TXI OPERATIONS, LP

HUNTER CEMENT PLANT

U.S. ENVIRONMENTAL PROTECTION AGENCY INFORMATION REQUEST SECTION 114 OF THE CAA (42 U.S.C. section 7414)

MERCURY AND TOC CONTENT ANALYSIS OF PORTLAND CEMENT KILN FEED MATERIALS, FUELS, CEMENT KILN DUST

(PART I OF II – TOC ANALYSIS)

JULY 2007

PREPARED BY:

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Phone: (512) 396-4244 ext. 263

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

8 MAY 2007

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Leo Faciane
TXI
1341 West Mocking Bird Lane
Dallas, Texas 75247-6913

Re: Requirement to provide information according to Title 42 of the Unites States Code, Chapter 85, Subchapter I, Part A, section 7414 (42 U.S.C 7414)

Dear Mr. Faciane:

The U.S. Environmental Protection Agency (EPA) is collecting additional information about your industry, Portland Cement Manufacturing. This information is for the purpose of developing standards under Section 112 (d) of the Clean Air Act (CAA) for the industry, and assessing the Section 112(d) standards which EPA has already promulgated for the industry. Specifically, EPA is reconsidering the new and existing source mercury and total hydrocarbon standards in the Portland Cement Manufacturing NESHAP amendments promulgated on December 20, 2007. See 71 FR 76553. Based on comments raised in the reconsideration, and a recent decision by the D.C. Circuit Court of Appeals in Sierra Club v. EPA, no. 03-1230 (D.C. Cir. March 14, 2007), EPA is gathering data to better assess the variability of mercury and total hydrocarbon emissions for individual kilns.

We are requesting this information under the authority of Section 114 of the CAA (42 U.S.C. section 7414), and, as also authorized by Section 114, require that you send your completed surveys to us by 75 days from the receipt of this letter. Specifically, Section 114(g) allows EPA to require source owners to furnish "such other information as the Administrator may reasonably require." Because this information relates directly to a critical issue for the Portland Cement Manufacturing NESHAP, namely the amount of intra-kiln variability associated with mercury and hydrocarbon emissions from Portland cement kilns, it is reasonable to require Portland cement facilities to generate and submit this information.

In the enclosed survey, we request information on mercury and total organic carbon (TOC) content of portland cement kiln feed materials (including fly ash), fuels, cement kiln dust, and (for facilities with continuous monitors) total hydrocarbon emissions. We are also asking for copies of mercury and hydrogen chloride (HCl) emission test reports and any associated plant operation data obtained during the test necessary for evaluating that data. We are not requiring you perform any mercury or HCl stack tests as part of this request, we are only asking for reports of tests that have already been performed. Enclosure 1 includes survey forms that you should use to provide the information to us. Please complete one of the survey forms in Enclosure 1 for each of your facilities unless any of those facilities is part of another company and is separately incorporated as a subsidiary or affiliate of your company. If any one of your facilities is separately incorporated, please do not complete any of the surveys in Enclosure 1 for that facility.

As noted in Enclosure 1, we are requiring the data on the mercury and TOC contents of the kiln feed be provided for each facility operated by your company. For facilities with multiple kilns, you may choose to sample the feed to any one kiln if all kilns have exactly the same feed materials. However, please provide the feed material usage by individual kiln. For kilns with total hydrocarbon monitors, please provide the data for each individual kiln. Detailed instructions are included within the enclosure.

Using the information you provide to us in these surveys, along with similar information we receive from other companies in your industry, we will determine the amount of mercury and total hydrocarbons typically emitted from cement kilns and the intra-kiln variability of those emissions. We are sensitive to the amount of time and effort required to complete these surveys. Therefore, we have tried to limit the information requested to only those features important to developing and reassessing the regulation so as to minimize the time you need to spend. I would like to assure you that nothing is being requested that we do not feel is necessary to achieve our goals stated above. You may respond "Not Applicable" to questions that do not apply to your facilities.

