
07/17/10	130.15	715.29	138.88	658.91	07/17/10	182.74	310.30
07/18/10	129.33	684.87	139.74	669.57	07/18/10	181.98	303.60
07/19/10	129.23	669.19	139.98	672.46	07/19/10	183.08	297.69
07/20/10	130.12	664.20	139.76	668.20	07/20/10	178.70	285.64
07/21/10	129.85	645.00	139.23	662.41	07/21/10	180.37	270.20
07/22/10	130.76	605.78	138.86	664.60	07/22/10	178.69	267.33
07/23/10	128.98	640.22	139.47	666.40	07/23/10	180.95	278.72
07/24/10	129.21	611.87	139.27	672.83	07/24/10	178.94	300.17
07/25/10	129.17	457.63	138.18	669.76	07/25/10	176.35	309.95
07/26/10	129.34	502.84	139.60	677.40	07/26/10	175.48	304.01
07/27/10	129.47	620.21	139.77	678.65	07/27/10	178.11	324.26
07/28/10	131.07	667.27	132.83	614.96	07/28/10	182.99	347.72
07/29/10	130.49	631.56	135.62	628.54	07/29/10	182.08	366.91
07/30/10	129.03	636.88	138.96	668.34	07/30/10	177.72	330.44
07/31/10	128.66	688.96	140.40	679.89	07/31/10	179.51	320.90
08/01/10	129.37	729.05	139.29	668.12	08/01/10	180.12	298.13

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
08/02/10	131.19	754.44	137.87	659.05	08/02/10	177.96	285.21
08/03/10	129.44	771.93	140.36	679.14	08/03/10	179.81	283.86
08/04/10	130.23	720.74	139.06	670.56	08/04/10	182.37	294.49
08/05/10	127.30	707.12	139.85	674.85	08/05/10	181.07	247.34
08/06/10	125.04	675.79	140.63	690.07	08/06/10	181.45	208.06
08/07/10	129.80	653.99	140.00	680.34	08/07/10	177.98	195.23
08/08/10	128.91	666.16	139.07	672.68	08/08/10	179.53	216.00
08/09/10	125.96	629.80	140.71	688.97	08/09/10	179.81	253.65
08/10/10	126.74	576.53	140.06	684.28	08/10/10	178.08	272.30
08/11/10	129.82	614.23	139.38	679.47	08/11/10	178.82	263.49
08/12/10	129.00	662.84	138.73	675.66	08/12/10	180.03	265.11
08/13/10	129.29	671.82	138.57	672.57	08/13/10	180.18	286.44
08/14/10	129.01	692.96	138.67	674.28	08/14/10	175.43	318.16
08/15/10	129.67	691.17	140.27	692.96	08/15/10	181.59	348.30
08/16/10	129.93	660.66	140.58	693.33	08/16/10	180.45	368.92
08/17/10	132.42	643.63	139.47	687.41	08/17/10	178.40	384.77
08/18/10	131.60	662.32	139.63	690.00	08/18/10	178.42	395.07
08/19/10	132.23	667.43	140.22	697.09	08/19/10	177.29	410.75
08/20/10	132.71	614.66	140.43	703.92	08/20/10	173.93	398.46
08/21/10	131.93	670.14	139.94	694.83	08/21/10	179.85	390.93
08/22/10	130.65	596.31	139.16	687.96	08/22/10	180.56	396.80
08/23/10	131.12	541.08	138.35	683.09	08/23/10	180.21	370.21
08/24/10	129.13	533.67	138.82	688.68	08/24/10	180.62	377.45
08/25/10	127.87	365.20	140.37	707.98	08/25/10	180.33	368.56
08/26/10	130.06	424.14	139.89	705.76	08/26/10	177.54	306.30
08/27/10	127.07	389.43	138.87	695.47	08/27/10	179.69	243.96
08/28/10	128.89	410.31	140.09	706.05	08/28/10	178.16	209.93
08/29/10	128.96	424.14	138.52	693.57	08/29/10	178.71	249.73
08/30/10	132.66	536.42	139.11	693.73	08/30/10	177.53	268.46
08/31/10	129.06	355.84	140.37	710.37	08/31/10	181.01	277.47
09/01/10	131.19	458.14	139.20	691.55	09/01/10	177.73	259.40
09/02/10	132.49	629.57	141.17	700.81	09/02/10	179.83	260.08
09/03/10	133.04	509.57	140.56	692.06	09/03/10	179.96	220.60
09/04/10	130.44	375.02	140.24	699.16	09/04/10	177.46	186.90
09/05/10	130.77	430.01	140.64	703.25	09/05/10	167.48	214.42
09/06/10	128.60	533.61	137.47	669.63	09/06/10	181.48	256.01
09/07/10	129.13	564.98	139.35	688.34	09/07/10	179.49	324.78
09/08/10	129.66	596.34	143.84	732.29	09/08/10	180.43	346.19
09/09/10	130.19	627.70	138.55	680.42	09/09/10	179.36	345.46
09/10/10	130.72	659.07	140.34	700.04	09/10/10	176.71	292.40
09/11/10	130.81	686.32	140.16	698.30	09/11/10	177.26	261.56
09/12/10	130.12	691.50	139.67	697.27	09/12/10	174.29	258.19
09/13/10	128.85	693.41	138.04	681.37	09/13/10	178.49	256.55
09/14/10	130.47	702.68	140.89	707.78	09/14/10	180.04	290.53
09/15/10	132.32	711.33	140.91	705.74	09/15/10	180.59	305.47
09/16/10	132.78	706.91	134.37	638.58	09/16/10	184.04	322.98
09/17/10	123.93	685.33	140.13	704.32	09/17/10	180.71	328.56
09/18/10	124.65	667.08	139.10	698.06	09/18/10	181.51	278.63
09/19/10	133.47	648.33	141.94	718.04	09/19/10	180.59	272.74
09/20/10	142.29	629.58	140.42	701.98	09/20/10	179.66	298.86
09/21/10	151.11	610.83	140.12	700.77	09/21/10	177.28	324.78
09/22/10	142.69	650.74	135.05	654.14	09/22/10	172.20	328.05
09/23/10	130.62	688.72	130.70	604.22	09/23/10	135.62	317.11

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
09/24/10	125.42	643.26	139.35	702.14	09/24/10	189.29	292.80
09/25/10	119.18	591.19	140.33	714.90	09/25/10	181.41	335.29
09/26/10	112.94	539.11	121.50	504.18	09/26/10	090.75	262.36
09/27/10	106.70	487.03	124.95	537.65	09/27/10	117.88	191.53
09/28/10	100.46	434.96	130.16	599.08	09/28/10	144.82	402.74
09/29/10	094.21	382.88	139.62	700.82	09/29/10	188.46	428.01
09/30/10	087.97	330.80	147.35	773.79	09/30/10	114.85	322.44
10/01/10	080.45	283.06	155.20	846.84	10/01/10	000.00	009.38
10/02/10	076.24	270.97	101.97	275.20	10/02/10	000.00	009.84
10/03/10	122.86	593.72	132.13	589.46	10/03/10	145.31	122.00
10/04/10	125.12	667.01	139.81	677.69	10/04/10	182.78	341.38
10/05/10	127.61	682.38	139.13	673.85	10/05/10	191.23	344.54
10/06/10	126.28	669.69	139.85	677.03	10/06/10	186.34	271.43
10/07/10	125.72	668.81	139.20	676.37	10/07/10	192.54	246.36
10/08/10	125.01	667.56	140.93	700.75	10/08/10	190.75	278.35
10/09/10	125.16	668.13	140.94	701.29	10/09/10	190.93	250.50
10/10/10	125.47	669.80	141.17	702.09	10/10/10	190.38	216.36
10/11/10	125.48	671.80	141.19	705.65	10/11/10	188.29	197.71
10/12/10	125.93	674.63	140.65	699.01	10/12/10	184.91	202.52
10/13/10	124.31	660.22	139.42	683.14	10/13/10	183.63	201.10
10/14/10	126.96	679.65	140.11	693.82	10/14/10	190.26	251.65
10/15/10	127.57	682.88	137.70	670.38	10/15/10	181.97	276.06
10/16/10	128.34	688.25	140.59	699.32	10/16/10	189.44	701.31
10/17/10	128.34	688.96	140.59	699.32	10/17/10	189.44	701.31
10/18/10	128.34	688.96	140.40	701.15	10/18/10	189.44	701.31
10/19/10	127.21	679.85	139.36	689.58	10/19/10	188.06	686.87
10/20/10	127.55	683.61	139.53	695.29	10/20/10	188.06	686.08
10/21/10	126.06	679.13	139.80	697.20	10/21/10	188.06	697.66
10/22/10	126.06	679.13	138.66	686.04	10/22/10	191.89	709.87
10/23/10	125.20	675.66	140.64	708.34	10/23/10	189.41	702.11
10/24/10	126.42	679.67	141.20	712.25	10/24/10	186.89	692.12
10/25/10	126.42	679.67	140.78	706.71	10/25/10	189.66	707.05
10/26/10	124.82	672.38	140.50	704.62	10/26/10	191.06	706.83
10/27/10	124.82	672.38	140.37	704.94	10/27/10	190.67	706.53
10/28/10	136.98	747.95	116.76	325.51	10/28/10	206.81	764.10
10/29/10	142.08	779.16	098.65	127.84	10/29/10	206.81	790.72
10/30/10	142.08	779.16	114.37	442.85	10/30/10	186.82	684.11
10/31/10	142.08	779.16	137.98	685.08	10/31/10	186.82	684.11
11/01/10	127.47	683.61	136.92	655.68	11/01/10	189.92	698.40
11/02/10	127.78	685.13	137.19	689.79	11/02/10	188.75	689.02
11/03/10	126.62	679.63	136.17	672.94	11/03/10	188.02	675.21
11/04/10	126.71	686.33	136.67	682.73	11/04/10	188.34	697.97
11/05/10	128.22	693.80	136.04	686.60	11/05/10	186.68	688.60
11/06/10	128.14	689.26	135.07	675.34	11/06/10	191.15	700.47
11/07/10	126.80	686.13	137.48	692.62	11/07/10	189.05	688.56
11/08/10	127.21	690.89	137.64	705.88	11/08/10	185.42	683.14
11/09/10	125.48	674.54	136.87	692.13	11/09/10	186.32	682.83
11/10/10	125.25	678.07	135.01	518.14	11/10/10	192.49	720.95
11/11/10	000.00	281.64	000.00	289.22	11/11/10	202.09	751.23
11/12/10	000.00	279.95	000.00	279.72	11/12/10	000.00	284.15
11/13/10	121.86	632.69	137.46	563.91	11/13/10	190.76	696.47
11/14/10	128.04	681.42	137.46	661.87	11/14/10	182.25	681.42
11/15/10	128.04	686.36	137.46	554.05	11/15/10	182.03	666.80

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
11/16/10	128.04	676.66	137.46	676.66	11/16/10	186.62	691.29
11/17/10	124.90	676.66	137.46	661.87	11/17/10	186.62	691.29
11/18/10	128.04	671.73	137.46	607.96	11/18/10	186.62	691.04
11/19/10	124.90	671.73	137.46	691.29	11/19/10	190.98	686.36
11/20/10	127.88	671.48	137.46	686.60	11/20/10	186.62	686.36
11/21/10	128.04	666.80	137.46	701.15	11/21/10	186.83	681.67
11/22/10	128.04	656.94	134.32	578.54	11/22/10	182.25	681.42
11/23/10	121.86	652.17	137.46	661.87	11/23/10	177.89	681.42
11/24/10	124.90	671.73	134.32	666.80	11/24/10	182.25	686.36
11/25/10	124.90	671.73	134.32	652.17	11/25/10	177.89	676.66
11/26/10	121.86	681.42	137.46	607.96	11/26/10	177.89	671.48
11/27/10	118.72	671.73	134.32	622.75	11/27/10	182.25	671.73
11/28/10	118.72	671.73	134.32	607.96	11/28/10	177.89	676.66
11/29/10	118.72	666.80	134.32	671.73	11/29/10	182.25	681.42
11/30/10	118.72	676.66	134.32	632.20	11/30/10	173.52	666.80
12/01/10	115.58	656.94	134.32	666.80	12/01/10	178.11	671.73
12/02/10	118.72	676.66	131.18	652.17	12/02/10	177.89	666.80
12/03/10	071.82	298.39	096.84	284.33	12/03/10	000.00	289.26
12/04/10	118.72	666.80	134.32	578.54	12/04/10	190.98	691.53
12/05/10	103.12	666.80	137.46	622.75	12/05/10	186.62	681.42
12/06/10	118.72	666.80	134.32	676.66	12/06/10	190.98	691.29
12/07/10	118.72	666.80	131.18	652.17	12/07/10	186.62	691.29
12/08/10	118.72	671.73	134.32	671.73	12/08/10	190.76	691.29
12/09/10	118.72	676.66	134.32	666.80	12/09/10	190.98	695.97
12/10/10	118.72	675.41	131.18	583.47	12/10/10	182.25	681.19
12/11/10	121.86	676.66	140.60	632.45	12/11/10	182.25	671.73
12/12/10	118.72	681.42	137.46	681.42	12/12/10	177.89	661.87
12/13/10	118.72	671.73	134.32	622.75	12/13/10	186.62	696.22
12/14/10	121.86	686.36	121.86	568.67	12/14/10	186.62	706.08
12/15/10	114.17	658.75	134.32	647.24	12/15/10	182.25	671.73
12/16/10	106.16	607.96	134.32	534.49	12/16/10	169.31	622.75
12/17/10	109.30	632.45	137.46	573.61	12/17/10	173.52	637.38
12/18/10	143.79	824.50	106.16	294.20	12/18/10	000.00	289.26
12/19/10	068.78	294.20	106.16	284.33	12/19/10	000.00	289.26
12/20/10	071.82	279.57	103.27	294.20	12/20/10	000.00	284.33
12/21/10	121.71	676.90	137.46	563.91	12/21/10	195.13	695.97
12/22/10	118.72	676.66	140.60	603.03	12/22/10	186.62	661.87
12/23/10	115.58	656.94	140.60	588.40	12/23/10	190.98	686.36
12/24/10	115.42	661.87	140.60	681.42	12/24/10	186.83	691.29
12/25/10	118.72	691.29	134.32	627.52	12/25/10	190.98	686.36
12/26/10	118.72	686.36	140.60	637.38	12/26/10	190.98	681.42
12/27/10	118.72	681.42	140.60	647.24	12/27/10	186.83	691.29
12/28/10	112.44	666.80	140.60	593.33	12/28/10	190.76	696.22
12/29/10	118.53	676.66	140.60	676.66	12/29/10	195.35	691.29
12/30/10	117.11	681.42	140.60	681.42	12/30/10	190.98	696.22
12/31/10	115.58	673.03	137.46	666.80	12/31/10	190.98	696.22
01/01/11	000.00	725.64	140.60	725.64	01/01/11	182.25	686.36
01/02/11	118.72	671.73	140.60	656.94	01/02/11	182.25	676.66
01/03/11	118.72	691.29	137.46	671.73	01/03/11	186.62	701.15
01/04/11	118.72	691.29	137.46	661.87	01/04/11	190.98	701.15
01/05/11	118.72	686.36	140.60	696.22	01/05/11	190.98	696.22
01/06/11	124.90	686.36	140.60	701.15	01/06/11	190.98	696.22
01/07/11	121.86	686.36	140.60	691.29	01/07/11	195.35	691.29

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
01/08/11	118.72	691.29	140.60	686.36	01/08/11	182.25	676.66
01/09/11	118.72	681.42	140.60	691.29	01/09/11	195.35	706.08
01/10/11	118.56	676.66	140.60	701.15	01/10/11	195.35	706.08
01/11/11	112.44	681.42	137.46	593.33	01/11/11	195.13	691.29
01/12/11	106.16	666.80	140.60	607.96	01/12/11	190.98	696.22
01/13/11	115.58	671.73	137.46	652.17	01/13/11	186.62	696.22
01/14/11	115.58	696.22	137.46	632.45	01/14/11	190.98	706.08
01/15/11	115.58	696.22	137.46	632.45	01/15/11	190.98	706.08
01/16/11	116.27	696.22	134.32	652.17	01/16/11	190.76	706.08
01/17/11	115.58	701.15	140.60	607.96	01/17/11	186.62	681.42
01/18/11	114.96	691.29	143.64	647.24	01/18/11	190.98	701.15
01/19/11	115.58	691.29	137.46	652.17	01/19/11	190.98	701.15
01/20/11	115.58	691.29	137.46	656.94	01/20/11	190.98	701.15
01/21/11	112.44	686.36	137.62	642.31	01/21/11	186.62	701.15
01/22/11	112.44	681.42	137.46	588.40	01/22/11	190.98	696.22
01/23/11	112.44	686.60	137.46	603.03	01/23/11	186.62	701.15
01/24/11	112.44	666.80	137.46	701.15	01/24/11	190.98	710.85
01/25/11	112.44	691.29	134.48	612.89	01/25/11	186.62	696.22
01/26/11	068.78	437.11	103.12	357.97	01/26/11	000.00	304.06
01/27/11	115.58	710.85	140.60	612.89	01/27/11	173.52	656.94
01/28/11	112.44	686.36	137.77	529.56	01/28/11	190.98	706.08
01/29/11	112.44	686.36	140.60	558.73	01/29/11	186.62	706.08
01/30/11	112.44	691.29	140.60	652.17	01/30/11	195.35	706.08
01/31/11	109.30	686.36	137.46	632.45	01/31/11	190.98	710.85
02/01/11	637.08	1000.1	637.08	706.08	02/01/11	000.00	1000.1
02/02/11	527.77	1000.1	000.00	480.41	02/02/11	885.11	1000.1
02/03/11	309.16	1000.1	637.08	416.81	02/03/11	016.79	382.70
02/04/11	136.53	725.64	137.46	578.54	02/04/11	177.67	686.36
02/05/11	074.96	353.04	103.12	372.59	02/05/11	000.00	299.13
02/06/11	071.82	353.04	099.98	318.93	02/06/11	000.00	299.13
02/07/11	060.14	254.91	140.60	431.43	02/07/11	195.35	720.71
02/08/11	109.30	656.94	099.98	083.32	02/08/11	201.52	1000.1
02/09/11	174.94	1000.1	131.18	455.92	02/09/11	143.48	974.90
02/10/11	074.33	328.55	102.97	490.28	02/10/11	000.00	152.02
02/11/11	140.60	519.70	099.98	406.95	02/11/11	117.23	490.28
02/12/11	112.44	480.41	137.46	460.86	02/12/11	099.78	485.34
02/13/11	143.64	598.09	159.35	485.34	02/13/11	129.96	588.40
02/14/11	137.46	568.92	159.35	534.49	02/14/11	134.54	573.61
02/15/11	149.92	607.96	162.38	514.76	02/15/11	151.85	578.54
02/16/11	134.32	558.98	168.66	588.40	02/16/11	160.58	598.09
02/17/11	143.64	598.09	159.50	524.38	02/17/11	164.94	598.09
02/18/11	149.92	603.03	165.52	568.67	02/18/11	147.49	568.67
02/19/11	146.78	612.89	159.35	603.03	02/19/11	173.31	603.27
02/20/11	159.72	573.02	156.20	426.50	02/20/11	151.85	558.98
02/21/11	153.06	622.75	156.20	470.72	02/21/11	160.58	603.03
02/22/11	074.96	338.24	099.98	357.97	02/22/11	000.00	308.82
02/23/11	146.78	626.26	156.20	500.14	02/23/11	164.94	598.09
02/24/11	097.40	398.45	099.98	490.28	02/24/11	000.00	308.82
02/25/11	168.66	725.64	171.80	554.05	02/25/11	199.56	696.22
02/26/11	074.96	362.90	099.98	476.14	02/26/11	000.00	308.82
02/27/11	165.52	705.84	174.94	588.40	02/27/11	195.35	681.42
02/28/11	162.38	686.36	178.09	632.45	02/28/11	190.98	686.36
03/01/11	168.66	715.78	174.94	563.91	03/01/11	186.62	671.73

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1			WDW-2		WDW-3		
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
03/02/11	168.66	720.71	171.80	431.43	03/02/11	195.35	681.42
03/03/11	124.90	573.61	184.26	588.40	03/03/11	212.65	745.20
03/04/11	140.60	647.49	143.64	416.81	03/04/11	130.18	519.70
03/05/11	131.18	607.96	099.98	362.90	03/05/11	000.00	309.07
03/06/11	215.46	956.07	099.98	377.53	03/06/11	173.52	607.96
03/07/11	140.60	617.82	099.98	357.97	03/07/11	000.00	309.07
03/08/11	205.99	896.99	149.92	441.30	03/08/11	004.36	402.01
03/09/11	212.43	931.58	149.92	455.92	03/09/11	134.54	519.70
03/10/11	209.59	916.79	146.78	392.32	03/10/11	138.91	539.25
03/11/11	234.20	1000.1	134.32	446.23	03/11/11	104.14	470.97
03/12/11	106.00	490.28	099.98	392.81	03/12/11	000.00	318.68
03/13/11	218.60	995.36	134.32	451.16	03/13/11	130.18	500.14
03/14/11	221.74	1000.1	143.64	490.28	03/14/11	138.91	529.56
03/15/11	221.74	1000.1	146.78	573.61	03/15/11	125.81	500.14
03/16/11	203.00	902.16	159.35	519.70	03/16/11	173.52	622.75
03/17/11	118.72	558.98	156.20	509.83	03/17/11	161.02	568.92
03/18/11	146.78	681.42	162.38	455.92	03/18/11	190.98	642.31
03/19/11	215.46	990.43	140.60	509.83	03/19/11	134.54	514.76
03/20/11	115.58	529.56	106.16	509.83	03/20/11	000.00	352.79
03/21/11	209.29	975.63	149.92	539.25	03/21/11	151.85	549.12
03/22/11	209.29	965.69	168.66	534.49	03/22/11	195.35	676.66
03/23/11	212.43	980.56	149.92	549.12	03/23/11	160.58	568.67
03/24/11	212.11	965.69	099.98	509.83	03/24/11	000.00	308.82
03/25/11	212.58	995.36	156.20	544.19	03/25/11	186.62	642.31
03/26/11	212.27	990.43	153.06	519.70	03/26/11	169.31	583.47
03/27/11	209.29	970.70	159.35	524.63	03/27/11	177.89	612.89
03/28/11	209.29	970.70	099.98	500.14	03/28/11	000.00	279.57
03/29/11	209.29	975.88	162.38	519.70	03/29/11	186.62	627.52
03/30/11	215.46	1000.1	153.06	524.63	03/30/11	170.78	581.74
03/31/11	218.60	1000.1	159.35	524.63	03/31/11	169.31	588.40
04/01/11	228.03	1000.1	162.38	524.63	04/01/11	186.62	622.75
04/02/11	221.74	1000.1	159.35	490.28	04/02/11	177.89	607.96
04/04/11	215.46	1000.1	100.14	529.56	04/04/11	000.00	294.20
04/05/11	220.98	1000.1	156.20	485.34	04/05/11	173.52	603.03
04/06/11	209.29	1000.1	134.32	500.14	04/06/11	134.54	514.76
04/07/11	169.65	411.26	099.98	279.57	04/07/11	000.00	328.55
04/08/11	200.00	912.00	167.92	550.00	04/08/11	043.49	656.94
04/09/11	216.92	1002.2	160.00	581.00	04/09/11	129.00	615.00
04/10/11	218.00	1010.3	180.00	640.00	04/10/11	157.08	729.00
04/11/11	225.00	1050.0	164.00	506.92	04/11/11	143.00	652.00
04/12/11	221.92	1037.2	175.00	446.92	04/12/11	151.08	701.00
04/13/11	220.00	1034.2	170.00	568.00	04/13/11	148.00	681.92
04/14/11	218.00	1020.8	173.00	480.92	04/14/11	149.67	673.00
04/15/11	220.83	1034.3	167.08	599.00	04/15/11	139.92	647.00
04/16/11	135.00	629.00	162.00	489.00	04/16/11	136.92	635.00
04/17/11	200.00	932.92	128.08	553.00	04/17/11	075.92	469.00
04/18/11	222.08	1043.1	166.00	533.92	04/18/11	140.00	653.00
04/19/11	216.92	1023.9	164.08	517.00	04/19/11	140.00	652.00
04/20/11	111.08	540.08	102.00	512.00	04/20/11	000.00	347.00
04/21/11	108.00	532.00	101.00	461.00	04/21/11	218.83	988.75
04/22/11	080.00	377.00	101.00	525.08	04/22/11	000.00	348.00
04/23/11	140.00	663.00	162.92	568.00	04/23/11	136.00	644.00
04/24/11	135.08	649.00	158.00	572.00	04/24/11	129.08	623.00

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

WDW-1		WDW-2		WDW-3			
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/25/11	153.08	727.00	176.00	562.00	04/25/11	148.00	694.00
04/26/11	115.00	564.00	145.00	551.08	04/26/11	102.08	536.00
04/27/11	147.92	707.00	171.92	540.00	04/27/11	145.08	676.00
04/28/11	153.00	731.00	175.00	509.00	04/28/11	151.00	699.00
04/29/11	153.92	731.00	174.08	611.00	04/29/11	152.08	694.00
04/30/11	145.08	695.08	173.00	594.00	04/30/11	148.17	693.00
05/01/11	150.00	718.00	176.00	566.00	05/01/11	155.00	710.00
05/02/11	077.00	507.50	099.00	567.08	05/02/11	000.00	358.17
05/03/11	150.00	724.00	175.00	584.08	05/03/11	151.00	706.00
05/04/11	150.92	722.00	175.00	556.00	05/04/11	151.00	702.00
05/05/11	149.00	716.00	173.00	580.00	05/05/11	156.00	722.00
05/06/11	079.00	443.25	101.00	533.00	05/06/11	000.00	353.00
05/07/11	149.00	722.00	179.00	606.00	05/07/11	149.00	694.00
05/08/11	145.92	701.00	174.00	574.00	05/08/11	145.00	678.00
05/09/11	147.00	713.00	176.92	560.08	05/09/11	152.08	712.00
05/10/11	151.08	736.00	176.00	581.00	05/10/11	149.00	704.00
05/11/11	140.00	686.00	165.00	638.00	05/11/11	140.00	666.00
05/12/11	153.08	742.00	173.00	570.00	05/12/11	148.83	693.00
05/13/11	149.00	725.00	176.00	573.00	05/13/11	152.08	715.00
05/14/11	145.08	659.92	164.00	590.00	05/14/11	141.92	658.92
05/15/11	147.00	718.00	171.00	558.00	05/15/11	157.00	724.00
05/16/11	151.17	735.00	176.00	621.00	05/16/11	150.08	697.00
05/17/11	150.00	719.00	173.00	578.00	05/17/11	147.08	686.00
05/18/11	146.92	709.00	175.00	590.00	05/18/11	152.83	706.00
05/19/11	146.92	707.00	172.92	606.08	05/19/11	152.17	714.00
05/20/11	146.08	710.00	171.92	605.00	05/20/11	154.00	715.00
05/21/11	146.92	710.00	171.00	533.00	05/21/11	152.08	714.00
05/22/11	146.00	711.00	171.08	593.00	05/22/11	151.08	715.00
05/23/11	146.92	712.00	172.00	608.00	05/23/11	152.00	713.00
05/24/11	146.08	713.00	172.00	549.00	05/24/11	151.92	712.00
05/25/11	147.00	715.00	172.00	583.08	05/25/11	151.08	714.00
05/26/11	146.92	713.00	171.00	558.00	05/26/11	153.08	711.00
05/27/11	146.92	711.00	175.46	616.00	05/27/11	149.92	706.00
05/28/11	148.92	724.00	175.00	535.08	05/28/11	144.92	692.00
05/29/11	145.00	709.00	172.00	562.00	05/29/11	148.17	701.00
05/30/11	144.00	708.00	172.00	573.00	05/30/11	149.17	701.00
05/31/11	142.92	708.00	171.00	549.92	05/31/11	148.00	701.00
06/01/11	144.00	705.00	171.08	570.00	06/01/11	149.08	697.00
06/02/11	145.00	705.00	171.08	560.00	06/02/11	147.92	692.00
06/03/11	145.08	703.92	170.00	505.00	06/03/11	152.00	697.92
06/04/11	163.92	759.00	179.08	621.00	06/04/11	163.08	755.00
06/05/11	159.00	782.00	178.00	685.00	06/05/11	163.00	755.00
06/06/11	157.00	773.00	183.08	681.00	06/06/11	163.00	765.00
06/07/11	157.08	775.08	182.92	690.92	06/07/11	163.08	766.00
06/08/11	150.92	742.00	174.00	682.92	06/08/11	152.75	722.00
06/09/11	164.08	807.00	182.00	666.00	06/09/11	167.83	791.00
06/10/11	150.08	735.00	175.00	543.00	06/10/11	152.92	719.00
06/11/11	137.00	682.00	164.92	581.00	06/11/11	138.00	671.00
06/12/11	148.00	730.00	173.92	526.00	06/12/11	152.92	726.00
06/13/11	174.08	677.83	168.00	575.92	06/13/11	146.17	678.83
06/14/11	149.92	736.92	176.00	580.08	06/14/11	152.92	715.00
06/15/11	151.00	741.00	175.92	539.08	06/15/11	149.00	710.00
06/16/11	149.00	735.00	174.00	596.00	06/16/11	152.92	722.92

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
06/17/11	151.92	731.00	172.57	608.56	06/17/11	147.08	712.00
06/18/11	152.00	736.00	176.08	563.00	06/18/11	147.92	714.00
06/19/11	153.00	735.00	174.00	582.00	06/19/11	150.00	721.00
06/20/11	151.00	740.00	175.00	619.00	06/20/11	150.08	726.00
06/21/11	149.08	739.00	174.00	587.00	06/21/11	149.92	724.00
06/22/11	150.08	739.08	175.00	604.00	06/22/11	150.92	724.08
06/23/11	149.58	737.71	175.71	613.11	06/23/11	150.02	721.71
06/24/11	149.92	737.00	175.00	583.24	06/24/11	149.83	721.92
06/25/11	150.00	738.00	175.00	601.00	06/25/11	150.00	721.08
06/26/11	150.00	735.92	175.92	589.00	06/26/11	150.92	719.00
06/27/11	148.00	732.00	176.00	596.00	06/27/11	148.00	717.00
06/28/11	082.00	413.08	102.00	589.00	06/28/11	000.00	369.00
06/29/11	150.92	746.00	174.00	594.00	06/29/11	147.08	714.08
06/30/11	082.00	418.08	102.00	582.08	06/30/11	000.00	372.00
07/01/11	159.00	787.00	102.00	466.00	07/01/11	155.92	742.00
07/02/11	148.00	735.00	174.00	557.00	07/02/11	148.83	713.00
07/03/11	081.00	397.00	102.00	564.00	07/03/11	000.00	371.00
07/04/11	149.00	740.00	174.00	556.00	07/04/11	149.00	723.00
07/05/11	149.92	740.00	173.92	572.00	07/05/11	148.00	724.00
07/06/11	081.00	406.08	101.00	568.08	07/06/11	000.00	371.00
07/07/11	130.92	658.00	159.00	588.08	07/07/11	120.00	623.00
07/08/11	149.00	741.00	174.00	578.00	07/08/11	148.92	730.00
07/09/11	148.00	732.00	173.00	592.08	07/09/11	148.00	721.00
07/10/11	147.00	731.00	172.00	592.00	07/10/11	147.00	720.00
07/11/11	147.00	728.00	171.08	567.00	07/11/11	147.08	718.00
07/12/11	145.92	728.00	171.08	598.00	07/12/11	146.08	721.00
07/13/11	145.92	729.00	170.00	606.00	07/13/11	148.08	723.00
07/14/11	145.00	729.00	166.92	577.00	07/14/11	148.17	726.92
07/15/11	080.00	447.17	101.00	592.00	07/15/11	000.00	380.00
07/16/11	146.00	735.92	172.92	598.00	07/16/11	145.08	722.92
07/17/11	181.17	671.42	165.92	588.92	07/17/11	136.75	655.50
07/18/11	146.00	741.00	172.00	608.00	07/18/11	141.00	707.00
07/19/11	080.00	410.08	102.00	604.08	07/19/11	000.00	378.00
07/20/11	144.92	730.00	172.92	583.00	07/20/11	146.00	724.00
07/21/11	146.08	746.00	173.08	601.00	07/21/11	141.00	706.00
07/22/11	148.00	744.00	173.08	618.00	07/22/11	139.17	696.00
07/23/11	145.00	738.00	171.00	612.00	07/23/11	145.00	723.00
07/24/11	144.92	740.00	171.08	634.08	07/24/11	146.08	721.00
07/25/11	145.92	744.00	171.00	637.92	07/25/11	143.00	713.00
07/26/11	146.08	747.00	171.00	622.00	07/26/11	139.92	706.00
07/27/11	145.08	739.00	168.17	620.00	07/27/11	144.00	726.00
07/28/11	145.08	744.00	170.92	617.00	07/28/11	145.92	729.00
07/29/11	176.25	683.67	165.92	602.92	07/29/11	134.08	670.67
07/30/11	080.00	416.08	100.08	564.00	07/30/11	000.00	388.00
07/31/11	146.00	749.00	169.00	582.00	07/31/11	142.92	722.00
08/01/11	145.00	744.00	170.92	595.00	08/01/11	143.92	728.00
08/02/11	080.00	442.17	102.00	602.00	08/02/11	000.00	392.00
08/03/11	143.00	742.00	172.00	575.00	08/03/11	144.00	730.00
08/04/11	143.00	745.00	170.00	608.00	08/04/11	143.00	727.00
08/05/11	144.00	736.00	171.00	603.00	08/05/11	145.92	731.00
08/06/11	140.92	732.00	171.92	610.00	08/06/11	146.17	734.00
08/07/11	170.75	644.00	164.75	624.00	08/07/11	130.33	651.17
08/08/11	143.00	752.00	169.08	606.00	08/08/11	145.75	737.00

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
08/09/11	142.92	752.00	169.00	595.00	08/09/11	144.92	736.00
08/10/11	143.00	751.00	169.00	581.00	08/10/11	145.83	735.00
08/11/11	143.00	753.00	169.00	578.00	08/11/11	145.92	736.00
08/12/11	143.00	749.08	167.92	582.00	08/12/11	145.08	732.00
08/13/11	143.00	751.00	168.00	598.00	08/13/11	144.83	733.00
08/14/11	143.00	750.00	168.08	604.00	08/14/11	142.17	731.00
08/15/11	079.00	518.33	101.00	604.00	08/15/11	000.00	404.00
08/16/11	143.00	754.00	167.92	603.00	08/16/11	141.92	731.00
08/17/11	143.00	759.92	167.00	605.00	08/17/11	143.92	730.00
08/18/11	141.08	748.00	170.92	650.00	08/18/11	143.08	737.00
08/19/11	141.00	749.00	171.00	634.00	08/19/11	143.00	738.00
08/20/11	141.00	751.00	171.00	621.00	08/20/11	145.92	740.00
08/21/11	142.00	748.00	171.00	596.00	08/21/11	144.17	738.00
08/22/11	141.08	748.00	171.00	630.00	08/22/11	144.08	739.00
08/23/11	141.00	747.00	170.92	627.00	08/23/11	143.92	737.00
08/24/11	079.00	430.08	102.00	606.00	08/24/11	000.00	401.00
08/25/11	154.08	721.92	168.00	618.00	08/25/11	139.00	713.92
08/26/11	138.00	738.92	172.00	651.00	08/26/11	143.83	736.00
08/27/11	142.00	758.00	170.00	659.00	08/27/11	144.00	742.00
08/28/11	142.92	762.00	169.00	669.00	08/28/11	142.00	738.00
08/29/11	142.00	760.00	170.08	688.00	08/29/11	143.08	745.00
08/30/11	139.00	742.00	171.92	712.08	08/30/11	145.92	748.00
08/31/11	142.92	760.00	171.00	713.00	08/31/11	144.00	740.00
09/01/11	142.00	759.00	169.08	681.08	09/01/11	144.00	743.00
09/02/11	142.08	761.92	169.00	666.00	09/02/11	143.83	739.00
09/03/11	142.08	763.00	169.08	675.00	09/03/11	142.08	732.00
09/04/11	140.00	757.08	168.00	654.00	09/04/11	146.92	749.00
09/05/11	139.92	757.00	166.08	627.00	09/05/11	141.08	749.00
09/06/11	139.00	755.00	167.00	632.00	09/06/11	144.08	748.00
09/07/11	139.92	762.00	170.92	651.00	09/07/11	143.83	740.00
09/08/11	140.00	761.00	170.00	688.00	09/08/11	144.00	738.00
09/09/11	140.00	761.00	171.92	679.00	09/09/11	141.08	733.00
09/10/11	138.00	753.92	169.92	672.08	09/10/11	145.08	750.92
09/11/11	137.00	751.00	164.42	657.00	09/11/11	146.92	751.08
09/12/11	136.08	745.08	170.00	669.00	09/12/11	144.17	752.00
09/13/11	140.00	762.92	169.08	630.00	09/13/11	144.00	747.00
09/14/11	140.92	764.00	169.00	634.00	09/14/11	142.00	748.00
09/15/11	140.00	762.00	168.00	589.00	09/15/11	145.00	746.00
09/16/11	141.08	758.00	167.00	582.00	09/16/11	144.00	740.92
09/17/11	080.00	430.00	099.00	562.00	09/17/11	000.00	405.00
09/18/11	078.00	503.25	099.00	496.00	09/18/11	158.08	816.00
09/19/11	149.08	806.00	179.00	602.00	09/19/11	152.83	787.08
09/20/11	150.92	809.00	179.08	654.00	09/20/11	151.92	780.00
09/21/11	140.00	763.92	172.92	681.00	09/21/11	136.17	729.92
09/22/11	135.00	740.00	171.00	692.00	09/22/11	142.08	754.00
09/23/11	135.00	746.00	170.00	665.00	09/23/11	142.92	754.00
09/24/11	140.00	767.00	169.92	683.00	09/24/11	143.92	750.00
09/25/11	137.00	751.00	167.00	662.00	09/25/11	137.00	734.92
09/26/11	139.00	768.00	169.00	660.08	09/26/11	142.00	749.00
09/27/11	139.00	770.00	169.00	648.00	09/27/11	139.17	749.00
09/28/11	140.92	772.00	170.00	689.00	09/28/11	143.75	751.00
09/29/11	079.00	448.00	099.08	631.00	09/29/11	000.00	415.00
09/30/11	139.92	771.00	169.00	656.08	09/30/11	142.08	746.00

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
10/01/11	139.00	772.00	169.00	631.08	10/01/11	138.00	746.00
10/02/11	140.00	770.00	169.08	645.00	10/02/11	141.00	747.00
10/03/11	140.00	771.00	169.92	631.00	10/03/11	140.92	743.00
10/04/11	090.00	536.00	122.00	649.00	10/04/11	056.83	512.00
10/05/11	140.08	774.00	169.00	650.00	10/05/11	139.17	740.00
10/06/11	078.92	546.25	122.00	649.00	10/06/11	059.00	528.17
10/07/11	138.00	766.00	167.00	662.00	10/07/11	143.00	755.00
10/08/11	077.00	545.33	118.00	632.00	10/08/11	036.25	510.00
10/09/11	119.00	686.00	155.08	627.00	10/09/11	122.00	687.00
10/10/11	134.00	754.00	168.00	621.00	10/10/11	140.08	760.00
10/11/11	133.08	755.00	166.00	647.00	10/11/11	141.08	759.00
10/12/11	138.08	776.00	169.92	643.00	10/12/11	135.17	751.00
10/13/11	138.00	777.00	169.00	647.00	10/13/11	136.17	752.00
10/14/11	138.00	778.00	169.00	658.08	10/14/11	138.00	752.00
10/15/11	138.08	780.00	169.00	669.08	10/15/11	137.08	750.00
10/16/11	138.08	782.00	170.00	667.08	10/16/11	134.08	746.00
10/17/11	139.00	781.00	169.00	685.00	10/17/11	134.92	747.00
10/18/11	137.92	778.00	167.92	646.08	10/18/11	139.92	764.00
10/19/11	138.00	780.08	166.08	646.08	10/19/11	134.08	761.00
10/20/11	079.00	447.00	186.00	661.00	10/20/11	000.00	420.00
10/21/11	080.36	445.59	175.88	760.44	10/21/11	000.00	418.72
10/22/11	080.47	443.69	099.85	580.52	10/22/11	001.06	416.11
10/23/11	138.25	753.73	126.88	575.14	10/23/11	130.77	737.62
10/24/11	137.01	760.47	166.96	678.85	10/24/11	136.60	746.27
10/25/11	135.01	751.98	164.82	710.04	10/25/11	131.21	737.02
10/26/11	140.51	774.15	169.17	732.78	10/26/11	138.23	759.25
10/27/11	135.45	753.99	165.16	704.11	10/27/11	131.20	739.46
10/28/11	140.09	772.96	168.42	585.51	10/28/11	138.25	758.90
10/29/11	136.08	752.47	164.13	635.38	10/29/11	125.23	738.33
10/30/11	140.65	767.77	166.86	676.53	10/30/11	134.90	754.11
10/30/11	136.08	751.06	164.11	705.62	10/30/11	126.12	737.49
10/31/11	145.54	793.96	168.72	725.93	10/31/11	140.81	771.77
11/01/11	144.15	792.62	165.81	771.90	11/01/11	139.78	770.18
11/02/11	143.85	790.85	168.40	711.49	11/02/11	142.39	769.78
11/03/11	138.59	769.46	166.17	682.79	11/03/11	140.45	750.02
11/04/11	138.30	771.23	165.88	725.32	11/04/11	211.00	750.60
11/05/11	142.86	796.40	169.41	741.36	11/05/11	176.92	773.23
11/06/11	136.17	768.11	165.59	740.54	11/06/11	130.85	743.30
11/07/11	140.50	785.24	168.93	747.08	11/07/11	134.27	755.50
11/08/11	129.90	736.01	158.25	701.07	11/08/11	122.72	727.90
11/09/11	125.45	716.21	153.26	684.72	11/09/11	113.05	706.86
11/10/11	141.19	793.09	128.85	622.25	11/10/11	062.27	585.68
11/11/11	148.29	826.36	098.28	470.88	11/11/11	000.00	427.66
11/12/11	082.46	454.29	099.13	517.42	11/12/11	000.00	425.67
11/13/11	099.44	540.92	157.22	627.29	11/13/11	115.52	711.30
11/14/11	141.69	784.86	168.71	705.94	11/14/11	139.08	769.44
11/15/11	154.00	848.00	179.00	672.00	11/15/11	146.58	832.00
11/16/11	113.08	652.00	143.00	670.00	11/16/11	140.92	635.00
11/17/11	155.00	850.00	180.92	638.00	11/17/11	174.25	835.00
11/18/11	151.08	834.00	177.00	630.00	11/18/11	174.75	820.00
11/19/11	152.00	841.00	179.00	706.00	11/19/11	249.33	830.00
11/20/11	083.25	655.08	140.25	728.00	11/20/11	065.08	635.08
11/21/11	152.08	849.00	180.00	694.08	11/21/11	152.17	836.08

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
11/22/11	101.00	618.92	137.00	684.00	11/22/11	084.75	602.08
11/23/11	147.00	851.00	180.00	689.00	11/23/11	145.92	838.92
11/24/11	136.00	777.00	167.00	706.00	11/24/11	189.58	768.00
11/25/11	089.00	560.00	120.08	740.00	11/25/11	038.33	543.00
11/26/11	136.00	785.00	166.92	683.00	11/26/11	131.08	770.00
11/27/11	119.00	710.00	151.00	641.00	11/27/11	104.92	695.00
11/28/11	136.92	786.00	166.00	679.00	11/28/11	130.92	771.00
11/29/11	105.00	611.92	132.00	697.08	11/29/11	066.92	593.08
11/30/11	153.00	851.00	177.00	682.00	11/30/11	147.75	834.00
12/01/11	126.00	726.92	154.00	718.00	12/01/11	115.92	708.00
12/02/11	122.08	786.00	161.00	563.00	12/02/11	130.00	769.00
12/03/11	139.00	858.00	174.00	595.00	12/03/11	145.00	837.00
12/04/11	129.00	757.92	157.00	604.00	12/04/11	118.92	740.92
12/05/11	126.00	790.00	161.00	638.00	12/05/11	129.17	769.00
12/06/11	653.00	780.00	157.00	773.92	12/06/11	129.08	1063.0
12/07/11	082.00	558.00	107.00	588.00	12/07/11	000.00	535.00
12/08/11	146.08	834.00	170.08	617.00	12/08/11	132.92	792.00
12/09/11	095.92	581.00	119.00	646.00	12/09/11	000.58	541.00
12/10/11	146.00	839.92	170.08	655.00	12/10/11	145.00	824.00
12/11/11	138.92	809.00	166.00	653.00	12/11/11	138.08	800.00
12/12/11	145.00	839.00	171.00	723.00	12/12/11	146.08	832.00
12/13/11	133.92	783.00	162.92	749.00	12/13/11	133.00	784.00
12/14/11	111.00	689.00	141.00	777.00	12/14/11	097.17	671.08
12/15/11	146.00	862.00	173.92	724.00	12/15/11	149.08	847.00
12/16/11	146.00	858.00	172.92	728.00	12/16/11	146.08	842.00
12/17/11	143.00	845.00	170.00	738.00	12/17/11	141.92	828.00
12/18/11	144.08	856.00	172.08	802.00	12/18/11	152.92	856.00
12/19/11	140.00	834.00	179.00	807.00	12/19/11	151.17	859.00
12/20/11	151.08	897.92	178.08	716.00	12/20/11	121.92	739.00
12/21/11	142.92	851.00	168.08	763.00	12/21/11	147.08	841.00
12/22/11	142.08	724.67	145.00	701.00	12/22/11	110.58	710.67
12/23/11	119.00	732.00	141.00	676.08	12/23/11	112.92	716.00
12/24/11	107.00	668.00	127.00	614.00	12/24/11	089.17	651.00
12/25/11	107.00	667.00	168.00	634.00	12/25/11	139.08	820.00
12/26/11	153.00	792.92	160.00	814.83	12/26/11	126.83	774.92
12/27/11	138.92	826.00	165.00	637.00	12/27/11	000.00	745.08
12/28/11	148.00	873.92	174.00	645.00	12/28/11	151.75	855.00
12/29/11	139.00	828.00	168.00	703.00	12/29/11	112.92	723.08
12/30/11	091.00	619.08	124.08	749.00	12/30/11	061.17	601.08
12/31/11	114.00	718.00	145.92	778.00	12/31/11	105.25	703.08
01/01/12	139.92	857.92	172.92	737.08	01/01/12	073.33	851.00
01/02/12	128.00	804.00	166.00	712.00	01/02/12	146.83	841.00
01/03/12	141.00	870.00	173.00	706.00	01/03/12	141.92	822.00
01/04/12	136.00	845.00	170.00	721.00	01/04/12	144.92	832.00
01/05/12	139.00	861.92	172.92	751.08	01/05/12	147.00	848.92
01/06/12	102.00	723.08	146.00	734.00	01/06/12	090.08	708.00
01/07/12	129.00	811.00	162.00	726.00	01/07/12	123.00	798.00
01/08/12	131.00	802.00	161.00	743.00	01/08/12	137.08	788.00
01/09/12	127.08	808.00	162.00	755.00	01/09/12	012.75	793.00
01/10/12	100.00	661.00	131.92	706.00	01/10/12	000.00	636.00
01/11/12	104.00	681.08	137.00	729.08	01/11/12	102.17	665.00
01/12/12	117.00	759.08	152.00	692.00	01/12/12	127.25	743.00
01/13/12	101.00	669.00	134.00	679.08	01/13/12	090.00	651.00