Enclosure 2 contains a summary of our legal authority in Section 114 of the CAA to obtain the information requested in these surveys. If you believe that providing any specific information to us would reveal a trade secret, please identify this information clearly in your response. However, please do not label your entire response "Confidential" if only a portion includes trade secrets. You can see in Enclosure 2 the type of information that EPA may ask of you at a later time to prove that any information you have so identified is truly confidential. Any information determined to be a trade secret will be protected by 18 U.S.C. 1905. If you do not claim as confidential any of the information in your returned survey, we can make this information available to the public without notifying you further (40 CFR Part 2.203, September 1, 1976). Because Section 114 of the CAA does not allow emission data to be claimed as confidential, the emission data you provide to us can be made available to the public. A detailed explanation of what we consider to be emission data is contained in Enclosure 3.

We have contracted RTI International (RTI) (Contract No. EP-D-06-118) to help us gather information about your industry. As noted in Enclosure 4, we have designated RTI to be our authorized representatives. Therefore, RTI has the same rights discussed above and in Enclosure 2 as EPA has. This means that RTI will have access to all information provided to us in your completed survey. As a designated representative of the Agency, RTI must, by law, also abide by the requirements of 42 U.S.C. 7414(c) in regard to the confidentiality of what you claim to be trade secrets.

Enclosure 5 summarizes our policies and procedures for handling trade secret information and describes how our contractor also is required to use the same procedures as we do. Because our contractors or other authorized representatives are required to follow the requirements in Enclosure 4, we believe that we can ensure your rights and protect any privileged information you submit to us.

Copies of these survey forms have been given to representatives of your industry for their comments. We have attempted to incorporate their comments and suggestions into the final version. If you have questions regarding the need for this survey or need clarification on the information we are requesting, please contact Mr. Keith Barnett with EPA's Office of Air Quality Planning and Standards at 919-541-5605 (e-mail barnett.keith@epa.gov). Questions relating to how to gather the data we are requesting (such as sampling locations, sampling intervals, and the like) also should be addressed to Mr. Barnett. As we discussed at our May 3, 2007 meeting, it is natural that such interpretive questions will arise, and EPA will work with affected plants to mutually and reasonably resolve these questions.

Please return the completed survey form(s) to Mr. Barnett at the following address by **75 days from the receipt of this letter.** However, if you can not meet this date due to unavoidable delays (such as a plant outage) we will grant an extension. Should you need an extension, please contact Mr. Barnett by phone or email with an estimated completion date and the reason(s) for the unavoidable delay. Mr. Barnett's address and other contact information are:

Mr. Keith Barnett
U.S. EPA Mailroom (D243-02)
United States Environmental Protection Agency
Office of Air Quality Planning and Standards
Research Triangle Park, NC 27711
919-541-5605
Barnett.keith@epa.gov

I am sure you understand how important it is for the EPA to use the very best information available to develop the most meaningful standard. Your help in providing this information is greatly appreciated.

Sincerely,

Penny E. Lassiter, for
Peter Tsirigotis
Director
Sector Policies and Programs Division

5 Enclosures

cc: John Steib, Texas Commission on Environmental Quality
Tom Diggs, EPA Region VI

Enclosure 1

PORTLAND CEMENT MANUFACTURING
MERCURY AND THC EMISSIONS INFORMATION COLLECTION

GENERAL INSTRUCTIONS

Please provide the information requested in the following forms. If you are unable to provide the information requested, please provide any information you believe may be relevant. Use additional copies of the request forms, as needed, for your response.

If you believe the disclosure of the information requested would compromise a trade secret, clearly identify such information as discussed in the cover letter. Any information subsequently determined to constitute a trade secret will be protected under 18 U.S.C. 1905. If no claim of confidentiality accompanies the information when it is received by EPA, it may be made available to the public by EPA without further notice (40 CFR 2.203, September 1, 1976). Because section 114(c) of the Clean Air Act exempts emission data from claims of confidentiality, the emission data you provide may be made available to the public. A definition of what the EPA considers emissions data is provided in 40 CFR 2.301(a)(2)(i) and in Enclosure 3.

This request for information is divided into three parts:

Part I - General Facility Information. Complete this part once for each facility.

Part II - Mercury and total organic carbon (TOC) contents of kiln feed materials and mercury and total hydrocarbon (THC) test data.

Part III -THC continuous monitor Data.

Part IV - HCl Test Data.

Parts I and II are to be completed for all facilities. Part III is to be completed for those facilities that operate a continuous emissions monitor for THC emissions. Part IV is to be completed for facilities that have performed emission tests for HCl. Detailed instructions for each part follow.

Questions regarding this information request should be directed to Mr. Keith Barnett at (919) 541-5605.

Return this information request and any additional information to:

Mr. Keith Barnett
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Mail Code D234-02
Research Triangle Park, North Carolina 27711

PART I: GENERAL FACILITY INFORMATION (Please fill out a separate form for each of your facilities)

1. Name of legal owner of facility: **TXI Operations, LP**

2. Name of legal operator of facility, if different from legal owner: **same as above**

3. Address of ✔ legal owner or ____ operator: **1341 W Mockingbird LN STE 700W Dallas, TX 75247-6913**

4. Complete street address of facility (physical location): **7781 FMR 1102 New Braunfels, TX 78132-3412**

5. Provide facility mailing address if different from physical location: **same as above**

6. Name and title of contact(s) able to answer technical questions about the completed survey: **Soc Lindholm**

7. Contact(s) telephone number(s): (512) 396-4244 ext. 263 cell:(830) 708-9987

and e-mail address(es): slindholm@txi.com

8. What fuels are fired in the cement kilns (if you have multiple kilns at this facility, note which kilns burn which fuels)

✔ coal ✔ pet coke ✔ TDF ✔ natural gas _____other (specify_____________)

9. If coal is fired, indicate which type of coal is utilized:

__ lignite __ subbituminous (including waste coal)

✔ bituminous (including waste coal or gob) __ anthracite (including waste coal or culm)

10. Kiln identification (or designation), design kiln capacity (tpy of clinker production) for each kiln located at this facility (do not include any kilns that burn hazardous waste).

Kiln ID	Design kiln capacity (Tons per year)	Does this kiln have an alkali bypass? If so, what percentage of the exhaust goes to bypass?	Kiln Type (Wet, long dry, preheater, preheater/precalciner)	Does the kiln have an in-line raw mill? If so, what percentage of the time does the raw mill operate?
1-DE-3	**1,042,002**	**YES** **40% contribution**	**Preheater/Precalciner**	**YES** **roller mill operation percentage 90%**

11. For each kiln noted in Part I, question 10, provide the following information:

Kiln ID	NO_x control[1]	SO_2 control[2]	PM control[3]	THC/VOC control[4]
1-DE-3	**(SNCR) Selective non-catalytic Reduction**	**Compliance with low-sulfur coal**	**(ESP) Electrostatic Precipitator**	**none**

[1]Examples: low-NO_x burners; selective catalytic reduction (SCR); selective non-catalytic reduction (SNCR)

[2]Examples: wet flue gas desulfurization (FGD; any type); dry scrubbing (any type); compliance (low sulfur) coal

[3]Examples: fabric filter; cold-side electrostatic precipitator (ESP)

[4] Examples: thermal oxidizer; carbon injection

PART II. MERCURY AND TOTAL ORGANIC CARBON CONTENT OF KILN FEED MATERIALS AND EMISSIONS TEST DATA

For each individual raw material used in each of your cement kilns, collect and analyze a daily sample for mercury and total organic carbon for 30 days. The sampling does not have to be for 30 continuous days, but we need a total of 30 days of data. For example, if your facility uses coal and petroleum coke as fuels, and limestone, shale, sand, and iron ore as feed materials, you would report the mercury concentration in each of these materials for each day. You should include all feed materials, both mined materials and materials that might be perceived as waste materials, such as fly ash, cement kiln dust and mill scale. Also provide the amounts of each material used. You can report annual materials usage if daily usage figures are not available.