Historical Injection Rates and Surface Injection Pressures
 Navajo Refining Company, L.L.C.
 Artesia, New Mexico

Date	WDW-1		WDW-2		Date	WDW-3	
	Rate	Pres	Rate	Pres		Rate	Pres
01/14/12	128.00	812.00	162.00	707.00	01/14/12	128.83	797.00
01/15/12	085.83	697.25	138.00	710.00	01/15/12	094.25	679.17
01/16/12	117.00	753.08	152.00	740.00	01/16/12	106.75	737.00
01/17/12	131.00	804.92	162.00	714.08	01/17/12	135.17	788.92
01/18/12	123.08	796.00	159.00	635.00	01/18/12	131.00	780.00
01/19/12	127.00	811.00	161.00	691.92	01/19/12	155.25	793.00
01/20/12	129.00	807.00	161.00	670.00	01/20/12	133.83	787.00
01/21/12	126.00	810.00	162.92	679.00	01/21/12	041.25	786.00
01/22/12	101.08	671.08	135.00	692.00	01/22/12	115.50	644.92
01/23/12	096.00	646.00	128.92	614.00	01/23/12	134.50	617.00
01/24/12	097.00	646.00	129.92	625.00	01/24/12	211.83	618.00
01/25/12	079.00	489.00	094.00	516.00	01/25/12	052.75	678.00
01/26/12	079.00	488.00	093.00	459.00	01/26/12	000.00	461.00
01/27/12	079.00	487.00	094.00	485.00	01/27/12	000.00	459.00
01/28/12	128.00	802.00	162.00	603.00	01/28/12	134.00	788.00
01/29/12	130.00	798.00	161.00	586.00	01/29/12	131.00	783.00

APPENDIX E-2

HISTORICAL INJECTION VOLUME DATA

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
10/1 to 10/20	3,499,177	3,988,598	4,806,153
10/21/10	184,375	197,947	268,727
10/22/10	179,851	202,470	274,698
10/23/10	184,375	202,470	268,727
10/24/10	184,375	206,838	256,157
10/25/10	179,851	202,470	268,727
10/26/10	179,851	198,173	275,012
10/27/10	184,375	206,838	268,727
10/28/10	206,838	143,973	312,192
10/29/10	202,470	134,925	299,936
10/30/10	184,375	197,947	268,727
10/31/10	199,098	197,947	268,727
10/31/10	179,851	193,423	262,756
11/01/10	184,375	197,947	262,442
11/02/10	180,078	197,947	262,442
11/03/10	184,149	197,947	275,012
11/04/10	184,375	193,649	268,727
11/05/10	184,375	193,423	268,727
11/06/10	179,851	197,947	268,727
11/07/10	184,375	197,947	275,012
11/08/10	180,078	197,947	262,442
11/09/10	179,633	197,947	274,698
11/10/10	103,415	143,973	287,366
11/11/10	107,938	134,925	000,000
11/12/10	107,938	134,925	000,000
11/13/10	175,484	197,947	274,698
11/14/10	184,375	197,947	262,442
11/15/10	184,375	197,947	262,128
11/16/10	184,375	197,947	268,727
11/17/10	179,851	197,947	268,727
11/18/10	184,375	197,947	268,727
11/19/10	179,851	197,947	275,012
11/20/10	184,149	197,947	268,727
11/21/10	184,375	197,947	269,041
11/22/10	184,375	193,423	262,442
11/23/10	175,484	197,947	256,157
11/24/10	179,851	193,423	262,442
11/25/10	179,851	193,423	256,157
11/26/10	175,484	197,947	256,157
11/27/10	170,960	193,423	262,442
11/28/10	170,960	193,423	256,157
11/29/10	170,960	193,423	262,442
11/30/10	170,960	193,423	249,872
12/01/10	166,436	193,423	256,471
12/02/10	170,960	188,899	256,157
12/03/10	103,415	139,449	000,000
12/04/10	170,960	193,423	275,012
12/05/10	148,497	197,947	268,727
12/06/10	170,960	193,423	275,012
12/07/10	170,960	188,899	268,727

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
12/08/10	170,960	193,423	274,698
12/09/10	170,960	193,423	275,012
12/10/10	170,960	188,899	262,442
12/11/10	175,484	202,470	262,442
12/12/10	170,960	197,947	256,157
12/13/10	170,960	193,423	268,727
12/14/10	175,484	175,484	268,727
12/15/10	164,405	193,423	262,442
12/16/10	152,864	193,423	243,804
12/17/10	157,388	197,947	249,872
12/18/10	207,064	152,864	000,000
12/19/10	99,047	152,864	000,000
12/20/10	103,415	148,715	000,000
12/21/10	175,257	197,947	280,983
12/22/10	170,960	202,470	268,727
12/23/10	166,436	202,470	275,012
12/24/10	166,210	202,470	269,041
12/25/10	170,960	193,423	275,012
12/26/10	170,960	202,470	275,012
12/27/10	170,960	202,470	269,041
12/28/10	161,912	202,470	274,698
12/29/10	170,688	202,470	281,297
12/30/10	168,637	202,470	275,012
12/31/10	166,436	197,947	275,012
01/01/11	000,000	202,470	262,442
01/02/11	170,960	202,470	262,442
01/03/11	170,960	197,947	268,727
01/04/11	170,960	197,947	275,012
01/05/11	170,960	202,470	275,012
01/06/11	179,851	202,470	275,012
01/07/11	175,484	202,470	281,297
01/08/11	170,960	202,470	262,442
01/09/11	170,960	202,470	281,297
01/10/11	170,734	202,470	281,297
01/11/11	161,912	197,947	280,983
01/12/11	152,864	202,470	275,012
01/13/11	166,436	197,947	268,727
01/14/11	166,436	197,947	275,012
01/15/11	166,436	197,947	275,012
01/16/11	167,423	193,423	274,698
01/17/11	166,436	202,470	268,727
01/18/11	165,539	206,838	275,012
01/19/11	166,436	197,947	275,012
01/20/11	166,436	197,947	275,012
01/21/11	161,912	198,173	268,727
01/22/11	161,912	197,947	275,012
01/23/11	161,912	197,947	268,727
01/24/11	161,912	197,947	275,012
01/25/11	161,912	193,649	268,727
01/26/11	99,047	148,497	000,000

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
01/27/11	166,436	202,470	249,872
01/28/11	161,912	198,391	275,012
01/29/11	161,912	202,470	268,727
01/30/11	161,912	202,470	281,297
01/31/11	157,388	197,947	275,012
02/01/11	917,389	917,389	000,000
02/02/11	759,992	000,000	1,274,552
02/03/11	445,197	917,389	24,185
02/04/11	196,597	197,947	255,843
02/05/11	107,938	148,497	000,000
02/06/11	103,415	143,973	000,000
02/07/11	86,598	202,470	281,297
02/08/11	157,388	143,973	290,183
02/09/11	251,920	188,899	206,614
02/10/11	107,041	148,270	000,000
02/11/11	202,470	143,973	168,817
02/12/11	161,912	197,947	143,676
02/13/11	206,838	229,457	187,141
02/14/11	197,947	229,457	193,740
02/15/11	215,886	233,825	218,663
02/16/11	193,423	242,873	231,234
02/17/11	206,838	229,676	237,519
02/18/11	215,886	238,349	212,378
02/19/11	211,362	229,457	249,569
02/20/11	229,996	224,934	218,663
02/21/11	220,410	224,934	231,234
02/22/11	107,938	143,973	000,000
02/23/11	211,362	224,934	237,519
02/24/11	140,251	143,973	000,000
02/25/11	242,873	247,397	287,366
02/26/11	107,938	143,973	000,000
02/27/11	238,349	251,920	281,297
02/28/11	233,825	256,444	275,012
03/01/11	242,873	251,920	268,727
03/02/11	242,873	247,397	281,297
03/03/11	179,851	265,336	306,221
03/04/11	202,470	206,838	187,455
03/05/11	188,899	143,973	000,000
03/06/11	310,262	143,973	249,872
03/07/11	202,470	143,973	000,000
03/08/11	296,620	215,886	6,272
03/09/11	305,894	215,886	193,740
03/10/11	301,815	211,362	200,025
03/11/11	337,249	193,423	149,961
03/12/11	152,646	143,973	000,000
03/13/11	314,786	193,423	187,455
03/14/11	319,310	206,838	200,025
03/15/11	319,310	211,362	181,170
03/16/11	292,323	229,457	249,872
03/17/11	170,960	224,934	231,862

**Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico**

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
03/18/11	211,362	233,825	275,012
03/19/11	310,262	202,470	193,740
03/20/11	166,436	152,864	000,000
03/21/11	301,370	215,886	218,663
03/22/11	301,370	242,873	281,297
03/23/11	305,894	215,886	231,234
03/24/11	305,442	143,973	000,000
03/25/11	306,113	224,934	268,727
03/26/11	305,668	220,410	243,804
03/27/11	301,370	229,457	256,157
03/28/11	301,370	143,973	000,000
03/29/11	301,370	233,825	000,000
03/30/11	310,262	220,410	245,928
03/31/11	314,786	229,457	243,804
04/01/11	328,357	233,825	268,727
04/02/11	319,310	229,457	256,157
04/04/11	310,262	144,199	000,000
04/05/11	318,208	224,934	249,872
04/06/11	301,370	193,423	193,740
04/07/11	244,291	143,973	000,000
04/08/11	288,000	241,800	62,621
04/09/11	312,360	230,400	185,760
04/10/11	313,920	259,200	226,200
04/11/11	324,000	236,160	205,920
04/12/11	319,560	252,000	217,560
04/13/11	316,800	244,800	213,120
04/14/11	313,920	249,120	215,520
04/15/11	318,000	240,600	201,480
04/16/11	194,400	233,280	197,160
04/17/11	288,000	184,440	109,320
04/18/11	319,800	239,040	201,600
04/19/11	312,360	236,280	201,600
04/20/11	159,960	146,880	000,000
04/21/11	155,520	145,440	315,120
04/22/11	115,200	145,440	000,000
04/23/11	201,600	234,600	195,840
04/24/11	194,520	227,520	185,880
04/25/11	220,440	253,440	213,120
04/26/11	165,600	208,800	147,000
04/27/11	213,000	247,560	208,920
04/28/11	220,320	252,000	217,440
04/29/11	221,640	250,680	219,000
04/30/11	208,920	249,120	213,360
05/01/11	216,000	253,440	223,200
05/02/11	110,880	142,560	000,000
05/03/11	216,000	252,000	217,440
05/04/11	217,320	252,000	217,440
05/05/11	214,560	249,120	224,640
05/06/11	113,760	145,440	000,000
05/07/11	214,560	257,760	214,560

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
05/08/11	210,120	250,560	208,800
05/09/11	211,680	254,760	219,000
05/10/11	217,560	253,440	214,560
05/11/11	201,600	237,600	201,600
05/12/11	220,440	249,120	214,320
05/13/11	214,560	253,440	219,000
05/14/11	208,920	236,160	204,360
05/15/11	211,680	246,240	226,080
05/16/11	217,680	253,440	216,120
05/17/11	216,000	249,120	211,800
05/18/11	211,560	252,000	220,080
05/19/11	211,560	249,000	219,120
05/20/11	210,360	247,560	221,760
05/21/11	211,560	246,240	219,000
05/22/11	210,240	246,360	217,560
05/23/11	211,560	247,680	218,880
05/24/11	210,360	247,680	218,760
05/25/11	211,680	247,680	217,560
05/26/11	211,560	246,240	220,440
05/27/11	211,560	252,660	215,880
05/28/11	214,440	252,000	208,680
05/29/11	208,800	247,680	213,360
05/30/11	207,360	247,680	214,800
05/31/11	205,800	246,240	213,120
06/01/11	207,360	246,360	214,680
06/02/11	208,800	246,360	213,000
06/03/11	208,920	244,800	218,880
06/04/11	236,040	257,880	234,840
06/05/11	228,960	256,320	234,720
06/06/11	226,080	263,640	234,720
06/07/11	226,200	263,400	234,840
06/08/11	217,320	250,560	219,960
06/09/11	236,280	262,080	241,680
06/10/11	216,120	252,000	220,200
06/11/11	197,280	237,480	198,720
06/12/11	213,120	250,440	220,200
06/13/11	250,680	241,920	210,480
06/14/11	215,880	253,440	220,200
06/15/11	217,440	253,320	214,560
06/16/11	214,560	250,560	220,200
06/17/11	218,760	248,497	211,800
06/18/11	218,880	253,560	213,000
06/19/11	220,320	250,560	216,000
06/20/11	217,440	252,000	216,120
06/21/11	214,680	250,560	215,880
06/22/11	216,120	252,000	217,320
06/23/11	215,393	253,024	216,034
06/24/11	215,878	252,000	215,756
06/25/11	216,000	252,000	216,000
06/26/11	216,000	253,320	217,320

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
06/27/11	213,120	253,440	213,120
06/28/11	118,080	146,880	000,000
06/29/11	217,320	250,560	211,800
06/30/11	118,080	146,880	000,000
07/01/11	228,960	146,880	224,520
07/02/11	213,120	250,560	214,320
07/03/11	116,640	146,880	000,000
07/04/11	214,560	250,560	214,560
07/05/11	215,880	250,440	213,120
07/06/11	116,640	145,440	000,000
07/07/11	188,520	228,960	172,800
07/08/11	214,560	250,560	214,440
07/09/11	213,120	249,120	213,120
07/10/11	211,680	247,680	211,680
07/11/11	211,680	246,360	211,800
07/12/11	210,120	246,360	210,360
07/13/11	210,120	244,800	213,240
07/14/11	208,800	240,360	213,360
07/15/11	115,200	145,440	000,000
07/16/11	210,240	249,000	208,920
07/17/11	260,880	238,920	196,920
07/18/11	210,240	247,680	203,040
07/19/11	115,200	146,880	000,000
07/20/11	208,680	249,000	210,240
07/21/11	210,360	249,240	203,040
07/22/11	213,120	249,240	200,400
07/23/11	208,800	246,240	208,800
07/24/11	208,680	246,360	210,360
07/25/11	210,120	246,240	205,920
07/26/11	210,360	246,240	201,480
07/27/11	208,920	242,160	207,360
07/28/11	208,920	246,120	210,120
07/29/11	253,800	238,920	193,080
07/30/11	115,200	144,120	000,000
07/31/11	210,240	243,360	205,800
08/01/11	208,800	246,120	207,240
08/02/11	115,200	146,880	000,000
08/03/11	205,920	247,680	207,360
08/04/11	205,920	244,800	205,920
08/05/11	207,360	246,240	210,120
08/06/11	202,920	247,560	210,480
08/07/11	245,880	237,240	187,680
08/08/11	205,920	243,480	209,880
08/09/11	205,800	243,360	208,680
08/10/11	205,920	243,360	210,000
08/11/11	205,920	243,360	210,120
08/12/11	205,920	241,800	208,920
08/13/11	205,920	241,920	208,560
08/14/11	205,920	242,040	204,720
08/15/11	113,760	145,440	000,000

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
08/16/11	205,920	241,800	204,360
08/17/11	205,920	240,480	207,240
08/18/11	203,160	246,120	206,040
08/19/11	203,040	246,240	205,920
08/20/11	203,040	246,240	210,120
08/21/11	204,480	246,240	207,600
08/22/11	203,160	246,240	207,480
08/23/11	203,040	246,120	207,240
08/24/11	113,760	146,880	000,000
08/25/11	221,880	241,920	200,160
08/26/11	198,720	247,680	207,120
08/27/11	204,480	244,800	207,360
08/28/11	205,800	243,360	204,480
08/29/11	204,480	244,920	206,040
08/30/11	200,160	247,560	210,120
08/31/11	205,800	246,240	207,360
09/01/11	204,480	243,480	207,360
09/02/11	204,600	243,360	207,120
09/03/11	204,600	243,480	204,600
09/04/11	201,600	241,920	211,560
09/05/11	201,480	239,160	203,160
09/06/11	200,160	240,480	207,480
09/07/11	201,480	246,120	207,120
09/08/11	201,600	244,800	207,360
09/09/11	201,600	247,560	203,160
09/10/11	198,720	244,680	208,920
09/11/11	197,280	236,760	211,560
09/12/11	195,960	244,800	207,600
09/13/11	201,600	243,480	207,360
09/14/11	202,920	243,360	204,480
09/15/11	201,600	241,920	208,800
09/16/11	203,160	240,480	207,360
09/17/11	115,200	142,560	000,000
09/18/11	112,320	142,560	227,640
09/19/11	214,680	257,760	220,080
09/20/11	217,320	257,880	218,760
09/21/11	201,600	249,000	196,080
09/22/11	194,400	246,240	204,600
09/23/11	194,400	244,800	205,800
09/24/11	201,600	244,680	207,240
09/25/11	197,280	240,480	197,280
09/26/11	200,160	243,360	204,480
09/27/11	200,160	243,360	200,400
09/28/11	202,920	244,800	207,000
09/29/11	113,760	142,680	000,000
09/30/11	201,480	243,360	204,600
10/01/11	200,160	243,360	198,720
10/02/11	201,600	243,480	203,040
10/03/11	201,600	244,680	202,920
10/04/11	129,600	175,680	81,840

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
10/05/11	201,720	243,360	200,400
10/06/11	113,640	175,680	84,960
10/07/11	198,720	240,480	205,920
10/08/11	110,880	169,920	52,200
10/09/11	171,360	223,320	175,680
10/10/11	192,960	241,920	201,720
10/11/11	191,640	239,040	203,160
10/12/11	198,840	244,680	194,640
10/13/11	198,720	243,360	196,080
10/14/11	198,720	243,360	198,720
10/15/11	198,840	243,360	197,400
10/16/11	198,840	244,800	193,080
10/17/11	200,160	243,360	194,280
10/18/11	198,600	241,800	201,480
10/19/11	198,720	239,160	193,080
10/20/11	113,760	234,360	000,000
10/21/11	115,725	221,606	000,000
10/22/11	115,884	125,811	1,527
10/23/11	199,076	159,871	188,316
10/24/11	197,292	210,368	196,700
10/25/11	194,417	207,669	188,939
10/26/11	202,331	213,160	199,053
10/27/11	195,050	208,104	188,929
10/28/11	201,723	212,208	199,075
10/29/11	195,958	206,802	180,336
10/30/11	202,531	210,250	194,254
10/30/11	195,951	206,783	181,617
10/31/11	209,583	212,593	202,767
11/01/11	207,571	208,914	201,288
11/02/11	207,145	212,189	205,037
11/03/11	199,564	209,370	202,249
11/04/11	199,148	209,011	303,835
11/05/11	205,724	213,453	254,761
11/06/11	196,086	208,637	188,429
11/07/11	202,324	212,850	193,350
11/08/11	187,053	199,393	176,717
11/09/11	180,646	193,110	162,786
11/10/11	203,307	162,353	89,670
11/11/11	213,536	000,000	000,000
11/12/11	000,000	000,000	000,000
11/13/11	000,000	198,099	166,344
11/14/11	204,033	212,579	196,439
11/15/11	221,760	225,540	211,080
11/16/11	162,840	180,180	202,920
11/17/11	223,200	227,955	250,920
11/18/11	217,560	223,020	251,640
11/19/11	218,880	225,540	359,040
11/20/11	119,880	176,715	93,720
11/21/11	219,000	226,800	219,120
11/22/11	145,440	172,620	122,040

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
11/23/11	211,680	226,800	210,120
11/24/11	195,840	210,420	705,000
11/25/11	128,160	151,305	55,200
11/26/11	195,840	210,315	188,760
11/27/11	171,360	190,260	151,080
11/28/11	197,160	209,160	188,520
11/29/11	151,200	166,320	96,360
11/30/11	220,320	223,020	212,760
12/01/11	181,440	194,040	166,920
12/02/11	175,800	202,860	187,200
12/03/11	200,160	219,240	208,800
12/04/11	185,760	197,820	171,240
12/05/11	181,440	202,860	186,000
12/06/11	940,320	197,820	185,880
12/07/11	118,080	134,820	000,000
12/08/11	210,360	214,305	191,400
12/09/11	138,120	149,940	840
12/10/11	210,240	214,305	208,800
12/11/11	200,040	209,160	198,840
12/12/11	208,800	215,460	210,360
12/13/11	192,840	205,275	191,520
12/14/11	159,840	177,660	139,920
12/15/11	210,240	219,135	214,680
12/16/11	210,240	217,875	210,360
12/17/11	205,920	214,200	204,360
12/18/11	207,480	216,825	220,200
12/19/11	201,600	225,540	217,680
12/20/11	217,560	224,385	175,560
12/21/11	205,800	211,785	211,800
12/22/11	204,600	182,700	159,240
12/23/11	171,360	177,660	162,600
12/24/11	154,080	160,020	128,400
12/25/11	154,080	211,680	200,280
12/26/11	940,320	201,600	182,640
12/27/11	200,040	207,900	000,000
12/28/11	213,120	219,240	218,520
12/29/11	200,160	211,680	162,600
12/30/11	131,040	156,345	88,080
12/31/11	164,160	183,855	151,560
01/01/12	201,480	217,875	105,600
01/02/12	184,320	209,160	211,440
01/03/12	203,040	217,980	204,360
01/04/12	195,840	214,200	208,680
01/05/12	200,160	217,875	211,680
01/06/12	146,880	183,960	129,720
01/07/12	185,760	204,120	177,120
01/08/12	188,640	202,860	197,400
01/09/12	183,000	204,120	18,360
01/10/12	144,000	166,215	000,000
01/11/12	149,760	172,620	147,120

**Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico**

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)	
01/12/12	168,480	191,520	183,240	
01/13/12	145,440	168,840	129,600	
01/14/12	184,320	204,120	185,520	
01/15/12	123,600	173,880	135,720	
01/16/12	168,480	191,520	153,720	
01/17/12	188,640	204,120	194,640	
01/18/12	177,240	200,340	188,640	
01/19/12	182,880	202,860	223,560	
01/20/12	185,760	202,860	192,720	
01/21/12	181,440	205,275	59,400	
01/22/12	145,560	170,100	166,320	
01/23/12	138,240	162,435	193,680	
01/24/12	139,680	163,695	305,040	
01/25/12	113,760	118,440	75,960	
01/26/12	113,760	117,180	000,000	
01/27/12	113,760	118,440	000,000	
01/28/12	184,320	204,120	192,960	
01/29/12	<u>187,200</u>	<u>202,860</u>	<u>188,640</u>	
Sub Totals (above)	<u>97,707,317</u>	<u>104,096,353</u>	<u>97,505,713</u>	Total Volume 299,309,384
Total before 9/30/10	<u>1,326,473,337</u>	<u>732,996,868</u>	<u>257,757,772</u>	<u>2,317,227,977</u>
Total Volumes	<u>1,424,180,654</u>	<u>837,093,221</u>	<u>355,263,485</u>	<u>2,616,537,361</u>

APPENDIX E-3

PredictW INFORMATION

PREDICTW - RESERVOIR PRESSURE INCREASE PROGRAM

The pressure response for radial flow of a slightly compressible fluid in a planar (porous) injection layer with spatially-constant properties is determined by the well-known diffusivity equation (Lee, 1982):

$$\frac{\partial^2 p}{\partial r^2} + \frac{1}{r} \frac{\partial p}{\partial r} = \frac{\phi \mu c_t}{0.000264k} \frac{\partial p}{\partial t}, \quad \text{Equation 1}$$

where ϕ , μ , c_t , and k refer to porosity, viscosity (cp), compressibility (psi^{-1}), and permeability (md), respectively. The pressure, p , is expressed in psi; radial distance, r , is in feet; and time, t , is indicated in hours. For an infinite reservoir of thickness h (ft) with $p \rightarrow p_o$ (initial pressure) as $r \rightarrow \infty$, the transient pressure, $p(r, t)$, for a single line source injector at $r = 0$ is determined from Equation 1 as (Muskat, 1937):

$$p(r, t) = p_o - \frac{70.6 q \mu}{kh} \text{Ei} \left(\frac{-39.5 \phi \mu c_t r^2}{kt} \right), \quad \text{Equation 2}$$

where Ei represents the exponential integral defined by:

$$\text{Ei}(-x) = - \int_x^\infty \frac{e^{-\epsilon}}{\epsilon} d\epsilon,$$

and q represents the (constant) injection rate in barrels per day (bbl/day). Time, t , in Equation 2 is expressed in days.

For the general case of multiple wells in a single layer, in which injection from each is represented by a succession of piece-wise constant flow rate intervals, the pressure response is readily obtained by superposition of elementary solutions given by Equation 1. In terms of Cartesian coordinates, the pressure transient at an arbitrary point (x, y) is given by:

$$p(x, y, t) = p_o + \sum_{j=1}^N \frac{70.6 q_1^j \mu}{kh} \text{Ei} \left(\frac{-39.5 \phi \mu c_t [(x-x_j)^2 + (y-y_j)^2]}{kt} \right) \\ + \sum_{j=1}^N \sum_{i=1}^{n_j-1} \frac{70.6 [(q_{i+1}^j - q_i^j) \mu]}{kh} \text{Ei} \left(\frac{-39.5 \phi \mu c_t [(x-x_j)^2 + (y-y_j)^2]}{k(t-t_i^j)} \right)$$

Equation 3

for all $t_i^j < t$. In Equation 3, the following notation is employed:

- N = number of wells injecting into the reservoir
- n_j = number of constant flow rate increments for well j operative over time t
- i = flow rate summation index ($1 < i < n_j$)
- j = well number summation index ($1 < j < N$)
- t_i^j = cumulative time corresponding to the end of injection rate interval i for well j
- x_j, y_j = cartesian coordinates of well j
- q_i^j = flow rate from well j during flow increment i

Equation 3 forms the basis for determining the cone of influence for a general multi-well system.

To determine shutin or flowing pressures at a generic wellbore location, Equation 3 is modified to include a dimensionless skin factor, s_b , which reflects the effects of altered properties in the near-wellbore region (Van Everdingen, 1953). The associated augmentation, Δp_{skin}^b , of the theoretical flowing pressure is assumed to be of the form:

$$\Delta p_{skin}^b \text{ (psi)} = 141.2 \frac{q_i^b \mu}{kh} s_b \quad \text{Equation 4}$$

Incorporation of Equation 4 into Equation 3 and replacement of the quantity $[(x-x_b)^2 + (y-y_b)^2]$ in the Ei-function argument by $r_{w,b}^2$ (wellbore radius squared) leads to the following expression for the transient flowing pressure at a generic wellbore (b):

$$\begin{aligned} p_{wf}^b(x_b, y_b, t) = & p_o + \sum_{j=1}^N \frac{70.6 q_1^j \mu}{kh} \text{Ei} \left[\frac{-39.5 \phi \mu c_t [(x_b - x_j)^2 + (y_b - y_j)^2]}{kt} \right] \\ & + \sum_{j=1(j \neq b)}^N \sum_{i=1}^{n_j-1} \frac{70.6 (q_{i+1}^j - q_i^j) \mu}{kh} \text{Ei} \left[\frac{-39.5 \phi \mu c_t [(x_b - x_j)^2 + (y_b - y_j)^2]}{k(t - t_i^j)} \right] \\ & + \frac{70.6 q_1^b \mu}{kh} \left[\text{Ei} \left(\frac{-39.5 \phi \mu c_t r_{w,b}^2}{kt} \right) - 2s_b \right] \\ & + \sum_{i=1}^{n_j-1} \frac{70.6 (q_{i+1}^b - q_i^b) \mu}{kh} \left[\text{Ei} \left(\frac{-39.5 \phi \mu c_t r_{w,b}^2}{k(t - t_i^b)} \right) - 2s_b \right] \end{aligned}$$

Equation 5

where x_b , y_b denote the wellbore coordinates at well b where the pressure response is evaluated.

Application of Equations 3 and 5 to address actual operational conditions often requires inclusion of many wells (including image injectors), each having several hundred flow rate increments. Accordingly, a Visual Basic computer program, PREDICTW, was created to evaluate these equations. When isobaric contours at a given time in a given injection zone are desired, Equation 3, actually $p - p_o$, is evaluated at each node of a predefined uniform grid. The resulting Δp -x-y array is then input into a 3-D graphics routine, SURFER (® Golden Software, Inc.), to generate selected isobaric contours. When transient wellbore responses are desired to determine flowing pressures at a given well or to simulate pressure falloff tests, Equation 5 is utilized. The output for this case consists of a record of $\Delta p = p - p_o$ at a single well location over a specified time interval.

REFERENCES:

Lee, J., 1982, Well Testing: SPE Textbook Series, Vol. 1, Dallas, Texas.

Muskat, M., 1937, The Flow of Homogeneous Fluids Through Porous Media: McGraw Hill.

Van Everdingen, A. F., 1953, The Skin Effect and Its Influence on the Productive Capacity of a Well: SPE, Presented at the Petroleum Branch Fall Meeting, Fall 1953.

APPENDIX E-4

VISCOSITY OF FORMATION FLUID



6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1798

September 16, 1998
 Receiving Date: 08/01/98
 Sample Type: Water
 Project No: NA
 Project Location: Wastewater Wells - Artesia

ANALYTICAL RESULTS FOR
NAVAJO REFINING
 Attention: Darrell Moore
 501 E. Main
 Artesia, NM 88210

Prep Date: 08/02/98
 Analysis Date: 08/11/98
 Sampling Date: 07/31/98
 Sample Condition: Intact & Cool
 Sample Received by: MS
 Project Name: NA

After 16 hours @ 130 F

TAs#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T103911	Upper Zone	120	152	215	4,470
T103912	Lower Zone	403	166	372	11,000
T103993	Upper Zone 2:1	92	111	175	2,960
T103994	Upper Zone 1:1	74	91	156	2,280
T103995	Upper Zone 1:2	65	70	170	1,630
T103996	Lower Zone 2:1	284	122	314	8,300
T103997	Lower Zone 1:1	203	98	272	6,230
T103998	Lower Zone 1:2	139	77	237	4,400
ICV		24	25	28	25
OCV		24	26	25	26
Reporting Limit		0.50	0.50	0.50	0.50
METHOD BLANK		<0.50	<0.50	<0.50	<0.50
RPD		2	1	1	5
% Extraction Accuracy		120	93	94	105
% Instrument Accuracy		99	102	104	104

METHODS: EPA 200.7.
 CHEMIST: RR
 SPIKE: 1,000 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
 CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

RR
 Director, Dr. Blair Leitch

9-16-98
 Date



TRACE ANALYSIS, INC.

6701 Aberdsen Avenue

Lubbock, Texas 79424

806-794-1296

FAX 806-794-1798

September 18, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
601 E. Main
Artesia, NM 88210

Prep Date: 08/11/98
Analysis Date: 08/18/98
Sampling Date: 07/31/98
Sample Condition: Intact & Cool
Sample Received by: MS
Project Name: NA

ROOM TEMPERATURE

TAP	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T103911	Upper Zone	61	126	276	4,785
T103912	Lower Zone	213	143	390	12,770
T103993	Upper Zone 2:1	26	60	214	3,114
T103994	Upper Zone 1:1	18	65	282	2,491
T103995	Upper Zone 1:2	5.3	39	213	1,675
T103996	Lower Zone 2:1	136	99	364	8,920
T103997	Lower Zone 1:1	89	70	277	6,778
T103998	Lower Zone 1:2	54	43	201	4,547
ICV		25	25	25	25
CCV		25	25	25	25
Reporting Limit		0.50	0.50	0.50	0.50
METHOD BLANK		<0.50	<0.50	<0.50	<0.50
RPD		2*	0*	0*	0*
% Extraction Accuracy		98*	100*	104*	101*
% Instrument Accuracy		100	100	100	104

*NOTE: Used LCS for Extraction Accuracy and RPD due to high concentration in sample.
METHODS: EPA 200.7.

CHEMIST: RR

SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

MS

Director, Dr. Blair LeFevich

9-16-98

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4544
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

September 16, 1998
 Receiving Date: 08/01/98
 Sample Type: Water
 Project No: NA
 Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
 501 E. Main
 Artesia, NM 88210

Sampling Date: 07/31/98
 Sample Condition: I & C
 Sample Received by: MS
 Project Name: NA

ROOM TEMPERATURE

TA#	FIELD CODE	NO3-N* (mg/L)		TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103993	Upper Zone 2:1	<10		560	11,000	14	5,000	1,400
ICV		4.8		---	---	0.97	11	12
CCV		4.8		---	---	0.94	11	12
RPD		4		0	8	6	5	1
% Extraction Accuracy		86		---	---	104	93	99
% Instrument Accuracy		97		---	98	97	93	98
REPORTING LIMIT		10		---	---	0.1	0.5	0.5
PREP DATE		08/06/98		08/08/98	08/06/98	08/07/98	08/10/98	08/06/98
ANALYSIS DATE		08/08/98		08/09/98	08/08/98	08/07/98	08/10/98	08/08/98
		ALKALINITY (mg/L as CaCO3)		SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)		
		HCO3	CO3					
T103002	Upper Zone 2:1	700	<1.0	1.010	18,000	8.2		
ICV		1.100	1.100	---	1,396	7.0		
CCV		1.130	1.060	---	1,387	7.0		
RPD		1	1	0	1	0		
% Extraction Accuracy		---	---	---	98	---		
% Instrument Accuracy		91	91	---	99	100		
REPORTING LIMIT		---	---	---	---	---		
PREP DATE		08/11/98		08/06/98	08/07/98	08/09/98		
ANALYSIS DATE		08/11/98		08/08/98	08/07/98	08/09/98		

*NOTE: Out of holding time for NO3-N.

METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
 CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
 TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

NO3-N SPIKE: 125 mg/L NO3-N.
 FLUORIDE SPIKE: 10 mg/L FLUORIDE.
 CHLORIDE SPIKE: 1,260 mg/L CHLORIDE.
 SULFATE SPIKE: 312.5 mg/L SULFATE.

NO3-N CV: 5.0 mg/L NO3-N.
 FLUORIDE CV: 1.0 mg/L FLUORIDE.
 CHLORIDE CV: 12.5 mg/L CHLORIDE.
 SULFATE CV: 12.5 mg/L SULFATE.



 Director, Dr. Blair Leftwich

8-16-98

 DATE

TRACE ANALYSIS, INC.

8701 Aberdeen Avenue, Suite 9 Lybuck, Texas 79474 TEL 806-794-1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-585-3443 915-585-3443 FAX 806-794-1298
 FAX 915-585-4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

September 16, 1998
 Receiving Date: 08/01/98
 Sample Type: Water
 Project No: NA
 Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
 501 E. Main
 Artesia, NM 88210

Sampling Date: 07/31/98
 Sample Condition: I & C
 Sample Received by: MS
 Project Name: NA

ROOM TEMPERATURE


TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103996	Upper Zone 1:2	<10	320	8,000	24	2,600	960
T103998	Lower Zone 2:1	<10	630	23,000	13	14,000	1,700
T103997	Lower Zone 1:1	<10	430	18,000	20	12,000	1,500
T103998	Lower Zone 1:2	<10	230	13,000	23	13,000	1,100
ICV		4.8	—	—	0.97	12	12
CCV		4.8	—	—	0.94	12	12
RPD		1	0	8	8	1	4
% Extraction Accuracy		106	—	—	104	90	108
% Instrument Accuracy		97	—	98	87	97	97
REPORTING LIMIT		10	—	—	0.1	0.5	0.5

PREP DATE	08/08/98	08/08/98	08/08/98	08/07/98	08/08/98	08/08/98
ANALYSIS DATE	08/08/98	08/08/98	08/08/98	08/07/98	08/08/98	08/08/98
	ALKALINITY (mg/L as CaCO3)		SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHO/cm)	pH (s.u.)	
	HCO3	CO3				

T103996	Upper Zone 1:2	340	4	1.010	9,300	8.5
T103998	Lower Zone 2:1	570	<1.0	1.018	44,000	8.2
T103997	Lower Zone 1:1	540	2.0	1.023	34,000	8.4
T103998	Lower Zone 1:2	370	10	1.009	20,000	8.6
ICV		1,100	1,100	—	1,386	7.0
CCV		1,130	1,060	—	1,387	7.0
RPD		1	1	0	1	0
% Extraction Accuracy		—	—	—	98	—
% Instrument Accuracy		91	91	—	99	100
REPORTING LIMIT		—	—	—	—	—

PREP DATE	08/11/98	08/08/98	08/07/98	08/09/98
ANALYSIS DATE	08/11/98	08/08/98	08/07/98	08/09/98

***NOTE: Out of holding time for NO3-N.**
 METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-82.
 CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
 TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS
 NO3-N SPIKE: 125 mg/L NO3-N.
 FLUORIDE SPIKE: 10 mg/L FLUORIDE.
 CHLORIDE SPIKE: 312.5 mg/L CHLORIDE.
 SULFATE SPIKE: 312.5 mg/L SULFATE.
 NO3-N CV: 5.0 mg/L NO3-N.
 FLUORIDE CV: 1.0 mg/L FLUORIDE.
 CHLORIDE CV: 12.5 mg/L CHLORIDE.
 SULFATE CV: 12.5 mg/L SULFATE.


 Director, Dr. Blair Leftwich

9-16-98
 DATE

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite H Lubbock, Texas 79424 800-378-1298 808-794-1298 FAX 800-794-1298
 4725 Hopley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4544
 E-Mail: lac@tracanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

September 16, 1998
 Receiving Date: 08/01/98
 Sample Type: Water
 Project No: NA
 Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
 601 E. Main
 Artesia, NM 88210

Sampling Date: 07/31/98
 Sample Condition: I & C
 Sample Received by: MS
 Project Name: NA

After 16 hours @ 130 ° F

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103911	Upper Zone	<10	3,200	17,000	2.7	7,200	1,800
T103912	Lower Zone	<10	1,040	38,000	2.0	22,000	2,100
T103993	Upper Zone 2:1	<10	1,900	11,000	12	49,000	1,300
ICV		4.7	—	—	0.97	11	12
CCV		4.7	—	—	0.98	11	11
RPD		3	3	1	0	5	0
% Extraction Accuracy		105	—	—	100	93	110
% Instrument Accuracy		96	—	101	97	93	97
REPORTING LIMIT		10	—	—	0.1	0.5	0.5

PREP DATE		08/28/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98
ANALYSIS DATE		08/28/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98
		ALKALINITY (mg/L as CaCO3)		SPECIFIC GRAVITY		SPECIFIC CONDUCTANCE	
		HCO3	CO3	(g/mL)	(uMHOS/cm)	pH (s.u.)	
T103911	Upper Zone	720	38	1.018	27,000	8.6	
T103912	Lower Zone	570	8.0	1.036	68,000	8.4	
T103993	Upper Zone 2:1	480	24	1.016	18,000	8.8	
ICV		1,080	1,100	—	1,335	7.0	
CCV		1,040	1,120	—	1,327	7.0	
RPD		1	1	0	2	0	
% Extraction Accuracy		—	—	—	94	—	
% Instrument Accuracy		90	80	—	94	100	
REPORTING LIMIT		—	—	—	—	—	

PREP DATE: 08/14/98 08/11/98 08/10/98 08/12/98
 ANALYSIS DATE: 08/14/98 08/11/98 08/10/98 08/12/98

*NOTE: Out of holding time for NO3-N.
 METHODS: EPA 150.1, 300.0, 100.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
 CHEMIST: pHTSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
 TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS
 NO3-N SPIKE: 125 mg/L NO3-N. NO3-N CV: 5.0 mg/L NO3-N.
 FLUORIDE SPIKE: 10 mg/L FLUORIDE. FLUORIDE CV: 1.0 mg/L FLUORIDE.
 CHLORIDE SPIKE: 1,250 mg/L CHLORIDE. CHLORIDE CV: 12.5 mg/L CHLORIDE.
 SULFATE SPIKE: 1,250 mg/L SULFATE. SULFATE CV: 12.5 mg/L SULFATE.


 Director, Dr. Blair Leftwich

9-18-98
 DATE

TRACE ANALYSIS, INC.

8701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1298 806-794-1298 FAX 806-794-1298
 4725 Army Avenue, Suite A Ft. Worth, Texas 76122 800-688-2443 817-585-3443 FAX 817-585-4944
 E-Mail lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

September 16, 1998
 Receiving Date: 08/01/98
 Sample Type: Water
 Project No: NA
 Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
 601 E. Main
 Artesia, NM 88210

Sampling Date: 07/31/98
 Sample Condition: I & C
 Sample Received by: MS
 Project Name: NA


After 16 hours @ 130 °F

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103994	Upper Zone 1:1	<10	370	8,700	17	3,500	1,100
T103995	Upper Zone 1:2	<10	300	8,500	24	2,400	880
T103996	Lower Zone 2:1	<10	300	27,000	12	14,000	1,800
ICV		4.7	—	—	0.97	11	11
CCV		4.7	—	—	0.98	11	11
RPD		3	3	1	0	2	2
% Extraction Accuracy		105	—	—	100	92**	95**
% Instrument Accuracy		98	—	101	97	93	95
REPORTING LIMIT		10	—	—	0.1	0.5	0.5

PREP DATE	08/28/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98
ANALYSIS DATE	08/28/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98
	ALKALINITY (mg/L as CaCO3)	SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)		
	HCO3	CO3				

T103994	Upper Zone 1:1	520	58	1.012	14,000	8.7
T103995	Upper Zone 1:2	370	20	1.004	11,000	9.0
T103996	Lower Zone 2:1	430	8.0	1.021	48,000	8.5
ICV		1,080	1,100	—	1,335	7.0
CCV		1,040	1,120	—	1,327	7.0
RPD		1	1	0	2	0
% Extraction Accuracy		—	—	—	84	—
% Instrument Accuracy		90	90	—	84	100
REPORTING LIMIT		—	—	—	—	—
PREP DATE		08/14/98	08/11/98	08/10/98	08/12/98	08/12/98
ANALYSIS DATE		08/14/98	08/11/98	08/10/98	08/12/98	08/12/98

*NOTE: Out of holding time for NO3-N.
 **NOTE: Chloride and Sulfate spikes % Extraction Accuracy low. LRB spikes % Extraction Accuracy used due to matrix difficulties. LRB spikes in range.
 METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
 CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
 TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS
 NO3-N SPIKE: 125 mg/L NO3-N.
 FLUORIDE SPIKE: 10 mg/L FLUORIDE.
 CHLORIDE SPIKE: 312.5 mg/L CHLORIDE.
 SULFATE SPIKE: 312.5 mg/L SULFATE.
 NO3-N CV: 5.0 mg/L NO3-N.
 FLUORIDE CV: 1.0 mg/L FLUORIDE.
 CHLORIDE CV: 12.5 mg/L CHLORIDE.
 SULFATE CV: 12.5 mg/L SULFATE.


 Director, Dr. Blair Leftwich

9-16-98
 DATE

TRACE ANALYSIS, INC.

5701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 808-734-1798 FAX 305-794-1298
 4725 Ripley Avenue, Suite A El Paso, Texas 78722 888-588-3443 915-585-3443 FAX 315-585-4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

September 16, 1998
 Receiving Date: 08/01/98
 Sample Type: Water
 Project No: NA
 Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
 501 E. Main
 Artesia, NM 88210

Sampling Date: 07/31/98
 Sample Condition: I & C
 Sample Received by: MS
 Project Name: NA

After 16 hours @ 130 °F

TA#	FIELD CODE	N03-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103997	Lower Zone 1:1	<10	180	22,000	16	11,000	1,500
T103998	Lower Zone 1:2	<10	340	15,000	22	7,100	1,000
ICV		4.7	—	—	0.97	11	11
CCV		4.7	—	—	0.98	11	12
RPD		3	3	1	0	1	1
% Extraction Accuracy		105	—	—	100	91	93
% Instrument Accuracy		98	—	101	97	94	97
REPORTING LIMIT		10	—	—	0.1	0.5	0.5

PREP DATE 08/26/98 08/12/98 08/10/98 08/12/98 08/10/98 08/10/98
 ANALYSIS DATE 08/26/98 08/12/98 08/10/98 08/12/98 08/10/98 08/10/98

ALKALINITY SPECIFIC SPECIFIC
 (mg/L as CaCO3) GRAVITY CONDUCTANCE pH
 HCO3 C03 (g/mL) (uMHOS/cm) (s.u.)

T103997	Lower Zone 1:1	340	32	1.012	37,000	8.8
T103998	Lower Zone 1:2	300	16	1.009	28,000	8.8
ICV		1,090	1,100	—	1,335	7.0
CCV		1,040	1,120	—	1,327	7.0
RPD		1	1	0	2	0
% Extraction Accuracy		—	—	—	94	—
% Instrument Accuracy		90	90	—	94	100
REPORTING LIMIT		—	—	—	—	—

PREP DATE 08/14/98 08/11/98 08/10/98 08/12/98
 ANALYSIS DATE 08/14/98 08/11/98 08/10/98 08/12/98

*NOTE: Out of holding time for N03-N.

METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
 CHEMIST: pH/TSS: SP N03-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
 TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

N03-N SPIKE: 125 mg/L N03-N.
 FLUORIDE SPIKE: 10 mg/L FLUORIDE.
 CHLORIDE SPIKE: 62.5 mg/L CHLORIDE.
 SULFATE SPIKE: 62.5 mg/L SULFATE.

N03-N CV: 5.0 mg/L N03-N.
 FLUORIDE CV: 1.0 mg/L FLUORIDE.
 CHLORIDE CV: 12.5 mg/L CHLORIDE.
 SULFATE CV: 12.5 mg/L SULFATE.


 Director, Dr. Blair Leftwich

5-16-98
 DATE

Client: Trace Analysis, Inc.
 Attn: Neil Green
 Address: 6701 Aberdeen Ave, Ste. 9
 Labbock, Tx 79424
 Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92840 Report Date: 8/31/98
 Project ID:
 Sample Name: 103911
 Sample Matrix: water
 Date Received: 8/5/98 Time: 10:00:00
 Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQL ⁵	Blank	Date	Method	Prec. ²	Recov. ³	CCV ⁴	LCS ⁴
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temperature - Upper Zone
Note: Could not run heated sample due to sulfide hazard.

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Respectfully Submitted,
Richard Laster
 Richard Laster

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than (<) values reflect nominal quantitation limits, adjusted for any required dilution.

Client: Trace Analysis, Inc.
 Attn: Neil Green
 Address: 6701 Aberdeen Ave, Ste. 9
 Lubbock, Tx 79424
 Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92841 Report Date: 8/31/98
 Project ID:
 Sample Name: 103912
 Sample Matrix: water
 Date Received: 8/5/98 Time: 10:00:00
 Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQL ⁵	Blank	Date	Method	Pre ²	Recov. ³	CCV ⁴	LCS ⁴
Viscosity	0.7	cps			8/26/98	Brookfield				

*Room Temperature - Lower zone
 Note: Could not run heated sample due to sulfide hazard*

This analytical report respectfully submitted by AnalySys, Inc. The enclosed results have been reviewed and to the best of my knowledge the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program © Copyright 1998 AnalySys, Inc., Austin, Texas. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the express written permission of AnalySys, Inc.

Respectfully Submitted,
Richard Laster
 Richard Laster

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Pre²) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.³) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Functional Quantitation Limit (FQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than ("[<]") values reflect nominal quantitation limits, adjusted for any required dilution.

Client: Trace Analysis, Inc.
 Attn: Nell Gosen
 Address: 6701 Aberdeen Ave, Ste. 9
 Lubbock, Tx 79424
 Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92842 Report Date: 8/31/98
 Project ID:
 Sample Name: 103993
 Sample Matrix: water
 Date Received: 8/5/98 Time: 10:00:00
 Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQL ⁵	Blank	Date	Method	Prec. ²	Recov. ³	CCV ⁴	LCS ⁴
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temp - Upper Zone 2:1
Note: Could not run heated sample due to sulfide hazard

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Respectfully Submitted,
Richard Laster
 Richard Laster

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than (<) values reflect nominal quantitation limits, adjusted for any required dilution.

Client: Trace Analysis, Inc.
 Attn: Neil Green
 Address: 6701 Aberdeen Ave, Ste. 9
 Lubbock, Tx 79424
 Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92843 Report Date: 8/31/98
 Project ID:
 Sample Name: 103994
 Sample Matrix: water
 Date Received: 8/5/98 Time: 10:00:00
 Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQL ⁵	Blank	Date	Method	Prec. ²	Recov. ³	CCV ⁴	LCS ⁶
Viscosity	0.6	cps			8/26/98	Brookfield				

*Room Temperature - Upper Zone 1:1
 Note: Could not run heated sample due to Sulfide hazard*

This analytical report respectfully submitted by AnalySys, Inc. The enclosed results have been reviewed and to the best of my knowledge the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program. © Copyright 1998 AnalySys, Inc., Austin, Texas. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the express written permission of AnalySys, Inc.

Respectfully Submitted,
Richard Laster
 Richard Laster

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than (<) values reflect nominal quantitation limits, adjusted for any required dilution.

Client: Trace Analysis, Inc.
 Attn: Neil Cozen
 Address: 6701 Aberdeen Ave, Ste. 9
 Lubbock, Tx 79424
 Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92844 Report Date: 8/31/98
 Project ID:
 Sample Name: 103995
 Sample Matrix: water
 Date Received: 8/5/98 Time: 10:00:00
 Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQL ³	Blank	Date	Method	Prec. ²	Recov. ³	CCV ⁴	LCS ⁴
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temperature - Upper Zone 1:2
Note: Could not run heated sample due to sulfide hazard

This analytical report respectfully submitted by AnalySys, Inc. The enclosed results have been reviewed and to the best of my knowledge the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program © Copyright 1998 AnalySys, Inc., Austin, Texas. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the express written permission of AnalySys, Inc.

Respectfully Submitted,
Richard Laster
 Richard Laster

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than (" $<$ ") values reflect nominal quantitation limits, adjusted for any required dilution.

Client: Trace Analysis, Inc.
 Attn: Neil Green
 Address: 6701 Aberdeen Ave, Ste. 9
 Lubbock, TX 79424
 Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92845 Report Date: 8/31/98
 Project ID:
 Sample Name: 103996
 Sample Matrix: water
 Date Received: 8/5/98 Time: 10:00:00
 Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQL ⁵	Blank	Date	Method	Prec. ²	Recov. ³	CCV ⁴	LCS ⁴
Viscosity	0.1	cps			8/26/98	Brookfield				

*Room Temperature - Lower Zone 2:1
 note: Could not run heated sample due to sulfite hazard*

This analytical report respectfully submitted by AnalySys, Inc. The enclosed results have been reviewed and to the best of my knowledge the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program © Copyright 1998 AnalySys, Inc., Austin, Texas. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the express written permission of AnalySys, Inc.

Respectfully Submitted,
Richard Laster
 Richard Laster

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than (" $<$ ") values reflect nominal quantitation limits, adjusted for any required dilution.

Client: Trace Analysis, Inc.
 Attn: Neil Green
 Address: 6701 Aberdeen Ave, Sta. 9
 Lubbock, TX 79424
 Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92846 Report Date: 8/31/98
 Project ID:
 Sample Name: 103997
 Sample Matrix: water
 Date Received: 8/5/98 Time: 10:00:00
 Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQL ⁵	Blank	Date	Method	Prec. ²	Recov. ³	CCV ⁴	LCS ⁴
Viscosity	0.6	cps			8/26/98	Brookfield				

*Room Temp - Lower Zone 1:1
 Note: Could not run heated sample due to sulfide hazard*

This analytical report respectfully submitted by AnalySys, Inc. The enclosed results have been reviewed and to the best of my knowledge the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program © Copyright 1998 AnalySys, Inc., Austin, Texas. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the express written permission of AnalySys, Inc.

Respectfully Submitted,
Richard Laster
 Richard Laster

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than (<) values reflect nominal quantitation limits, adjusted for any required dilution.

Client: Trace Analysis, Inc.
Attn: Nell Green
Address: 6701 Aberdeen Ave, Ste. 9
 Lubbock, TX 79424
Phone: (806) 794-1296 **FAX:** (806) 794-1298

Report #/Lab ID#: 92847 **Report Date:** 8/31/98
Project ID:
Sample Name: 103998
Sample Matrix: water
Date Received: 8/5/98 **Time:** 10:08:00
Date Sampled: Not specific **Time:** 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA¹

Parameter	Result	Units	RQI ⁵	Blank	Date	Method	Prec. ²	Recov. ³	CCV ⁴	LCS ⁴
Viscosity	0.5	cps			8/26/98	Bronkfield				

Room Temp - Lower Zone 1:2

Note: Could not run heated sample due to Sulfide hazard

This analytical report respectfully submitted by AnalySys, Inc. The enclosed results have been reviewed and to the best of my knowledge the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program © Copyright 1998 AnalySys, Inc., Austin, Texas. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the express written permission of AnalySys, Inc.

Respectfully Submitted,

Richard Lester

Richard Lester

1. Quality assurance data reported is for the lot analyzed which included this sample.
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits, adjusted for any required dilution.

APPENDIX E-5

COMPRESSIBILITY OF FORMATION FLUID

APPENDIX E-5

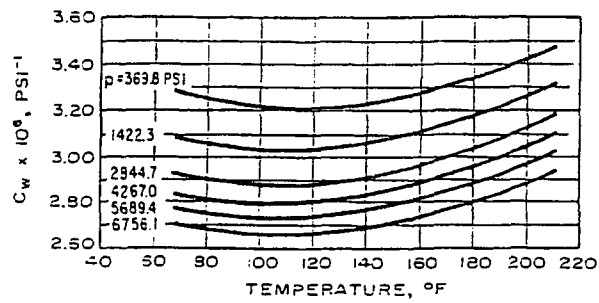


Fig. D.16 Average compressibility of distilled water. After Long and Chierici.¹²

Source: Earlougher, 1977, *Advances in Well Test Analysis*

COMPRESSIBILITY OF PORE VOLUME AND DISTILLED WATER

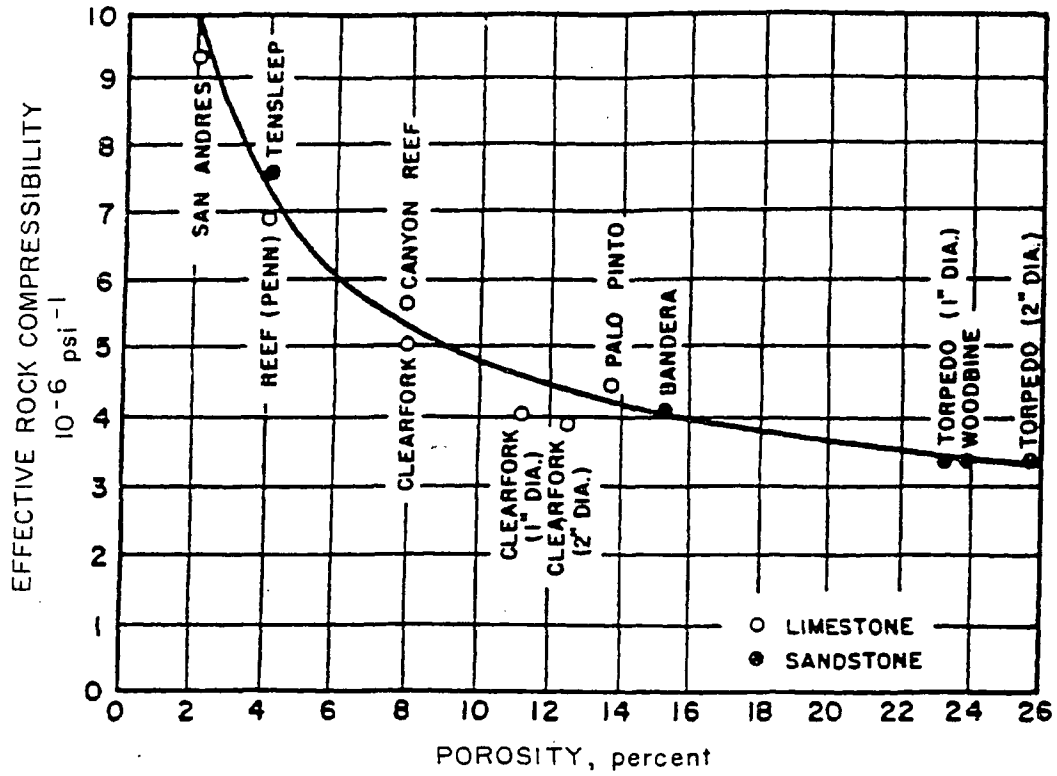


Fig. G.5 Effective formation (rock) compressibility. From Hall, *Trans., AIME* (1953) 198, 309.

Source: Matthews and Russell, 1967, *Pressure Buildup and Flow Tests in Wells*

APPENDIX E-6

PREDICTED BHP CALCULATIONS

**APPENDIX E-6
Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.**

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 400 gpm
 Rate in Well No. 3 0 gpm
 Permeability 521 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)
 1-2

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 250 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
 1-3

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 521 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
 2-3

Rate in Well No. 1 267 gpm
 Rate in Well No. 2 266 gpm
 Rate in Well No. 3 267 gpm
 Permeability 521 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
 All

				Pressure Build at Well No 3				Injection Pressure Build at Well No 3				Injection Pressure Build at Well No 3				Injection Pressure Build at Well No 3			
Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)
4257	30.5	1	2/29/2012	4257	30.5	1	2/29/2012	4257	30.5	1	2/29/2012	4257	30.5	1	2/29/2012	4257	30.5	1	2/29/2012
4287.5	61	2	3/29/2012	4287.5	61	2	3/29/2012	4287.5	61	2	3/29/2012	4287.5	61	2	3/29/2012	4287.5	61	2	3/29/2012
4318	91.5	3	4/29/2012	4318	91.5	3	4/29/2012	4318	91.5	3	4/29/2012	4318	91.5	3	4/29/2012	4318	91.5	3	4/29/2012
4348.5	122	4	5/29/2012	4348.5	122	4	5/29/2012	4348.5	122	4	5/29/2012	4348.5	122	4	5/29/2012	4348.5	122	4	5/29/2012
4379	152.5	5	6/29/2012	4379	152.5	5	6/29/2012	4379	152.5	5	6/29/2012	4379	152.5	5	6/29/2012	4379	152.5	5	6/29/2012
4409.5	183	6	7/29/2012	4409.5	183	6	7/29/2012	4409.5	183	6	7/29/2012	4409.5	183	6	7/29/2012	4409.5	183	6	7/29/2012
4440	213.5	7	8/29/2012	4440	213.5	7	8/29/2012	4440	213.5	7	8/29/2012	4440	213.5	7	8/29/2012	4440	213.5	7	8/29/2012
4470.5	244	8	9/29/2012	4470.5	244	8	9/29/2012	4470.5	244	8	9/29/2012	4470.5	244	8	9/29/2012	4470.5	244	8	9/29/2012
4501	274.5	9	10/29/2012	4501	274.5	9	10/29/2012	4501	274.5	9	10/29/2012	4501	274.5	9	10/29/2012	4501	274.5	9	10/29/2012
4531.5	305	10	11/29/2012	4531.5	305	10	11/29/2012	4531.5	305	10	11/29/2012	4531.5	305	10	11/29/2012	4531.5	305	10	11/29/2012
4562	335.5	11	12/29/2012	4562	335.5	11	12/29/2012	4562	335.5	11	12/29/2012	4562	335.5	11	12/29/2012	4562	335.5	11	12/29/2012
4592.5	366	12	1/29/2013	4592.5	366	12	1/29/2013	4592.5	366	12	1/29/2013	4592.5	366	12	1/29/2013	4592.5	366	12	1/29/2013
4623	396.5	13	2/28/2013	4623	396.5	13	2/28/2013	4623	396.5	13	2/28/2013	4623	396.5	13	2/28/2013	4623	396.5	13	2/28/2013
4653.5	427	14	3/29/2013	4653.5	427	14	3/29/2013	4653.5	427	14	3/29/2013	4653.5	427	14	3/29/2013	4653.5	427	14	3/29/2013
4684	457.5	15	4/29/2013	4684	457.5	15	4/29/2013	4684	457.5	15	4/29/2013	4684	457.5	15	4/29/2013	4684	457.5	15	4/29/2013
4714.5	488	16	5/29/2013	4714.5	488	16	5/29/2013	4714.5	488	16	5/29/2013	4714.5	488	16	5/29/2013	4714.5	488	16	5/29/2013
4745	518.5	17	6/29/2013	4745	518.5	17	6/29/2013	4745	518.5	17	6/29/2013	4745	518.5	17	6/29/2013	4745	518.5	17	6/29/2013
4775.5	549	18	7/29/2013	4775.5	549	18	7/29/2013	4775.5	549	18	7/29/2013	4775.5	549	18	7/29/2013	4775.5	549	18	7/29/2013
4806	579.5	19	8/29/2013	4806	579.5	19	8/29/2013	4806	579.5	19	8/29/2013	4806	579.5	19	8/29/2013	4806	579.5	19	8/29/2013
4836.5	610	20	9/29/2013	4836.5	610	20	9/29/2013	4836.5	610	20	9/29/2013	4836.5	610	20	9/29/2013	4836.5	610	20	9/29/2013
4867	640.5	21	10/29/2013	4867	640.5	21	10/29/2013	4867	640.5	21	10/29/2013	4867	640.5	21	10/29/2013	4867	640.5	21	10/29/2013
4897.5	671	22	11/29/2013	4897.5	671	22	11/29/2013	4897.5	671	22	11/29/2013	4897.5	671	22	11/29/2013	4897.5	671	22	11/29/2013
4928	701.5	23	12/29/2013	4928	701.5	23	12/29/2013	4928	701.5	23	12/29/2013	4928	701.5	23	12/29/2013	4928	701.5	23	12/29/2013

**APPE. -6
Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.**

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 400 gpm
 Rate in Well No. 3 0 gpm
 Permeability 521 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. 3 (X= 0 feet, Y= 0 feet)

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 250 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 521 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)

Rate in Well No. 1 267 gpm
 Rate in Well No. 2 266 gpm
 Rate in Well No. 3 267 gpm
 Permeability 521 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)

1-2

1-3

2-3

All

Pressure Build at Well No 3				Injection Pressure Build at Well No 3				Injection Pressure Build at Well No 3				Injection Pressure Build at Well No 3			
Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)
4958.5	732	24	1/29/2014	4958.5	732	24	1/29/2014	4958.5	732	24	1/29/2014	4958.5	732	24	1/29/2014
4989	762.5	25	2/28/2014	4989	762.5	25	2/28/2014	4989	762.5	25	2/28/2014	4989	762.5	25	2/28/2014
5019.5	793	26	3/29/2014	5019.5	793	26	3/29/2014	5019.5	793	26	3/29/2014	5019.5	793	26	3/29/2014
5050	823.5	27	4/29/2014	5050	823.5	27	4/29/2014	5050	823.5	27	4/29/2014	5050	823.5	27	4/29/2014
5080.5	854	28	5/29/2014	5080.5	854	28	5/29/2014	5080.5	854	28	5/29/2014	5080.5	854	28	5/29/2014
5111	884.5	29	6/29/2014	5111	884.5	29	6/29/2014	5111	884.5	29	6/29/2014	5111	884.5	29	6/29/2014
5141.5	915	30	7/29/2014	5141.5	915	30	7/29/2014	5141.5	915	30	7/29/2014	5141.5	915	30	7/29/2014
5172	945.5	31	8/29/2014	5172	945.5	31	8/29/2014	5172	945.5	31	8/29/2014	5172	945.5	31	8/29/2014
5202.5	976	32	9/29/2014	5202.5	976	32	9/29/2014	5202.5	976	32	9/29/2014	5202.5	976	32	9/29/2014
5233	1006.5	33	10/29/2014	5233	1006.5	33	10/29/2014	5233	1006.5	33	10/29/2014	5233	1006.5	33	10/29/2014
5263.5	1037	34	11/29/2014	5263.5	1037	34	11/29/2014	5263.5	1037	34	11/29/2014	5263.5	1037	34	11/29/2014
5294	1067.5	35	12/29/2014	5294	1067.5	35	12/29/2014	5294	1067.5	35	12/29/2014	5294	1067.5	35	12/29/2014
5324.5	1098	36	1/29/2015	5324.5	1098	36	1/29/2015	5324.5	1098	36	1/29/2015	5324.5	1098	36	1/29/2015
5355	1128.5	37	2/28/2015	5355	1128.5	37	2/28/2015	5355	1128.5	37	2/28/2015	5355	1128.5	37	2/28/2015
5385.5	1159	38	3/29/2015	5385.5	1159	38	3/29/2015	5385.5	1159	38	3/29/2015	5385.5	1159	38	3/29/2015
5416	1189.5	39	4/29/2015	5416	1189.5	39	4/29/2015	5416	1189.5	39	4/29/2015	5416	1189.5	39	4/29/2015
5446.5	1220	40	5/29/2015	5446.5	1220	40	5/29/2015	5446.5	1220	40	5/29/2015	5446.5	1220	40	5/29/2015
5477	1250.5	41	6/29/2015	5477	1250.5	41	6/29/2015	5477	1250.5	41	6/29/2015	5477	1250.5	41	6/29/2015
5507.5	1281	42	7/29/2015	5507.5	1281	42	7/29/2015	5507.5	1281	42	7/29/2015	5507.5	1281	42	7/29/2015
5538	1311.5	43	8/29/2015	5538	1311.5	43	8/29/2015	5538	1311.5	43	8/29/2015	5538	1311.5	43	8/29/2015
5568.5	1342	44	9/29/2015	5568.5	1342	44	9/29/2015	5568.5	1342	44	9/29/2015	5568.5	1342	44	9/29/2015
5599	1372.5	45	10/29/2015	5599	1372.5	45	10/29/2015	5599	1372.5	45	10/29/2015	5599	1372.5	45	10/29/2015
5629.5	1403	46	11/29/2015	5629.5	1403	46	11/29/2015	5629.5	1403	46	11/29/2015	5629.5	1403	46	11/29/2015

APPE. 2-6
Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 400 gpm
 Rate in Well No. 3 0 gpm
 Permeability 521 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 250 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 521 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

Rate in Well No. 1 267 gpm
 Rate in Well No. 2 266 gpm
 Rate in Well No. 3 267 gpm
 Permeability 521 md
 Prosoilty 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

1-2				1-3				2-3				All							
			Pressure Build				Injection Pressure Build				Injection Pressure Build				Injection Pressure Build				
Time	Cum		at Well No	Time	Cum		at Well No	Time	Cum		at Well No	Time	Cum		at Well No				
(hours)	(hours)	Months	(mm/dd/yyyy)	(hours)	(hours)	Months	(mm/dd/yyyy)	(hours)	(hours)	Months	(mm/dd/yyyy)	(hours)	(hours)	Months	(mm/dd/yyyy)				
			(psi)				(psi)				(psi)				(psi)				
5660	1433.5	47	12/29/2015	3387.398	5660	1433.5	47	12/29/2015	4296.218	5660	1433.5	47	12/29/2015	4319.281	5660	1433.5	47	12/29/2015	4001.704
5690.5	1464	48	1/29/2016	3387.713	5690.5	1464	48	1/29/2016	4296.533	5690.5	1464	48	1/29/2016	4319.596	5690.5	1464	48	1/29/2016	4002.019
5721	1494.5	49	2/29/2016	3388.023	5721	1494.5	49	2/29/2016	4296.843	5721	1494.5	49	2/29/2016	4319.907	5721	1494.5	49	2/29/2016	4002.329
5751.5	1525	50	3/29/2016	3388.328	5751.5	1525	50	3/29/2016	4297.148	5751.5	1525	50	3/29/2016	4320.212	5751.5	1525	50	3/29/2016	4002.634
5782	1555.5	51	4/29/2016	3388.628	5782	1555.5	51	4/29/2016	4297.448	5782	1555.5	51	4/29/2016	4320.512	5782	1555.5	51	4/29/2016	4002.934
5812.5	1586	52	5/29/2016	3388.923	5812.5	1586	52	5/29/2016	4297.743	5812.5	1586	52	5/29/2016	4320.807	5812.5	1586	52	5/29/2016	4003.229
5843	1616.5	53	6/29/2016	3389.213	5843	1616.5	53	6/29/2016	4298.033	5843	1616.5	53	6/29/2016	4321.098	5843	1616.5	53	6/29/2016	4003.52
5873.5	1647	54	7/29/2016	3389.499	5873.5	1647	54	7/29/2016	4298.319	5873.5	1647	54	7/29/2016	4321.384	5873.5	1647	54	7/29/2016	4003.806
5904	1677.5	55	8/29/2016	3389.78	5904	1677.5	55	8/29/2016	4298.601	5904	1677.5	55	8/29/2016	4321.666	5904	1677.5	55	8/29/2016	4004.087
5934.5	1708	56	9/29/2016	3390.058	5934.5	1708	56	9/29/2016	4298.878	5934.5	1708	56	9/29/2016	4321.944	5934.5	1708	56	9/29/2016	4004.365
5965	1738.5	57	10/29/2016	3390.331	5965	1738.5	57	10/29/2016	4299.152	5965	1738.5	57	10/29/2016	4322.218	5965	1738.5	57	10/29/2016	4004.638
5995.5	1769	58	11/29/2016	3390.6	5995.5	1769	58	11/29/2016	4299.421	5995.5	1769	58	11/29/2016	4322.487	5995.5	1769	58	11/29/2016	4004.908
6026	1799.5	59	12/29/2016	3390.866	6026	1799.5	59	12/29/2016	4299.687	6026	1799.5	59	12/29/2016	4322.753	6026	1799.5	59	12/29/2016	4005.174
6056.5	1830	60	1/29/2017	3391.128	6056.5	1830	60	1/29/2017	4299.949	6056.5	1830	60	1/29/2017	4323.016	6056.5	1830	60	1/29/2017	4005.436
6087	1860.5	61	2/28/2017	3391.387	6087	1860.5	61	2/28/2017	4300.208	6087	1860.5	61	2/28/2017	4323.274	6087	1860.5	61	2/28/2017	4005.694
6117.5	1891	62	3/29/2017	3391.642	6117.5	1891	62	3/29/2017	4300.463	6117.5	1891	62	3/29/2017	4323.53	6117.5	1891	62	3/29/2017	4005.95
6148	1921.5	63	4/29/2017	3391.894	6148	1921.5	63	4/29/2017	4300.715	6148	1921.5	63	4/29/2017	4323.782	6148	1921.5	63	4/29/2017	4006.201
6178.5	1952	64	5/29/2017	3392.142	6178.5	1952	64	5/29/2017	4300.963	6178.5	1952	64	5/29/2017	4324.03	6178.5	1952	64	5/29/2017	4006.45
6209	1982.5	65	6/29/2017	3392.387	6209	1982.5	65	6/29/2017	4301.209	6209	1982.5	65	6/29/2017	4324.276	6209	1982.5	65	6/29/2017	4006.695
6239.5	2013	66	7/29/2017	3392.63	6239.5	2013	66	7/29/2017	4301.451	6239.5	2013	66	7/29/2017	4324.519	6239.5	2013	66	7/29/2017	4006.938
6270	2043.5	67	8/29/2017	3392.869	6270	2043.5	67	8/29/2017	4301.69	6270	2043.5	67	8/29/2017	4324.758	6270	2043.5	67	8/29/2017	4007.177
6300.5	2074	68	9/29/2017	3393.106	6300.5	2074	68	9/29/2017	4301.927	6300.5	2074	68	9/29/2017	4324.995	6300.5	2074	68	9/29/2017	4007.414
6331	2104.5	69	10/29/2017	3393.339	6331	2104.5	69	10/29/2017	4302.161	6331	2104.5	69	10/29/2017	4325.229	6331	2104.5	69	10/29/2017	4007.648

**APPE .-6
Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.**

Rate in Well No. 1 400 gpm
Rate in Well No. 2 400 gpm
Rate in Well No. 3 0 gpm
Permeability 521 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi
Pressure Buildup at Well No. 3 (X= 0 feet, Y= 0 feet)
1-2

Rate in Well No. 1 400 gpm
Rate in Well No. 2 0 gpm
Rate in Well No. 3 400 gpm
Permeability 250 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi
Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)
1-3

Rate in Well No. 1 400 gpm
Rate in Well No. 2 0 gpm
Rate in Well No. 3 400 gpm
Permeability 521 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi
Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)
2-3

Rate in Well No. 1 267 gpm
Rate in Well No. 2 266 gpm
Rate in Well No. 3 267 gpm
Permeability 521 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi
Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)
All

				Injection Pressure Build at Well No 3					Injection Pressure Build at Well No 3					Injection Pressure Build at Well No 3					
Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)
6361.5	2135	70	11/29/2017	6361.5	2135	70	11/29/2017	6361.5	2135	70	11/29/2017	6361.5	2135	70	11/29/2017	6361.5	2135	70	11/29/2017
6392	2165.5	71	12/29/2017	6392	2165.5	71	12/29/2017	6392	2165.5	71	12/29/2017	6392	2165.5	71	12/29/2017	6392	2165.5	71	12/29/2017
6422.5	2196	72	1/29/2018	6422.5	2196	72	1/29/2018	6422.5	2196	72	1/29/2018	6422.5	2196	72	1/29/2018	6422.5	2196	72	1/29/2018
6453	2226.5	73	2/28/2018	6453	2226.5	73	2/28/2018	6453	2226.5	73	2/28/2018	6453	2226.5	73	2/28/2018	6453	2226.5	73	2/28/2018
6483.5	2257	74	3/29/2018	6483.5	2257	74	3/29/2018	6483.5	2257	74	3/29/2018	6483.5	2257	74	3/29/2018	6483.5	2257	74	3/29/2018
6514	2287.5	75	4/29/2018	6514	2287.5	75	4/29/2018	6514	2287.5	75	4/29/2018	6514	2287.5	75	4/29/2018	6514	2287.5	75	4/29/2018
6544.5	2318	76	5/29/2018	6544.5	2318	76	5/29/2018	6544.5	2318	76	5/29/2018	6544.5	2318	76	5/29/2018	6544.5	2318	76	5/29/2018
6575	2348.5	77	6/29/2018	6575	2348.5	77	6/29/2018	6575	2348.5	77	6/29/2018	6575	2348.5	77	6/29/2018	6575	2348.5	77	6/29/2018
6605.5	2379	78	7/29/2018	6605.5	2379	78	7/29/2018	6605.5	2379	78	7/29/2018	6605.5	2379	78	7/29/2018	6605.5	2379	78	7/29/2018
6636	2409.5	79	8/29/2018	6636	2409.5	79	8/29/2018	6636	2409.5	79	8/29/2018	6636	2409.5	79	8/29/2018	6636	2409.5	79	8/29/2018
6666.5	2440	80	9/29/2018	6666.5	2440	80	9/29/2018	6666.5	2440	80	9/29/2018	6666.5	2440	80	9/29/2018	6666.5	2440	80	9/29/2018
6697	2470.5	81	10/29/2018	6697	2470.5	81	10/29/2018	6697	2470.5	81	10/29/2018	6697	2470.5	81	10/29/2018	6697	2470.5	81	10/29/2018
6727.5	2501	82	11/29/2018	6727.5	2501	82	11/29/2018	6727.5	2501	82	11/29/2018	6727.5	2501	82	11/29/2018	6727.5	2501	82	11/29/2018
6758	2531.5	83	12/29/2018	6758	2531.5	83	12/29/2018	6758	2531.5	83	12/29/2018	6758	2531.5	83	12/29/2018	6758	2531.5	83	12/29/2018
6788.5	2562	84	1/29/2019	6788.5	2562	84	1/29/2019	6788.5	2562	84	1/29/2019	6788.5	2562	84	1/29/2019	6788.5	2562	84	1/29/2019
6819	2592.5	85	2/28/2019	6819	2592.5	85	2/28/2019	6819	2592.5	85	2/28/2019	6819	2592.5	85	2/28/2019	6819	2592.5	85	2/28/2019
6849.5	2623	86	3/29/2019	6849.5	2623	86	3/29/2019	6849.5	2623	86	3/29/2019	6849.5	2623	86	3/29/2019	6849.5	2623	86	3/29/2019
6880	2653.5	87	4/29/2019	6880	2653.5	87	4/29/2019	6880	2653.5	87	4/29/2019	6880	2653.5	87	4/29/2019	6880	2653.5	87	4/29/2019
6910.5	2684	88	5/29/2019	6910.5	2684	88	5/29/2019	6910.5	2684	88	5/29/2019	6910.5	2684	88	5/29/2019	6910.5	2684	88	5/29/2019
6941	2714.5	89	6/29/2019	6941	2714.5	89	6/29/2019	6941	2714.5	89	6/29/2019	6941	2714.5	89	6/29/2019	6941	2714.5	89	6/29/2019
6971.5	2745	90	7/29/2019	6971.5	2745	90	7/29/2019	6971.5	2745	90	7/29/2019	6971.5	2745	90	7/29/2019	6971.5	2745	90	7/29/2019
7002	2775.5	91	8/29/2019	7002	2775.5	91	8/29/2019	7002	2775.5	91	8/29/2019	7002	2775.5	91	8/29/2019	7002	2775.5	91	8/29/2019
7032.5	2806	92	9/29/2019	7032.5	2806	92	9/29/2019	7032.5	2806	92	9/29/2019	7032.5	2806	92	9/29/2019	7032.5	2806	92	9/29/2019

APPENDIX E-6
Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1	400 gpm	Rate in Well No. 1	400 gpm	Rate in Well No. 1	400 gpm	Rate in Well No. 1	267 gpm
Rate in Well No. 2	400 gpm	Rate in Well No. 2	0 gpm	Rate in Well No. 2	0 gpm	Rate in Well No. 2	266 gpm
Rate in Well No. 3	0 gpm	Rate in Well No. 3	400 gpm	Rate in Well No. 3	400 gpm	Rate in Well No. 3	267 gpm
Permeability	521 md	Permeability	250 md	Permeability	521 md	Permeability	521 md
Prososity	10%	Prososity	10%	Prososity	10%	Prososity	10%
Thickness	85 feet	Thickness	85 feet	Thickness	85 feet	Thickness	85 feet
Compressibility	8.40E-06 /psi	Compressibility	8.40E-06 /psi	Compressibility	8.40E-06 /psi	Compressibility	8.40E-06 /psi
Pressure Buildup at Well No. 3 (X= 0 feet, Y= 0 feet)		Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)		Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)		Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)	
1-2		1-3		2-3		All	

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Pressure Build at Well No 3		Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3		Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3	
				(psi)	(psi)					(psi)	(psi)						
7063	2836.5	93	10/29/2019	3398.267	3398.267	7063	2836.5	93	10/29/2019	4307.088	4307.088	7063	2836.5	93	10/29/2019	4330.16	4330.16
7093.5	2867	94	11/29/2019	3398.449	3398.449	7093.5	2867	94	11/29/2019	4307.27	4307.27	7093.5	2867	94	11/29/2019	4330.342	4330.342
7124	2897.5	95	12/29/2019	3398.629	3398.629	7124	2897.5	95	12/29/2019	4307.451	4307.451	7124	2897.5	95	12/29/2019	4330.522	4330.522
7154.5	2928	96	1/29/2020	3398.808	3398.808	7154.5	2928	96	1/29/2020	4307.63	4307.63	7154.5	2928	96	1/29/2020	4330.701	4330.701
7185	2958.5	97	2/29/2020	3398.985	3398.985	7185	2958.5	97	2/29/2020	4307.807	4307.807	7185	2958.5	97	2/29/2020	4330.879	4330.879
7215.5	2989	98	3/29/2020	3399.161	3399.161	7215.5	2989	98	3/29/2020	4307.983	4307.983	7215.5	2989	98	3/29/2020	4331.055	4331.055
7246	3019.5	99	4/29/2020	3399.336	3399.336	7246	3019.5	99	4/29/2020	4308.158	4308.158	7246	3019.5	99	4/29/2020	4331.229	4331.229
7276.5	3050	100	5/29/2020	3399.509	3399.509	7276.5	3050	100	5/29/2020	4308.331	4308.331	7276.5	3050	100	5/29/2020	4331.403	4331.403
7307	3080.5	101	6/29/2020	3399.681	3399.681	7307	3080.5	101	6/29/2020	4308.502	4308.502	7307	3080.5	101	6/29/2020	4331.574	4331.574
7337.5	3111	102	7/29/2020	3399.851	3399.851	7337.5	3111	102	7/29/2020	4308.673	4308.673	7337.5	3111	102	7/29/2020	4331.745	4331.745
7368	3141.5	103	8/29/2020	3400.02	3400.02	7368	3141.5	103	8/29/2020	4308.842	4308.842	7368	3141.5	103	8/29/2020	4331.914	4331.914
7398.5	3172	104	9/29/2020	3400.188	3400.188	7398.5	3172	104	9/29/2020	4309.01	4309.01	7398.5	3172	104	9/29/2020	4332.082	4332.082
7429	3202.5	105	10/29/2020	3400.354	3400.354	7429	3202.5	105	10/29/2020	4309.176	4309.176	7429	3202.5	105	10/29/2020	4332.248	4332.248
7459.5	3233	106	11/29/2020	3400.519	3400.519	7459.5	3233	106	11/29/2020	4309.341	4309.341	7459.5	3233	106	11/29/2020	4332.413	4332.413
7490	3263.5	107	12/29/2020	3400.683	3400.683	7490	3263.5	107	12/29/2020	4309.505	4309.505	7490	3263.5	107	12/29/2020	4332.577	4332.577
7520.5	3294	108	1/29/2021	3400.846	3400.846	7520.5	3294	108	1/29/2021	4309.668	4309.668	7520.5	3294	108	1/29/2021	4332.74	4332.74
7551	3324.5	109	2/28/2021	3401.007	3401.007	7551	3324.5	109	2/28/2021	4309.829	4309.829	7551	3324.5	109	2/28/2021	4332.902	4332.902
7581.5	3355	110	3/29/2021	3401.168	3401.168	7581.5	3355	110	3/29/2021	4309.989	4309.989	7581.5	3355	110	3/29/2021	4333.062	4333.062
7612	3385.5	111	4/29/2021	3401.327	3401.327	7612	3385.5	111	4/29/2021	4310.149	4310.149	7612	3385.5	111	4/29/2021	4333.221	4333.221
7642.5	3416	112	5/29/2021	3401.485	3401.485	7642.5	3416	112	5/29/2021	4310.307	4310.307	7642.5	3416	112	5/29/2021	4333.379	4333.379
7673	3446.5	113	6/29/2021	3401.641	3401.641	7673	3446.5	113	6/29/2021	4310.463	4310.463	7673	3446.5	113	6/29/2021	4333.536	4333.536
7703.5	3477	114	7/29/2021	3401.797	3401.797	7703.5	3477	114	7/29/2021	4310.619	4310.619	7703.5	3477	114	7/29/2021	4333.692	4333.692
7734	3507.5	115	8/29/2021	3401.952	3401.952	7734	3507.5	115	8/29/2021	4310.774	4310.774	7734	3507.5	115	8/29/2021	4333.847	4333.847

APPEX -6
Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 400 gpm
 Rate in Well No. 3 0 gpm
 Permeability 521 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. 3 (X= 0 feet, Y= 0 feet)
 1-2

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 250 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)
 1-3

Rate in Well No. 1 400 gpm
 Rate in Well No. 2 0 gpm
 Rate in Well No. 3 400 gpm
 Permeability 521 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)
 2-3

Rate in Well No. 1 267 gpm
 Rate in Well No. 2 266 gpm
 Rate in Well No. 3 267 gpm
 Permeability 521 md
 Prosoity 10%
 Thickness 85 feet
 Compressability 8.40E-06 /psi
 Pressure Buildup at Well No. (X= 0 feet, Y= 0 feet)
 All

Pressure Build at Well No 3					Injection Pressure Build at Well No 3					Injection Pressure Build at Well No 3					Injection Pressure Build at Well No 3									
Time	Cum		Date	psi	Time	Cum		Date	psi	Time	Cum		Date	psi	Time	Cum		Date	psi	Time	Cum		Date	psi
(hours)	(hours)	Months	(mm/dd/yyyy)		(hours)	(hours)	Months	(mm/dd/yyyy)		(hours)	(hours)	Months	(mm/dd/yyyy)		(hours)	(hours)	Months	(mm/dd/yyyy)		(hours)	(hours)	Months	(mm/dd/yyyy)	
7764.5	3538	116	9/29/2021	3402.105	7764.5	3538	116	9/29/2021	4310.927	7764.5	3538	116	9/29/2021	4334	7764.5	3538	116	9/29/2021	4016.416	7764.5	3538	116	9/29/2021	4016.416
7795	3568.5	117	10/29/2021	3402.258	7795	3568.5	117	10/29/2021	4311.08	7795	3568.5	117	10/29/2021	4334.153	7795	3568.5	117	10/29/2021	4016.568	7795	3568.5	117	10/29/2021	4016.568
7825.5	3599	118	11/29/2021	3402.409	7825.5	3599	118	11/29/2021	4311.231	7825.5	3599	118	11/29/2021	4334.304	7825.5	3599	118	11/29/2021	4016.72	7825.5	3599	118	11/29/2021	4016.72
7856	3629.5	119	12/29/2021	3402.559	7856	3629.5	119	12/29/2021	4311.382	7856	3629.5	119	12/29/2021	4334.455	7856	3629.5	119	12/29/2021	4016.87	7856	3629.5	119	12/29/2021	4016.87
7886.5	3660	120	1/29/2022	3402.709	7886.5	3660	120	1/29/2022	4311.531	7886.5	3660	120	1/29/2022	4334.604	7886.5	3660	120	1/29/2022	4017.019	7886.5	3660	120	1/29/2022	4017.019
7917	3690.5	121	2/28/2022	3402.857	7917	3690.5	121	2/28/2022	4311.679	7917	3690.5	121	2/28/2022	4334.753	7917	3690.5	121	2/28/2022	4017.168	7917	3690.5	121	1/30/2022	4017.168

APPENDIX E-7

PLUME RADIUS EVALUATION

**APPENDIX E-7
PLUME RADIUS EVALUATION**

$$r_c = [(0.1337 v t) / (0.8 \pi \theta h)]^{1/2}$$

$$r_d = 2.3 (C_d r_c)^{1/2} + r_c$$

(r _c) Radius of Concentrated Plume	
(r _d) Radius of Dispersed Plume	
(v) volume of average annual injected volume in gallons	88,668,260
Factor to compensate for Immobile Connate Water	0.8
(θ) Formation Porosity	0.1
(h) Thickness of the Injection Reservoir	85
(t) Years of Injection	10
(c _d) Coefficient of Dispersion; for limestone = 65	65
Constant	2.3

The Mewbourne Well No. 1 is approximately 7,900 feet from Gaines Well No. 3, the test well. The Chukka Well No. 2 is approximately 3,130 feet from the Gaines Well No. 3.

Gaines Well Number 3			
Time	Corrected		
	Time	r _c	r _d
1	-3	745.1613	749.1058
2	-2	1053.817	1057.831
3	-1	1290.657	1294.712
4	0	1490.323	1494.406
5	1	1666.231	1670.338
6	2	1825.285	1829.39
7	3	1971.512	1975.653
8	4	2107.634	2111.789
9	5	2235.484	2239.651
10	6	2356.407	2360.585
11	7	2471.42	2475.609
12	8	2581.314	2585.512
13	9	2686.717	2690.923
14	10	2788.138	2792.352

$$r_c = [(0.1337 v t) / (0.8 \pi \theta h)]^{1/2}$$

$$r_d = 2.3 (C_d r_c)^{1/2} + r_c$$

(r _c) Radius of Concentrated Plume	
(r _d) Radius of Dispersed Plume	
(v) volume of average annual injected volume in gallons	70,030,453
Factor to compensate for Immobile Connate Water	0.8
(θ) Formation Porosity	0.1
(h) Thickness of the Injection Reservoir	85
(t) Years of Injection	10
(c _d) Coefficient of Dispersion; for limestone = 65	65
Constant	2.3

The Mewbourne Well No. 1 is approximately 7,900 feet from Gaines Well No. 3, the test well. The Chukka Well No. 2 is approximately 3,130 feet from the Gaines Well No. 3.

Chukka Well Number 2			
Time	Corrected		
	Time	r _c	r _d
1	-10.6667	662.2312	666.1525
2	-9.66667	936.5364	940.5262
3	-8.66667	1147.018	1151.049
4	-7.66667	1324.462	1328.522
5	-6.66667	1480.794	1484.876
6	-5.66667	1622.129	1626.23
7	-4.66667	1752.059	1756.216
8	-3.66667	1873.073	1877.203
9	-2.66667	1986.694	1990.836
10	-1.66667	2094.159	2098.313
11	-0.66667	2196.373	2200.536
11.6667	3.33E-05	2261.954	2266.123
12.66667	1	2356.898	2361.077
13.66667	2	2448.167	2452.353
14.66667	3	2536.153	2540.346
15.66667	4	2621.187	2625.387
16.66667	5	2703.548	2707.755
17.66667	6	2783.473	2787.686
18.66667	7	2861.166	2865.385
19.66667	8	2936.805	2941.029
20.66667	9	3010.543	3014.773
21.66667	10	3082.519	3086.753

APPENDIX E-7
PLUME RADIUS EVALUATION

$$r_c = [(0.1337 v t) / (0.8 \pi \theta h)]^{1/2}$$

$$r_d = 2.3 (C_d r_c)^{1/2} + r_c$$

(r_c) Radius of Concentrated Plume

(r_d) Radius of Dispersed Plume

(v) volume of average annual injected volume in gallons	121,555.892
Factor to compensate for Immovable Connate Water	0.8
(θ) Formation Porosity	0.1
(h) Thickness of the Injection Reservoir	85
(t) Years of Injection	10
(cd) Coefficient of Dispersion; for limestone = 65	65
Constant	2.3

Mewbourne Well Number 1

The Mewbourne Well No. 1 is approximately 7,900 feet from Gaines Well No. 3, the test well. The Chukka Well No. 2 is approximately 3,130 feet from the Gaines Well No. 3.

Time	Corrected		
	Time	r _c	r _d
1	-10.5833	872.4774	876.4531
2	-9.58333	1233.869	1237.915
3	-8.58333	1511.175	1515.262
4	-7.58333	1744.955	1749.071
5	-6.58333	1950.919	1955.058
6	-5.58333	2137.125	2141.282
7	-4.58333	2308.358	2312.532
8	-3.58333	2467.739	2471.927
9	-2.58333	2617.432	2621.633
10	-1.58333	2759.016	2763.227
11	-0.58333	2893.68	2897.902
11.58333	0	2969.416	2973.642
12.58333	1	3094.939	3099.174
13.58333	2	3215.566	3219.809
14.58333	3	3331.828	3336.079
15.58333	4	3444.168	3448.427
16.58333	5	3552.958	3557.223
17.58333	6	3658.515	3662.786
18.58333	7	3761.11	3765.387
19.58333	8	3860.98	3865.262
20.58333	9	3958.331	3962.619
21.58333	10	4053.344	4057.637

APPENDIX F

FORMATION FLUID ANALYTICAL DATA

APPENDIX F-1

**FORMATION FLUID ANALYTICAL DATA
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO**

Chemical	Mewbourne Well No. 1	Chukka Well No. 2	Gaines Well No. 3	Average
Date	July 31, 1998	June 14, 1999	Nov 8, 2006	
Fluoride (mg/l)	2.6	9.7	Not Detected	6.15
Chloride (mg/L)	19,000	15,000	10,447	14,815.67
NO3-N (mg/L)	<10	<10	--	<10
SO4 (mg/L)	2,200	2000	1,908	2,036
CaCO3 (mg/L)	1000	1210	--	1105
Specific Gravity (g/L)	1.034	1.0249	--	1.0295
TDS (mg/L)	33,000	20,000	--	26,500
Specific Conductance (uMHOs/cm)	52,000	43,000	--	47,500
Potassium (mg/L)	213	235	85.5	177.83
Magnesium (mg/L)	143	128	155	142
Calcium (mg/L)	390	609	393	464
Sodium (mg/L)	12,770	8,074	6,080	8,974.67
pH (s.u.)	8.1	7.2	--	7.65

The data in the above table was referenced from "Discharge Plan Application and Application for Authorization to Inject per Oil Conservation Division Form C-108, into Class I Wells WDW-1 and Proposed WDW-2 and WDW-3" and the "Discharge Permit Approval Conditions", "Reentry and Completion Report Waste Disposal Well No. 2", and "Reentry and Completion Report Waste Disposal Well No. 3".