For mercury the analysis methods should be EPA Method 7471 with sample preparation by methods 7473 or 3052. The mercury detection limit should be 20 parts per billion or less. The analysis method for TOC should be EPA Method 9060 or 9060A. If for any reason you have concerns or questions about these methods, you must (preferably by phone or email) contact:

Mr. Keith Barnett
U.S. Environmental Protection Agency
barnett.keith@epa.gov
919-541-5605

You should report materials usage separately for each kiln. If more than one kiln uses exactly the same raw materials you may provide one set of mercury analysis data per day for the kilns using identical feed materials, but materials usage figures need to be provided for each individual kiln.

We are also requesting daily mercury analyses for the cement kiln dust collected in a control device, regardless of whether the dust is returned to the process. If some cement kiln dust is not returned to process we need the annual quantity of the dust that is not returned to the process. Please sample, analyze, and report any collected cement kiln dust from the alkali bypass (if installed) separately from the cement kiln dust collected in the PM control device. Also, report the amounts of alkali bypass cement kiln dust not returned to process separately from any other dust not returned to the process.

All analyses and materials usage figures should be for the same time period, but note that you may report annual materials usage and dust removal figures if they are representative of the 30 days of sampling.

Concurrent fuel, raw material, and cement kiln dust sampling and analysis should be done by taking samples at approximately 8 hour intervals each day, for a total of three samples of each material each day. The samples need not be exactly 8 hours apart, and may be taken concurrently, rather than all at exactly the same time. Take the samples prior to blending the different raw materials, but as close to the blending step as possible. For each material sampled, the three 8-hour samples should be combined and analyzed as the daily sample for that material.

Sample size, ID protocols, sampling methods, etc. are left to your discretion. As long as we can identify the material, sample day, kiln and analysis results and you can meet the mercury detection limit. Variations in these instructions due to site specific conditions are allowed, but we ask you notify the contact person previously noted prior to beginning the sampling. You may exceed the 75 day response requirement if it the result of unavoidable delay, but you must notify us of the delay and the reason(s).

An example of what we need in your data submission on mercury is shown below. In this case there is no alkali bypass, but it is estimated that 30,000 tons per year of the materials collected in the baghouse is not returned to the kiln.

Example Data - Daily Analysis of Fuel and Feed for Kiln No. 1

Sample Date	Mercury Content in ppm					
	Cement Kiln Dust	Limestone	Shale	Clay	Coal	Iron ore
5/20/2007	0.03	0.38	0.3	0.4	<0.01	<0.02
5/21/2007	0.1	0.4	0.4	0.2	0.01	<0.02
5/22/2007	0.05	0.05	0.4	0.3	0.07	<0.02
5/23/2007	0.05	0.03	1.7	0.5	1.7	<0.02

5/24/2007	0.3	0.08	0.5	0.3	<0.01	<0.02
5/25/2007	0.2	0.4	0.3	0.3	0.3	<0.02
5/26/2007	0.3	0.35	0.5	0.3	0.01	<0.02
5/27/2007	0.08	0.21	0.7	0.4	0.2	<0.02
5/28/2007	0.05	0.02	0.6	0.5	0.01	<0.02
5/29/2007	0.1	0.1	0.4	0.2	0.01	<0.02
5/30/2007	0.2	0.08	0.4	0.3	0.01	<0.02
5/31/2007	0.09	0.06	0.4	0.3	0.02	<0.02
Outage	-	-	-	-	-	-
6/3/2007	0.3	0.5	0.3	0.3	0.01	<0.02
6/4/2007	0.5	0.35	0.2	0.1	0.01	<0.02
6/5/2007	0.06	0.2	0.5	0.4	0.01	<0.02
6/6/2007	0.08	0.09	0.7	0.4	0.01	<0.02
6/7/2007	0.3	0.1	0.8	0.2	0.03	<0.02
6/8/2007	0.4	0.5	0.6	0.3	0.01	<0.02
6/9/2007	0.3	0.09	0.7	0.6	0.01	<0.02
6/10/2007	0.02	0.1	0.5	0.3	0.02	<0.02
6/11/2007	0.08	0.1	0.4	0.4	0.02	<0.02
6/12/2007	0.5	0.02	0.02	0.02	0.03	<0.02
6/13/2007	0.09	0.01	0.01	0.01	0.01	<0.02
6/14/2007	0.07	0.02	0.02	0.02	0.02	<0.02
6/15/2007	0.1	<0.01	< 0.01	0.01	0.01	<0.02
6/16/2007	0.3	0.4	1.1	0.5	0.02	<0.02
6/17/2007	0.08	0.3	0.5	0.4	0.01	<0.02
6/18/2007	0.06	0.4	0.3	0.5	0.01	<0.02
6/19/2007	0.2	0.7	0.4	0.3	0.01	<0.02
6/20/2007	0.3	0.4	0.02	0.3	0.01	<0.02

Note that when you are below the detection limit you should use a < sign. Also note in this example that there was one 2-day outage, and that the detection limit was typically 20 ppb, but in a few cases was reported as 10 ppb.

Kiln materials usage can be reported as shown below as long as the annual usage figures are representative of usage during the sampling period. If not, report usage during the sampling period.

Raw Materials	Annual Usage (tons/yr)
Limestone	83,120
Shale	141,100
Clay	91,840

Iron Ore	90,400
Coal	90,100
Materials collected in baghouse not returned to the kiln	30,000

In addition, we are asking for complete copies of any mercury and/or total hydrocarbons emission stack tests performed on your cement kilns. We need a copy of the complete test report including test protocols, field data sheets, lab analysis sheets, and operating conditions of the kiln during testing. Note that we are asking for reports of tests already performed. We are not asking you to perform a stack test at this time. If the kiln has been modified since the test and no longer matches the information in section 1, please provide information on the kiln as it was configured at the time of the emissions test. The operating conditions of interest are kiln feed rate or production rate, condition of the raw mill (on/off), amounts of cement kiln dust wasted (if any) during the tests, fuels fired and fuel firing rates, and any other operating conditions that you think may have affected the measured mercury and THC emissions during the test.

PART III. THC CONTINUOUS MONITOR DATA

If your facility is equipped with a monitor for total hydrocarbons, we need daily average THC emissions measured with the monitor over a 30-day period. The monitor should be installed and certified according to protocol PS-8A of Appendix B to 40 CFR Part 60 or the equivalent. We also need to know the fuels fired during that period. If the types of fuels varied, we also need to know during what time periods the different fuels were fired, and any other variations in kiln operating parameters that may have affected THC emissions.

PART IV. HCl DATA

We are asking for complete copies of any HCl emission stack tests performed on your cement kilns. We need a copy of the complete test report including test protocols, field data sheets, lab analysis sheets, and operating conditions of the kiln. The operating conditions of interest are kiln feed rate, production rate, condition of the raw mill (on/off), amounts of cement kiln dust wasted (if any) during the tests, fuels fired and fuel firing rates, and any other operating conditions that you think may have affected the measured HCl emissions during the test.

Enclosure 2

EPA's Information Gathering Authority
Under Section 114 of the Clean Air Act

Under Section 114 of the Act (42 U.S.C. 7414), Congress has given the U.S. Environmental Protection Agency broad authority to secure information needed "for the purpose of (i) developing or assisting in the development of any implementation plan under Section 110 or 111(d), any standard of performance under Section 111, or any emission standard under Section 112, (ii) determining whether any person is in violation of any such standard of any requirement of such a plan, or (iii) carrying out any provision of this Act." Amount other things, Section 114 authorizes EPA to make inspections, conduct tests, examine records, and require owners or operators of emission sources to submit information reasonably required for the purpose of developing such standards. In addition, the EPA Office of General Counsel has interpreted Section 114 to include authority to photograph or require submission of photographs of pertinent equipment, emissions, or both.