APPENDIX G

PRESSURE FALL-OFF TEST RESULTS



SUBSURFACE

HOUSTON, TX • DALLAS, TEXAS • MEMPHIS, TN

Subsurface Technology, Inc

Report File:

2008_WDW-3.pan

PanSystem

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	WDW-3
Date	April 1 - 2, 2008
Test	Falloff
Gauge Depth	7660 feet
Injection Interval	7570 feet - 8399 feet
Completion Type	Perforated
Top of Fill	N/A
Last Stabilization	January 2008
Analyst	TWW
Subsurface Project No.	70G6142

Reservoir Description

Fluid type : Water

Well orientation : Vertical

Number of wells : 1

Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3430.266493 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-3
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.1000 bbl/psi
Storage Amplitude	-100.000000 psi
Storage Time Constant	0.010000 hr
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	0.000000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.720 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

PanSystem

Well Test Analysis Report

Layer 1 Correlations

Not Used

Layer 1 Model Data

Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	1322.0700 md
Skin factor (Well 1)	107.0280

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-2071.863056	3457.960000	0.000000
-2047.863056	3457.960000	-812.914286
-2023.863056	3457.960000	-721.371429
-1999.863056	3457.960000	-2408.228572
-1975.863056	3457.960000	-4733.485715
-1951.863056	3457.960000	-5046.171429
-1927.863056	3457.960000	-4780.800001
-1903.863056	3457.960000	-4393.371429
-1879.863056	3457.960000	-4379.657143
-1855.863056	3457.960000	-4000.114286
-1831.863056	3457.960000	-3507.771429
-1807.863056	3457.960000	-4653.257143
-1783.863056	3457.960000	-3842.057143
-1759.863056	3457.960000	-4548.342858
-1735.863056	3457.960000	-5261.142858
-1711.863056	3457.960000	-7843.885715
-1687.863056	3457.960000	-5715.771429
-1663.863056	3457.960000	-4275.428572
-1639.863056	3457.960000	-5074.971429
-1615.863056	3457.960000	-5097.257143
-1591.863056	3457.960000	-5001.942858
-1567.863056	3457.960000	-5920.114286
-1543.863056	3457.960000	-5555.657144
-1519.863056	3457.960000	-5428.800001
-1495.863056	3457.960000	-5272.457144
-1471.863056	3457.960000	-4341.600001
-1447.863056	3457.960000	-3908.228572
-1423.863056	3457.960000	-3815.657143
-1399.863056	3457.960000	-5433.257144
-1375.863056	3457.960000	-4945.714286
-1351.863056	3457.960000	-5194.628572
-1327.863056	3457.960000	-4909.371429
-1303.863056	3457.960000	-3945.257143
-1279.863056	3457.960000	-3068.571429
-1255.863056	3457.960000	-2256.000000
-1231.863056	3457.960000	-3494.400000
-1207.863056	3457.960000	-3530.400000
-1183.863056	3457.960000	-3493.714286
-1159.863056	3457.960000	-3476.228572
-1135.863056	3457.960000	-3540.685715
-1111.863056	3457.960000	-3542.400000

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-1087.863056	3457.960000	-3397.371429
-1063.863056	3457.960000	-3492.685715
-1039.863056	3457.960000	-3396.685715
-1015.863056	3457.960000	-3473.142858
-991.863056	3457.960000	-3557.485715
-967.863056	3457.960000	-3493.028572
-943.863056	3457.960000	-3498.514286
-919.863056	3457.960000	-3541.028572
-895.863056	3457.960000	-3363.771429
-871.863056	3457.960000	-3350.057143
-847.863056	3457.960000	-3357.600000
-823.863056	3457.960000	-3362.057143
-799.863056	3457.960000	-3303.771429
-775.863056	3457.960000	-3346.971429
-751.863056	3457.960000	-3373.028572
-727.863056	3457.960000	-7593.257144
-703.863056	3457.960000	-7176.685715
-679.863056	3457.960000	-6956.228572
-655.863056	3457.960000	-5682.857144
-631.863056	3457.960000	0.000000
-607.863056	3457.960000	-3868.457143
-583.863056	3457.960000	-7889.142858
-559.863056	3457.960000	-6718.285715
-535.863056	3457.960000	-7427.314287
-511.863056	3457.960000	-8015.314287
-487.863056	3457.960000	-7303.542858
-463.863056	3457.960000	-6829.714287
-439.863056	3457.960000	-7286.057144
-415.863056	4026.630000	-7547.314287
-391.863056	3930.290000	-7812.342858
-367.863056	3556.080000	0.000000
-343.863056	3840.010000	-3903.428572
-319.863056	3952.690000	-6434.742858
-295.863056	3982.110000	-6957.600001
-271.863056	3987.520000	-7229.485715
-247.863056	4004.370000	-7408.114287
-223.863056	4012.010000	-7640.228572
-199.863056	4036.500000	-7787.657144
-175.863056	4036.500000	-7933.028572
-151.863056	4000.480000	-8104.114287
-127.863056	3977.630000	-6902.057144

Rate Change Data (cont)

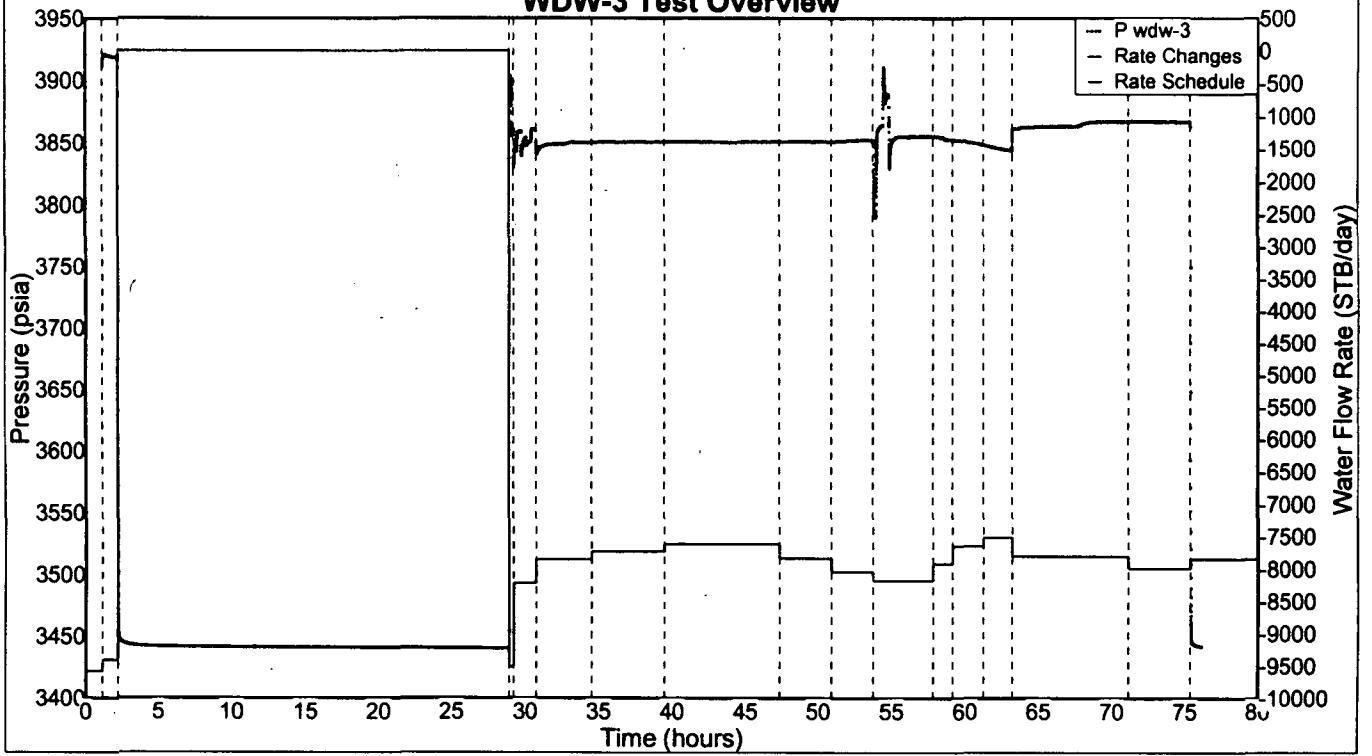
Time Hours	Pressure psia	Rate STB/day
-60.679722	4031.570000	-7828.457144
-48.013056	4031.570000	-7582.971430
-38.263056	4036.500000	-7865.828572
-24.179722	4036.500000	-7445.485715
-22.213056	4099.720000	-7586.742858
-21.463056	4139.380000	-9244.457144
-20.346389	4144.320000	-9345.257144
-19.446389	4145.720000	-9936.000001
-14.229722	4164.040000	-1.0074e4
-9.932790	4154.180000	-9727.542858
1.131247	4014.179168	-9579.771430
2.203142	3919.189261	-9406.628573
28.919168	3440.498262	0.000000
29.230873	3859.753237	-9516.342858
30.766006	3859.753237	-8220.000001
34.536942	3850.008925	-7853.828572
39.470289	3850.629760	-7736.914287
47.336948	3851.055995	-7618.285715
50.903554	3850.454873	-7831.542858
53.762149	3851.623879	-8044.457144
57.829612	3855.226121	-8182.285715
59.164704	3851.989116	-7919.314287
61.269438	3848.212610	-7648.800001
63.226082	3843.379716	-7514.400001
71.135402	3866.884031	-7803.771430
75.392998	3866.683766	-7990.628572
102.920278	4009.300000	-7845.942858
106.036944	4023.540000	-7584.685715
107.386944	4036.500000	-7739.314287
112.136944	4036.500000	-7557.257144

PanSystem

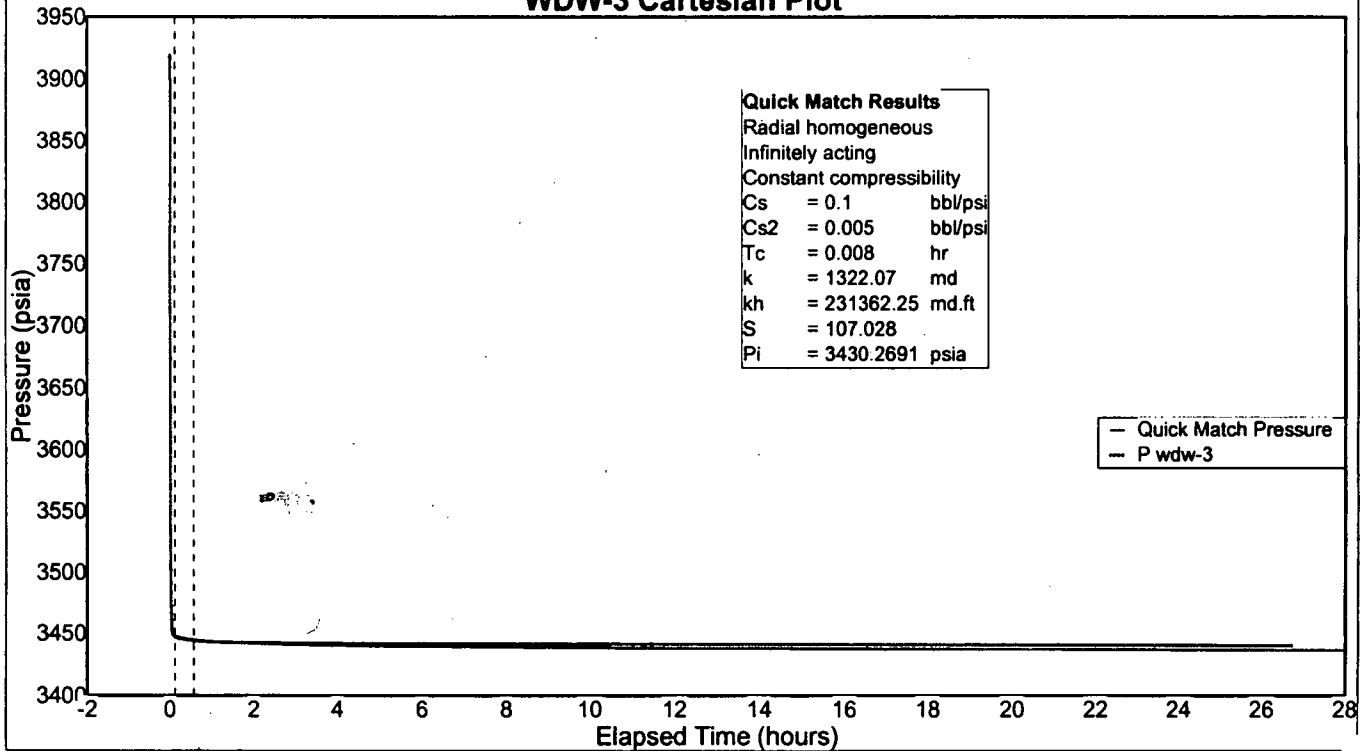
Well Test Analysis Report

HOUSTON, TX • DALLAS • MEMPHIS • LOS ANGELES • NORTH HAVEN, CT

WDW-3 Test Overview



WDW-3 Cartesian Plot

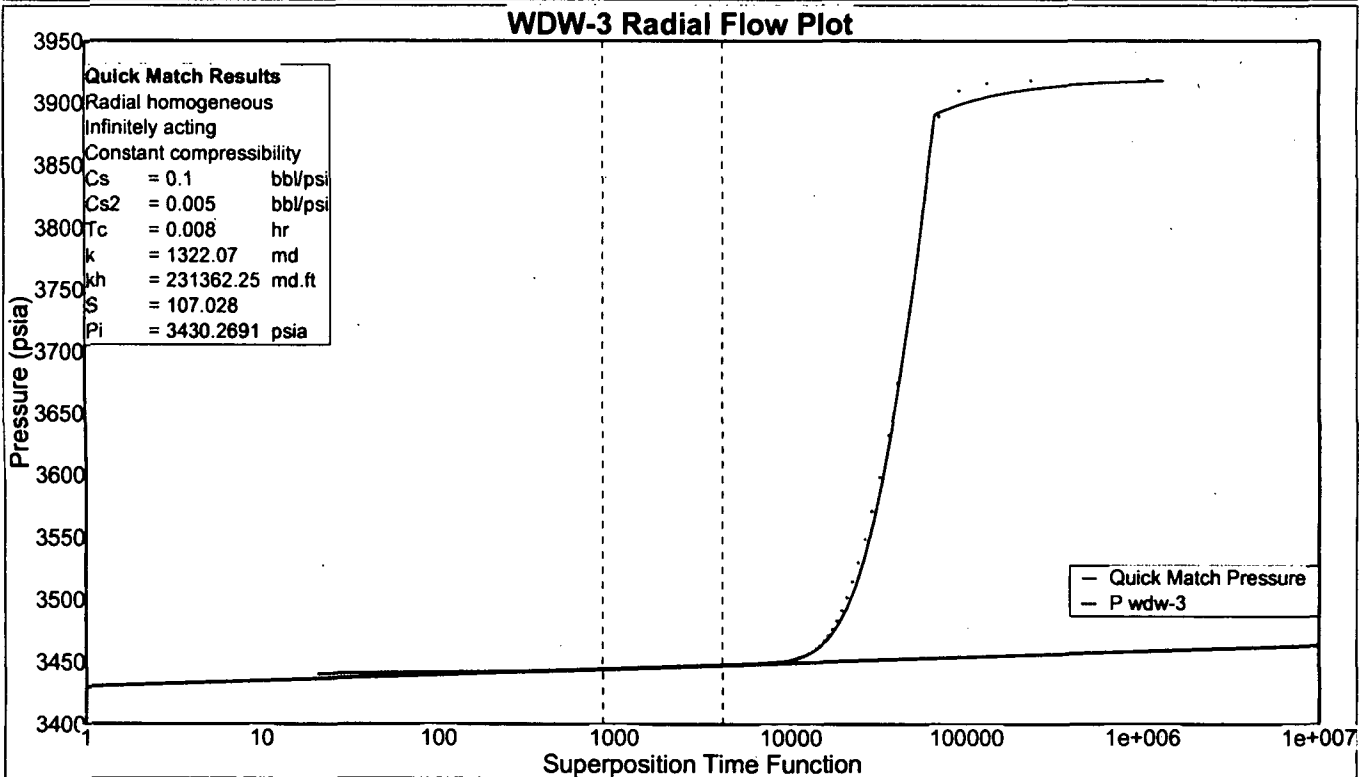


Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia



WDW-3 Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Permeability	1322.071461 md
Permeability-thickness	2.3136e5 md.ft
Radius of investigation	7008.111172 ft
Flow efficiency	0.095170
dP skin (constant rate)	442.391874 psi
Skin factor	107.028375
Extrapolated pressure	3430.266493 psia

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Radial Flow Plot Line Details



Line type : Radial flow

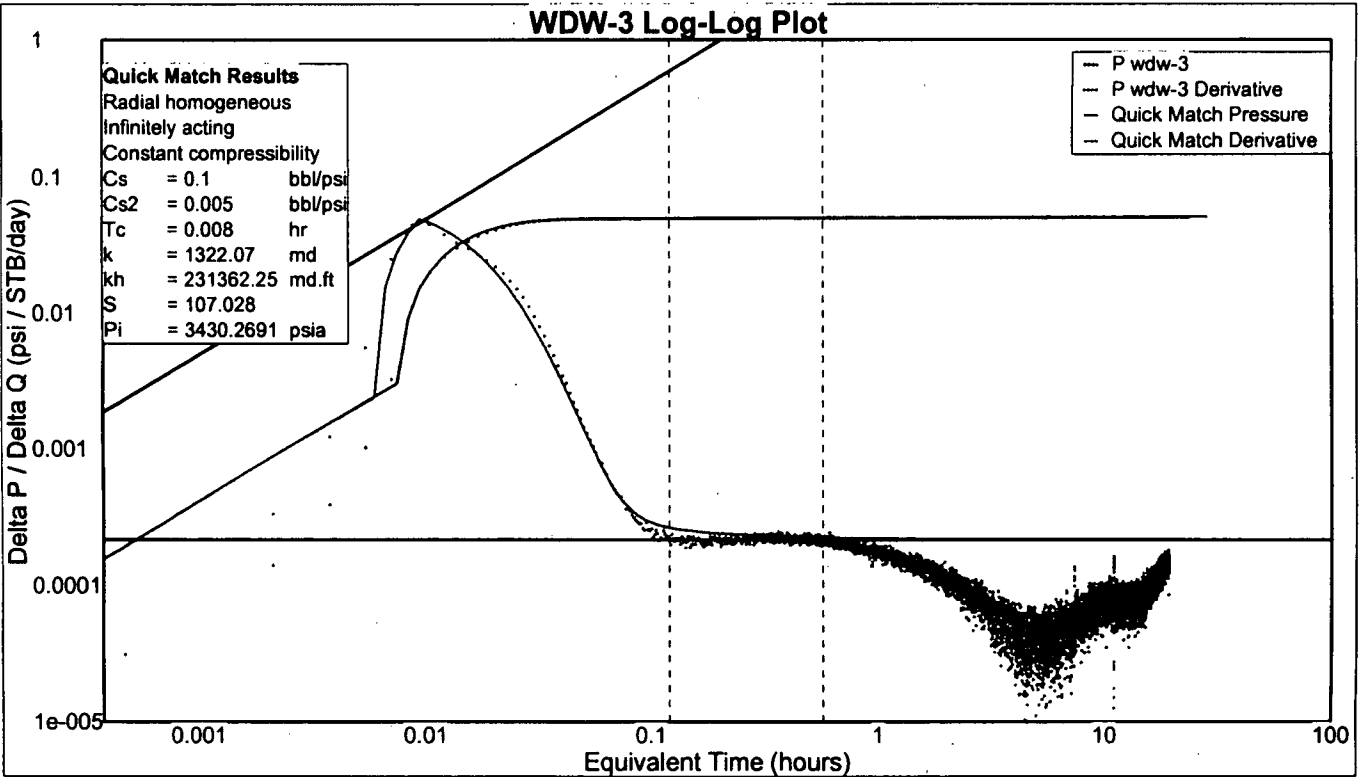
Slope : 4.75876

Intercept : 3430.27

Coefficient of Determination : 0.998783

	Radial flow
Extrapolated pressure	3430.266493 psia
Pressure at dt = 1 hour	3443.109169 psia

Number of Intersections = 0



WDW-3 Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Time Stopped Wellbore Storage

	Value
Wellbore storage coefficient	8.4899e-3 bbl/psi
Dimensionless wellbore storage	479.634571
Permeability	1326.624884 md
Permeability-thickness	2.3216e5 md.ft
Skin factor	107.421824

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stopped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Log-Log Plot Line Details

Line type : Radial flow

Slope : 0

Intercept : 0.000218953

Coefficient of Determination : Not Used

SUBSURFACE



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Well Test Analysis Report

Report File:

2008_WDW-3.pan

Line type : Wellbore storage

Slope : 1

Intercept : 4.90779

Coefficient of Determination : Not Used

Number of Intersections = 0

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Subsurface Technology, Inc

Report File:

2008_WDW-3.pan

PanSystem

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	WDW-3
Date	April 1 - 2, 2008
Test	Falloff
Gauge Depth	7660 feet
Injection Interval	7570 feet - 8399 feet
Completion Type	Perforated
Top of Fill	N/A
Last Stabilization	January 2008
Analyst	TWW
Subsurface Project No.	70G6142

Reservoir Description

Fluid type : Water
 Well orientation : Vertical
 Number of wells : 1
 Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3430.266493 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-3
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.1000 bbl/psi
Storage Amplitude	-100.000000 psi
Storage Time Constant	0.010000 hr
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	0.000000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.720 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

Layer 1 Correlations

Not Used

Layer 1 Model Data

Layer 1 Model Type : Radial homogeneous

Layer 1	
Permeability	1322.0700 md
Skin factor (Well 1)	107.0280

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-2071.863056	3457.960000	0.000000
-2047.863056	3457.960000	-812.914286
-2023.863056	3457.960000	-721.371429
-1999.863056	3457.960000	-2408.228572
-1975.863056	3457.960000	-4733.485715
-1951.863056	3457.960000	-5046.171429
-1927.863056	3457.960000	-4780.800001
-1903.863056	3457.960000	-4393.371429
-1879.863056	3457.960000	-4379.657143
-1855.863056	3457.960000	-4000.114286
-1831.863056	3457.960000	-3507.771429
-1807.863056	3457.960000	-4653.257143
-1783.863056	3457.960000	-3842.057143
-1759.863056	3457.960000	-4548.342858
-1735.863056	3457.960000	-5261.142858
-1711.863056	3457.960000	-7843.885715
-1687.863056	3457.960000	-5715.771429
-1663.863056	3457.960000	-4275.428572
-1639.863056	3457.960000	-5074.971429
-1615.863056	3457.960000	-5097.257143
-1591.863056	3457.960000	-5001.942858
-1567.863056	3457.960000	-5920.114286
-1543.863056	3457.960000	-5555.657144
-1519.863056	3457.960000	-5428.800001
-1495.863056	3457.960000	-5272.457144
-1471.863056	3457.960000	-4341.600001
-1447.863056	3457.960000	-3908.228572
-1423.863056	3457.960000	-3815.657143
-1399.863056	3457.960000	-5433.257144
-1375.863056	3457.960000	-4945.714286
-1351.863056	3457.960000	-5194.628572
-1327.863056	3457.960000	-4909.371429
-1303.863056	3457.960000	-3945.257143
-1279.863056	3457.960000	-3068.571429
-1255.863056	3457.960000	-2256.000000
-1231.863056	3457.960000	-3494.400000
-1207.863056	3457.960000	-3530.400000
-1183.863056	3457.960000	-3493.714286
-1159.863056	3457.960000	-3476.228572
-1135.863056	3457.960000	-3540.685715
-1111.863056	3457.960000	-3542.400000

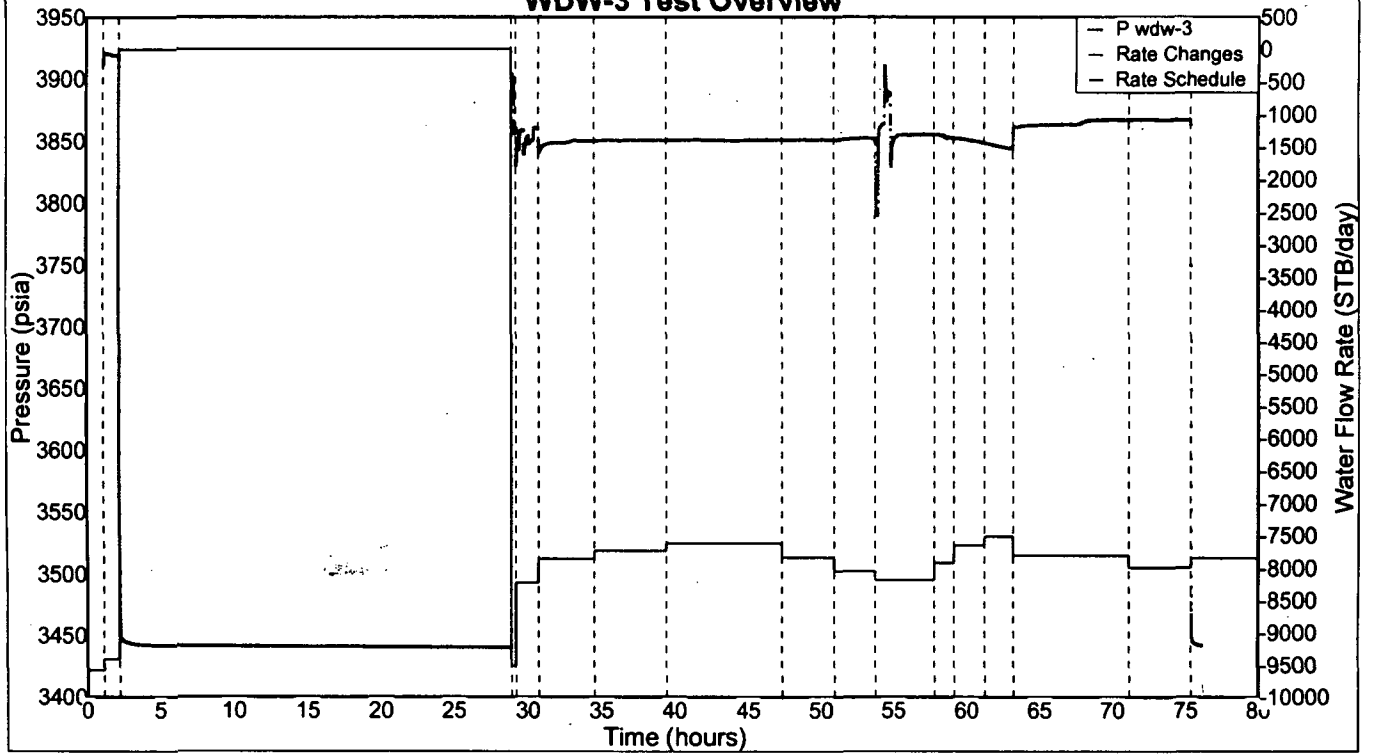
Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-1087.863056	3457.960000	-3397.371429
-1063.863056	3457.960000	-3492.685715
-1039.863056	3457.960000	-3396.685715
-1015.863056	3457.960000	-3473.142858
-991.863056	3457.960000	-3557.485715
-967.863056	3457.960000	-3493.028572
-943.863056	3457.960000	-3498.514286
-919.863056	3457.960000	-3541.028572
-895.863056	3457.960000	-3363.771429
-871.863056	3457.960000	-3350.057143
-847.863056	3457.960000	-3357.600000
-823.863056	3457.960000	-3362.057143
-799.863056	3457.960000	-3303.771429
-775.863056	3457.960000	-3346.971429
-751.863056	3457.960000	-3373.028572
-727.863056	3457.960000	-7593.257144
-703.863056	3457.960000	-7176.685715
-679.863056	3457.960000	-6956.228572
-655.863056	3457.960000	-5682.857144
-535.863056	3457.960000	0.000000
-511.863056	3457.960000	-3868.457143
-367.863056	3457.960000	-7889.142858
-343.863056	3457.960000	-6718.285715
-295.863056	3457.960000	-7427.314287
-271.863056	3457.960000	-8015.314287
-223.863056	3457.960000	-7303.542858
-127.863056	3457.960000	-6829.714287
-79.863056	3457.960000	-7286.057144
-79.513056	4026.630000	-7547.314287
-76.829722	3930.290000	-7812.342858
-76.363056	3556.080000	0.000000
-76.313056	3840.010000	-3903.428572
-76.229722	3952.690000	-6434.742858
-76.129722	3982.110000	-6957.600001
-76.079722	3987.520000	-7229.485715
-75.979722	4004.370000	-7408.114287
-75.846389	4012.010000	-7640.228572
-73.429722	4036.500000	-7787.657144
-71.463056	4036.500000	-7933.028572
-65.046389	4000.480000	-8104.114287
-63.596389	3977.630000	-6902.057144

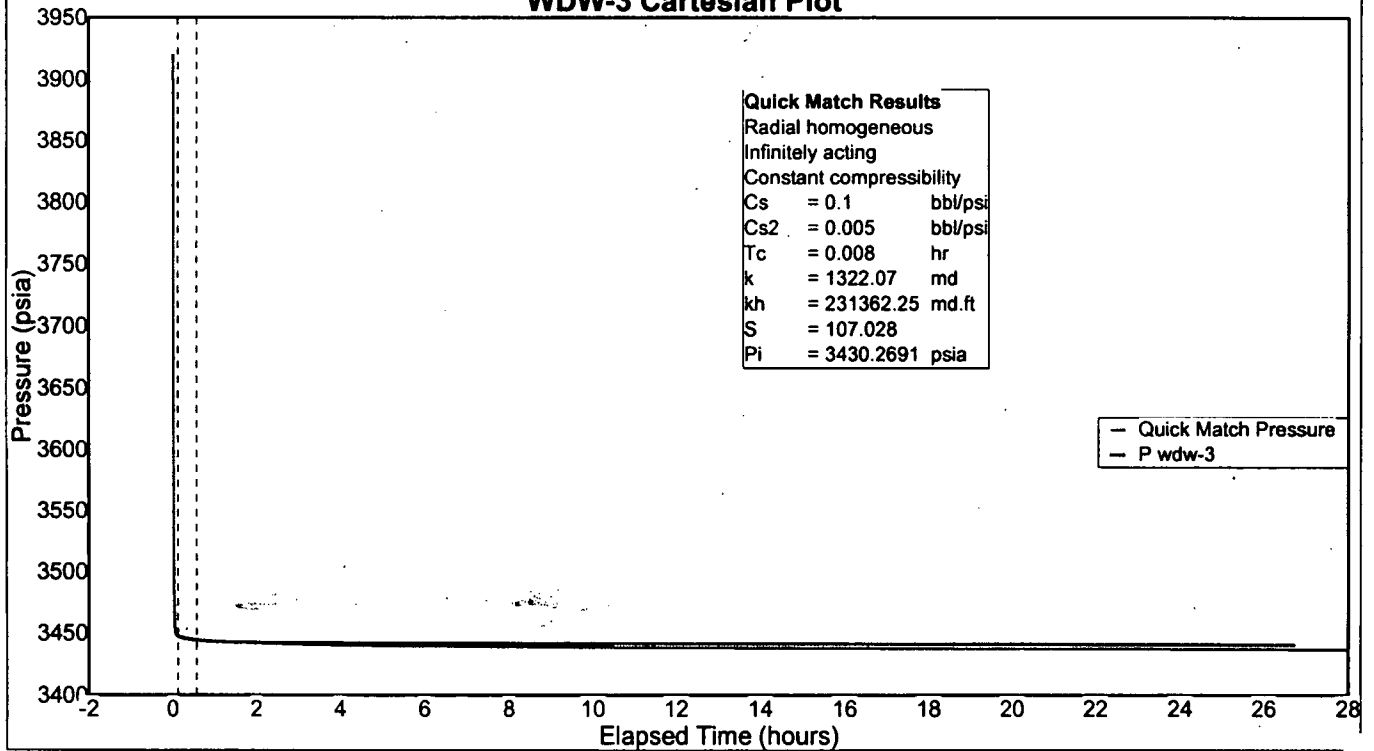
Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
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-48.013056	4031.570000	-7582.971430
-38.263056	4036.500000	-7865.828572
-24.179722	4036.500000	-7445.485715
-22.213056	4099.720000	-7586.742858
-21.463056	4139.380000	-9244.457144
-20.346389	4144.320000	-9345.257144
-19.446389	4145.720000	-9936.000001
-14.229722	4164.040000	-1.0074e4
-9.932790	4154.180000	-9727.542858
1.131247	4014.179168	-9579.771430
2.203142	3919.189261	-9406.628573
28.919168	3440.498262	0.000000
29.230873	3859.753237	-9516.342858
30.766006	3859.753237	-8220.000001
34.536942	3850.008925	-7853.828572
39.470289	3850.629760	-7736.914287
47.336948	3851.055995	-7618.285715
50.903554	3850.454873	-7831.542858
53.762149	3851.623879	-8044.457144
57.829612	3855.226121	-8182.285715
59.164704	3851.989116	-7919.314287
61.269438	3848.212610	-7648.800001
63.226082	3843.379716	-7514.400001
71.135402	3866.884031	-7803.771430
75.392998	3866.683766	-7990.628572
102.920278	4009.300000	-7845.942858
106.036944	4023.540000	-7584.685715
107.386944	4036.500000	-7739.314287
112.136944	4036.500000	-7557.257144

WDW-3 Test Overview



WDW-3 Cartesian Plot



Quick Match Results	
Radial homogeneous	
Infinitely acting	
Constant compressibility	
Cs	= 0.1 bbl/psi
Cs2	= 0.005 bbl/psi
Tc	= 0.008 hr
k	= 1322.07 md
kh	= 231362.25 md.ft
S	= 107.028
Pi	= 3430.2691 psia

— Quick Match Pressure
 - - P wdw-3

Quick Match Results

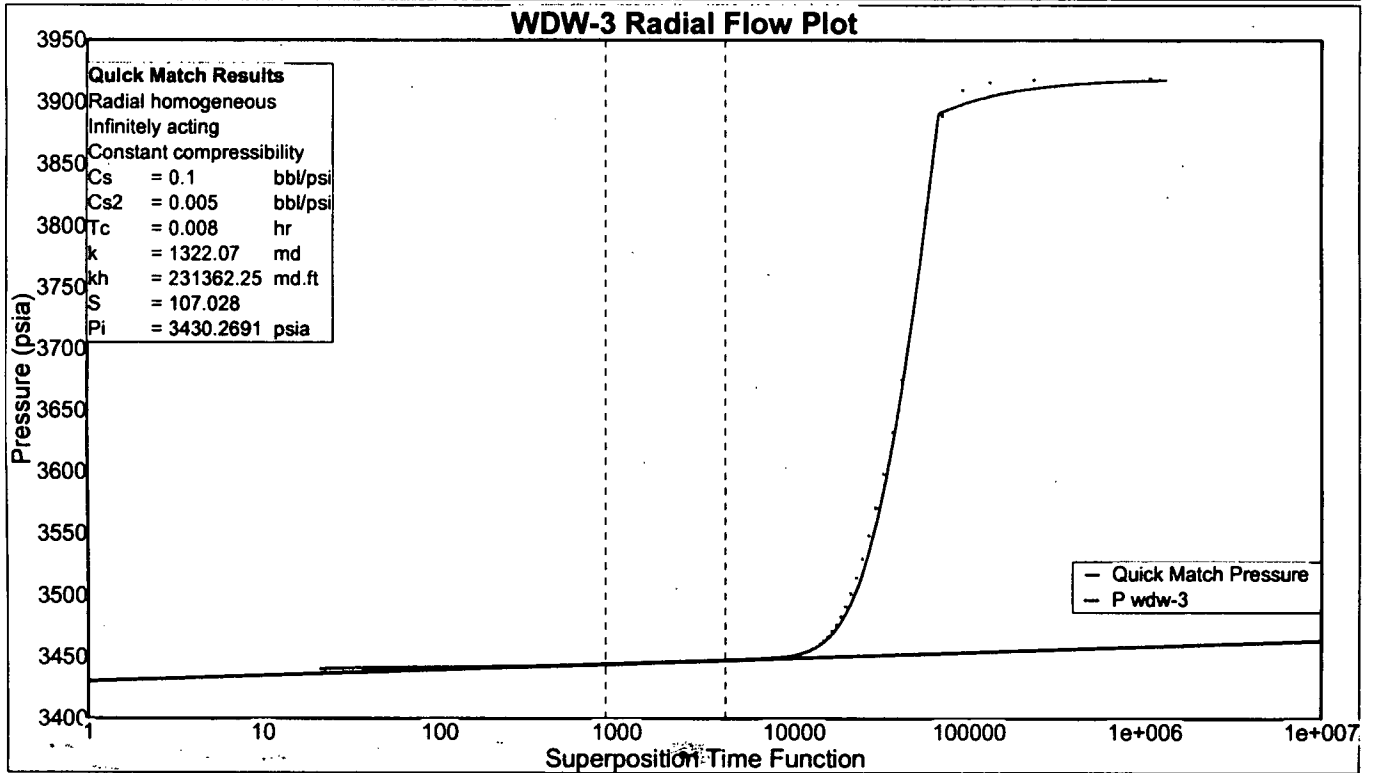
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

PanSystem

Well Test Analysis Report



WDW-3 Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Permeability	1322.071461 md
Permeability-thickness	2.3136e5 md.ft
Radius of investigation	7008.111172 ft
Flow efficiency	0.095170
dP skin (constant rate)	442.391874 psi
Skin factor	107.028375
Extrapolated pressure	3430.266493 psia

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Radial Flow Plot Line Details

PanSystem

Well Test Analysis Report

Line type : Radial flow

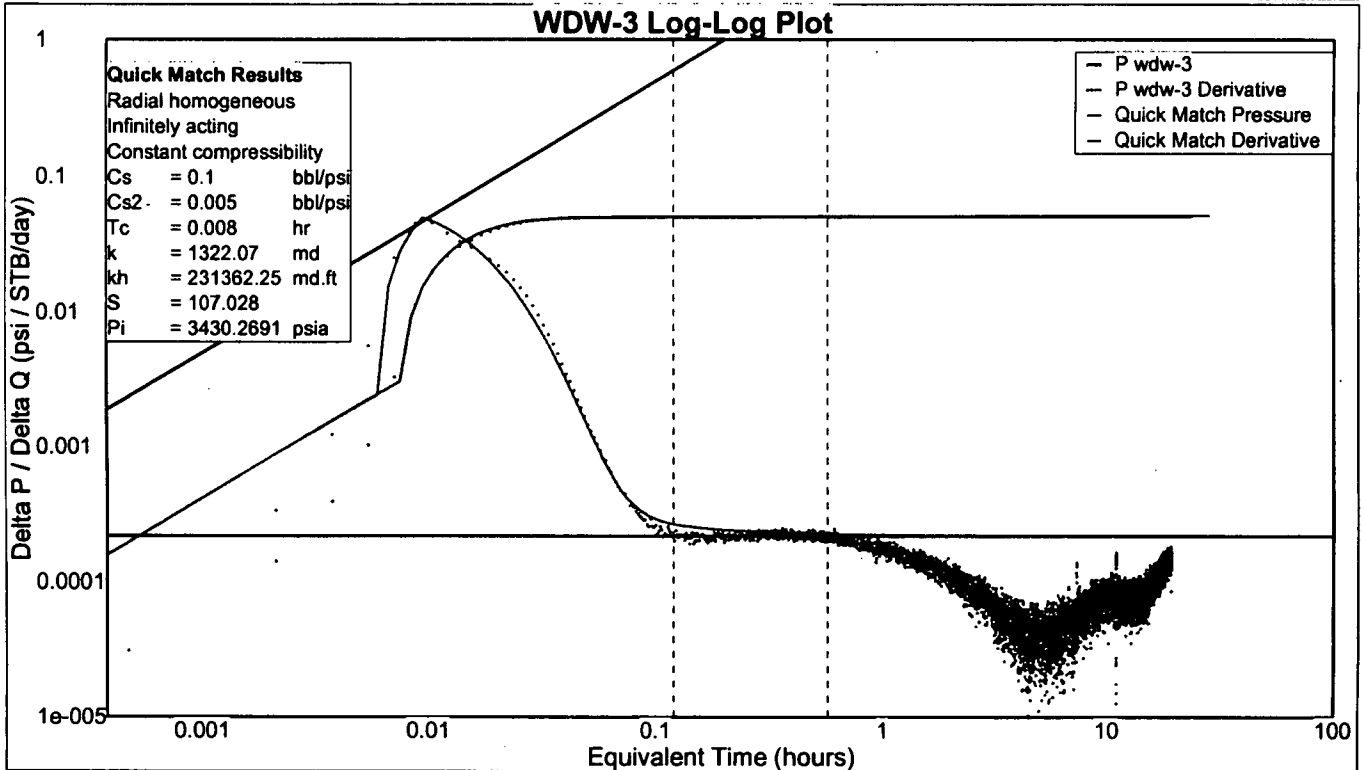
Slope : 4.75876

Intercept : 3430.27

Coefficient of Determination : 0.998783

	Radial flow
Extrapolated pressure	3430.266493 psia
Pressure at dt = 1 hour	3443.109169 psia

Number of Intersections = 0



WDW-3 Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	8.4899e-3 bbl/psi
Dimensionless wellbore storage	479.634571
Permeability	1326.624884 md
Permeability-thickness	2.3216e5 md.ft
Skin factor	107.421824

Quick Match Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Log-Log Plot Line Details

Line type : Radial flow
Slope : 0
Intercept : 0.000218953
Coefficient of Determination : Not Used

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Report File:

2008_WDW-3.pan

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Well Test Analysis Report

Line type : Wellbore storage

Slope : 1

Intercept : 4.90779

Coefficient of Determination : Not Used

Number of Intersections = 0

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Gaines Well #3
Date	August 24 - 30, 2009
Test	Injection/Falloff
Gauge Type/Serial Number	Spartek.#80780
Gauge Depth	7,663 feet
Injection Interval	7,660 feet - 8,620 feet
Completion Type	Perforated
Top of Fill	8,986 feet
Analyst	LKM
Subsurface Project No.	70A6365

Reservoir Description

Fluid type : Water
 Well orientation : Vertical
 Number of wells : 1
 Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3475.675745 psia
Temperature	114.820000 deg F

Well Parameters Data

	Well 1
Well radius	0.3646 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.043509 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.035103 bbl/psi
Time Change for Second Storage	0.016000 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	3484.080000 psia
Check Temperature	114.820000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.540 cp

Fluid Parameters Data (cont)

	Layer 1
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

Layer 1 Correlations

Not Used

Layer 1 Model Data

Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	718.830698 md
Skin factor (Well 1)	15.588053

Rate Change Data

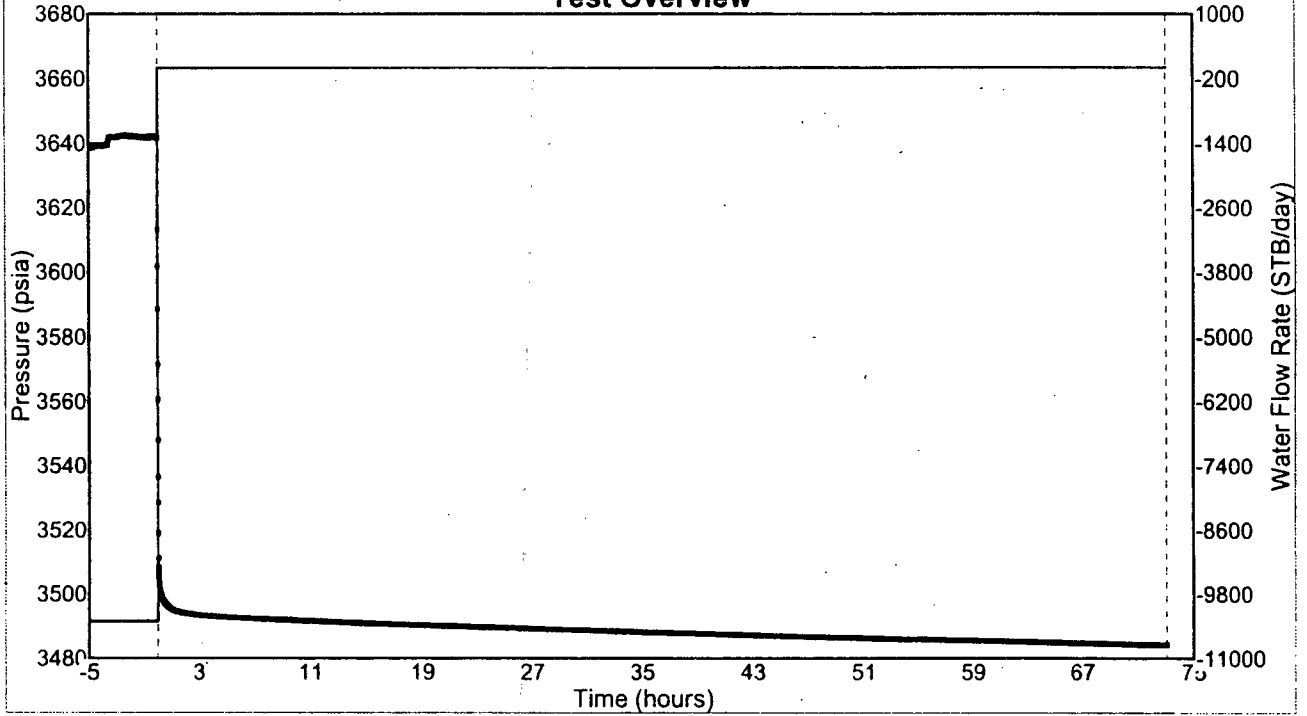
Time Hours	Pressure psia	Rate STB/day
-925.483330	0.000000	-7006.000000
-901.483330	0.000000	-7073.940000
-877.483330	0.000000	-6813.490000
-853.483330	0.000000	-7164.460000
-829.483330	0.000000	-7021.020000
-805.483330	0.000000	-7107.950000
-781.483330	0.000000	-7208.180000
-757.483330	0.000000	-7508.980000
-733.483330	0.000000	-7197.630000
-709.483330	0.000000	-7375.970000
-685.483330	0.000000	-7304.950000
-661.483330	0.000000	-7168.640000
-637.483330	0.000000	-6937.170000
-613.483330	0.000000	-6870.560000
-589.483330	0.000000	-7152.810000
-565.483330	0.000000	-6632.390000
-541.483330	0.000000	-6736.960000
-517.483330	0.000000	-6677.310000
-493.483330	0.000000	-6495.640000
-469.483330	0.000000	-6562.180000
-445.483330	0.000000	-6656.030000
-421.483330	0.000000	-6903.070000
-397.483330	0.000000	-7067.910000
-373.483330	0.000000	-6741.210000
-349.483330	0.000000	-6845.950000
-325.483330	0.000000	-7010.790000
-301.483330	0.000000	-6822.860000
-277.483330	0.000000	-6786.210000
-253.483330	0.000000	-6905.040000