Under Section 114, EPA is empowered to obtain information described by that section even if you consider it to be confidential. You may, however, request that EPA treat such information as confidential. Information obtained under Section 114 and covered by such a request will ordinarily be released to the public only if EPA determines that the information is not entitled to confidential treatment.[1] Procedures to be used for making confidentiality determinations, substantive criteria to be used in such determinations, and special rules governing information obtained under Section 114 are set forth in 40 CFR Part 2 published in the Federal Register on September 1, 1976 (40 FR 36902).

Pursuant to § 2.204(a) of EPA's Freedom of Information Act (FOIA) regulation, in the event a request is received, or it is determined that a request is likely to be received, or EPA desires to determine whether business information in its possession is entitled to confidential treatment even though no request for release of the information has been received, please be advised that EPA will seek, at that time, the following information to support your claim as required by § 2.204(e)(4) of EPA's FOIA regulations:

1. Measures taken by your company to guard against undesired disclosure of the information to others;

2. The extent to which the information has been disclosed to others, and the precautions taken in connection therewith;

3. Pertinent confidentiality determinations, if any, by EPA or other Federal agencies, and a copy of any such determinations, or reference to it, if available; and

4. Whether your company asserts that disclosure of the information would be likely to result in substantial harmful effects on the business' competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial, and an explanation of the causal relationship between disclosure and such harmful effects.

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[1] Section 114 requires public availability of all emission data and authorizes disclosure of confidential information in certain circumstances. See 40 FR 36902 - 36912 (September 1, 1976).

Enclosure 3

Dated: February 14, 1991.
Paul Lapsley,
Director, Regulatory Management Division.
[FR Doc 91-4113 Filed 2-20-91; 8:45 am]
BILLING CODE 6560-50-M

[AD-FRL-3906-3]

Disclosure of Emission Data Claimed as Confidential Under Sections 110 and 114(c) of the Clean Air Act

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of policy on public release of certain emission data submitted under sections 110 and 114(c) of the Clean Air Act (CAA).

SUMMARY: Section 114(c) of the CAA excludes emission data from the general definition of trade secret information. Certain classes of data submitted to the EPA under sections 110 and 114(a) of the CAA are emission data, and, as such, cannot be withheld from disclosure as confidential pursuant to section 1905 of title 18 of the United States Code. This notice clarifies EPA's current policy, and solicits comment regarding that policy and categories of data which it considers excluded from a trade secret definition.

DATES: Written comments pertaining to this notice are requested by April 22, 1991.

ADDRESSES: Submit comments to: Nancy D. Riley, U.S. Environmental Protection Agency, Emission Standards Division, Pollutant Assessment Branch (MD-13), Research Triangle Park, NC 27711.

FOR FURTHER INFORMATION CONTACT: Timothy Mohin (telephone: (919) 541-5349 commercial/FTS 629-5349) or Karen Blanchard (telephone: (919) 541-5503 commercial/FTS 629-5503), Pollutant Assessment Branch (MD-13), Emission Standards Division; or Thomas Rosendahl (telephone: (919) 541-5404 commercial/FTS 629-5404), National Air Data Branch (MD-14); Technical Support Division; U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION: The EPA routinely uses the authority of sections 110 and 114(a) of the CAA to gather technical information from industries involved in operations that lead to emission of pollutants to the ambient air. This information has been used, among other things, to better characterize emitting facilities and to evaluate the need for and impacts of potential regulation.

Information requests under sections 110 and 114(a) of the CAA typically include questions on uncontrolled and controlled emission rates and emission parameters of the pollutant or group of pollutants of concern. The respondents sometimes claim that its response constitutes trade secret information, and thus, should be treated as confidential. Claims of confidentiality may be made under section 114(c) of the CAA, which states "* * * upon a showing satisfactory to the Administrator by any person that records, reports, or information, or a particular part thereof, (other than emission data) to which the Administrator has access under this section if made public, would divulge methods or processes entitled to protection as trade secrets of such person, the Administrator shall consider such * * * confidential in accordance with the purposes of section 1905 of title 18 of the United States Code * * *." If the Administrator so determines, the information is not disclosable to the public.