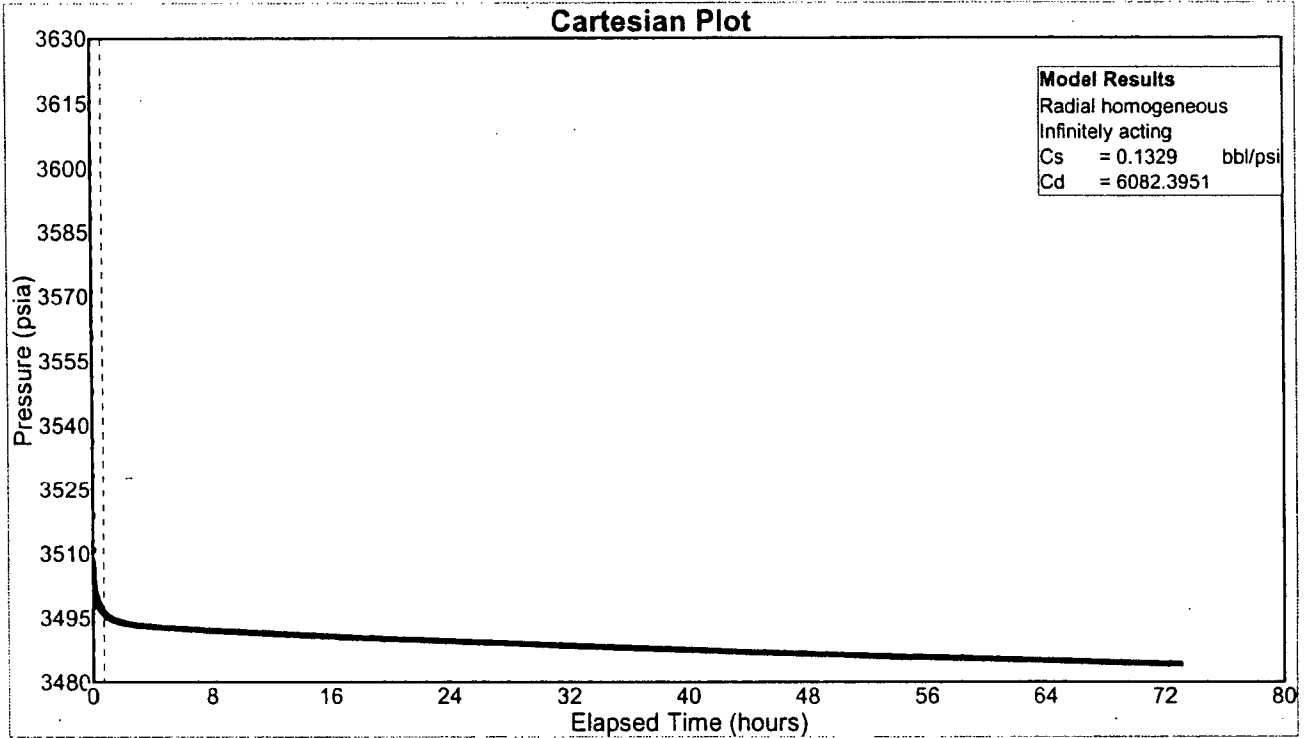
Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-229.483330	0.000000	-7031.590000
-205.483330	0.000000	-7052.840000
-181.483330	0.000000	-7064.320000
-157.483330	0.000000	-7042.000000
-133.483330	0.000000	-6504.350000
-109.483330	0.000000	-6133.120000
-85.483330	0.000000	-8259.030000
-72.983330	0.000000	-1.0413e4
-61.483330	0.000000	-1.0585e4
-37.483330	0.000000	-1.0407e4
-13.483330	0.000000	-1.0446e4
0.000007	3641.573000	-1.0323e4
73.037550	3484.078000	0.000000



Test Overview





Cartesian Plot Model Results

Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Wellbore storage coefficient	0.13295 bbl/psi
Dimensionless wellbore storage	6082.395108

Cartesian Plot Line Details

Line type : Wellbore storage

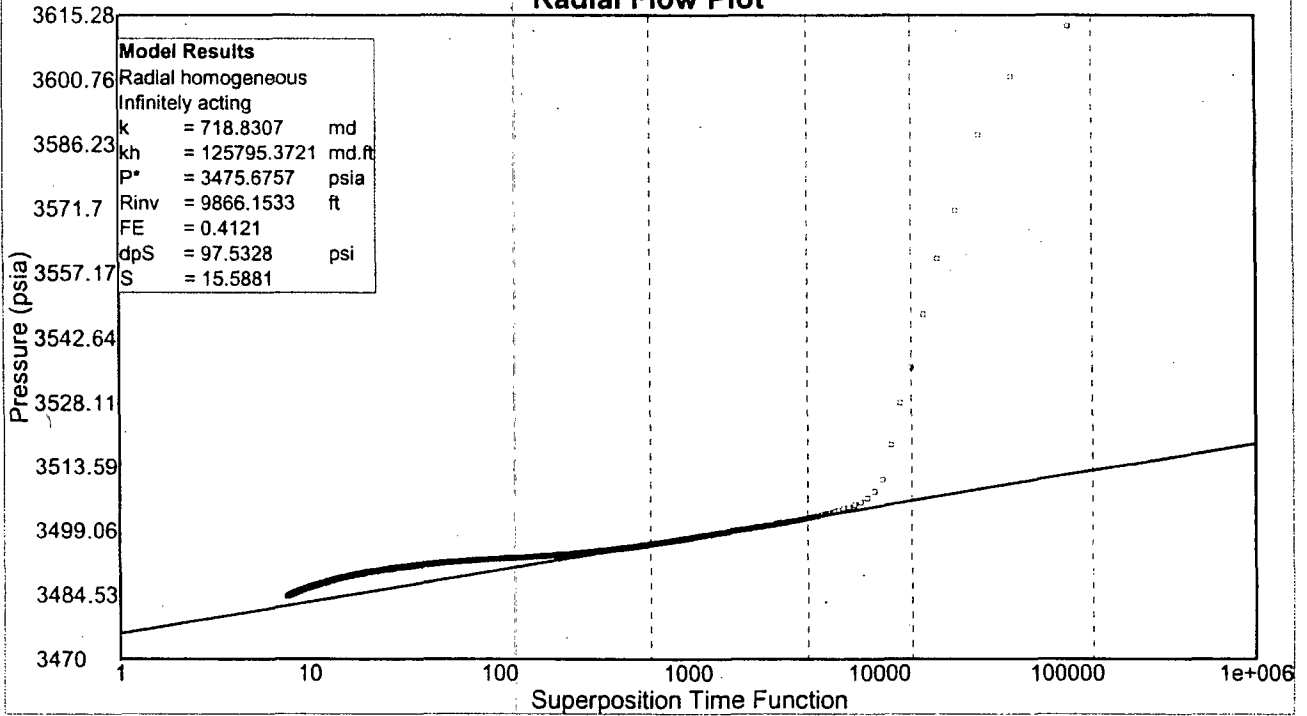
Slope : -3235.16

Intercept : 3627.89

Coefficient of Determination : 0.994898

Number of Intersections = 0

Radial Flow Plot



Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Permeability	718.830698 md
Permeability-thickness	1.2580e5 md.ft
Extrapolated pressure	3475.675745 psia
Radius of investigation	9866.153307 ft
Flow efficiency	0.412089
dP skin (constant rate)	97.532793 psi
Skin factor	15.588053

Radial Flow Plot Line Details

Line type : Radial flow

Slope : 7.20352

Intercept : 3475.68

Coefficient of Determination : 0.998862

	Radial flow
Extrapolated pressure	3475.675745 psia
Pressure at dt = 1 hour	3494.712188 psia

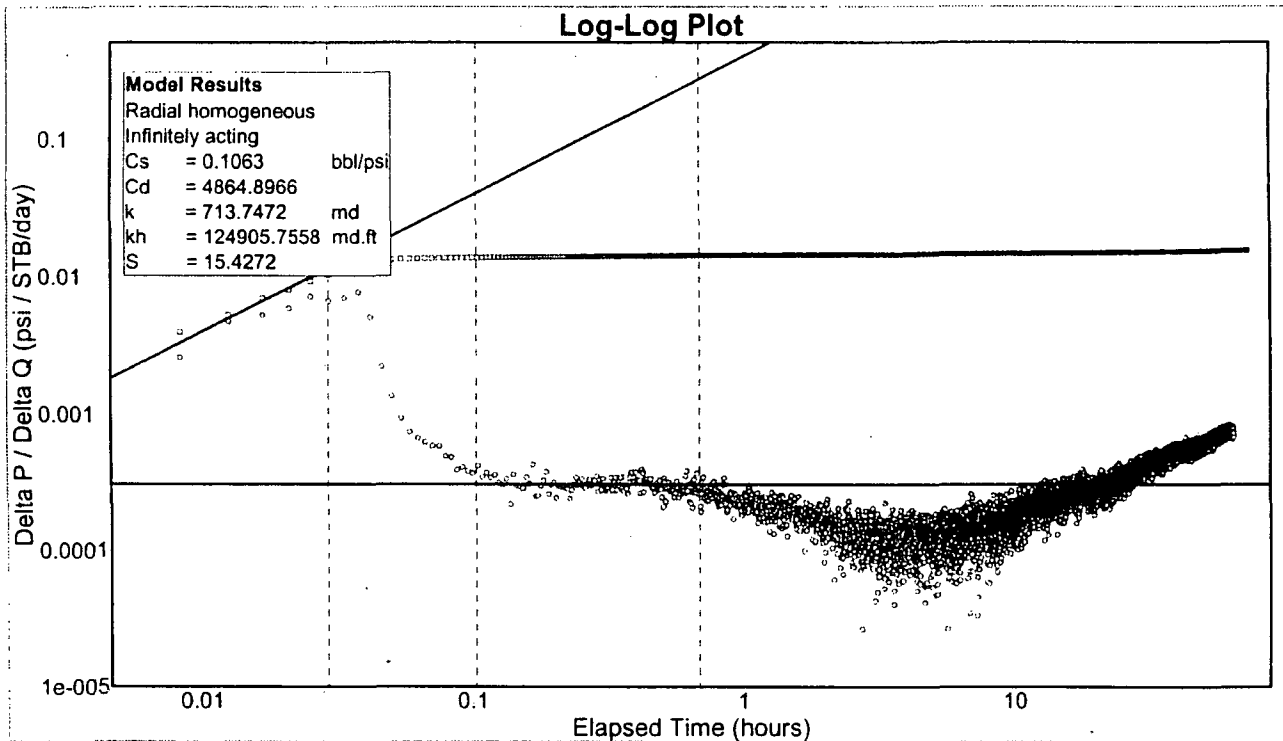
Number of Intersections = 0



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Well Test Analysis Report



Log-Log Plot Model Results

Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Wellbore storage coefficient	0.106338 bbl/psi
Dimensionless wellbore storage	4864.896562
Permeability	713.747176 md
Permeability-thickness	1.2491e5 md.ft
Skin factor	15.427202

Log-Log Plot Line Details

Line type : Wellbore storage

Slope : 1

Intercept : 0.391834

Coefficient of Determination : Not Used

Line type : Radial flow

Slope : 0

Intercept : 0.000305222

Coefficient of Determination : Not Used

Number of Intersections = 0

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Gaines Well No. 3
Date	November 8 - 13, 2010
Gauge Type / Serial Number	Spartek / Top No. 76585 & Bottom No. 76648
Gauge Depth	7660 feet
Injection Interval	7660 feet to 8620 feet
Completion Type	Perforated
Top of Fill	8986 feet
Analyst	RLS
Subsurface Project No.	70A6516

Remarks:



Reservoir Description

Fluid type : Water
 Well orientation : Vertical
 Number of wells : 1
 Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3622.164936 psia
Temperature	0.000000 deg F

Well Parameters Data

	Well 1
Well radius	0.3246 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.040651 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.000000 bbl/psi
Time Change for Second Storage	0.000000 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	3622.870000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.570 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

Layer 1 Correlations

Not Used

Layer Boundaries Data

Layer 1 Boundary Type : Infinitely acting

	Layer 1
L1	0.000000 ft
L2	0.000000 ft
L3	0.000000 ft
L4	0.000000 ft
Drainage area	0.000000 acres
Dietz shape factor	0.000000

Layer 1 Model Data

Layer 1 Model Type : Radial homogeneous

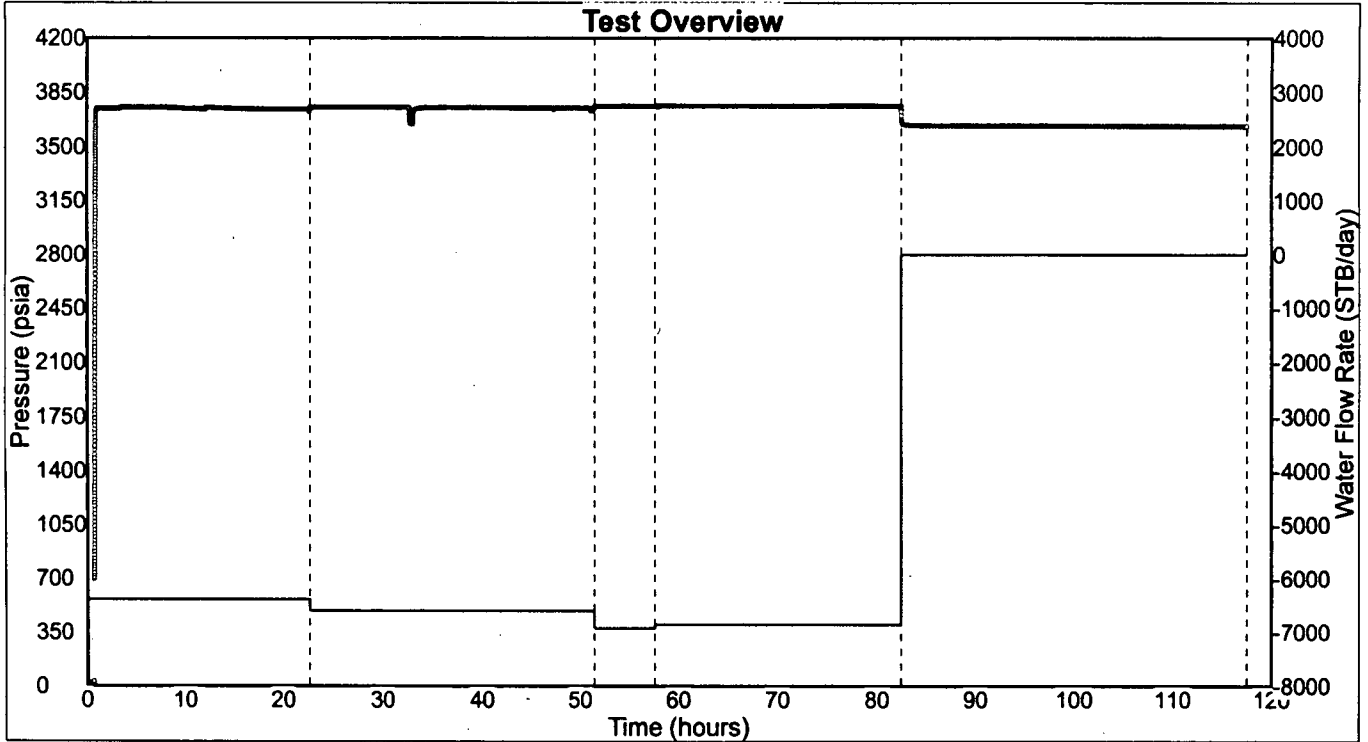
	Layer 1
Permeability	567.835809 md
Skin factor (Well 1)	14.63743

Rate Change Data

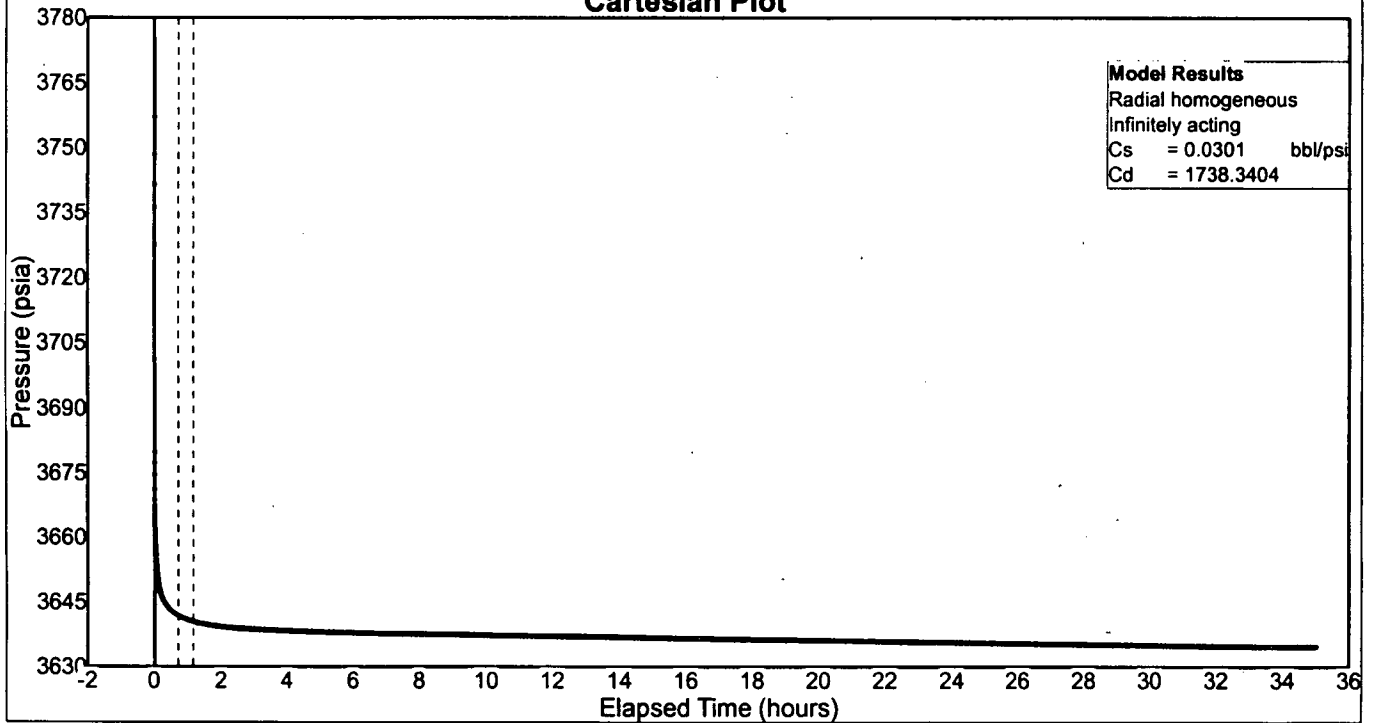
Time	Pressure	Rate
Hours	psia	STB/day
-896.530000	0.000000	-6556.478291
-800.530000	0.000000	-6601.295752
-752.530000	0.000000	-6527.197437
-680.530000	0.000000	-6455.564906
-560.530000	0.000000	-6495.140172
-488.530000	0.000000	-6447.882191
-416.530000	0.000000	-6579.061020
-392.530000	0.000000	-6494.151021
-368.530000	0.000000	-6407.507286
-344.530000	0.000000	-6502.572720
-320.530000	0.000000	-6550.762753
-296.530000	0.000000	-6537.209766
-272.530000	0.000000	-7090.581141
-224.530000	0.000000	-6405.124987
-176.530000	0.000000	-6511.595238
-152.530000	0.000000	-6457.245522
-80.530000	0.000000	-6400.552384
-56.530000	0.000000	-6553.585991
-32.530000	0.000000	-6481.716753
-8.530000	0.000000	-6357.386028
22.640735	3754.422743	-6388.006784
51.435332	3761.219618	-6599.617354
57.610353	3764.865451	-6928.849572
82.475272	3765.713641	-6857.001709
117.500343	3634.618056	0.000000



Well Test Analysis Report



Cartesian Plot



Cartesian Plot Model Results

Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.030117 bbl/psi
Dimensionless wellbore storage	1738.340434

Cartesian Plot Line Details

Line type : Wellbore storage

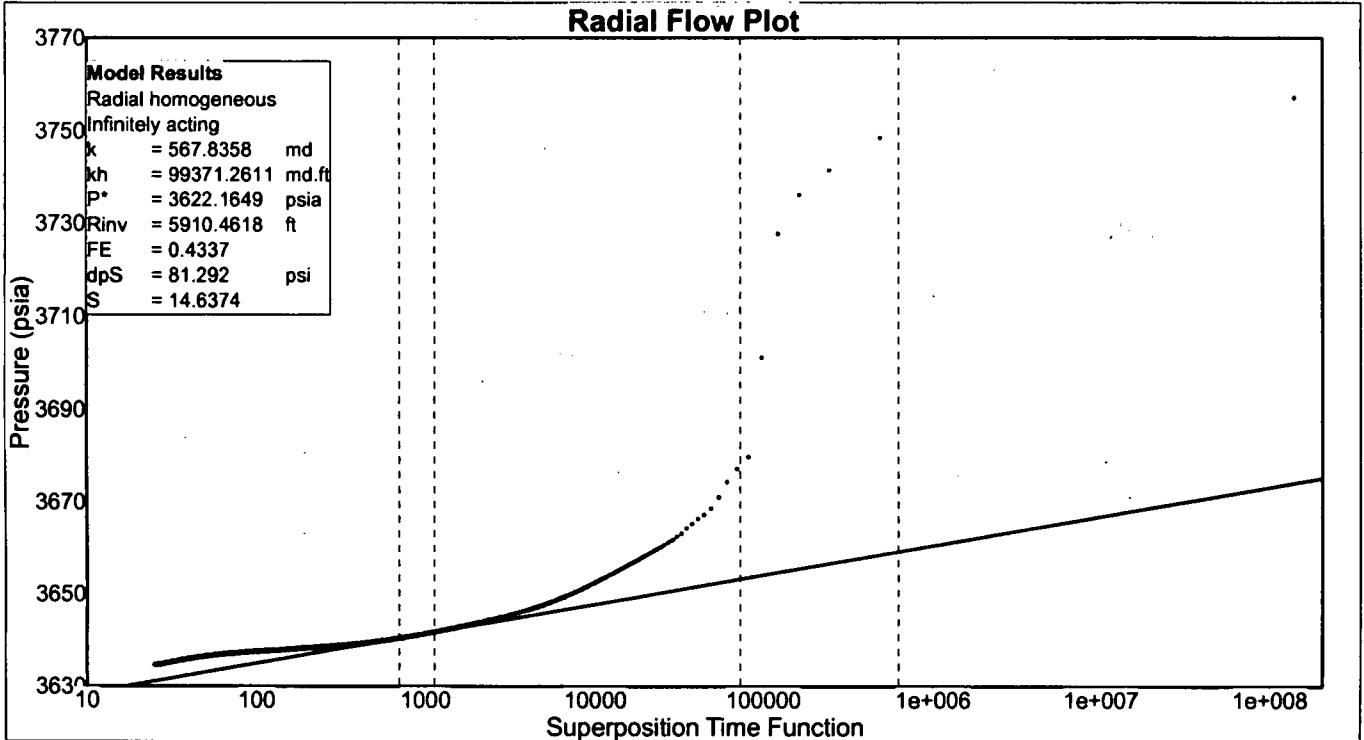
Slope : -9486.62

Intercept : 3780.53

Coefficient of Determination : 0.923237

Number of Intersections = 0

Well Test Analysis Report



Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Permeability	567.835778 md
Permeability-thickness	9.9371e4 md.ft
Extrapolated pressure	3622.164936 psia
Radius of investigation	5910.461759 ft
Flow efficiency	0.433697
dP skin (constant rate)	81.291998 psi
Skin factor	14.637429

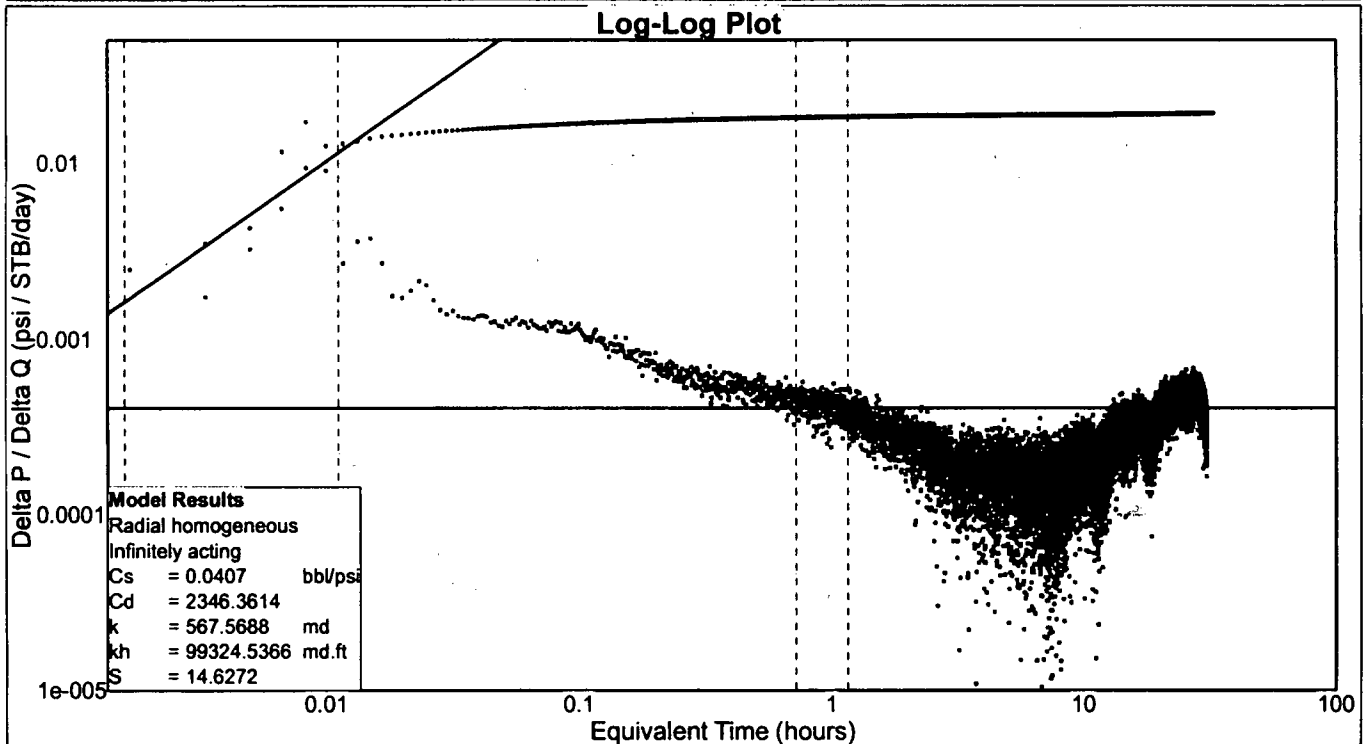
Radial Flow Plot Line Details

Line type : Radial flow
Slope : 6.39394
Intercept : 3622.16
Coefficient of Determination : Not Used

	Radial flow
Extrapolated pressure	3622.164936 psia
Pressure at dt = 1 hour	3640.793976 psia

Number of Intersections = 0

Well Test Analysis Report



Log-Log Plot Model Results
 Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.040651 bbl/psi
Dimensionless wellbore storage	2346.361416
Permeability	567.56878 md
Permeability-thickness	9.9325e4 md.ft
Skin factor	14.627163

Log-Log Plot Line Details

Line type : Radial flow
 Slope : 0
 Intercept : 0.000405157
 Coefficient of Determination : Not Used

Line type : Wellbore storage
 Slope : 1
 Intercept : 1.02498
 Coefficient of Determination : Not Used
 Number of Intersections = 0

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Subsurface Technology, Inc

Report File:

2011 Gaines Well-3 rev.pan

PanSystem Version 3.5

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Gaines Well No. 3
Date	January 21 - 28, 2012
Gauge Type / Serial Number	Spartek / Top No. 77120 & Bottom No. 76404
Gauge Depth	7660 feet
Injection Interval	7660 feet to 8620 feet
Completion Type	Perforated
Top of Fill	8986 feet
Analyst	RLS
Subsurface Project No.	70A6645

**Reservoir Description**

Fluid type : Water
 Well orientation : Vertical
 Number of wells : 1
 Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3622.164936 psia
Temperature	0.000000 deg F

Well Parameters Data

	Well 1
Well radius	0.3246 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.11809 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.000000 bbl/psi
Time Change for Second Storage	0.000000 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	3622.870000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.570 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1



Layer 1 Correlations

Not Used

Layer 1 Model Data

Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	596.528914 md
Skin factor (Well 1)	27.240663

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-11208.000000	0.000000	-6398.265381
-11184.000000	0.000000	-6398.265381
-11160.000000	0.000000	-6398.265381
-11136.000000	0.000000	-6547.910679
-11112.000000	0.000000	-6398.265381
-11088.000000	0.000000	-6398.265381
-11064.000000	0.000000	-6540.428467
-11040.000000	0.000000	-6398.265381
-11016.000000	0.000000	-6098.977400
-10992.000000	0.000000	-6398.265381
-10968.000000	0.000000	-6547.910679
-10944.000000	0.000000	-6398.265381
-10920.000000	0.000000	-7433.133022
-10896.000000	0.000000	-7141.325160
-10872.000000	0.000000	-6398.265381
-10848.000000	0.000000	-6398.265381
-10824.000000	0.000000	-6256.104911
-10800.000000	0.000000	-6248.622698
-10776.000000	0.000000	-6248.622698
-10752.000000	0.000000	-6547.910679
-10728.000000	0.000000	-6398.265381
-10704.000000	0.000000	-6398.265381
-10680.000000	0.000000	-6398.265381
-10656.000000	0.000000	-6547.910679
-10632.000000	0.000000	-6248.622698
-10608.000000	0.000000	-6540.428467
-10584.000000	0.000000	-6842.037179
-10560.000000	0.000000	0.000000
-10536.000000	0.000000	0.000000
-10512.000000	0.000000	-6540.428467
-10488.000000	0.000000	-6248.622698
-10464.000000	0.000000	-6241.140485
-10440.000000	0.000000	-6398.265381
-10416.000000	0.000000	-6398.265381
-10392.000000	0.000000	-6398.265381
-10368.000000	0.000000	-6547.910679
-10344.000000	0.000000	-6398.265381
-10320.000000	0.000000	-6405.747593
-10296.000000	0.000000	-6248.622698
-10272.000000	0.000000	-6098.977400
-10248.000000	0.000000	-6248.622698

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-10224.000000	0.000000	-6098.977400
-10200.000000	0.000000	-6098.977400
-10176.000000	0.000000	-6248.622698
-10152.000000	0.000000	-6098.977400
-10128.000000	0.000000	-6248.622698
-10104.000000	0.000000	-5949.334717
-10080.000000	0.000000	-6106.459612
-10056.000000	0.000000	-6098.977400
-10032.000000	0.000000	0.000000
-10008.000000	0.000000	-6547.910679
-9984.000000	0.000000	-6398.265381
-9960.000000	0.000000	-6547.910679
-9936.000000	0.000000	-6398.265381
-9912.000000	0.000000	-6540.428467
-9888.000000	0.000000	-6547.910679
-9864.000000	0.000000	-6248.622698
-9840.000000	0.000000	-6248.622698
-9816.000000	0.000000	-6098.977400
-9792.000000	0.000000	-6398.265381
-9768.000000	0.000000	-6398.265381
-9744.000000	0.000000	-6248.622698
-9720.000000	0.000000	-5804.850900
-9696.000000	0.000000	-5949.334717
-9672.000000	0.000000	0.000000
-9648.000000	0.000000	0.000000
-9624.000000	0.000000	0.000000
-9600.000000	0.000000	-6690.071150
-9576.000000	0.000000	-6398.265381
-9552.000000	0.000000	-6547.910679
-9528.000000	0.000000	-6405.747593
-9504.000000	0.000000	-6547.910679
-9480.000000	0.000000	-6547.910679
-9456.000000	0.000000	-6405.747593
-9432.000000	0.000000	-6540.428467
-9408.000000	0.000000	-6697.553362
-9384.000000	0.000000	-6547.910679
-9360.000000	0.000000	-6547.910679
-9336.000000	0.000000	-6248.622698
-9312.000000	0.000000	-6248.622698
-9288.000000	0.000000	-6398.265381
-9264.000000	0.000000	-6547.910679

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-9240.000000	0.000000	-6547.910679
-9216.000000	0.000000	-6547.910679
-9192.000000	0.000000	-6697.553362
-9168.000000	0.000000	-6248.622698
-9144.000000	0.000000	-6697.553362
-9120.000000	0.000000	-6697.553362
-9096.000000	0.000000	-6690.071150
-9072.000000	0.000000	-6547.910679
-9048.000000	0.000000	-6398.265381
-9024.000000	0.000000	-6547.910679
-9000.000000	0.000000	-6547.910679
-8976.000000	0.000000	-6540.428467
-8952.000000	0.000000	-6398.265381
-8928.000000	0.000000	-6547.910679
-8904.000000	0.000000	-6547.910679
-8880.000000	0.000000	-6547.910679
-8856.000000	0.000000	-6398.265381
-8832.000000	0.000000	-6547.910679
-8808.000000	0.000000	-6398.265381
-8784.000000	0.000000	-6547.910679
-8760.000000	0.000000	-6398.265381
-8736.000000	0.000000	0.000000
-8712.000000	0.000000	-5949.334717
-8688.000000	0.000000	-6547.910679
-8664.000000	0.000000	-6398.265381
-8640.000000	0.000000	-6697.553362
-8616.000000	0.000000	-6547.910679
-8592.000000	0.000000	0.000000
-8568.000000	0.000000	-3.0346e4
-8544.000000	0.000000	-575.822689
-8520.000000	0.000000	-6091.495187
-8496.000000	0.000000	0.000000
-8472.000000	0.000000	0.000000
-8448.000000	0.000000	-6697.553362
-8424.000000	0.000000	-6909.119176
-8400.000000	0.000000	-4919.370117
-8376.000000	0.000000	0.000000
-8352.000000	0.000000	-4019.441267
-8328.000000	0.000000	-3420.865566
-8304.000000	0.000000	-4455.730852
-8280.000000	0.000000	-4612.858364
-8256.000000	0.000000	-5206.272845
-8232.000000	0.000000	-5505.560826
-8208.000000	0.000000	-5655.205601
-8184.000000	0.000000	-5056.630162
-8160.000000	0.000000	-5942.110421
-8136.000000	0.000000	-5206.272845
-8112.000000	0.000000	-5505.560826
-8088.000000	0.000000	0.000000

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-8064.000000	0.000000	-5655.205601
-8040.000000	0.000000	0.000000
-8016.000000	0.000000	-6842.037179
-7992.000000	0.000000	0.000000
-7968.000000	0.000000	-6697.553362
-7944.000000	0.000000	-6547.910679
-7920.000000	0.000000	-6398.265381
-7896.000000	0.000000	-6697.553362
-7872.000000	0.000000	-7290.970459
-7848.000000	0.000000	-4463.213065
-7824.000000	0.000000	0.000000
-7800.000000	0.000000	-5949.334717
-7776.000000	0.000000	0.000000
-7752.000000	0.000000	-149.336406
-7728.000000	0.000000	-4612.858364
-7704.000000	0.000000	-4762.501046
-7680.000000	0.000000	-3570.508248
-7656.000000	0.000000	0.000000
-7632.000000	0.000000	-4463.213065
-7608.000000	0.000000	-4762.501046
-7584.000000	0.000000	-4313.570382
-7560.000000	0.000000	-5949.334717
-7536.000000	0.000000	-5520.525251
-7512.000000	0.000000	-6547.910679
-7488.000000	0.000000	-4612.858364
-7464.000000	0.000000	0.000000
-7440.000000	0.000000	-5206.272845
-7416.000000	0.000000	-6697.553362
-7392.000000	0.000000	-5505.560826
-7368.000000	0.000000	0.000000
-7344.000000	0.000000	-6398.265381
-7320.000000	0.000000	-5804.850900
-7296.000000	0.000000	-6098.977400
-7272.000000	0.000000	0.000000
-7248.000000	0.000000	-6398.265381
-7224.000000	0.000000	-5855.419922
-7200.000000	0.000000	-5804.850900
-7176.000000	0.000000	-6398.265381
-7152.000000	0.000000	-6098.977400
-7128.000000	0.000000	0.000000
-7104.000000	0.000000	-5949.334717
-7080.000000	0.000000	-4612.858364
-7056.000000	0.000000	0.000000
-7032.000000	0.000000	-1490.971854
-7008.000000	0.000000	-4422.857143
-6984.000000	0.000000	-5385.714111
-6960.000000	0.000000	-4902.857143
-6936.000000	0.000000	-5179.999826
-6912.000000	0.000000	-5074.285714

**Rate Change Data (cont)**

Time Hours	Pressure psia	Rate STB/day
-6888.000000	0.000000	-5131.428746
-6864.000000	0.000000	-4797.143032
-6840.000000	0.000000	-4694.285889
-6816.000000	0.000000	-2602.857056
-6792.000000	0.000000	-4800.000000
-6768.000000	0.000000	-4800.000000
-6744.000000	0.000000	0.000000
-6720.000000	0.000000	-7502.856968
-6696.000000	0.000000	0.000000
-6672.000000	0.000000	-4662.857143
-6648.000000	0.000000	-4425.714111
-6624.000000	0.000000	-5074.285714
-6600.000000	0.000000	-3500.000087
-6576.000000	0.000000	-4974.285540
-6552.000000	0.000000	-5177.142857
-6528.000000	0.000000	-5214.285540
-6504.000000	0.000000	-5080.000174
-6480.000000	0.000000	-5314.285714
-6456.000000	0.000000	0.000000
-6432.000000	0.000000	-5177.142857
-6408.000000	0.000000	-5177.142857
-6384.000000	0.000000	-5348.571429
-6360.000000	0.000000	0.000000
-6336.000000	0.000000	-5108.571429
-6312.000000	0.000000	-4971.428571
-6288.000000	0.000000	-5214.285540
-6264.000000	0.000000	-5108.571429
-6240.000000	0.000000	-4800.000000
-6216.000000	0.000000	-5102.856968
-6192.000000	0.000000	-5214.285540
-6168.000000	0.000000	-4865.714460
-6144.000000	0.000000	-5382.857143
-6120.000000	0.000000	-5145.714111
-6096.000000	0.000000	-5042.856968
-6072.000000	0.000000	-5239.999826
-6048.000000	0.000000	-5217.143032
-6024.000000	0.000000	-5280.000000
-6000.000000	0.000000	-5214.285540
-5976.000000	0.000000	-5179.999826
-5952.000000	0.000000	-5211.428571
-5928.000000	0.000000	-5208.571603
-5904.000000	0.000000	-5179.999826
-5880.000000	0.000000	-5248.571254
-5856.000000	0.000000	-5140.000174
-5832.000000	0.000000	-4968.571603
-5808.000000	0.000000	-5080.000174
-5784.000000	0.000000	-5114.285889
-5760.000000	0.000000	-5074.285714
-5736.000000	0.000000	-5111.428397

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-5712.000000	0.000000	-5071.428746
-5688.000000	0.000000	-5211.428571
-5664.000000	0.000000	-5591.428397
-5640.000000	0.000000	-5588.571429
-5616.000000	0.000000	-5588.571429
-5592.000000	0.000000	-5591.428397
-5568.000000	0.000000	-5237.142857
-5544.000000	0.000000	-5754.285540
-5520.000000	0.000000	-5242.857317
-5496.000000	0.000000	-4731.428571
-5472.000000	0.000000	-5242.857317
-5448.000000	0.000000	-5011.428746
-5424.000000	0.000000	-5242.857317
-5400.000000	0.000000	-5108.571429
-5376.000000	0.000000	-5242.857317
-5352.000000	0.000000	-5042.856968
-5328.000000	0.000000	-5071.428746
-5304.000000	0.000000	-5142.857143
-5280.000000	0.000000	-5145.714111
-5256.000000	0.000000	-5140.000174
-5232.000000	0.000000	-5174.285889
-5208.000000	0.000000	-5143.661237
-5184.000000	0.000000	-5137.054269
-5160.000000	0.000000	-5142.857143
-5136.000000	0.000000	-5174.285889
-5112.000000	0.000000	-5074.285714
-5088.000000	0.000000	0.000000
-5064.000000	0.000000	-5042.856968
-5040.000000	0.000000	0.000000
-5016.000000	0.000000	-5345.714460
-4992.000000	0.000000	-5102.856968
-4968.000000	0.000000	0.000000
-4944.000000	0.000000	-5108.571429
-4920.000000	0.000000	-5074.285714
-4896.000000	0.000000	0.000000
-4872.000000	0.000000	-4114.285714
-4848.000000	0.000000	-5105.714460
-4824.000000	0.000000	-5074.285714
-4800.000000	0.000000	-5040.000000
-4776.000000	0.000000	-5042.856968
-4752.000000	0.000000	-5008.571254
-4728.000000	0.000000	-5077.142683
-4704.000000	0.000000	-5080.000174
-4680.000000	0.000000	0.000000
-4656.000000	0.000000	-4974.285540
-4632.000000	0.000000	-4688.571429
-4608.000000	0.000000	-4834.285714
-4584.000000	0.000000	0.000000
-4560.000000	0.000000	-5005.714286

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-4536.000000	0.000000	-4834.285714
-4512.000000	0.000000	-4771.428746
-4488.000000	0.000000	-4971.428571
-4464.000000	0.000000	-5008.571254
-4440.000000	0.000000	-4902.857143
-4416.000000	0.000000	-4797.143032
-4392.000000	0.000000	-4937.142857
-4368.000000	0.000000	-5002.857317
-4344.000000	0.000000	-4597.142683
-4320.000000	0.000000	0.000000
-4296.000000	0.000000	-4900.000174
-4272.000000	0.000000	-4934.285889
-4248.000000	0.000000	0.000000
-4224.000000	0.000000	-4937.142857
-4200.000000	0.000000	-4902.857143
-4176.000000	0.000000	-5002.857317
-4152.000000	0.000000	-5011.428746
-4128.000000	0.000000	-4468.571254
-4104.000000	0.000000	-4997.142857
-4080.000000	0.000000	-4968.571603
-4056.000000	0.000000	-4999.999826
-4032.000000	0.000000	-5002.857317
-4008.000000	0.000000	-4974.285540
-3984.000000	0.000000	-4965.714111
-3960.000000	0.000000	-4874.285889
-3936.000000	0.000000	0.000000
-3912.000000	0.000000	-4865.714460
-3888.000000	0.000000	-4934.285889
-3864.000000	0.000000	-4905.714111
-3840.000000	0.000000	-4902.857143
-3816.000000	0.000000	-5002.857317
-3792.000000	0.000000	-4942.857317
-3768.000000	0.000000	-4939.999826
-3744.000000	0.000000	-4934.285889
-3720.000000	0.000000	0.000000
-3696.000000	0.000000	-4765.714286
-3672.000000	0.000000	-4931.428397
-3648.000000	0.000000	-4937.142857
-3624.000000	0.000000	-4868.571429
-3600.000000	0.000000	-4905.714111
-3576.000000	0.000000	-5002.857317
-3552.000000	0.000000	-4937.142857
-3528.000000	0.000000	-4937.142857
-3504.000000	0.000000	-4931.428397
-3480.000000	0.000000	-4871.428397
-3456.000000	0.000000	-5037.143032
-3432.000000	0.000000	-4837.142683
-3408.000000	0.000000	-4939.999826
-3384.000000	0.000000	-4931.428397

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-3360.000000	0.000000	-4937.142857
-3336.000000	0.000000	-4837.142683
-3312.000000	0.000000	-4974.285540
-3288.000000	0.000000	-5037.143032
-3264.000000	0.000000	-4942.857317
-3240.000000	0.000000	-4937.142857
-3216.000000	0.000000	-4868.571429
-3192.000000	0.000000	-4971.428571
-3168.000000	0.000000	-4937.142857
-3144.000000	0.000000	0.000000
-3120.000000	0.000000	-5419.999826
-3096.000000	0.000000	-5239.999826
-3072.000000	0.000000	-5208.571603
-3048.000000	0.000000	-4668.571603
-3024.000000	0.000000	-4871.428397
-3000.000000	0.000000	-4900.000174
-2976.000000	0.000000	-4934.285889
-2952.000000	0.000000	-4697.142857
-2928.000000	0.000000	-4868.571429
-2904.000000	0.000000	-4771.428746
-2880.000000	0.000000	-4928.571429
-2856.000000	0.000000	0.000000
-2832.000000	0.000000	-4871.428397
-2808.000000	0.000000	-4731.428571
-2784.000000	0.000000	-4834.285714
-2760.000000	0.000000	-4831.428746
-2736.000000	0.000000	-1948.571385
-2712.000000	0.000000	-4771.428746
-2688.000000	0.000000	-2022.857143
-2664.000000	0.000000	-4902.857143
-2640.000000	0.000000	-1242.857143
-2616.000000	0.000000	-4182.857143
-2592.000000	0.000000	-4802.856968
-2568.000000	0.000000	-4837.142683
-2544.000000	0.000000	-4634.285889
-2520.000000	0.000000	-4668.571603
-2496.000000	0.000000	-4731.428571
-2472.000000	0.000000	-4699.999826
-2448.000000	0.000000	-4597.142683
-2424.000000	0.000000	-4625.714460
-2400.000000	0.000000	-4797.143032
-2376.000000	0.000000	-4597.142683
-2352.000000	0.000000	0.000000
-2328.000000	0.000000	0.000000
-2304.000000	0.000000	-36.357143
-2280.000000	0.000000	-4483.702381
-2256.000000	0.000000	-4683.331018
-2232.000000	0.000000	-4498.543981
-2208.000000	0.000000	-4739.353257

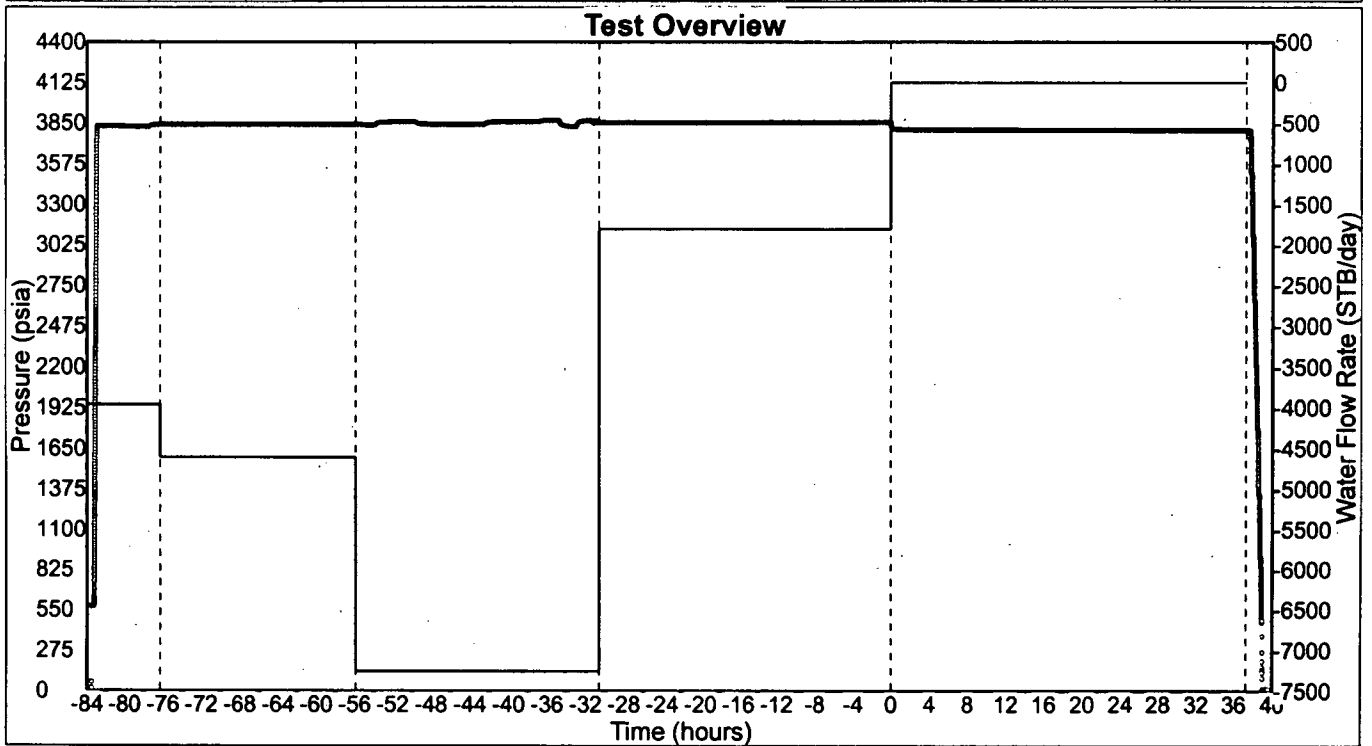


Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-2184.000000	0.000000	-4498.311508
-2160.000000	0.000000	-4739.888558
-2136.000000	0.000000	-4293.713624
-2112.000000	0.000000	-4625.099950
-2088.000000	0.000000	-4324.223628
-2064.000000	0.000000	-4827.789104
-2040.000000	0.000000	-4792.579034
-2016.000000	0.000000	-4881.841105
-1992.000000	0.000000	-4815.456267
-1968.000000	0.000000	-7234.171048
-1944.000000	0.000000	-6065.735284
-1920.000000	0.000000	-4486.401207
-1896.000000	0.000000	-4603.563244
-1872.000000	0.000000	-4207.539683
-1848.000000	0.000000	-3875.855076
-1824.000000	0.000000	-2134.996280
-1800.000000	0.000000	0.000000
-1776.000000	0.000000	0.000000
-1752.000000	0.000000	-3960.563740
-1728.000000	0.000000	-4768.571254
-1704.000000	0.000000	-5025.714111
-1680.000000	0.000000	-4831.428746
-1656.000000	0.000000	-5974.285714
-1632.000000	0.000000	-5991.428571
-1608.000000	0.000000	-8548.571254
-1584.000000	0.000000	-2231.428659
-1560.000000	0.000000	-5217.143032
-1536.000000	0.000000	-2905.714286
-1512.000000	0.000000	-5002.857317
-1488.000000	0.000000	-1.6786e4
-1464.000000	0.000000	-1314.285671
-1440.000000	0.000000	-4494.285540
-1416.000000	0.000000	-3597.142770
-1392.000000	0.000000	-4488.571603
-1368.000000	0.000000	-2294.285627
-1344.000000	0.000000	-5065.714286
-1320.000000	0.000000	-3974.285627
-1296.000000	0.000000	-4457.142857
-1272.000000	0.000000	-4971.428571
-1248.000000	0.000000	-4077.142770
-1224.000000	0.000000	-4428.571603
-1200.000000	0.000000	-4425.714111
-1176.000000	0.000000	0.000000
-1152.000000	0.000000	-4557.143032
-1128.000000	0.000000	-19.999999
-1104.000000	0.000000	-4971.428571
-1080.000000	0.000000	-4734.285540
-1056.000000	0.000000	-5008.571254
-1032.000000	0.000000	-4560.000000

Rate Change Data (cont)

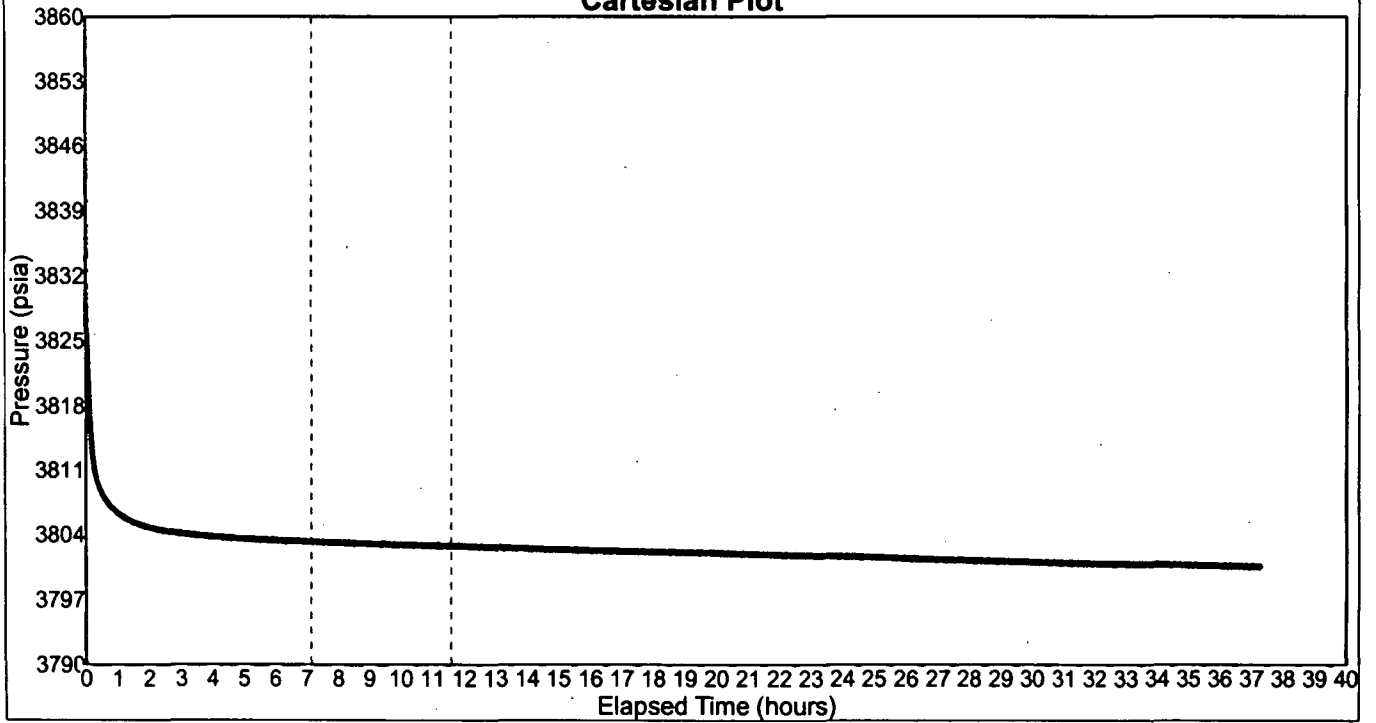
Time Hours	Pressure psia	Rate STB/day
-1008.000000	0.000000	-3331.428484
-984.000000	0.000000	-5111.428397
-960.000000	0.000000	-5008.571254
-936.000000	0.000000	-4865.714460
-912.000000	0.000000	-5242.857317
-888.000000	0.000000	-5182.857317
-864.000000	0.000000	-4179.999913
-840.000000	0.000000	-5042.856968
-816.000000	0.000000	-3791.428659
-792.000000	0.000000	-3871.428484
-768.000000	0.000000	-3057.142770
-744.000000	0.000000	-4768.571254
-720.000000	0.000000	-4348.571516
-696.000000	0.000000	0.000000
-672.000000	0.000000	-5202.857143
-648.000000	0.000000	-3871.428484
-624.000000	0.000000	-2097.142901
-600.000000	0.000000	-3608.571429
-576.000000	0.000000	-2514.285801
-552.000000	0.000000	-5034.285540
-528.000000	0.000000	-4865.714460
-504.000000	0.000000	-4968.571603
-480.000000	0.000000	-5040.000000
-456.000000	0.000000	-3088.571516
-432.000000	0.000000	-4217.142857
-408.000000	0.000000	-4699.999826
-384.000000	0.000000	-437.142857
-360.000000	0.000000	0.000000
-336.000000	0.000000	-3502.857056
-312.000000	0.000000	-4362.857143
-288.000000	0.000000	-3085.714286
-264.000000	0.000000	-4417.142683
-240.000000	0.000000	-3231.428571
-216.000000	0.000000	-3660.000000
-192.000000	0.000000	-4634.285889
-168.000000	0.000000	-4491.428571
-144.000000	0.000000	-5322.857143
-120.000000	0.000000	-4588.571254
-96.000000	0.000000	-1414.285714
-76.289593	3841.764422	-3960.000000
-55.927602	3842.748942	-4611.428571
-30.569832	3852.797833	-7262.856968
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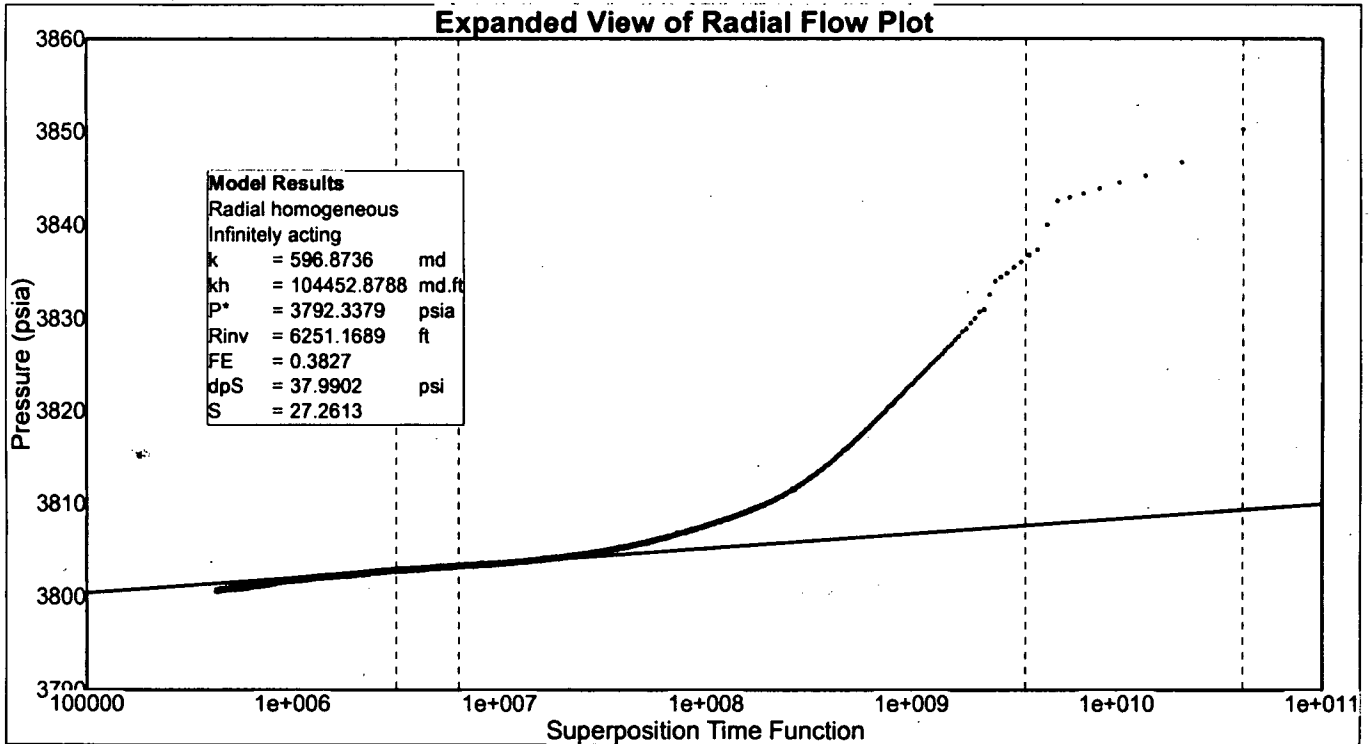




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Cartesian Plot





Expanded View of Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Permeability	596.873593 md
Permeability-thickness	1.0445e5 md.ft
Extrapolated pressure	3792.337923 psia
Radius of investigation	6251.168856 ft
Flow efficiency	0.382731
dP skin (constant rate)	37.990201 psi
Skin factor	27.261314

Expanded View of Radial Flow Plot Line Details

Line type : Radial flow

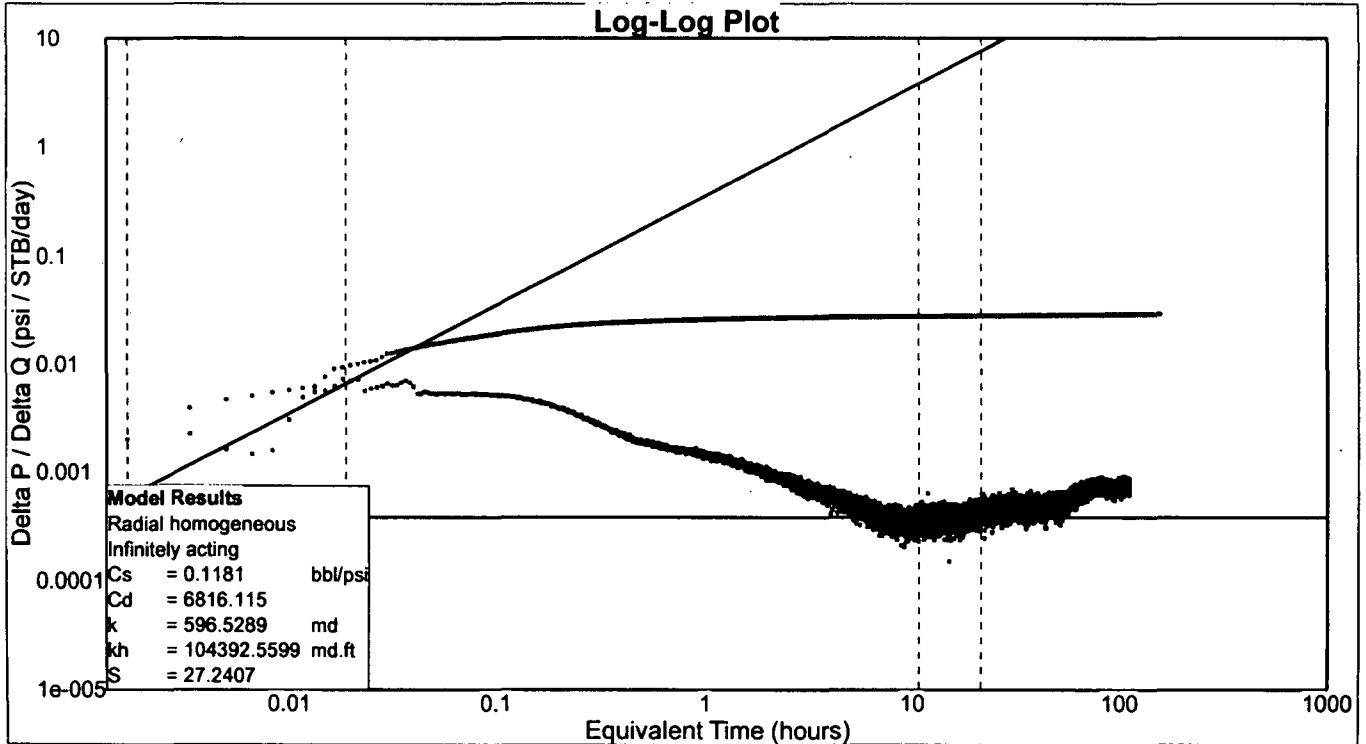
Slope : 1.60439

Intercept : 3792.34

Coefficient of Determination : 0.899916

	Radial flow
Extrapolated pressure	3792.337923 psia
Pressure at dt = 1 hour	3804.910506 psia

Number of Intersections = 0



Log-Log Plot Model Results
 Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.11809 bbl/psi
Dimensionless wellbore storage	6816.114987
Permeability	596.528914 md
Permeability-thickness	1.0439e5 md.ft
Skin factor	27.240663

Log-Log Plot Line Details

Line type : Wellbore storage

Slope : 1

Intercept : 0.352838

Coefficient of Determination : Not Used

Line type : Radial flow

Slope : 0

Intercept : 0.000385487

Coefficient of Determination : Not Used

Number of Intersections = 0

APPENDIX G

Comparison of Permeability, Transmissibility, Skin, False Extrapolated Pressure, and Fill Depth

Date of Test	Permeability (k)	Transmissibility (kh/u)	Skin (s)	False Extrapolated Pressure (p*)	Fill Depth
January 22 - 27, 2012	597 md	183,293 md-ft/cp	27.26	3792.34 psia	8,986 feet
November 10 - 13, 2010	568 md	174,376 md-ft/cp	14.64	3622.16 psia	8,986 feet
August 27 - 30, 2009	719 md	233,008 md-ft/cp	54.07	3,475.68 psia	8,986 feet
April 1 - 2, 2008	1,322 md	321,411 md-ft/cp	107	3,430.27 psia	N/A
Permit Parameters	250 md	40,094 md-ft-cp	N/A	N/A	N/A

APPENDIX H

WDW-3 CONSTRUCTION INFORMATION





**RE-ENTRY AND COMPLETION REPORT
WASTE DISPOSAL WELL NO. 3**

**NAVAJO REFINING COMPANY
Artesia, New Mexico**

SUBSURFACE PROJECT NO. 70F5826

December 2006

PREPARED BY

**SUBSURFACE CONSTRUCTION CORP.
6925 Portwest Dr., Suite 110
Houston, Texas 77024**



February 5, 2006

Mr. Darrell Moore
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211

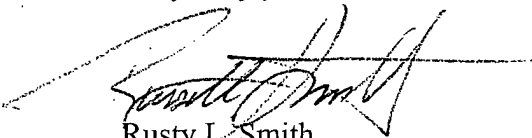
RE: Re-Entry and Completion Report Waste Disposal Well No. 3;
Subsurface Project No. 70F5826

Dear Darrell:

Enclosed are four (4) copies of the above-referenced report. Four copies have been included for your records and for the State of New Mexico Energy Minerals and Natural Resources Department, Oil Conservation Division.

If you should have any questions, please feel free to contact me at (713) 880-4640.

Very truly yours,



Rusty L. Smith
Project Engineer, EIT

RLS/bl

Enclosures

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	vii
1.0 INTRODUCTION	1
2.0 SUMMARY OF DAILY OPERATIONS	1
2.1 LOCATION CLEARING AND RIG MOBILIZATION	2
2.2 DRILLING OF CAST IRON BRIDGE PLUGS AND CEMENT SQUEEZING OF THE PERFORATIONS	3
2.3 LOGGING AND PERFORATING THE INJECTION INTERVAL	6
2.4 FORMATION SAMPLE COLLECTION AND INJECTION TESTING OF THE WELL	7
2.5 FINDING AND REPAIRING CASING LEAKS	8
2.6 RUNNING THE 4-1/2-INCH, 11.6 LB/FT TUBING AND SETTING THE PACKER.....	9
2.7 INSTALLATION OF THE WELLHEAD	9
2.8 PRESSURE BUILD UP AND FALLOFF TESTING	10
2.9 LOCATION CLEAN UP AND STATE REQUIRED TESTING	11
3.0 MECHANICAL INTEGRITY TESTING.....	12
3.1 CALIPER CASING INSPECTION LOG	12
3.2 CEMENT BOND LOG	12
3.3 CASING PRESSURE TESTING	13

3.4	ANNULUS PRESSURE TEST	14
3.5	RADIOACTIVE TRACER SURVEY	15
3.6	DIFFERENTIAL TEMPERATURE SURVEY	16
4.0	RESERVOIR EVALUATION	16
4.1	PRESSURE FALLOFF TEST	17
4.2	STATIC GRADIENT SURVEY	19
5.0	REGULATOR COMPLIANCE	20
5.1	SITING	20
5.2	CASING CEMENTING	20
5.3	TUBING AND PACKER	20
5.4	DIRECTIONAL SURVEYS	21
5.5	LOGGING PROGRAM	21
5.6	MECHANICAL INTEGRITY TESTING	22
5.7	PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE FORMATION FLUIDS	22
5.8	REGULATORY WITNESSING	23
6.0	FUTURE TESTING RECOMENDATIONS	23

TABLES

TABLE 2.0-1: Current Wellbore Casing Configuration

TABLE 2.1-1: Pipe Tally of the 2 7/8-inch Work String



TABLE 2.1-2: Casing Pressure Test Data

TABLE 2.4-1: Pump-in Injection Test Pressures and Rates Data

TABLE 2.7-1: Pipe Tally of the 4 1/2-inch Tubing

TABLE 2.8-1: Pump-in Pressure Build Up Pressures and Rates Data

TABLE 2.9-1: Annulus Pressure Test Data

TABLE 4.2-1: Static Gradient Results

FIGURES

FIGURE 2.0-1: Schematic of Current Wellbore Configuration

FIGURE 2.7-1: Superior Wellhead Schematic

FIGURE 2.9-1: Graph of Annulus Pressure Data

FIGURE 4.1-1: Plot of Pressure from Bottom Hole Pressure Gauge

FIGURE 4.1-2: Cartesian Plot of Pressure Falloff Data

FIGURE 4.1-3 Log-Log Diagnostic Plot

FIGURE 4.1-4: Horner Plot

FIGURE 4.1-5: Expanded Horner Plot

FIGURE 4.2-1: Static Gradient Plot

FIGURE 5.3-1: Kenco Schematic of Packer System

APPENDICES

APPENDIX 2.0-1: Chronology of Field Activities

APPENDIX 2.0-2: Well Location and Acreage Dedication Plat

APPENDIX 2.0-3: United States Department of Interior Bureau of Land Management Application for Permit to Drill or Re-enter June 29, 2006

APPENDIX 2.0-4: State of New Mexico Energy Minerals and Natural Resources Oil Conservation Division Application for Permit to Drill, Re-enter, Deepen, Plugback, or add a Zone Dated June 29, 2006

APPENDIX 2.0-5: United States Department of Interior Bureau of Land Management Sundry Notices and Reports on Wells Dated June 29, 2006

APPENDIX 2.0-6: State of New Mexico Energy Minerals and Natural Resources Oil Conservation Division Approval of Discharge Permit UIC-CIL-008-3 Dated June 23, 2004

APPENDIX 2.1-1: Halliburton Treatment Report for First Cement Squeeze

APPENDIX 2.1-2: Halliburton Treatment Report for Second Cement Squeeze

APPENDIX 2.1-3: Key Pumping Service Treatment Report for Third Cement Squeeze

APPENDIX 2.2-1: Cement Bond Log (CBL/VDL)

APPENDIX 2.2-2: Temperature Log

APPENDIX 2.2-3: Casing Inspection Log



APPENDIX 2.7-1: Circular Pressure Chart from 300 PSI for Annulus Pressure Test

APPENDIX 2.8-1: Petroplex Pumping Service Treatment Report

APPENDIX 2.9-1: Radioactivity Tracer Log

APPENDIX 3.4-1: Gauge Calibration Certificate

APPENDIX 3.5-1: Letter of Interpretation for Radioactive Tracer Test

APPENDIX 4.1-1: Pan System Output

APPENDIX 4.1-2: Raw Data from Bottom Hole Pressure Tool

APPENDIX 5.5-1 : Dual Induction Laterolog

APPENDIX 5.5-2: Spectral Density Dual Spaced Neutron Log

ATTACHMENTS

ATTACHMENT 1.0-1: Well Reentry Procedure

ATTACHMENT 3.2-1: Correspondence with State of New Mexico Energy Minerals
and Natural Resources Oil Conservation Division

ATTACHMENT 5.4-1 State Record of Deviation Survey



EXECUTIVE SUMMARY

Navajo Refining Company (Navajo) contracted Subsurface Technology, Inc. (Subsurface), to prepare an Application for Permit and to Re-enter a Plugged and Abandoned (P&A) Oil and Gas Well. The Application for Permit to Drill or Re-enter and the Sundry Notices and Reports on Wells was submitted to the Department of the Interior, Bureau of Land Management (BLM), on June 29, 2006, and approved. The Application for Permit to Drill, Re-enter, Deepen, Plug Back, or add a Zone was submitted to the State of New Mexico Oil Conservation Commission (OCD) on June 29, 2006, and approved.

Subsurface prepared an engineering plan to re-enter the P&A' oil and gas well formally owned by Mewbourne Oil Company. The original well name was Caulk Bluff Federal No. 1 (API number 30-015-26575), and a Change of Operator application was submitted to the OCD on December 5, 2000, and approved under the well name of WDW-3. Under contract to Navajo, Subsurface commenced field operations on September 25, 2006. The existing location was cleared and prepared for re-entry operations. An earthen lined reserve pit was dug to catch returns. All depths, unless stated, are referenced to workover rig floor at six feet to seven feet above ground level. The rig floor was moved from six feet to seven feet after drilling out the cast iron bridge plugs.

A workover rig and reverse unit was placed on location and the existing wellhead was removed. The first cast iron bridge plug (CIBP) at 7010 feet was drilled and the perforated interval from 7050 feet to 7102 feet was squeezed off with neat cement and successfully pressured tested to six hundred eighty pounds per square inch gauge pressure (680 psig). The second and third CIBP at 7190 feet and 7279 feet was drilled. There appeared to be ten feet of cement on top of the third CIBP. The perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314 feet was squeezed with neat cement. The squeezed interval was pressure tested to 920 psig and would not hold. A second cement squeeze was performed across the perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314. The interval was pressured tested to 630 psig and continued to lose pressure at a rate of two pounds per square inch every thirty minutes (2 psi/30 min). The fourth CIBP at 7595 feet was drilled and at 7838 feet a cement plug was



encountered and drilled through. Cement was tagged twenty nine (29) feet above the top of the liner at 9022 feet. The hole was circulated clean and prepared for logging.

A Cement Bond Log (CBL), Variable Density Log (VDL), caliper log, and temperature survey were performed. The CBL/VDL showed that the top of the cement (TOC) behind the 7-inch casing was located 900 feet from the surface. The OCD was notified and approved the existing well condition. The casing was perforated from 7660 feet to 8450 feet and from 8540 feet to 8620 feet at 2-JSPF on sixty degree (60°) phasing.

A packer was set at 7546 feet with 2 7/8-inch PH-6 tubing, the well was swabbed back and samples of the formation fluid were recovered. It was estimated that two hundred twenty six barrels (226 bbls) of formation fluid was returned to the surface. A pressure test on the annulus between the 7-inch and 2-7/8-inch was performed at 660 psig with the annulus losing pressure at a rate of 8 psi/hr.

An injection test was performed on the well down the 2-7/8-inch tubing with the annulus open to the bottom of the well. The open annulus will allow for the calculation of the bottom hole pressure while pumping down the 2-7/8-inch tubing with out the influence of tubing friction pressure on the bottom hole calculations. The injection rates were from two barrels per minute (2 bpm) to ten barrels per minute (10 bpm). From the data collected during the injection test it appears that the well will be able to accept an injection rate up to 10 bpm at the permitted pressure of 1550 psig with 4-1/2-inch, 11.6 pound per foot (11.6 lb/ft) tubing in the wellbore.

At the request of the OCD, Subsurface went back into the wellbore with a retrievable bridge plug (RBP) to test the casing and isolate any leaks to within 1000 feet. The RBP was set at 7550 feet and the packer was set at 6985 feet to isolate the squeezed interval from 7050 feet to 7314 feet. The squeezed interval was pressure tested to 490 psig and the annulus to 632 psig. The squeezed interval was losing pressure at a rate of 6 psi/hr and the annulus was gaining pressure due to thermal affects. The RBP was moved up the wellbore to 1255 feet and casing pressure tested to 569 psig. The casing above 1255 feet was losing pressure at a rate of 2 psi/hr. The casing leaks were isolated to the squeezed interval from 7050 feet to 7314 feet and in the interval from surface to 1255 feet. The

OCD was called and approved the 300PSI sealing application to stop the casing leaks across the two intervals.

The 4-1/2-inch tubing was run into the wellbore and the Arrow X-1 packer was set at 7575.73 feet with 37,000 lbs of tension. Prior to running the 4-1/2-inch tubing a new Superior hanging spool was installed. Prior to setting the tubing packer, the annulus between the 4-1/2-inch tubing and the 7-inch casing was filled with inhibited brine, with the 300psi sealant across the squeezed perforations and across the upper section of the 7-inch casing. Once the packer was set and tubing hung off in the spool, a new Superior wellhead was installed and the P-seals were pressure tested to 3000 psig. After the wellhead was assembled the annulus was squeezed at 545 psig for four hours (4 hrs), as specified by the sealant manufacture representative on site. The annulus was then pressure tested to 480 psig overnight with no pressure loss. The workover rig was disassembled and moved off location with all associated equipment.

A 12-hr pump-in and falloff test was performed down the 4-1/2-inch tubing. To maintain a surface injection pressure that was below the permitted pressure of 1550 psi the injection rate was lowered to 9 bpm at the end of the pump-in procedure. The BHP gauge was placed at 8630 feet for 14 hrs to monitor BHP. When the gauge was pulled, five minute (5 min) gradient stops were made every 1000 feet with the first stop at 7000 feet. The equipment used to perform the falloff testing was moved off location to prepare for mechanical integrity testing (MIT).

The MIT consisted of an annulus pressure test and a radioactive tracer survey. The temperature survey was performed during the CBL/VDL logging event and will be used as a baseline for any future temperature surveys. The annulus pressure test was performed at 530 psia and lost 2.5 psi over a one-hour period, which was within the OCD requirements of five percent (5%) over a 30 minute time interval. The radioactive tracer survey showed no signs of fluid flow out of the permitted interval above 7650 feet. The OCD witnessed the annular pressure test and the first half of the radioactive tracer survey.

The annulus monitoring system will be installed and tested in March 2007. After the installation of the well annulus monitoring system, the well will be turned over to Navajo for injection.

1.0 INTRODUCTION

Navajo re-entered, tested, and completed WDW-3 for the injection of plant waste effluent. The well is located in Section 1, Township 18 South, Range 27 East (S1-T18S-R27E) approximately 11.5 miles east-southeast of Artesia, New Mexico in Eddy County. A Well Location and Acreage Dedication plat of the well location is located in Appendix 2.0-2. The construction and testing of this well was performed in compliance with the provisions of the New Mexico Water Quality Control Commission Regulations (NMWOCCR) Subpart V, Section Nos. 5204 and 5205, New Mexico Oil Conservation Division Underground Injection Control (UIC) Program Manual, and the Environmental Protection Agency (EPA) Code of Federal Regulations 40 CFR 16.12, Subpart B.

Subsurface was contracted by Navajo to re-enter and test WDW-3. The construction and testing of this Non-Commercial Class I Nonhazardous Waste Disposal Well was permitted by the BLM and the OCD. All work associated with WDW-3 was completed in accordance with the provisions specified in the permit approved by the BLM and OCD.

The following report and contracted work on WDW-3 was designated as Subsurface Project No. 70F5826. The following report summarizes all work performed on the WDW-3 and includes the fillings of the necessary documents. The report is broken down into four parts Summary of Daily Activities, Mechanical Integrity Testing, Reservoir Evaluation, and Regulatory Compliance. For continuity this report is written in the same structure as the report completed on WDW-2. The well reentry procedure can be found in 1.0-1.

2.0 SUMMARY OF DAILY OPERATIONS

The reentry, testing, and completion operations for WDW-3 are presented in this section. Details of certain operations are referenced in the text and included as figures, exhibits, tables, and appendices. Appendix 2.0-1 contains a Chronology of Field Activities from the Field Activity Reports.

The original wellbore was designated as the Mewbourne Oil Company, Chalk Bluff Federal No. 1 (API No. 30-015-26575), installed March 7, 1991, as a producing oil & gas well. The wellbore was constructed with 13-3/8-inch, 54.5 lb/ft surface casing set to 400 feet in a 17-1/2-inch hole and was cemented to the surface. A 9-5/8-inch, 36 lb/ft intermediate casing was set at 2600 feet in a 12-1/4-inch hole and cemented to the surface. The 7-inch, 26 lb/ft and 29 lb/ft production casing was set at 9450 feet in an 8-3/4-inch hole and was cemented to 900 feet below ground level (GL). On March 7, 1991, the well was deepened to 10,119 feet and a 4-1/2-inch, 11.6 lb/ft liner was installed from 9051 feet to 10,119 feet and cemented in place with 175 sks of cement. The well was plugged and abandoned on August 14, 1995. The well was acquired by Navajo on November 27, 2000. The current well configuration is presented in Figure 2.0-1 and Table 2.0-1.

Navajo submitted the application to recomplete the well to both the BLM and the OCD on June 6, 2006, and received approval from the OCD on August 11, 2006, (Appendix 2.0-3 and Appendix 2.0-4). The Sundry Notices and Reports on New Wells notification was submitted to the BLM on June 6, 2006, (Appendix 2.0-5). The New Mexico Energy, Minerals and Natural Resources Department sent a letter of approval to discharge according to UIC-CLI-008-3 on June 23, 2004, which was later modified to raise the top of the injection interval from 7750 feet to 7650 feet (Appendix 2.0-6)

2.1 LOCATION CLEARING AND RIG MOBILIZATION

On September 27, 2006, Banta's roustabout crew arrived at the job site with two back holes and a three man crew. The location was cleared of all overgrowth and a thirty feet by thirty feet by five feet (30 ft x 30 ft x 5 ft) lined pit was dug to hold returns. An eight foot by seven foot by three foot (8 ft x 7 ft x 3 ft) cellar was dug around the wellhead in order to inspect the lower section of the wellhead for repairs. New valves and fittings were installed on the existing wellhead. Rig support equipment started to arrive at the job site.

On September 28, 2006, the roustabout crew framed in the cellar and the Basic workover rig arrived at the job site. The rig was spotted and the remaining support

equipment arrived at the job site. The derrick was erected and the rig crew repaired the sand line break and replaced the drilling line. The 2-7/8-inch work string was tallied at 9413.59 feet with a bottom hole assembly of 126.45 feet (See Table 2.1-1).

On September 29, 2006, the wellhead was inspected by a Superior Wellhead technician and was found to be an eleven inch, three thousand pound, by seven inch, five thousand pound (11³ x 7⁵) Cameron type spool. The Cameron type spool attached to the wellhead had been discontinued and Superior suggested that the spool be replaced. The remaining support equipment arrived at the job site and was rigged up for drilling. The annular blow out preventer (BOP) was attached up to the wellhead and the rig crew went into the wellbore with 2-7/8-inch, 7.9 lb/ft, PH-6 tubing, four 4-3/4-inch drill collars, 46.67 lb/ft, and a 6-1/8-inch Baker Hughes Rock bit. The rig crew tagged bottom at 7001 feet.

2.2 DRILLING OF CAST IRON BRIDGE PLUGS AND CEMENT SQUEEZING OF THE PERFORATIONS

On September 30, 2006, the sand line brake on the rig would not hold and operations were shut down until the brake was repaired. On October 1, 2006, first CIBP was drilled out with no show of cement or drilling mud. The second CIBP was tagged at 7190 feet. The well was circulated clean with brine water and an injection test was performed. The rig crew tripped out of the hole (TOOH) with the work string and tripped into the hole (TIH) with the work string excluding the bit and drill collars (open ended) to spot cement for squeeze operations.

On October 2, 2006, the first cement squeeze was executed across the perforations from 7050 feet to 7102 feet. Halliburton spotted eighty sacks (80 sks) of Premium Plus neat 14.8 ppg cement across the perforations. The rig crew pulled nine stands to get out of the cement and circulated out any excessive that was trapped in the work string. Halliburton was able to pump four barrels (4 bbls) of cement into the formation before reaching a squeeze pressure of 2000 psig. The well was shut-in over night with 680 psig left on the wellhead.

On October 3, 2006, the rig crew tagged cement at 6873 feet assuming the hole was full of cement to the CIBP. At 7190 feet there were 12.1 bbls of cement left in the wellbore. The total amount of cement spotted in the wellbore was 18.7 bbls leaving 6.6 bbls of cement either place in the formation or circulated out of the wellbore. It was estimated that 3.5 bbls were circulated out of the tubing during the clean out, leaving 3.1 bbls placed into the formation (Halliburton Report Appendix 2.1-1). The cement in the wellbore was drilled out to the top of CIBP at 7190 feet and the well was pressure tested to 578 psig. The well lost 123 psi over a thirteen and half hour period at 9.1 psi/hr (1.58%).

On October 4, 2006, the second CIBP was drilled out and the third CIBP was tagged at 7278.96 feet. It was estimated that there was 9 feet of cement on top of the third CIBP. The third CIBP was drilled out and the formation started to take fluid at a rate of 1.0 bpm to 1.25 bpm. It was estimated that during circulation 180 bbls of 8.7 ppg brine was lost to the formation. The fourth CIBP was tagged at 7591 feet. The hole was circulated clean to prepare for the second cement squeeze operation. A pump-in test was performed and the well would take fluid at a rate of 4.5 bpm at 710 psig. The rig crew TOOH with collars and bit and TIH open ended to spot cement for squeeze operations.

On October 5, 2006, the bottom of the work string was placed at 7321 feet. Halliburton pumped 100 sks of 14.8 ppg Premium Plus neat cement across the perforations. The rig crew pulled ten stands and Halliburton started to squeeze into the formation using a hesitation squeeze method. The cement was squeezed into the formation in seven stages 10 minutes apart with 1.5 bbls of cement pumped between each stage. After the first stage the wellhead pressure was 78 psig and after the seventh stage the wellhead pressure was 1973 psig. The well was shut-in with 1970 psig for 2 hours and then was bled off and an additional eight stands were pulled and the tubing was circulated to clear the tubing of any excessive cement (see Halliburton Report Appendix 2:1-2). The well was shut-in over night with 930 psig on the wellhead.

On October 6, 2006, the rig crew drilled through soft cement and tagged bottom at 7554 feet, which was 37 feet above the previous spot at 7591 feet. The well would

not hold pressure and squeeze perforation were taking fluid at 25 gpm with 920 psig on the wellhead. A second cement squeeze was required to seal off the perforations.

On October 7, 2006, Halliburton was not available to do the third squeeze job so Key Pumping Services was called and performed the third cement squeeze. Rig crew TOOH with collars and bit and TIH open ended (without collars and bit). The bottom of the work string was placed at 7290 feet. On October 8, 2006, Key Pumping Services placed 80 sks of 14.8 ppg Premium Plus neat cement across the perforations. The rig crew pulled eight stands of pipe and circulated the pipe free of excessive cement. Key Pumping Services pumped 6 bbls of cement into the formation at 750 psig. At a squeeze pressure of 1975 and additional 1.5 bbls was pumped into the formation. Key Pumping Service stopped pumping for 10 min to allow the pressure to fall then pumped another 1.5 bbls into the formation before the formation refused to take any addition fluid at 1940 psig (see Key's Report in Appendix 2.1-3). The well was shut-in for the night with 1830 psig on the wellhead.

On October 9, 2006, Rig crew tagged hard cement at 6981 feet and drilled hard cement to 7312 feet. The estimated amount of cement left in the pipe was 12.7 bbls out of a total of 18.8 bbls pumped with no sign of returned cement. The rig crew tagged bottom at 7559 feet and the wellbore was circulated clean. On October 10, 2006, the casing was pressure tested for twelve hours with a starting pressure 630 psig. At the end of the twelve hour period, the pressure was 568 psig. The wellhead pressure was recorded every thirty minutes and, after six hours the rate of pressure loss was maintaining 2 psi/ 30 minutes. The annulus valve between the 7-inch casing and the 9-5/8-inch casing was opened and contained pressure. A gauge was placed on the 7-inch by 9-5/8-inch annulus and monitored for 18 hours with no apparent increase in pressure (Table 2.1-2). The 7-inch by 9-5/8-inch annulus was initially bled off before the BOP was placed on the wellhead.

On October 11, 2006, rig crew drilled through the fourth CIBP at 7595 feet and while drilling though the plug the plug dropped to 7776 feet. At 7780 feet mud contaminated cement was encountered. At 7838 feet the rig crew had drilled though the cement plug and TIH to the top of the 4-1/2-inch liner (TOL). The rig crew

tagged bottom at 9022 feet 28 feet above the TOL. It appears that there is a 28 foot cement plug across the top of the liner at 9051 feet. The wellbore was circulated clean from 9022 feet to surface. On October 12, 2006 the rig crew TIH with a casing scraper and circulated the hole to prepare for logging. Wood Group Logging Services arrived at the job site and spotted equipment.

2.3 LOGGING AND PERFORATING THE INJECTION INTERVAL

On October 13, 2006, Wood Group ran a CBL/VDL log, temperature survey, and a caliper log. The CBL/VDL log showed top of cement behind the 7-inch casing at 900 feet below the ground level (Appendix 2.3-1). The temperature log showed no major anomalies throughout the wellbore (Appendix 2.3-2). The caliper log showed some minor ware in the casing wall below the top of the injection interval (Appendix 2.3-3).

The CBL/VDL log was difficult to evaluate due to the fast formation responses. It appears that there is cement behind the 7-inch casing from the packer at 7575 feet up to 1500 feet with areas that appear to have a micro annulus. Isolation from 1500 feet to 1000 feet is spotty with little or no cement. From 900 feet to the surface, the CBL and VDL show no cement behind the casing.

The temperature survey showed no anomalies in the temperature curve. The fluid level in the well was found at 296 feet. The static bottom hole temperature (BHT) at 7575 feet was 126° F, at 8140 feet the BHT was 132.5° F, and at 9020 feet the BHT was 142.6° F.

The caliper log showed 7-inch, 29 lb/ft casing and 7-inch, 26 lb/ft casing mixed throughout the casing string. A bad spot in the 7-inch casing string was discovered at 7604 feet. There appears to be some additional corrosion from 8662 feet to 8705 feet.

From October 14, 2006 through October 15, 2006, Wood Group perforated the intervals from 7660 feet to 8450 feet and from 8540 feet to 8620 feet. Perforating was done using a 40 foot steel hollow carrier gun that produced a 0.5-inch hole at

two shots per foot on 60° phasing. On the first day 12 perforating runs were made completing the interval from 8540 feet to 8620 feet and 400 feet of the interval from 8050 feet to 8450 feet. On the second day 10 perforating runs were made completing the interval from 7660 feet to 8050 feet. There were no misfires during both days and all perforating charges went off as planned.

2.4 FORMATION SAMPLE COLLECTION AND INJECTION TESTING OF THE WELL

On October 15, 2006, the well was swabbed back from 2400 feet to surface to collect formation samples. Four samples were collected at different volumes of returned fluid. The first sample was collected after twelve runs estimated volume at 151 bbls. The second sample was taken after fourteen runs estimated volume at 176 bbls. The third sample was taken after sixteen runs estimated volume at 201 bbls, and the fourth sample was taken after eighteen runs estimated volume of 226 bbls. Samples were delivered to the Navajo Refining Facility in Artesia, New Mexico. Between runs seven through nine hydrogen sulfide gas was encountered and all personnel not active in the swabbing process were moved off the location. The formation fluid sample lab results can be found in Appendix 2.4-1. A standard API water analysis of the formation water samples and brine water samples was completed by Texas Oil Tech Laboratories.

On October 18, 2006, Key Pumping services arrived at the job site to perform the injection test. Key Pumping services started the injection testing down 2-7/8-inch, PH-6 tubing. Key's pump truck broke down after pumping 80 bbls. Key Pumping services returned on October 19, 2006. The wellhead was shut-in with the bottom of the pipe left open ended. Pressure gauges were placed on the annulus and on the wellhead. Key Pumping services circulated the wellbore at 2 bpm and caught returns after 37 bbls. The test commenced starting at 2 bpm and increasing in 1 bpm increments to 10 bpm. Both the wellhead pressure and annulus pressure were monitored during the testing. The annulus pressure will allow for a calculation of the BHP with out the affect of the 2-7/8-inch pipe friction. The brine fluid weight that was pumped into the well was measured at 8.6 ppg.

Key pumping was able to reach 10 bpm for a short five minute period before the deck engine over heated and the pump shut down. The wellhead tubing pressure at 10 bpm was 5087 psig the annulus pressure was estimated at 660 psig. With a hydrostatic pressure of 3488.16 psi calculated to 7800 feet, the BHP is 4148 psi. The pressure gradient is 0.53 psi/ft, which is below the fracture gradient. According to the data collected from the annulus pressure gauge, it appears that it would be possible to pump into the well at 10 bpm and still stay below the fracture gradient and the permitted wellhead pressure of 1550 psig (Table 2.4-1).

2.5 FINDING AND REPAIRING CASING LEAKS

The State of New Mexico OCD requested that Navajo Refining try to find all the casing leaks to within 1000 feet. For two days from October 20, 2006 to October 22, 2006, a retrievable bridge plug (RBP) and packer were placed in the wellbore to isolate sections of the casing within 1000 foot intervals. The additional testing that was performed after each perforation cement squeeze revealed that there were two intervals that were suspect of casing leaks; the interval across the squeezed perforations and the interval from 1000 feet to surface.

The first suspected interval was across the squeezed perforations. The RBP was set at 7550 feet and the packer was set at 6985 feet. The isolated interval was pressure tested to 490 psig and the annulus between the 2-7/8-inch tubing to the packer was pressure tested to 632 psig. The pressure loss across the squeezed interval stabilized after two hours and was losing 6 psi/hr. The annulus gained pressure due to thermal affects and would not stabilize.

The next suspect interval in the casing was in the upper 1000 feet to surface interval. The RBP was set at 1255 feet and the entire casing interval from 1255 feet to surface was pressure tested to 570 psig. The pressure stabilized after two hours and maintained a pressure loss of 2 psi/hr over a twelve hour period. The two tested intervals accounted for the majority of the 7-inch casing leaks. The OCD was called and approved the pumping of a sealant treatment provided by 300 PSI, Inc. as a solution to sealing off the 7-inch casing leaks. The treatment would be pumped ahead of and behind the inhibited packer fluid.

2.6 RUNNING THE 4 1/2-INCH 11.6 LB/FT TUBING AND SETTING THE PACKER

On October 23, 2006, Superior Wellhead replaced the existing Cameron spool with a new Superior Wellhead spool. The BOP was reseated and Allen's Casing Crews started into the hole with the Weatherford Arrow X-1 7-inch by 3-inch packer. The Packer would not go past 50 feet before getting hung up in the casing. The packer was pulled and examined, and it was discovered Weatherford had brought out the wrong packer. Kenco, out of Artesia, was called and they delivered a new Arrow X-1, 7-inch by 2-7/8-inch (Figure 2.6-1) packer to the location. The Weatherford packer was made with a 3-inch EUE thread and the Kenco packer had a 2-7/8-inch REG thread. As a result of the Weatherford cross over not threading up to Kenco's packer, Kenco had an integral cross over made and brought to the location.

On October 24, 2006, Allen's Casing crew started into the wellbore with 4-1/2-inch tubing and Arrow X-1 packer. The tubing was torqued to specifications at 1600 lbs. The bottom of the packer was set at 7575.73 feet with 37,000 lbs of tension on the packer. Before the packer was set the wellbore was circulated with approximately 240 bbls. 300PSI pumped 23.8 bbls of sealant followed by 95 bbls of 8.7 ppg inhibited brine (55 gals Baker Petrolite CRW 132 inhibitor fluid) and 14.29 bbls of sealant. At the end of the pumping the packer was set with 37,000 lbs of tension and the slips placed into the hanging spool. The BOP was removed and the wellhead installed.

2.7 INSTALLATION OF THE WELLHEAD

On October 25, 2006, the rig crew finished rigging up the wellhead. Superior arrived and pressure tested the P-seals to 3000 psig. The rig crew filled the annulus with 2.5 bbls of 8.7 ppg brine water and 300 psi applied 545 psig to the 4-1/2-inch by 7-inch annulus using nitrogen. The pressure was maintained for four hours. The pressure was bled off and the annulus was pressure tested to 490 psig with brine for one-hour and recorded on a circular chart (Appendix 2.7-1). The annulus was bled down and retested overnight to 480 psig with no pressure loss. From October 25,

2006 to October 28, 2006, the rig was demobilized and moved off location with all support equipment. Key Energy services started moving frac tanks onto the location for the pressure build up and falloff testing. The pipe tally for the 4-1/2-inch tubing can be found in Table 2.7-1. A schematic of the as-built wellhead can be located in Figure 2.7-1.

2.8 PRESSURE BUILD UP AND FALLOFF TESTING

On November 2, 2006, Key Energy services placed fourteen frac tanks on the location and were in the process of filling them. On November 3, 2006, Banta Roustabout service installed the pump-in flange on the wellhead. Six temperatures were taken at the mid-point in the frac tanks to determine the brine fluid temperature, so that the stress that would be applied to the packer, due to temperature changes in the wellbore could be calculated. The average water temperature of brine that would be used to perform the pump-in procedure portion of the pressure build up was 60.6° F. The shear pins in the packer were set at 80,000 lbs and the maximum amount of shear stress that would be applied to the packer was determined to be less than 60,000 lbs. All the brine located in the frac tanks were treated with biocide and the tanks were rolled with a Key vacuum truck.

On November 4, 2006, Petroplex Pumping service rigged up to the injection side of the wellhead and a Key Energy kill truck rigged up to the annulus side of the wellhead. The kill truck will maintain 700 psig on the annulus in order to help reduce tubing and packer stresses. Petroplex Pumping service started pumping at 3 bpm and after 28 bbls the well caught pressure at 162 psig. The rate was slowly increased to 10 bpm with a wellhead pressure of 1278 psig. The rate was maintained at 10 bpm until the wellhead pressure started to approach the 1400 psig mark and at that time the rate was decreased to 9 bpm at a wellhead pressure of 1170 psig. Based on strap measurements from the frac tanks it was estimated that 6700 bbls of 8.8 ppg brine were pumped into the well (Table 2.8-1 and Appendix 2.8-1).

Two hours prior to ending the pumping procedure, Schlumberger Slickline service lowered a bottom-hole pressure gauge into the well at 8630 feet. While lowering

the tool, the rate was decreased to 5 bpm in order to get the tool passed through the upper section of the wellbore. At 9:00 PM pumping was stopped with the BHP tool at 8630 feet, and the well was closed in with 50 psig on the annulus and no pressure on the wellhead. On November 5, 2006, at 10:20 a.m. Schlumberger Slickline service started out of the hole, with the BHP gauge taking gradient stops every 1000 feet, starting at 7000 feet. Once the BHP tool was out of the wellbore the annulus was bled down and the well shut-in (Appendix 4.1-2). All but one frac tank were removed from the location.

2.9 LOCATION CLEANUP AND STATE REQUIRED TESTING

On November 13, 2006, Banta Roustabout service cleared the location of debris, hauled off trash, filled in cellar with pea gravel, removed diesel contaminated soil around the location, and leveled the location. The well cuttings and contaminated soils were placed in the reserve pit. The returned solids that remain in the reserve pit will have to be profiled prior to disposal and cannot be disposed of under the oil field exemption. The cuttings and returned solids that remain in the reserve pit will be hauled off once the profile of the material is complete.

On November 14, 2006, Wood Group was unable to rig up to the wellhead due to high winds and the OCD delayed testing until November 15, 2006.

On November 15, 2006, Wood Group logging services, Petroplex Pumping services, and OCD inspectors arrived at the job site. Wood Group Logging services performed an annulus pressure test, and radioactive tracer survey. Petroplex Pumping services provided pumps for the annulus pressure test and the chase down portion of the radioactive tracer survey.

The 4-1/2-inch by 7-inch annulus was pressure tested to 530 psia over a one-hour period and lost 1.99 psi. This represents a 0.37% pressure loss which is well within the OCD requirement of 5% for 30 minutes at a minimum pressure of 300 psig. The annulus pressure test was witnessed by the OCD representatives. The radioactive tracer test was run without any sign of radioactive material being pumped out of the injection interval. The first part of the radioactive tracer survey was witnessed by

the OCD representatives (Appendix 2.8-1, Attachment 2.8-1, Table 2.8-1, Figure 2.8-1). At the end of the job the annulus was again pressure tested to 300 psig and held pressure for 1-1/2-hrs before being bled off.

3.0 MECHANICAL INTEGRITY TESTING

The demonstration of the mechanical integrity of WDW-3, required by New Mexico Water Quality Control Commission Regulations (NMWQCCR) Subpart V, Section 5204 (A) to (D) and Section 5205(A)(1)(a), included a casing caliper inspection on the 7-inch protective casing, pressure testing of the 7-inch protective casing, CBL/VDL of the 7-inch casing, a radioactive tracer survey, a differential temperature survey, and an annulus pressure test. Results of these tests demonstrated that the well had internal and external mechanical integrity.

3.1 CALIPER CASING INSPECTION LOG

On October 13, 2006, Wood Group Logging services ran a caliper log to determine the condition of the existing casing wall thickness and to check for anomalies (Appendix 2.2-3). Overall the 7-inch protective casing looked good. The caliper log revealed that there was 26 lb/ft and 29 lb/ft casing in the wellbore. There was one anomaly found that occurred at 7604 feet, which appeared to be a gouge in the casing wall. The upper section of the 7-inch casing string appeared to be in better condition than the lower section. There appeared to be some corrosion and scale build up in a section of the casing just above and below the 8700 feet. The data obtained from the caliper log may be used as a baseline for future comparisons.

3.2 CEMENT BOND LOGGING

On October 13, 2006, Wood Group Logging services ran a CBL/VDL log (Exhibit 2.2-1). The CBL/VDL revealed cement had not been circulated to the surface behind the 7-inch protective casing, as was indicated in the state records. The TOC behind the 7-inch protective casing was located at 900 feet and the cement bond quality was poor down to 1200 feet. There were indications on the log that a micro annulus may be present below the 1200 foot interval. The intervals above the

injection interval from 2662 feet to 2160 feet, from 4876 feet to 5372 feet, and from 6750 feet to 7600 feet indicated that there was good bonding between the 7-inch casing and the cement to isolate the injection interval. The OCD was called and they approved the existing wellbore for injection and did not request that any additional cement be placed behind the 7-inch casing (Attachment 3.2-1).

3.3 CASING PRESSURE TESTING

After performing each perforation squeeze, the wellbore was drilled out and the casing was pressure tested. The casing pressure test that was performed across the squeezed interval from 7050 feet to 7102 feet had a loss rate of 9.1 psi/hr with a starting pressure of 580 psig. The pressure was run for 13.5 hours with the final reading at 455 psig.

The second perforation squeeze was over the perforated interval from 7262 feet to 7278 feet and 7304 feet to 7314 feet. The second cement squeeze would not hold pressure. A third cement squeeze was performed across the interval and the casing was pressure tested to 630 psig for a period of 12 hours. The final casing pressure was 568 psig with a average pressure loss of 2 psi/hr.

The OCD was notified of the pressure losses on the casing pressure test and requested that Navajo attempt to isolate the leakoff in the casing to within 500 feet to 1000 feet. A 2-7/8-inch by 7-inch packer and an RBP were run into the wellbore to isolate the squeezed interval. The RBP was set at 7550 feet and the packer was set at 6985 feet. The annulus between the 2-7/8-inch work string and the 7-inch protective casing was pressure tested to 632 psig and appeared to gain pressure due to a thermal heating effect in the wellbore. The tubing was pressure tested to 490 psig with a loss rate of 6 psi/hr down the 2-7/8-inch tubing.

The 7-inch protection casing interval from 900 feet to the surface did not appear to have cement behind it, therefore, it was necessary to determine if that interval mechanically sound. The RPB was set at the shallowest point possible at 1255 feet and the casing was pressure tested to 570 psig. Over a 13 hour period the wellhead pressure dropped to 540 psig with a loss rate of 2 psi/hr.

The request by the OCD was completed. The intervals across the squeezed perforations and the interval from 1255 feet to surface both showed signs of a casing leak. The leak-off rate across both intervals was small and within the regulator requirements of 5%. Again the OCD was contacted and they requested that Navajo attempt to seal off the leaks. A casing sealant was pumped with the inhibited brine down the 4-1/2-inch by 7-inch annulus before setting the 2-7/8-inch by 7-inch Arrow X-1 injection packer. The sealant treatment was performed by 300PSI Inc. and approved by the OCD (Attachment 3.2-1). The packer was set and the sealant was squeezed. An annulus pressure test was recorded with the initial annulus pressure at 490 psig, after one-hour the annulus pressure maintained 490 psig, there was no measurable loss over the one-hour period. A copy of the chart is in Appendix 2.7-1.

3.4 ANNULUS PRESSURE TEST

The State of New Mexico required an annulus pressure test which was performed on November 15, 2006, in conjunction with a radioactive survey. The well was allowed to sit idle for 10 days to attain a thermal equilibrium in the wellbore prior to running the annulus pressure test. Wood Group Logging service monitored the annulus pressure and Petroplex Pumping Service provided the pressure pumping equipment. The OCD representatives were present to witness the annular pressure test.

The annulus was pressurized using a high pressure, low volume triplex pump isolated from the pressure source. The official annular pressure test began at 11:32:30 AM at a pressure of 530.94 psia. The tubing pressure was 0 psi. After one-hour, the pressure decreased to 528.95 psia. This represents a loss of 1.99 psi, or 0.37%, which complies with the OCD allowable of 5% per 30-minute test period at a minimum test pressure of 300 psi. The annulus pressure test data are presented as Table 2.9-1. The pressure gauge calibration certificate is presented as Appendix 3.4-1.

3.5 RADIOACTIVE TRACER SURVEY

A radioactive tracer survey was performed on the WDW-3 on November 15, 2006, following the annulus pressure test. The first part of the radioactive tracer survey was witnessed by the OCD representatives. The radioactive tracer survey consisted of running two statistical checks, two baseline gamma ray surveys, and injecting four slugs of radioactive material. Two (2) of the slugs were injected during the time-drive surveys and two were injected during the moving surveys. All tests were conducted while injecting nonhazardous brine water into the well. Wood Group Logging service performed the logging services and Petroplex Pumping service provided the pumping equipment.

The radioactive tracer tool was lowered to a total depth of 9,020 feet and a pre-survey baseline log was then run from 9,020 feet to 7,350 feet. Five-minute statistical surveys were conducted at 7,550 feet and at 7,640 feet.

The injection rate was set at 102 gallons per minute (gpm) and a slug of radioactive iodine was ejected at 7,375 feet. A total of seven passes were made during the first moving survey, until the slug dissipated into the permitted injection interval from 7,650 feet to 8,830 feet.

The radioactive tracer tool was repositioned at 7,375 feet and a second slug of radioactive iodine was ejected. The injection rate was 102 gpm. A total of five passes were made during the second moving survey, until the slug dissipated into the permitted injection interval from 7,650 feet to 8,894 feet.

The first stationary time-drive survey was performed with the lower detector at 7,640 feet with an injection rate of 102 gpm. A slug of radioactive iodine was ejected and monitored on time drive for 15 minutes.

The second stationary time-drive survey was performed with the lower detector at 7,640 feet. The injection of brine water was maintained at 102 gpm. A 2-second slug of radioactive iodine was ejected and monitored on time-drive for 15 minutes.

No upward fluid movement was observed during the two chase downs or the two time-drive surveys. There does not appear to be any upward movement of fluid out of the injection interval from 7,650 feet to 8,884 feet.

Injection into WDW-3 was terminated and a post-survey gamma ray log was run from 9,016 to 7,342 feet. The initial and post-survey gamma ray logs were comparable.

The radioactive tracer log is presented as Appendix 2.9-1. The corresponding letter of interpretation of the radioactive tracer log, dated November 27, 2006, by Wood Group is presented as Appendix 3.5-1.

3.6 DIFFERENTIAL TEMPERATURE SURVEY

A baseline differential temperature survey was performed on October 13, 2006, (Exhibit 2.2-2) after the CBL/VDL logging run. The baseline differential temperature survey will be used to evaluate future temperature surveys to confirm mechanical integrity of the well. No anomalies were observed during the differential temperature survey.

The temperature log was run from 9020 feet to the surface. The fluid level in the wellbore was at 296 feet with 8.6 ppg brine water in the wellbore. The wellbore temperature at 560 feet was 68.1° F, at 1000 feet the wellbore was temperature 74.6° F, at 7650 feet the temperature was 127° F, at 8850 feet the temperature was 140.2 ° F, and at 9020 feet the temperature was 142.9° F. The gradient from 7650 feet to 9020 feet was 1.16° F / 100 ft.

4.0 RESERVOIR EVALUATION

The bottom-hole pressure testing, which was conducted on the WDW-3 following the completion of the well, was designed to obtain the best estimate of the permeability and mobility-thickness in the reservoir. The pressure testing consisted of an injection falloff test and a gradient survey. Petroplex Pumping Service

provided the pumping equipment for the injection period of the testing and Schlumberger Slickline Services provided the BHP equipment.

The calculated value for the skin does not appear to correspond with the pump-in surface pressure values or the injection test valves. It is possible that the offset wells, WDW-1 and WDW-2, influenced the bottom hole pressure response of the bottom hole pressure gauge during the pressure falloff test. Historically, the calculation for the permeability appears to be in the range that was anticipated from previous falloff testing conducted on WDW-1 and WDW-2. WDW-1 and WDW-2 are completed in the same zone of interest.

Due to the proximity of WDW-3 to both the WDW-1 and the WDW-2 and the procedure used by Navajo for injecting into the wells, consideration needs to be given to monitoring the bottom hole pressure in the two offset wells while performing a fallout test the target well. This should allow for a better understanding of the pressure behavior in the reservoir.

4.1 PRESSURE FALLOFF TEST

Petroplex Pumping Services rigged up on WDW-3 on November 4, 2006. Injection into WDW-3 was initiated at 0919 hours at an injection rate of 126 gpm. The injection rate was gradually increased to 420 gpm. At 1800 hours, Schlumberger rigged up and the injection rate was decreased to 210 gpm in order to run the bottom-hole pressure gauges into the well. The tandem memory gauges were positioned at 8,630 feet below ground level and the injection rate was increased to 378 gpm.

At 2100 hours, the injection pumps began to lose suction and WDW-3 was subsequently shut in. The final injection rate was 189 gpm with a final injection pressure at 8,630 feet of 4,577.59 psia.

The pressure falloff test was terminated after 13.57 hours with a final shut-in pressure of 3,804.87 psia. Gradient stops were made at 1000-foot intervals while removing the pressure gauges from the well.

The pressure data obtained from the falloff test were analyzed with the assistance of the commercially available PanSystem pressure transient analysis software. The PanSystem output for the falloff analysis has been included as Appendix 4.1-1 and includes the input reservoir parameters used in the reservoir analysis. The pressure and temperature data recorded during the pressure falloff testing are included as Appendix 4.1-2.

Figure 4.1-1 shows the pressure response recorded by the bottom-hole pressure gauge from the time the tool was in place through the 13.57-hour shut in period. Figure 4.1-2 is a cartesian plot of the pressure falloff data. The superposition time function was used to account for the rate changes during the pressure build up portion of the testing. Figure 4.1-3 is a log-log diagnostic plot of the falloff data, showing change in pressure and pressure derivative versus equivalent shut in time.

The reservoir permeability was determined from the radial flow region of the superposition Horner plot, Figure 4.1-4. The radial flow regime occurs between Horner times of 486 and 196. Figure 4.1-5 shows an expanded view of the radial flow regime. The slope of the radial flow period was determined to be 0.473785 psi/cycle.

An estimate of mobility-thickness, kh/μ , for the reservoir was determined to be 2,223,895 md-ft/cp from the following equation:

$$\frac{kh}{\mu} = 162.6 \frac{qB}{m}$$

where,

- kh/μ = formation mobility-thickness, millidarcy-feet/centipoise
- q = rate prior to shut in (6,480 bbl/day)
- B = formation volume factor (1.0 reservoir bbl/surface bbl)
- m = slope of the infinite acting radial flow period (0.473785 psi/cycle)

Substituting,

$$\begin{aligned}\frac{kh}{\mu} &= 162.6 \frac{(6,480)(1.0)}{0.473785} \\ &= 2,223,895 \text{ md-ft/cp}\end{aligned}$$

The permeability-thickness, kh , was determined to be 1,601,204 md-ft by multiplying the mobility-thickness by 0.72 centipoise, the viscosity of the reservoir fluid (μ_{res}).

$$\begin{aligned}kh &= \left(\frac{kh}{\mu}\right)\mu_{\text{res}} \\ &= (2,223,895)(0.72) \\ &= 1,601,204 \text{ md-ft}\end{aligned}$$

The average reservoir permeability was determined to be 1,840 md using the total perforated interval thickness of 870 feet:

$$\begin{aligned}k &= \frac{(kh)}{h} \\ &= \frac{1,601,204}{870} \\ &= 1,840 \text{ md}\end{aligned}$$

4.2 STATIC GRADIENT SURVEY

On November 5, 2006, the pressure gauges were removed from WDW-3. Static gradient stops were made at 8,630 feet, 7,000 feet, 6,000 feet, 5,000 feet, 4,000 feet, 3,000 feet, 2,000 feet, 1,000 feet, and at the surface. The bottom-hole pressure and temperature after 13.57 hours of shut in at 8,630 feet were 3,804.87 psia and 135.88° F, respectively. The static fluid level was determined to be at 420 feet.

A summary of the static gradient survey results is provided in Table 4.2-1 and are graphically depicted in Figure 4.2-1.

5.0 Regulatory Compliance

The construction of WDW-3 was performed in accordance with the regulatory considerations and standards specified in the approved modification to the Discharge Plan UIC-CLI-008-3 Dated June 23, 2004; the OCD Permit, Dated June 29, 2006; the BLM Sundry Notices and Reports on Wells Dated June 29, 2006; NMWQCCR, Subpart V, Section Nos. 5204 and 5205; and the United States Environmental Protection Agency 40 CFR 146.12.

5.1 Siting

Navajo re-entered, tested, and completed a plugged and abandoned wellbore located in Section 1, T18S, R27E, Unit Letter N, approximately 11 miles east-southeast of Artesia, in Eddy County, New Mexico. The modification to Discharge Plan UIC-CLI-008-3 includes provisions for the location, depth of the injection interval, and specific reentry and completion requirements. The Navajo WDW-3 will inject plant effluent into the Cisco and Brushy Canyon formations, which are beneath the lowermost formation contained within one quarter of a mile of the wellbore, with ground water having 10,000 mg/l total dissolved solids or less. A plat of the Navajo WDW-3 well location is shown in Appendix 2.0-2.

5.2 Casing Cementing

The existing casing and wellbore configuration was used and the only modifications to the wellbore were the removal of four existing CIBP's in the original wellbore configuration and the squeeze cementing of existing perforations. Table 2.0-1 and Figure 2.0-1 contain a detailed description of the current wellbore configuration.

5.3 Tubing and Packer

The Installation of the tubing and packer were in accordance with NMWQCCR Subpart V, Section 5205(B)(3).

The WDW-3 injection tubing is a 4-1/2-inch, 11.6 lb/ft, J-55, LTC 8rd connection, carbon steel pipe. The injection tubing was connected into the Arrow X-1, 2-7/8-inch by 7-inch packer via an integral 2-7/8-inch by 4-1/2-inch crossover. The packer was set with 37,000 lbs of tension in a competent area of the 7-inch casing with the bottom of the packer at 7575 feet, which is approximately 85 feet above the upper most perforation. The tubing was designed and selected based on its ability to withstand the chemical affect of the injectorate and its burst pressure, collapse pressure, and tensile stresses, which may be experienced during the operational life of the well. Table 2.0-1 is a detailed tubular list of the existing pipe and the installed pipe. Figure 5.3-1 is a schematic of the Kenco packer system, and Table 2.6-1 is an inspection tally of the tubing that was used. All the injection tubing that was placed in the well was inspected and threads cleaned prior to installation.

5.4 Directional Surveys

Deviation checks were obtained prior to re-entering WDW-3 and were based on prior deviation surveys obtained from state records, which were in accordance with NMWQCCR Subpart V, Section 5205 (A)(4)(a). Attachment 5.4-1 contains the deviation surveys that were obtained from the State of New Mexico record archives submitted to the OCD.

5.5 Logging Program

The logging program for WDW-3 was completed in accordance with the regulations specified in NMWQCCR Subpart V, Section 5205(A)(4)(b).

Type of Log	Type of Hole Logged	Interval Logged (ft)	Document Reference
Dual Induction Laterolog	Open Hole	2595 – 9448	Appendix 5.5-1
Spectral Density Dual Spaced Neutron Log	Open Hole	0 – 9448	Appendix 5.5-2
Cement Bond Log (CBL/VDL)	Cased Hole	0 – 9020	Appendix 2.2-1
Temperature Log	Cased Hole	0 – 9020	Appendix 2.2-2
Casing Inspection Caliper Log	Cased Hole	0 – 9000	Appendix 2.2-3
Radioactive Tracer Survey	Cased Hole	7375 - 9008	Appendix 2.9-1

5.6 MECHANICAL INTEGRITY TESTING

The demonstration of the mechanical integrity of the WDW-3, required by NMWQCCR Subpart V, Section 5204 (A) to (D) and Section 5202 (A)(1)(a), is discussed in detail in Section 3.0 of this report. The associated logs and interpretation of the results obtained from the mechanical tests are also included in Section 3.0 of this report.

5.7 PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE FORMATION FLUIDS

In accordance with NMWQCCR Subpart V, Section 5202(A)(3)(h), an analysis describing the physical and chemical characteristics of the formation fluids, extracted from the Cisco and Upper Canyon Formation, is presented as Appendix 2.3-1.

The well materials used to construct WDW-3 were compatible with fluids which the material may be expected to come into contact. Well material would be deemed to have compatibility as long as the materials used in the construction of the well meet or exceed standards developed for such materials by the American Petroleum

Institute (API), The American Society for Testing Materials (ASTM), or comparable standards acceptable to the NMWQCCR.

5.8 REGULATORY WITNESSING

In accordance with NMWQCCR Subpart V, Section 5205(A)(5), notification prior to commencement of the reentry, cementing and casing, well logging, and mechanical integrity testing was communicated with the BLM, Carlsbad, New Mexico and the OCD, Artesia, New Mexico offices. The BLM and the OCD had an opportunity to witness all installations, logging, and testing as required in the Application for Permit to Drill, Re-enter, Deepen, Plugback, or Add a Zone and in NMWQCCR Section 5205(A)(5).

6.0 FUTURE TEST RECOMMENDATIONS

As stated earlier, due to the proximity of WDW-3 to both the WDW-1 and the WDW-2 and the procedure used by Navajo for injecting into the wells, consideration needs to be given to monitoring the bottom hole pressure in the two offset wells while performing a fallout test in the target well (WDW-3). This should allow for a better understanding of the pressure behavior in the reservoir. This may further enhance reservoir pressure forecast and increase Navajo's ability to proactively respond to reservoir and wellbore conditions.

A proposed procedure for falloff testing on the three injection wells, consist of placing BHP gauges in each well prior to starting injection into WDW-3. The injection period would consist of maintaining a constant injection rate into WDW-3 for a period 24 hours. At the end of the 24-hour injection period, shut-in WDW-3 and shift the waste injection stream to WDW-1. This would be in line with the current Navajo injection procedures. Continue injection into WDW-1 for 12 hours, and then shift the injection stream to WDW-2 for a period of 12 hours. At the end of the 12 hour injection period in WDW-2 shut down injection operations and remove the BHP tools from each wellbore. Once the BHP gauges have been removed from the wells, return to normal injection operations.

APPENDIX 2.0-1
CHRONOLOGY OF FIELD ACTIVITIES

CHRONOLOGY OF FIELD ACTIVITIES

Tuesday, July 25, 2006

Rusty Smith, with Subsurface Construction, Inc. traveled to Artesia, New Mexico and met with David Alvarado, District Manager of Basic Energy, to inspect the two rigs that they will have available on August 7th. Only one rig was available; the other could not be released. The Cooper 500 with a 250K lb derrick was the rig that was inspected. The rig was well maintained, has no pipe racks, work string, and no power swivel. The rig is used mainly for workover operations. Inspected the well site where the workover rig unit will be located. Well site needs to be scraped clean and the barbed wire fence, which surrounds the area where the old tank used to be, needs to be removed. The wellhead needs some work. Pictures of the Basic rig and well location were taken.

Wednesday, July 26, 2006

Rusty Smith left Artesia, New Mexico and traveled to Farmington, New Mexico. The rig and well location inspection summary were completed and e-mailed to Subsurface personnel for review. Included in the inspection summary were photos of the rig and location.

Wednesday, August 30, 2006

Subsurface personnel traveled to Artesia, New Mexico to meet with David Alvarado, District Manager of Basic Energy, to develop a location layout for equipment and assist Joe Konicki. Talked with Julian Carrillo, the rig tool pusher, because David Alvarado was on vacation, and he informed Subsurface that the rig was no longer available because Yates Energy had changed its position and would not release it. Set up meetings with Darrel Moore and the new Project Engineer at the Navajo plant to discuss the current job situation and introduce Joe Konicki. Joe and I talked with Key Energy about the possibility of acquiring a rig.

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Thursday, August 31, 2006

Rusty Smith measured the current WAMS units on Disposal Well No. 1 and Disposal Well No. 2 and acquired photos of Well No. 1 WAMS and the current well configuration. The well location inspection summary was completed. All photos, drawings, and the inspection summary were e-mailed to Subsurface personnel for review. Rusty Smith and Joe Konicki. left Artesia, New Mexico for Houston, Texas.

Monday, September 25, 2006

Rusty Smith traveled to Artesia, New Mexico to prepare the location for the reentry project on WDW-3, formally owned by Mewbourne Oil Company and known as Chalk Bluff Federal No. 1. The sundry notice to the BLM for the transfer of ownership was submitted on May 5, 2003. The OCD Change of Operator Notice was submitted on October 5, 2000.

Tuesday, September 26, 2006

Subsurface personnel called Knight Oil Tools & Rental and spoke with Francisco about work string and pipe. He wanted to know what type of crossovers, bit sub, safety clamp, and elevators would be needed. Spoke with Basic and they did not have any handling tools for the PH6 tubing and would need elevators and a safety valve. Knight said that they would provide elevators and a safety valve with the work string. Talked with Allen, of Key Fishing Tools, and he said that they would provide all the crossovers and bit subs. Basic was in agreement with the supplied tools.

Banta Oilfield Services will arrive tomorrow to clear the location and dig 30 foot x 30 foot x 3 foot pit. Key Energy Services will deliver tanks tomorrow and start filling them up. Portable toilets will arrive tomorrow from Sani-Tech Rentals. Young's Mobile Homes will deliver a small office trailer on Thursday. Knight Oil Tools will provide



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

work string, elevators, and the safety valve to be delivered September 27, 2006. Key Fishing Tools and Rental will provide reverse unit, subs, collars, bit, BOP (Allen), which are scheduled to arrive on Thursday, after noon. The rig is also scheduled to arrive on Thursday. Steve L., with Halliburton, has been notified and will need 48 hours notice. Contacted Aztec Rental about a fork lift and they will send account information to the office to be filled out by Subsurface's accountant. Once the account is approved, they will deliver a fork lift on September 27, 2006.

Wednesday, September 27, 2006

Subsurface personnel arrived at the job site at 7:00 a.m. MST. Banta's roustabout crew called and said that were having problems finding the location. Therefore, I met them at the ATOKA compressor station and led them to the location. Banta arrived with two backhoes and proceeded to clear the location of over growth and remove all fencing. Key Energy arrived at the job site with three frac tanks, two sets of pipe racks, catwalk, and Knight Oil Tools arrived with 150 joints of 2-7/8-inch PH-6 tubing. Knight Oil Tools will not charge for the pipe until the remaining 148 joints pipe and tools are delivered. Aztec Rental arrived on the job site with an extended boom fork lift. Julian, with Basic, called and said that they should be able to move onto the location by noon tomorrow.

The roustabout crew dug a 30 feet x 30 feet x 5 feet lined pit, cleared the location of over growth, removed the barbed wire fence, and dug out cell. The roustabout crew will return tomorrow to frame in the cellar. Key will start filling the frac tanks tomorrow and Knight Oil Tools will deliver the remaining pipe and handling tools. Subsurface left the jobsite at 6:30 p.m.

Thursday, September 28, 2006

Subsurface personnel arrived at the location at 7:20 a.m. MST. The roustabout crew arrived at 8:00 a.m. The roustabout crew completed the cellar. The Basic rig crew arrived on the location at 12:30 p.m. with a mechanic to repair the sand line brake. The



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

rig crew raised the derrick and replaced the drilling line. Rig mats had to be placed under the derrick for support. The rig mats were acquired from G&L Tools a division of Basic Energy Services. The rig crew completed repairs on the rig and left the location at 7:20 p.m. Key finished loading the frac tanks with water and brine. Key delivered the reverse unit and open top flow back tank, and the reverse unit operator will arrive tomorrow with BOP, collars, and handling tools.

Knight had problems getting the remaining work string delivered before nightfall. Knight will have the remaining pipe delivered in the morning. Young's delivered a 10 foot x 30 foot office trailer and Aztec delivered a light plant to the location. Superior Wellhead was notified and will have a man on the job site in the morning to inspect the hanger and wellhead before installing the BOP. The 150 joints of 2-7/8-inch PH-6 tubing were tallied at 4691.06 ft. Subsurface left the location at 7:45 p.m.

Friday, September 29, 2006

Subsurface personnel arrived on the jobsite at 6:45 a.m. MST. Basic rig crew arrived on location at 7:30 a.m. Subsurface and Basic crews spotted catwalk & pipe racks. The last load of pipe from Knight Tools arrived at the location with handling tools. The rig crew moved pipe and off-loaded pipe onto the pipe racks. The BOP from Key Energy arrived at the job site and was flanged up to the wellhead. The Superior wellhead technician arrived at the job and inspected the tubing hanger spool and found it to be 11₃ x 7₅ Cameron hanger and profile. The Superior wellhead technician suggested that the tubing hanger spool be replaced as the Cameron spool has been discontinued and is hard to find parts for. Key Energy's reverse unit operator arrived at the job site with 3-1/2-inch collars and handling tools.

The reverse unit (pump & tank) were rigged up to the wellhead. Portable toilets arrived at the job site. The rig crew tallied the top layer of PH-6 tubing, drill collars, bit, and started into the hole with the BHA at 1:30 p.m. The first plug was tagged at 7001 feet, at

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

7:10 p.m. The rig crew pulled a single joint of tubing from the wellbore, the well was shut in, and operations were shut down for the night.

Saturday, September 30, 2006

Subsurface personnel arrived on the jobsite at 7:20 a.m. MST. Basic rig crew arrived on location at 7:30 a.m. Basic rig crew and Key's reverse unit operator rigged up the swivel. At 10:30 a.m., Basic could not get the brake to hold on the sand line. Operations were shut down until Basic could repair the brake on the sand line and the reverse unit operator was put on stand by. Basic estimated that it will take all day to repair the brake. Basic finished repairing the brake at 7:00 p.m. Drilling operations will commence Sunday morning. Halliburton was notified to be ready to perform a perforation squeeze job on Monday. Pipe tally was checked and verified at 297 joints of 2-7/8-inch tubing for a total footage of 9413.59 feet, including the BHA at 126.45 feet. The well was shut in and operations were shut down for the night.

Sunday, October 1, 2006

Subsurface personnel arrived on the job site at 7:20 a.m. MST. Basic rig crew arrived on location at 7:30 a.m. At 8:00 a.m. Key's reverse unit operator started to drill out CIBP after circulating bottoms up (40 bbls) and there did not appear to be any cement on top of the plug. Current ROP is about 1 ft/hr while circulating returns to pit. The reverse unit operator will change over to tank once fluid cleans up. The returns appear to contain trace amounts of oil with no mud. RPM on the swivel is at 50 with a pump pressure between 250 psi to 300 psi with brine water. Drilled through plug at 9:45 a.m. and circulated hole clean. Rig crew started back into hole to tag second plug. Tagged second plug at 7190 feet, rig crew hooked up swivel to circulate hole and perform an injection test. The injection test revealed the following: 1 bpm at 300 psi, 1.5 bpm at 550 psi, and 2 bpm at 980 psi. After the pump-in test, the falloff went from ISIP of 950 psi to 200 psi in 22 minutes. Key Energy Service removed 250 bbls of water from earthen pit.

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Rig crew tripped out of hole (TOOH) with pipe to prepare for cement squeeze job. Rig crew tripped in hole (TIH) open ended with tubing to spot cement for squeeze job, with bottom of the tubing at 7101.49 feet. Contacted Halliburton and ordered 80 sks of cement (cmt) for squeeze job into upper perforations.

Monday, October 2, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Halliburton was on the jobsite waiting on cement to arrive. Cement arrived at the location at 7:30 a.m. Halliburton rigged up their cement pump while waiting on a crossover for the PH-6 tubing. Halliburton did not bring a crossover to the PH-6 thread to 8rd, so Key Fishing Tools had one delivered.

Cement squeeze went well at 2000 psi squeeze pressure. Pressured up to 2001 psi. After 10 minutes, pressure fell to 1950 psi and re-pressured to 2007 psi. After one hour, pressure dropped to 1990 psi with 2.2 bbls, released pressure and recovered about 2 bbls. Re-pressured well to 2001 psi and held for 5 minutes at 1990 psi. The ring gasket began to leak around BOP. Halliburton released pressure and recovered 1.9 bbls. Halliburton rigged down and the rig crew TOOH with tubing. Hole remained full while tripping pipe. Rig crew tightened BOP flange head bolts. Key reverse unit operator pressured up well to 680 psi, with no apparent leaks, and the well was shut-in over night, while waiting on cement (WOC).

Tuesday, October 3, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and TIH with the collars and bit. Rig crew tagged cement at 6873 feet on joint No. 215 plus 20 feet. Assuming hole is full of cement to CIBP at 7190 feet, there are 12.1 bbls of cement in the hole and 6.6 bbls of cement were circulated out and/or squeezed into the formation. It was estimated that 3.5 bbls were circulated out leaving 3.1 bbls of cement having been squeezed into the near wellbore. Rig crew drilled out cement and



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

circulated hole clean at 4:00 p.m. The well was shut-in to prepare for a pressure test on the squeeze perforation for 12 hours at 500 psi.

Started 500 psi pressure test at 4:30 p.m. Pressured up well to 590 psi and after one hour pressure fell to 530 psi. Re-pressured well to 580 psi and after one hour pressure was at 578 psi. At 5:30 p.m. well was at 578 psi and holding. Shut down operations overnight.

Wednesday, October 4, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. At 7:00 a.m., the pressure on the well was 455 psi. The well lost 123 psi over 13.5 hour, for a 9.1 psi/hr (1.58%/hr) loss. Rig crew rigged up swivel and continued to drill out CIBPs at 7190 feet and (estimated third plug depth) at 7294 feet. While drilling through the second plug at 7190 feet metal cuttings were being retrieved across screen. Third CIBP was found at 7278.96 and it was estimated that there was 9 feet of cement on top of both plugs, which places the second plug at 7199 feet and third plug at 7287 feet. At 12:25 p.m., rig crew commenced drilling through third plug. At 3:00 p.m., driller punched through the third plug. The formation started taking fluid at a rate of 1.0 to 1.25 bpm while pumping, lost 180 bbls of 8.7 ppg brine water to the formation.

Rig crew TIH and tagged the forth CIBP at 7591 feet then pulled up 20 feet and reversed circulated the wellbore clean. The reverse unit operator completed the pump in test for the perforations from 7262 feet to 7278 feet and from 7304 feet to 7314 feet. The maximum rate was 4.5 bpm (max that the pump could deliver) at 710 psi with no pressure build up. The ISIP was about 580 psi and fell to 170 psi in 9 minutes. At 4:45 p.m., rig crew TOOH with collars and bit. Halliburton will be out tomorrow afternoon with 100 sks of Class C cement to squeeze off perforations. At 7:30 pm, the rig crew was out of the hole with the collars. The well was shutin and operations were shut down.



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Thursday, October 5, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:20 a.m. and TIH open ended, placing the bottom of the work string at 7321 feet; 7 feet below the bottom perf at 7314 feet. Key filled fresh water and salt water tanks while we waited for a Halliburton pump truck to arrive. Halliburton arrived on the location at 11:30 a.m. At 12:44 p.m. Lines were pressure tested to 3000 psi. Halliburton broke circulation and caught returns with 6.3 bbls pumped. At 12:52 p.m., Halliburton started mixing cement and pumped 23.5 bbls of cement, followed by 35.5 bbls of fresh water. Rig crew pulled 10 stands (630 feet) and Halliburton started to squeeze the cement into the formation. The squeeze was performed in 7 stages, each 10 minutes apart, pumping approximately 1 to 1.5 bbls per stage.

After the first stage the wellhead pressure was 78 psi. After the 7th and last stage, the wellhead pressure had increased to 1973 psi. A total of 9 bbls were pumped during the squeeze job. The well was shut-in with 1970 psi on the wellhead. Subsurface allowed the well to remain shut-in for an additional 2 hours, after which the wellhead pressure was bled off and 8 stands (500 feet) of pipe were TOOH to insure that no cement remained around the pipe. The well was pressured up to 930 psi and shut-in overnight to WOC.

Friday, October 6, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and TOOH with work string. The wellhead pressure this morning, after 14 hours, was 850 psi. With a loss of 80 psi over a 14-hour period after the squeeze or 5.7 psi/hr. At 10:00 a.m., rig crew TIH with work string, collars, and a new bit. At 12:30 p.m., rig crew tagged soft cement at 7052 feet and quickly drilled through the cement. At 7092 feet, hard cement was encountered. Rig crew drilled through cement to 7338 feet and tagged bottom at 7554 feet (previous tag 7591 feet). Well would not hold pressure during test and reverse unit operator was able to pump into the well at ~20 to 25



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

gpm at 920 psi. A second cement squeeze on the second set of perforations will be required. Well was shut in over night.

Saturday, October 7, 2006

Subsurface personnel arrived at the location at 7:20 a.m. MST. Rig crew arrived at 7:30 a.m. and TOOH with work string, collars, and bit. A new Key reverse unit operator arrived at the location. Halliburton was called to confirm a third cement squeeze job. Halliburton informed Subsurface that they would not have a pump truck available until Wednesday. Key Pumping service was contacted and retained to provide the service on Sunday afternoon. Due to unavailability of cement pumping services to do the third cement squeeze, the estimated schedule has been pushed back 2 days.

At 10:50 AM the rig crew had collars and bit out of the hole and TIH with open ended work string to just above the bottom set of perforations at 7314'. The open ended work string was placed at 7290 feet, 24 feet above the bottom set of perforations (1 bbl of casing volume). The well was shut-in while waiting on a cement pump truck to arrive.

Sunday, October 8, 2006

Subsurface personnel arrived at the location at 10:10 a.m. MST. Rig crew arrived at 10:20 a.m. Key Pressure Pumping Services arrived at the location at 10:30 a.m. Key pumping crew rigged up pump and bulk truck. The mix water for the cement squeeze in the frac tank was contaminated with brine water and a load of city water was called in for mix water. At 2:00 p.m., fresh mixed water arrived on location. Key pumping pressure tested lines to 2500 psi and then circulated 12 bbls to fill the wellbore with fluid. At 3:04 p.m., Key started mixing cement and pumped 10 bbls of FW ahead followed by 18.5 bbls of 14.8 ppg cement. The cement was displaced with 35.5 bbls of FW. Rig crew TOOH with 8 stands (500 feet) and the well was reversed circulated with 40 bbls of FW. At 4:03 p.m., Key pumping started to squeeze the well with an initial rate of 0.5 bpm at



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

750 psi. After 6 bbls the rate was decreased to 0.3 bpm at 1890 psi. After 7.5 bbls at 1975 psi pumping was stopped to allow the pressure to fall.

At the end of 10 minutes, the wellhead pressure had fallen to 1063 psi and pumping was resumed. An additional 1.5 bbls was pumped before the pressure reached 1940 psi. The wellhead pressure fell to 1914 psi after 20 minutes and did not appear to fall any further. The well was shut-in and Key rigged down their pumps. After one hour, the wellhead pressure had fallen to 1860 psi. At 6:00 p.m., the well was shut-in for the night with 1830 psi on the wellhead to WOC.

Monday, October 9, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and TOOH with open ended work string. Rig crew TIH with work string, collars, and bit to drill out cement. The wellhead pressure this morning after the 80 sk cement squeeze job was 1825 psi. Reverse unit operator tagged cement at 6981 feet and found hard cement at about 7003 feet. At 4:43 p.m., driller broke through the cement at 7312 feet. The estimated cement plug length left in casing was 331 feet or 12.7 bbls out of 18.8 bbls of cement. Driller tagged bottom at 7559 feet, rig crew pulled up off bottom approximately 20 feet, and the reverse unit operator circulated the wellbore. The well was shut-in and pressure tested to 610 psi at 6:45 p.m. for a 12-hour test.

Tuesday, October 10, 2006

Subsurface arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. Wellhead pressure at the end of 13 hours was 480 psig, down from 610 psig; a pressure loss of 130 psi over the 13-hour period. The decision was made by Subsurface personnel to retest the casing after the squeeze for an additional 12 hours. At 8:03 a.m., the wellhead pressure was increased to 630 psig and monitored every thirty minutes. At 9:30 a.m., the 7-inch x 9-5/8-inch annulus valve was opened to see if it had any effect on the casing pressure. Casing pressure fell slightly faster from 2 psi/30 minutes to 5 psi/30

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

minutes. Once the annulus casing valve was closed, the pressure loss maintained a 2 psi/30 min loss.

When the casing valve was first opened it smelled like natural gas. The annulus casing valve was closed and a pressure gauge placed on the annulus and monitored. At 2:03 p.m., the wellhead pressure was falling at a rate of 2 psi/30 minutes with less than 5 psi on the casing annulus. At 5:03 p.m., wellhead pressure was maintaining a falloff rate of 2 psi/30 minutes. At 8:03 p.m., after 12 hours, the wellhead pressure was 568 psig.

Wednesday, October 11, 2006

Subsurface arrived at the location at 7:00 a.m. MST. The wellhead pressure was 523 psig. At 7:03 a.m., maintaining a 2 psi/30-minute pressure loss. Rig crew arrived at 7:30 a.m. and rigged up swivel and broke circulation. At 8:00 a.m., reverse unit operator tagged bottom and started to drill out plug at a circulation rate of 2 bpm, with 500 psi of pressure. At 9:30 a.m., reverse unit operator tagged the top of the plug at 7595 feet and started to drill through the plug. While drilling out the plug, the plug dropped to 7776 feet and, reverse unit operator continued to drill out the plug. Reverse unit operator drilled 2 feet through the plug and tagged mud contaminated cement at 7780 feet. Continued to drill through the cement.

At 2:00 p.m., reverse unit operator drilled through cement plug at 7838 feet, then circulated for 30 minutes before the rig crew TIH to tag the top of the liner (TOL). The well was taking fluid at a rate of about 1/2 bpm once the cement plug was drilled through. Rig crew tagged cement on TOL at 9022 feet and broke circulation. At 3:30 p.m., the reverse unit operator commenced circulating the hole clean to 9022 feet. Reverse unit operator circulated 347 bbls of 8.6 ppg brine water. At 5:30 p.m., the rig crew started TOOH with work string, bit, and collars. Tomorrow, the rig crew will TIH with casing scraper to prepare the well for logging operations.



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Thursday, October 12, 2006

Subsurface arrived on location at 7:00 a.m. MST. Wood Group logging crew was at the job site spotting equipment. Rig crew arrived at the location at 7:30 a.m. and continued to TOOH with work string, collars, and bit. At 10:00 a.m., rig crew TIH with casing scraper to 9022 feet. At 12:30 p.m., rig crew TOOH with casing scraper. At 3:30 p.m., Wood Group Wireline Services rigged up to the wellhead to run the CBL/VDL into the wellbore. At 4:30 p.m., the well was shut-in for the night.

Friday, October 13, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Wood Group logging crew arrived at the job site at 7:10 a.m. Rig crew arrived at the location at 7:30 a.m. and Wood Group started into the wellbore with CBL/VDL logging tool. Fikes Truck Lines arrived at the location with 4-1/2-inch, 11.6 lb/ft, J-55, LTC tubing, from C&R Industries, and the rig crew unloaded 174 joints of tubing. Wood Group completed CBL/VDL logging and ran into the wellbore with the temperature logging tool. The temperature log was completed at 3:00 p.m. with no anomalies. At 3:15 p.m., Wood Group ran the caliper logging tool into the wellbore. The CBL/VDL log showed that the TOC was located at 900 feet with good to fair bonding to 9020 feet. The VDL indicated that cement was placed into the squeezed perforations.

At 6:40 p.m., Wood Group was out of the wellbore with the caliper log and there did not appear to be any major anomalies in the 7-inch casing from 9020 feet to surface. The well was shut-in for the night and Wood Group will be back tomorrow to perforate. The time needed to perforate well was estimated to be two days.

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Saturday, October 14, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Wood Group logging crew arrived at the job site at 7:00 a.m. Rig crew arrived at the location at 7:30 a.m. and Wood Group started into the wellbore with a 40 foot perforating gun. Basic provided two men to assist Wood Group as needed with the rig. Wood Group made 12 perforating runs, completing the interval from 8540 feet to 8620 feet and 400 feet of the interval from 8050 feet to 8450 feet. Wood Group will complete the remaining 390 feet tomorrow from 7660 feet to 8050 feet. The well was shutin for the night.

Sunday, October 15, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Wood Group logging crew arrived at the job site at 7:00 a.m. Rig crew arrived at the location at 7:20 a.m. and Wood Group started into the wellbore with a 40 foot perforating gun. Basic provided two men to assist Wood Group as needed with the rig. Wood Group made 10 perforating runs, completing the interval from 7660 feet to 8050 feet. A total of 22 perforating runs were made and there were no misfires during any of the runs. All the retrieved hollow steel carrier guns shot 2-JSPF on a 60° phasing. The two man rig crew assisted Wood Group with rigging down the logging equipment. The well was shutin for the night.

Monday, October 16, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and started to lay down collars. Kenco packer and operator arrived at the job site at 8:30 a.m.. Kenco did not have the proper x-over for the PH-6 to 8rd and had to wait for a cross-over before the rig crew could run the packer. Cross-over arrived at the location and the rig crew TIH with the 7-inch x 2-7/8-inch packer. Packer was set at 7546 feet and the rig crew started to swab back the well. The first formation fluid sample was taken after 12 runs to 2400 feet (estimated 151 bbls), the second sample was taken



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

after 14 runs (estimated 176 bbls), the third sample taken after 16 runs (estimated 201 bbls), and fourth sample was taken after 18 runs (estimated 226 bbls). Had H₂S gas present between runs 7 through 9 (estimated at 88 and 113 bbls). Well was shutin over night.

Tuesday, October 17, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:20 a.m. Rig crew loaded collar and swivel onto Key's trailers. While waiting on Key's pump truck to arrive, reverse unit operator pressured up on 2.875-inch x 7-inch annulus with packer set at 7546 feet to perform an annulus pressure test. Initial pressure was 660 psi at 8:15 a.m. After 2 hours the pressure loss started to stabilize at about 4 psi/30 minutes. At 12:30 p.m., Key Pressure Pumping was called to verify that a pump truck was coming. Apparently there was a mix-up by the dispatcher and the pump was sent to another job. Key informed Subsurface that they will have a pump on the jobsite tomorrow afternoon.

At 1:30 p.m., the wind had picked up to a point that the rig crew could not TOO H with the packer and pipe. Therefore, the annulus pressure test will be continued for the remainder of the day. Rig crew worked on rig until 3:30 p.m. and then shut-in the well for the night. Subsurface monitored pressure until 6:30 p.m.

Wednesday, October 18, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:20 a.m.. Reverse unit operator arrived at 7:30 a.m. Subsurface delivered field copies of the logs to Navajo Refining and contacted Darrel Moore. Rusty Smith informed Darrel of the need to contact the State of New Mexico for approval to use the well, even though cement did not come all the way to the surface around the 7-inch x 9-5/8-inch casing annulus (900 feet from the surface). Darrel approved Subsurface's request to



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

contact the appropriate state officials for approval and to take necessary steps as the State of New Mexico directs.

At 10:30 a.m., the reverse unit operator pressured up the annulus between the tubing and the 7-inch casing to 700 psig for the injection test and left the location. Key Pumping Service arrived at the job site at 3:30 p.m. and started pumping down the 2-7/8-inch tubing at 4:20 p.m. with produced water in the wellbore and 650 psi on the annulus. The initial rate was 2.2 bpm (inline flow meter) at 300 psig on the tubing. After 43 bbls the pressure stabilized at 150 psi, with a total of 50 bbls pumped. The rate was increased to 4.1 bpm with an initial pressure of 830 psi. After 20 bbls, the tubing pressure stabilized at 900 psi. The pump broke down with a total of 80 bbls pumped (tubing volume 43 bbls). The ISIP was about 630 psi. Rig crew shut-in the well for the night and Key Pumping will return tomorrow morning to complete the job. (Note: pump wire harness fell into the drive shaft ripping it apart along with some hydraulic hoses)

Thursday, October 19, 2006

Subsurface personnel arrived at the location at 7:30 a.m. MST. Rig crew arrived at 9:00 a.m. Reverse unit operator arrived at 8:00 a.m.. At 9:00 a.m., Key pumping supervisor called and said that they were 45 minutes out and were given directions to the location. Subsurface released the down hole packer and will monitor both the backside and tubing pressure during the pump-in testing.

Key Pumping circulated the wellbore at 2 bpm to fill the wellbore with fluid & caught returns after 37 bbls. At 2 bpm tubing pressure (Pt) was 183 psig and backside pressure (Pa) was 28 psig. At 3 bpm, Pt was 638 psig & Pa was 148 psig. At 4 bpm, Pt was 1132 psig & Pa was 250 psig. At 5 bpm, Pt was 1678 psig & Pa was 320 psig. At 6 bpm, Pt was 2343 psig & Pa was 408 psig. At 7bpm, Pt was 3108 psig & Pa was 518 psig. At 8 bpm, Pt was 3748 psig and Pa was 535 and at 9 bpm, Pt was 4522 psig Pa was 590 psig. Key was able to reach 10 bpm but the engine over heated and was shut down. The Pt was 5087 psig at shut down and no Pa was recorded but estimated at 660 psig. Well went on



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

a vacuum once pumping had stopped. The best estimate for ISIP 230 psig total volume of brine water pumped was 280 bbls.

Rig crew started out of the wellbore with the packer and went back into the hole with RBP and packer to test casing below squeezed perforations. We first tested across squeezed perforations and then the annulus above the perforation. RBP was set at 7550 feet packer was set above the RBP and RBP was pressure tested for leaks and packer was released. At 6:00 p.m., 640 psig was left on the annulus with the well shut-in overnight.

Friday, October 20, 2006

Subsurface personnel arrived at the location at 6:45 a.m. MST. At 7:00 a.m., the wellhead had 770 psig from 640 psig over 13 hours, a net pressure build of 130 psi. Rig crew arrived at 7:20 a.m. Subsurface and Navajo Refining received approval from the State of New Mexico after they reviewed the revised procedure and CBL/VDL log to complete the well for injection without additional cementing. The State of New Mexico requested that we try to find the leak in the casing within 500 feet to 1000 feet of the leak. Rig crew pulled 8 stands and one joint of pipe and the packer was set at 6985 feet to isolate the cement squeezed perforated interval. The squeeze interval was initially pressure tested to 490 psig and the annulus was initially pressure tested to 632 psig. The pressure test ran for 5 hours and appeared to stabilize after 2 hours.

After 2 hours, the squeezed interval was losing 6 psi/hr while the annulus was gaining about 0.75 psi/hr due to thermal effects. The final pressure for the squeezed interval was 458 psig and the final pressure for the annulus was 640 psi. At 2:30 p.m., the rig crew picked up the RBP and TOOH to 1255 feet where the RBP was reset. At 5:30 p.m., the casing was pressure tested from surface to 1255 feet with an initial pressure of 570 psig. At 6:00 p.m., the well was shut-in over night with 569 psig on the casing.

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Saturday, October 21, 2006

Subsurface personnel arrived at the location at 6:45 a.m. MST. At 7:00 a.m., the wellhead had 540 psig from 569 psig over a 13 hour period, a net pressure loss of 29 psi at a rate of 2 psi/hr with the RBP set at 1255 feet (48 bbl). Rig crew arrived at 7:30 a.m. Continued to monitor pressure to verify loss rate. At 7:30 a.m., pressure was 539 psig and at 8:00 a.m. pressure was 538 psi. Packer hand released RPB and rig crew TOOH with packer and RBP. Charlie's Services inspected the 4-1/2-inch tubing. Rig crew TIH and TOOH with work string and started laying down the work string as they came out of the hole. Charlie's inspection crew found two bad joints of 4-1/2-inch tubing as marked on their tally. Rig crew finished laying down the work string and loaded 4-1/2-inch tubing onto the pipe rack. Well was shut-in for the night.

Sunday, October 22, 2006

Pipe, location, and rig personnel are ready for casing crew. Wellhead, packer, and annulus fluid to arrive on Monday.

Monday, October 23, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and replaced the old Cameron 7-1/16-inch 5M x 11-inch 3M spool with a new Superior 7-1/16-inch 5M x 11-inch 3M spool. P-seals were pressure tested for 15 minutes to 3000 psi with no leakoff. BOP was reseated on the new spool to run the casing into the wellbore. At 12:00 p.m., casing crew started into the wellbore with packer and 4-1/2-inch tubing. Packer would not go past the 50-foot mark therefore, packer was pulled out of the hole and inspected.

Weatherford had brought to location, a packer for 7", 24 lb/foot casing. The casing in the wellbore was 7 inches, 29 lb/ft casing. Weather had to go back to Hobbs, New Mexico to

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

pick up the correct packer. Kenco was called, and they had an Arrow X-1 Packer in the shop. Kenco delivered a new 7-inch Arrow X-1 packer to the job site but brought out the wrong size cross-over. At 4:15 p.m., Weatherford brought out a rebuilt 29 lb/ft packer to replace the 24 lb/ft packer that was originally brought out to location. Kenco will have a cross-over on the job site in the morning and Weatherford was sent back to Hobbs. Kenco will install the packer. The well was shut in for the night.

Tuesday, October 24, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew and casing crew arrived at 7:30 a.m. The crews started running casing at 8:00 a.m. There were no problems getting Kenco's new Arrow Packer into the wellbore. Kenco also used an integral cross over rather than a sedge and casing collar for a cross. At 2:30 p.m., casing crew ran 7567 feet of casing into the hole and each joint was torqued to specifications at 1600 lbs. The wellbore was circulated full of fluid (240 bbls), then 300 PSI pumped 23.8 bbls of squeeze chemical. The reverse unit operator pumped 95 bbls of inhibited brine water followed by 14.29 bbls of squeeze chemical, leaving 7.23 bbls of brine in the bottom of the annulus. The weight of the brine circulated and the inhibited brine in the annulus was 8.7 ppg. The weight of the squeeze chemical was 10.2 ppg.

At 5:30 p.m., the bottom of the Arrow packer was set at 7575.73 feet with 37K lb in tension within 7 minutes after we stopped pumping with the well taking fluid at ~0.5 bpm. The length of the packer was 7.2 feet and the length of the cross over was 0.54 feet. Casing slips were set in the spool and the BOP was removed and a rough cut made on the casing. Once all equipment was removed from the area the 4-1/2-inch tubing was dressed off and the wellhead installed. At 7:00 p.m., the well was shut-in for the night.

Wednesday, October 25, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Superior Wellhead arrived at the job site at 7:20 a.m. and pressure tested the P-seals to 3000 psig. Rig crew



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

and casing crew arrived at 7:30 a.m. Rig crew started mobilizing the rig. The reverse unit operator pumped the annulus full with 2.5 bbls. At 10:00 a.m. 300 PSI arrived at the job site and performed a 545 psi squeeze for 4 hours with no pressure loss. At 3:00 p.m., an annulus pressure test was performed and recorded for one hour by 300 PSI, at a pressure of 490 psig on the chart. At 4:00 p.m., the annulus pressure test showed no pressure loss over the hour. Left 480 psig on the annulus (at 4:30 p.m.) overnight to watch for pressure leaks. At 6:00 p.m., annulus was maintaining 480 psig. Well was shut-in for the night.

Thursday, October 26, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. At 7:00 a.m., EL Farmer trucking was at the job site waiting on someone to load the 2-7/8-inch, PH-6 tubing onto the truck. At 7:15 a.m., Subsurface started loading tubing onto the EL Farmer truck. At 7:30 a.m., Renco Equipment arrived at the job site with a fork lift and completed loading up truck. The first truck picked up slips, stabbing tool, safety valve, and 150 joints of pipe. At 8:00 a.m., annulus was maintaining 480 psig and showed no signs of pressure loss over the 14-hour period. The second truck arrived at 8:05 p.m. and was loaded with 147 joints of pipe. At 8:30 a.m., two Key Fishing Tool trucks arrived at the job site to pick up pump, open top tank, pipe racks, BOP, and catwalk. Key Energy delivered 4 frac tanks to the job site and started to fill the tanks with fresh water and brine. At 4:30 p.m., G&L Tool Rental picked up rig mat boards. At 5:30 p.m., annulus was maintaining 480 psig and showed no signs of pressure loss over the 23.5-hour period. Well was shut-in for the night.

Friday, October 27, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Key will not have all 14 frac tanks spotted and filled by this Saturday therefore the pressure build up/falloff test will have to be postponed until Saturday, November 4th, due to the availability of pump trucks to perform the pressure build up portion of the test.



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Trailer and light plant will remain on the job site for another week, as we will need the light plant for the 12 hours of pumping. At 10:00 a.m., Medina's Hot Shot service arrived at the job site and delivered a flange, ring gasket, and bolts from Superior Wellhead to cover the injection line valve. At 3:00 p.m., Key delivered one frac tank to the job site and repaired a leak around the bottom valve on one of the tanks that was delivered yesterday.

Saturday, October 28, 2006

Rusty Smith traveled to Houston and will return on Thursday, November 2, 2006 to oversee the pressure build up and falloff test.

Thursday, November 2, 2006

Rusty Smith traveled to Artesia, New, Mexico and arrived at the jobsite at 2:30 p.m. MST. Key had 14 frac tanks on the site and should have them filled by tomorrow afternoon. Tried to find a 1-13/16-inch hammer wrench for flange bolts and could not find any in Artesia. Contacted Banta to install side flange for pump-in test, Banta will have hammer wrenches for flange. Subsurface acquired fuel containers for light plant. Key will roll frac tanks tomorrow.

Friday, November 3, 2006

Subsurface personnel arrived at the location at 7:30 a.m. MST. Banta Roustabout Service arrived at the location at 8:15 a.m. and installed the injection side flange. Six temperatures were taken at midpoint in the frac tanks to determine the current water temperatures. The shear pin in the packer was set at 80K lbs, which is well above the stress being applied due to temperature changes. Petroplex treated all tanks with biocide and Key came out and rolled the tanks with a vacuum truck.



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

Alex, with Schlumberger Slickline, was on notice for tomorrow at 3:00 p.m. MST. After rolling the tanks, the average water temperature in the tanks was 60.6° F. Key left the job site at 5:30 p.m.

Saturday, November 4, 2006

Subsurface personnel arrived at the location at 6:20 a.m. MST. Petroplex Pumping Service arrived at the location at 7:10 a.m. and started to rig up their pumps. Key's kill truck arrived at 7:12 a.m. and rigged up to the annulus to hold pressure on the annulus. At 9:15 a.m., treating lines were pressure tested to 4400 psi. Started pumping at 9:19 a.m. at 3 bpm to fill hole and after 28 bbls we caught pressure with 162 psig on the wellhead and 535 psig on the annulus. At 9:42 a.m., with 50 bbls into the well, the rate was increased to 5 bpm at 385 psig and 463 psig on the annulus. At 9:55 a.m., the rate was 5 bpm with 525 psig on the wellhead and 118 bbls pumped. At 10:00 a.m., the second pump was brought on line and the first pump was taken out of service due to a leaking hydraulic hole. At 10:10 a.m., the rate was 5 bpm at 531 psig and 493 psig on the annulus. At 10:15 a.m., the rate was increased to 6.8 bpm at 700 psig on the wellhead with 215 bbls pumped. At 10:45 a.m., the rate was increased to 10 bpm at 1200 psig and 542 psig on the annulus with 438 bbls pumped. At 10:55 a.m., the rate was 10 bpm at 1220 psig with 532 bbls pumped and 730 psig on the annulus. At 11:05 a.m., the rate was being maintained at 10 bpm at 1278 psig with 673 bbls pumped.

Petroplex is sending out another pump to the location. The backup Petroplex pump arrived at 12:10 p.m. and the crew rigged up two additional pumps in the treating line for backup. At 1:00 p.m., the rate was 10 bpm at 1185 psig with 1785 bbls pumped, annulus pressure was 775 psig. At 2:30 p.m., the rate was 10 bpm at 1387 psig with 713 psig on the annulus, 2307 bbls pumped. At 3:30 p.m., the rate was lowered to 9 bpm at 1209 psig with 725 psig on the annulus, 3028 bbls pumped. At 5:30 p.m., the rate was 9 bpm at 1171 psig with 719 psig on the annulus. At 6:00 p.m., Schlumberger arrived at the job site and rigged up the slickline unit. At 7:17 p.m., the rate was lowered to 5 bpm to allow the BHP memory tool into the wellbore. At 7:30 a.m., the rate was increased to 5 bpm at

CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

344 psig. At 7:41 p.m., the rate was increased to 9 bpm at 1104 psig. At 9:00 p.m., the pumps started to lose suction pressure and the pumping job was ended (est. 6700 bbls). Well was closed in with 50 psig on the annulus and no pressure on the wellhead. Petroplex rigged down and left location at 11:00 p.m.

Sunday, November 5, 2006

Subsurface personnel arrived at the location at 8:30 a.m. MST, with 800 psig on the annulus. Schlumberger slickline crew arrived at the location at 10:20 a.m. and started out of the hole with memory tool at 8630 feet (10:35 a.m.), taking gradient stops every 1000 feet for 5 minutes. The length of the tool was 27 feet with the top of the tool placed at 8630 feet. First stop was at 7000 feet at 10:40 a.m.. At 12:35 p.m., Schlumberger completed the rig down process and left location at 1:00 p.m. The office trailer was cleaned out and disconnected from the light plant. The light plant was rigged down and made ready for pickup. The well annulus was bled down and left open and the wellhead shut-in. Schlumberger left their 4-1/2-inch 8rd EUE x 2-7/8-inch female 8rd tubing swedge in the top of the wellhead.

Monday, November 6, 2006

Subsurface personnel traveled to Houston and will return on Monday, November 13, 2006, to oversee the temperature survey, radioactive tracer survey, and annulus pressure test. Called Young's to pickup office trailer, Sani-Tech to pick up portable toilets, and Aztec to pickup light plant. Larry at Key was notified to leave one frac tank on location and pickup the remaining frac tanks. Banta was notified for waste removal of pit and location cleanup for the week of November 13th.

Sunday, November 12, 2006

Rusty Smith traveled to Artesia, New Mexico, and arrived at the job site at 5:00 p.m. MST. Key Energy emptied the frac tank bottoms and the tanks are ready to be



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

disconnected and picked up. Aztec and Sani-Tech still have not removed the equipment from the location. The equipment was taken off rental on November 6, 2006.

Monday, November 13, 2006

Subsurface arrived at the location at 7:30 a.m. MST. Banta roustabout service arrived at the job site at 8:15 a.m. to remove well cutting and clear location of debris, fill in cellar with gravel, and haul off trash. Navajo refining requires that that all produced cuttings and debris contained in the pit be profiled prior to disposal (cannot be disposed under oil field exemption). Key started to remove frac tanks from the location. The OCD pushed back the annulus pressure test, and radioactive tracer survey one day to November 15th. Wood Group Logging services will arrive tomorrow afternoon for testing on the 15th. Petroplex Pumping will provide a pump truck for the radioactive tracer test.

Tuesday, November 14, 2006

Subsurface personnel arrived at the location at 8:30 a.m. MST. Wayne, with the OCD, was emailed at 5:00 p.m. MST November 13, 2006, informing the OCD of the annulus pressure test and radioactive tracer survey set for November 15, 2006. Included in the email were directions to the well and a short testing procedure. Wood Group and Petroplex were contacted to verify the job for tomorrow. Key has filled one frac tank with one load of brine and three loads of fresh water to chase down the radioactive slug. Wind gusted up to 50 mph and Key could not haul any more frac tanks for the day, in accordance with DOT regulations. Because of the high wind speed Wood Group will rig up tomorrow. OCD called and said that they will arrive at 10:00 a.m. tomorrow morning.

Wednesday, November 15, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Petroplex was on location. At 7:50 a.m., Petroplex hooked up to the frac tank and started to circulate the tank and will circulate for +2 hours. Wood Group started to rig up at 8:30 a.m. and



CHRONOLOGY OF FIELD ACTIVITIES (Cont'd.)

completed the rig up at 10:00 a.m. OCD representatives arrived at the location to witness the annulus pressure test. The annulus was pressure tested to 530 psia and over a one hour period and lost 2.5 psi. According to the OCD, the well passed the annulus pressure test.

The radioactive survey was started and during the 5-minute check, the upper gamma ray sensor malfunctioned and the sensor had to be pulled and replaced. Once the sensor was replaced, the remainder of the survey went as planned and there did not appear to be any radioactive material above the packer or being pumped out of the injection interval.

There were some undocumented perforations below 8600 feet that were taking fluid. During the first chase down, additional RA material was released as a result of the well being on a vacuum. At the end of the job the annulus was pressure tested to 300 psig and held pressure for 1.5 hours and was then bled off and left open. Wood Group rigged down at 8:30 p.m.

Thursday, November 16, 2006

Subsurface personnel called Key to release frac tank and went to location to check well and sign invoices from Basic and G&L Tools in Artesia, NM. Subsurface personnel travel to Houston, Texas.

Subsurface personnel will return to Artesia in \pm one month to install WAMS. Subsurface is waiting on the unit to be built.

APPENDIX I

INJECTION ZONE PERMEABILITY DATA



**APPENDIX I
CALCULATION OF PERMEABILITY
FROM DST NO. 5
MEWBOURNE OIL COMPANY, CHALK BLUFF 31, STATE NO. 1**

The permeability of the interval tested is calculated to be 597 md, as follows from test data in Attachment VIII-9:

$$k = 162 \frac{qB\mu}{mh}$$

where:

- k = permeability, md
- q = production rate (bbl/day)
- B = formation volume factor, (reservoir bbl)/(stock tank bbl)
- μ = viscosity, centipoise (cp)
- m = slope of Horner plot, psi/cycle
- h = reservoir thickness, feet

The production rate, q, is calculated from the total volume of fluid, 78.7 bbl, produced during DST No. 5, which lasted for 90 minutes (the sum of lengths of the first and second flow periods). Using these values, q is equal to 1259 bbl/day. The formation volume factor, B, is assumed to be 1. The viscosity, μ , of reservoir brine with 25,000 ppm chlorides (approximately 2% salinity) at a bottom-hole temperature of 130°F is 0.53 cp, taken from the charge in Attachment VI-7. The slope of the Horner plot, m, is taken from the Horner plot for the second flow period of DST no. 5, or 5.348 psi/cycle (page 22 of Attachment VIII-9). The reservoir thickness, h, is the thickness of the interval tested during DST No. 5, or 34 feet (7851 feet – 7817 feet). Substituting these values into the equation above gives:

$$k = 162 \frac{(1259)(1)(0.53)}{(34)(5.348)}$$
$$= 597 \text{ md}$$

APPENDIX J

INJECTED FLUID MONITORING PLAN





INJECTED FLUID MONITORING PLAN

**NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO**

SUBSURFACE PROJECT NO. 60A6781

**SUBMITTED
JUNE 2012**

**SUBSURFACE TECHNOLOGY, INC.
HOUSTON, TEXAS**

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	WASTE STREAM DESCRIPTION.....	1
3.0	INJECTED FLUID CHARACTERIZATION SAMPLING PROGRAM.....	1
3.1	Sampling Frequency.....	1
3.2	Sampling Location.....	2
3.3	Sample Collection Equipment.....	2
3.4	Sample Containers.....	2
3.5	Sampling Methodology.....	2
3.6	Sample Preservation.....	2
3.7	Field Measurements.....	3
3.8	Sampling Personnel.....	3
4.0	FIELD DOCUMENTATION.....	3
4.1	Water Sampling Log.....	3
4.2	Sample Container Label.....	3
4.3	Chain-of-Custody Form.....	4
4.4	Custody Seal.....	4
4.5	Field Equipment Calibration Log.....	4
5.0	QUALITY ASSURANCE/QUALITY CONTROL.....	4
6.0	SAMPLE CUSTODY AND TRANSPORT.....	4
7.0	WASTE STREAM ANALYTICAL PROGRAM.....	5
7.1	Laboratory Requirements.....	5
7.2	Analytical Parameters.....	5
8.0	REPORTING.....	6



1.0 INTRODUCTION

This injected fluid monitoring plan (plan) has been prepared per the requirements of 20.6.2.5207B NMAC. This plan allows for consistent characterization of the injected fluids that are being injected into the three nonhazardous waste injection wells operated by Navajo Refining Company, L.L.C. (Navajo) at their refinery in Artesia, New Mexico. The plan shall be updated as necessary to remain accurate and the analysis remains representative of the fluids being injected into the three nonhazardous waste injection wells.

2.0 INJECTED FLUID DESCRIPTION

The fluid injected into all three Navajo injection wells is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers, boilers, streams from water purification units, desalting units, recovered and treated ground water, and general waste waters, all waters will be blended to form the injected fluid into the injection wells.

3.0 INJECTED FLUID CHARACTERIZATION SAMPLING PROGRAM

The following sampling program shall be used to collect a representative sample of the injected fluid for chemical analysis to demonstrate the consistency of the fluid composition.

3.1 Sampling Frequency

The injected fluid shall be sampled on a quarterly basis unless a change in the injected fluid composition occurs as a result of operating changes at the Navajo refinery. If the injected fluid composition does change, a representative sample of the waste stream shall be collected at that time and reported to OCD.

3.2 Sampling Location

A representative sample of the injected fluid shall be obtained from the discharge side of the wastewater transfer pump that sends wastewater to the wellheads. The sample port is located at the refinery's wastewater treatment unit.

3.3 Sample Collection Equipment

The fluid samples shall be collected directly from the sample port on the wastewater transfer line into appropriately prepared sample containers required for specific analyses.

3.4 Sample Containers

The injected fluid sample shall be collected in new and previously unused sample containers as provided by the off-site commercial laboratory performing the analyses.

3.5 Sampling Methodology

The injected fluid sample shall be poured directly into the new and previously unused sample containers provided by the off-site commercial laboratory performing the analyses.

3.6 Sample Preservation

EPA and/or ASTM sampling protocols shall be used, including provisions for preserving samples when required. Sampling personnel shall verify that appropriate preservatives are present in sample containers if required by analytical protocol.

3.7 Field Measurements

Field measurements of pH, specific conductance, and temperature shall be recorded on a representative sample of the injected fluid during each quarterly monitoring event.

3.8 Sampling Personnel

Navajo environmental staff or qualified contractor sampling personnel shall be responsible for collecting the injected fluid samples in accordance with the procedures presented in this plan.

4.0 FIELD DOCUMENTATION

The following procedures shall be implemented to properly document each injected fluid characterization sampling event as described in Section 3.0.

4.1 Water Sampling Log

A water sampling log shall be completed at the time the sample is collected. The type of information to be recorded on the water sampling log includes, but is not limited to, the following:

- Date and time of sampling
- Weather conditions
- Sampling location
- Sampling method
- Sample identification
- Field measurements
- Laboratory analyses
- Sampling personnel

4.2 Sample Container Label

Each laboratory provided sample container shall have a label adhered to the outside of the container providing pertinent information identifying the sample,



location and time the sample was collected, analytical parameters, preservatives, and sampler identification.

4.3 Chain-of-Custody Form

A chain-of-custody form shall be completed and accompany each shipment of samples to the off-site commercial laboratory. Each transfer of sample custody shall be signed by both parties on the chain-of-custody form.

4.4 Custody Seal

A custody seal shall be affixed over the opening of the ice chest used to store and transport samples to the receiving laboratory. The laboratory shall note in their Check-In Form that the seal is properly attached and has not been broken.

4.5 Field Equipment Calibration Log

Calibration and maintenance of field equipment (pH, specific conductance, turbidity, and temperature meters) shall be in compliance with the manufacturers' recommended calibration or maintenance procedures. Field logs shall be completed in the field to properly document all calibration and maintenance activities to field equipment.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

A trip blank will be prepared during each waste stream characterization sampling event as described in Section 3.0.

6.0 SAMPLE CUSTODY AND TRANSPORT

Injected fluid characterization samples shall be maintained in the custody of the sampling personnel until the samples are transported to the laboratory or transferred to a representative of the receiving laboratory. Upon transfer of custody, the chain-of-custody record shall be completed and signed by the sampling personnel. The signed chain-of-custody record shall be placed in a plastic bag inside the shipment cooler containing the properly labeled injected fluid

samples. A signed and dated custody seal shall be placed over the lid of the opening of the sample cooler to indicate if the cooler has been opened during delivery prior to receipt by the laboratory.

The chain-of-custody record shall be signed and returned by the laboratory no later than the date the analytical results are available. If the samples are delivered in person by the sampling personnel or picked up by a laboratory employee, the chain-of-custody record shall be signed by the laboratory representative immediately upon relinquishment of the samples by the sampling personnel. One of the copies shall be maintained by the sampling personnel and the remaining copies kept with the samples.

7.0 WASTE STREAM ANALYTICAL PROGRAM

The following describes the injected fluid characterization analytical program.

7.1 Laboratory Requirements

The laboratory performing the analytical services for this project shall be an accredited laboratory. The laboratory shall possess a quality control/ quality assurance (QA/QC) manual prepared in accordance with the requirements of the NELAC certification program. A current copy of the plan shall be sent by the laboratory to the project manager in charge. When the manual is updated by the laboratory the updated version of the manual shall be sent to the project manager. The previously issued copy of the manual must be archived by the project manager to insure traceability of the data generated using the applicable QA/QC manual.

Navajo is currently utilizing ALS Environmental, a commercial laboratory located in Houston, Texas. ALS is a NELAC accredited laboratory.

7.2 Analytical Parameters and Methods

The injected fluid samples are analyzed for the following listing of parameters that are representative of the injected fluid:

- VOC (EPA Method 8260)
- SVOC (EPA Method 8270)
- Total Metals (EPA Method 6020/7000)
- RCI
- Chloride
- Sulfate
- Alkalinity
- TDS
- pH
- Conductivity

The parameter listing shall be updated as necessary to remain accurate and the waste analysis remains representative of the injected fluid being injected.

8.0 REPORTING

The laboratory performing the injected fluid characterization analyses shall generate a report of the analytical results. These analytical results shall be compiled with the field measurement results and tabularized. The results of each waste stream characterization sampling event, including tabularization of analytical results, copies of laboratory reports, and copies of water sampling logs, shall be provided to OCD within 90 days following each sampling episode. The report shall document any obvious fluctuations in the injected fluid composition.

APPENDIX K
INJECTION WELL CLOSURE PLAN



APPENDIX K
INJECTION WELL CLOSURE PLAN
NAVAJO REFINING COMPANY, L.L.C.
(WDW-3)

Final Testing Program

After ceasing injection in the well and prior to commencing physical closure procedures of the injection well, a pressure falloff test will be conducted in order to determine if the transient pressure data have conformed with predicted values within the injection interval. The brine injected for the falloff test will be nonhazardous and will also act as a buffer between the injectate and the well. Appropriate mechanical integrity testing shall also be conducted to ensure the integrity of the long casing string and cement that will remain in the ground after closure. Notify the OCD of mechanical integrity and pressure falloff testing procedures of the long casing string and cement that will remain.

Mechanical Integrity Testing

An annular pressure test and radioactive tracer survey will be conducted prior to removing the injection tubing and packer. Subsequent to tubing and packer removal, a casing inspection and a cement bond/variable density log will be conducted from total depth to the surface.

Pressure Falloff Testing

A wireline unit with pressure control equipment will be rigged up to run in the hole with a surface recording bottom-hole pressure transducer with temperature capabilities to position the transducer at the top of the injection interval. The transducer will be stabilized prior to injecting brine.

Two thousand barrels of brine will be injected at a constant rate. The brine will be compatible with the injection zone reservoir fluid as determined by compatibility testing. The pressure buildup will be recorded. After pumping is ceased, the pressure falloff will be recorded for a minimum of 24 hours after shut in. The pressure derivative curve to will be monitored confirm the test has investigated beyond the wellbore storage effect.



APPENDIX K (Continued)

Regulatory Notification

Navajo will notify OCD at least 60 days before commencing plugging and abandonment procedures on any waste disposal well.

Plug and Abandonment Procedures

The balance plug method will be employed to plug and abandon this well. This technique involves displacing the cement through a work string which has been run into the casing. The cement slurry is pumped down the work string and up the annulus to a calculated height which would balance the cement inside and outside the work string. The work string is then slowly pulled out of the cement leaving a solid, uniform plug.

Heavy drilling mud is placed between the cement plugs. This mud establishes a hydrostatic gradient that will exceed the static bottom-hole pressure at the time of plugging and any anticipated pressures which would result from future injection activity in these particular formations.

Finally, after all cement plugs are set, the well casings will be cut off 3 feet below grade and capped by welding a ½ inch steel plate to the outermost casing string.

The plugging and abandonment procedures for a typical well are described as follows:

1. Prepare the well and location for plugging. Remove the well monitoring equipment and wellhead injection piping.
2. Notify the OCD of the MIT schedule. Conduct an annulus pressure test and a radioactive tracer survey to satisfy OCD mechanical integrity requirements.
3. Move in and rig up the frac tanks and pump for the pressure falloff test. Fill frac tanks with 2,000 barrels of brine.
4. Rig up the wireline unit with pressure control equipment. Run into the hole with a surface recording bottom-hole pressure transducer with temperature capabilities and position the transducer at the top of the perforated injection interval. Allow the transducer to stabilize prior to injecting brine.

APPENDIX K (Continued)

5. Commence injecting 2,000 barrels of brine at a constant rate. The brine will be compatible with the injection zone reservoir fluid, as determined by compatibility testing. Record the pressure buildup. Cease pumping and record the pressure falloff. Measure the pressure falloff for a minimum of 24 hours after shut in. Monitor the pressure derivative curve to confirm the test has investigated beyond the wellbore storage effect.
6. Rig down the wireline unit.
7. Move in and rig up the well service unit with BOP equipment and a 2 7/8 inch work string.
8. Remove the wellhead and install the BOP equipment and stripper head.
9. Unseat the seal assembly from the packer and displace the annular fluid by flushing with 200 bbls of brine. Trip out of the hole laying down the 4 ½ -inch injection tubing.
10. Rig up the wireline unit and run a casing inspection log and a cement bond/variable density log from total depth to the surface. Pick up and run a wireline set cement retainer at 9,022 feet. Rig down the wireline unit.
11. Rig up cement service equipment. Cement shall be Class "A" (or comparable), weighing 15.6 pounds/gallon. Pressure test the surface lines as required.
12. Run in the well with the work string and sting into the cement retainer at 9,022 feet. Establish a pump-in rate into the injection perforations and pump 100 sx of Class "A" cement below the retainer. Pull out of the retainer and spot sufficient Class "A" (or comparable) cement slurry to develop a 100-foot plug above the cement retainer. Pull the tubing up above the top of cement and reverse out excess cement. Catch a sample of cement to check curing time and compressive strength. Allow the cement to set overnight (8-hour minimum) before tagging top of plug to confirm proper setup and location. Pressure test the plug to the pressure recommended by the OCD.
13. Set a balanced cement plug using Class "A" cement from the top of cement at approximately 9,022 feet to the surface.

APPENDIX K (Continued)

14. Cut casing strings ± 3 feet below ground level.
15. Weld a $\frac{1}{2}$ inch steel plate across the 13-3/8-inch casing. Inscribe on plate, in a permanent manner, the following information: (1) operator name, (2) closure date, and (3) UIC permit number.
16. Release all equipment and clean up the location.
17. Submit closure data to the TCEQ.

Once closure operations are complete and the well is officially plugged and abandoned, a closure report certifying that the well or wells were closed in accordance with applicable requirements, will be submitted to the OCD within 30 days. The report will include any newly constructed or discovered wells or information, including proposed well data, within the area of review. When plugging and abandonment is complete, Navajo will submit certification to the OCD that the injection well has been closed in accordance with applicable OCD regulations.

APPENDIX L

FINANCIAL ASSURANCE DOCUMENTATION



STATE OF NEW MEXICO
ONE-WELL PLUGGING BOND

For CHAVEZ, EDDY, L.E.A. MCKINLEY, RAO ARELLA, ROOSEVELT,
SANBOVAL, AND SAN JUAN COUNTIES ONLY.

BOND NO. 6186995
AMOUNT OF BOND \$95,000
COUNTY Eddy

NOTE: For wells less than 5,000 feet deep, the minimum bond is \$5,000.00*
For wells 5,000 to 10,000 feet deep, the minimum bond is \$7,500.00*
For wells more than 10,000 feet deep, the minimum bond is \$15,000.00

*Under certain conditions, a well being drilled under a \$5,000.00 or \$7,500.00 bond may be permitted to be drilled as much as 300 feet deeper than the normal maximum depth, e.g., a well being drilled under a \$5,000.00 bond may be permitted to go to 5,300 feet and a well being drilled under a \$7,500.00 bond may be permitted to go to 10,300 feet. (See Rule 101)

File with Oil Conservation Division, 1228 South Santa Francis, Santa Fe, NM, 87505

KNOW ALL MEN BY THESE PRESENTS:

The Navajo Refining Company, (an individual) (a general partnership) (a corporation, limited liability company or limited partnership organized in the State of Delaware, and authorized to do business in the State of New Mexico), as PRINCIPAL, and Safeco Insurance Co of America corporation organized and existing under the laws of the State of New Mexico and authorized to do business in the State of New Mexico, as SURETY, are jointly bound into the State of New Mexico, for the use and benefit of the Oil Conservation Division of the Energy, Minerals and Natural Resources Department (or successor agency) (the DIVISION), pursuant to NMSA 1978, Section 73-2-14, as amended, in the sum of ninety-five thousand dollars for the payment of which the PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, the PRINCIPAL has commenced or may commence the drilling of one well to a depth not to exceed 5,000 feet, to prospect for and/or produce oil or gas, carbon dioxide gas, helium gas or helium minerals, or does own or operate, or may acquire, own or operate such well, the identification and location of said well being:

WDN #3, Unit N located 790 feet from the S XXXX corner
(Name of well)
and 2250 feet from the W XXXX line of Section 1 Township 18 N23E
(South), Range 27 (East) OSER, NMNM, Eddy County, New Mexico.

NOW, THEREFORE, if the PRINCIPAL and SURETY or either of them, or their successors or assigns or any of them, shall cause said well to be properly plugged and abandoned when dry or when no longer productive or needed for other beneficial purposes, in accordance with the rules and orders of the DIVISION, including but not limited to Rules 101 [19.15.3.101 NMAC] and 202 [19.15.202 NMAC], as such rules now exist or may hereafter be amended;

THEN AND IN THAT EVENT, this obligation shall be null and void otherwise and in default of complete compliance with any and all of said obligations, this same shall remain in full force and effect.

Navajo Refining Company
PRINCIPAL
100 Crescent Court Ste 1600
Dallas, Texas 75201-6927

By [Signature]
Signature

Vice President

This
IF PRINCIPAL is a corporation, entity
thereof, sign here.

Safeco Insurance Co of America
SURETY
Adams Bldg, RM-3, 4634 154th PL NE
Redmond, Washington 98052

[Signature]
S. [Signature]
Safes
Safes

Corporate surety office
corporate seal here.



ACKNOWLEDGMENT FORM FOR INDIVIDUAL

STATE OF _____)
COUNTY OF _____)

This instrument was acknowledged before me on _____ 20__ by _____
(Name of individual)

Notary Public

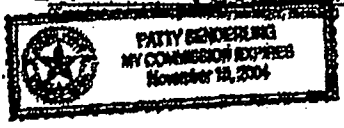
SEAL

My Commission Expires _____

ACKNOWLEDGMENT FORM FOR PARTNERSHIP, CORPORATION OR LIMITED LIABILITY COMPANY

STATE OF Texas)
COUNTY OF Dallas)

This instrument was acknowledged before me on 5th 2007 by Scott C. Surplus
Vice President of Navajo Reclaiming
(Name of person signing instrument) (Name of partnership, corporation or limited liability company)



Patty Benderling
Notary Public

My Commission Expires _____

ACKNOWLEDGMENT FORM FOR CORPORATE SURETY

STATE OF New Mexico)
COUNTY OF Eddy)

This instrument was acknowledged before me on 4-1 2006 by S. Gary Sims
(Name of Attorney in Fact)



OFFICIAL ~~Notary~~ Attorney-in-Fact for Safeco Insurance Co of America
(Name of corporate surety)

Susan S. Lopez
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires 8-1-2007

Susan S. Lopez
Notary Public

8-6-2007
My Commission Expires

Corporate Surety needs Power of Attorney

APPROVED BY:
OIL CONSERVATION DIVISION OF NEW MEXICO
By _____
Date _____



SAFECO

**POWER
OF ATTORNEY**

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98166

No. 10183

KNOW ALL BY THESE PRESENTS:

The **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

***** **GARY SIMS; CHARLENE M. WARD; Arago, New Mexico** *****

as true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and created these presents

this 1st day of April, 2004

CB Mead

CHRISTINE MEAD, SECRETARY

Mike McAvick

MIKE MCGAVICK, PRESIDENT

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA**:

"Article V, Section 13. - **FIDELITY AND SURETY BONDS** ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

- (i) The provisions of Article V, Section 13 of the By-Laws, and
- (ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
- (iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, **Christine Mead**, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 1st day of April, 2004



CB Mead

CHRISTINE MEAD, SECRETARY

APPENDIX M

WDW-3 OPEN-HOLE LOG

APPENDIX O
DRAFT PUBLIC NOTICE



APPENDIX O

PUBLIC NOTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

In accordance with the laws of the State of New Mexico and the particular reference to the provisions of Subsection F in 20.6.2.3108 NMAC, Navajo Refining Company, L.L.C. is applying to renew a discharge permit to operate a Class I nonhazardous injection well located approximately 14 miles east of the refinery in the Empire Oil Field. The petroleum refinery is located at 501 East Main in Artesia, New Mexico 88210. The nonhazardous injection well is designated WDW-3.

The Navajo refinery is a 100,000 barrel per day oil refinery that refines Permian Basin crude oil that is gathered in West Texas and Southeast New Mexico. The fluid injected into WDW-3 is comprised of exempt and nonexempt nonhazardous oilfield waste water that is generated in the refining process.

WDW-3 is one of three nonhazardous injection wells at the Navajo refinery that are permitted to inject at a maximum composite rate of 800 gallons per minute. Subsurface disposal at WDW-3 occurs within a permitted injection zone from approximately 7,303 feet to 8,894 feet below land surface. The total dissolved solid concentration of the permitted injection zone is in excess of 10,000 milligrams per liter and is not considered to be a source of drinking water.

The Oil Conservation Division will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices. Interested parties may obtain information, submit comments, and request to be placed on a facility-specific mailing list by contacting the OCD at the following address:

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505
(505) 476-3440

When corresponding, please reference the name of the applicant and the well name.