However, section 114(c) of the CAA provides that information claimed to be a trade secret but which constitutes emission data may not be withheld as confidential. Although typically the EPA evaluates whether information constitutes emission data on a case-by-case basis, it believes that some kinds of data will always constitute emission data within the meaning of section 114(c). The purpose of this notice is to describe, without attempting to be comprehensive, that information which the EPA generally considers to be emission data, and which cannot qualify as confidential under either section 114(c) or section 110 (as set forth in 41 CFR 51.321, 51.322, and 51.323) of the CAA. The EPA is issuing this notice to clarify its policy and procedures, to facilitate the use of these data in automated data systems and computer-based simulation models, and to expedite processing of claims for confidentiality or requests for disclosure.

The EPA presently determines that data submitted to it as emission data does not qualify as confidential if it meets the following definition under 40 CFR 2.301(a)(2)(i):

a. Definitions. For the purpose of this section, (1) *Act* means the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. (2)(i) *Emission data* means, with reference to any source of emission of any substance into the air—

(A) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extend related to air quality) of any emission which has been emitted by the source (or of any pollutant resulting from any emission by the source), or any combination of the foregoing:

(B) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of the emission which, under an applicable standard or limitation, the source was authorized to emit (including, to the extent necessary for such purposes, a description of the manner or rate of operation of the source), or any combination of the foregoing.

(C) A general description of the location and/or nature of the source to the extent necessary to identify the source and to distinguish it from other sources (including, to the extent necessary for such purposes, a description of the device, installation, or operation constituting the source).

The table below lists the specific data fields which the EPA presently considers to constitute emission data and provides a brief description of what each data field describes. The descriptions are intended to provide general information. This list is not exhaustive, and, therefore, other data might be found, in a proper case, to constitute emission data.

Emission Data Fields

Facility Identification: The following data fields are needed to establish the identity and location of emission sources. This shall also include a description or an identifier of the device, installation, or operation constituting the source. These data are used to locate sources for dispersion evaluation and exposure modeling.

Plant Name and related point identifiers
Address
City
County
AQCR (Air Quality Control Region)
MSA, PMSA, CMSA (Metropolitan Statistical Areas)
State
Zip Code
Ownership and point of contact information
Locational Identifiers:
Latitude & Longitude, or UTM Grid Coordinates
SIC (Standard Industrial Classification)
Emission point, device or operation description information
SCC (Source Classification Codes)

Emission Parameters: The following data fields are needed to establish the characteristics of the emissions. This information is needed for the analyses of dispersion and potential control equipment.

Emission type
(e.g., nature of emissions such as CO_2), particulate or a specific toxic compound, and origin of emissions such as process vents, storage tanks or equipment leaks)
Emission rate
(e.g., the amount released to the atmosphere over time such as kg/yr or lbs/yr)
Release height
(e.g., height above ground level where the pollutant is emitted to the atmosphere)
Description of terrain and surrounding structures
(e.g., the size of the area associated with adjacent structures in square meters and terrain descriptions such as mountainous, urban, or rural)
Stack or vent diameter at point of emissions
(e.g., the inside diameter of vent at the point of emission to the atmosphere in meters)

Release velocity
(e.g., velocity of release in m/sec)
Release temperature
(e.g., temperature of release at point of release in degrees Kelvin)
Frequency of release
(e.g., how often a release occurs in events per year)
Duration of release
(e.g., the time associated with a release to the atmosphere)
Concentration
(e.g., the amount of an emission stream constituent relative to other stream constituents expressed as parts per million (ppm), volume percent, or weight percent)
Density of the emissions stream or average molecular weight
(e.g., density expressed as fraction or multiple of the density of air: molecular weight in g/g-mole)
Boiler or process design capacity
(e.g., the gross heating value of fuel input to a boiler at its maximum design rate)
Emission estimation method
(e.g., the method by which an emission estimate has been calculated such as material balance, source test, use of AP-42 emission factors, etc.)
Percent space heat
(e.g., the percent of fuel used for space heating)
Hourly maximum design rate
(e.g., the greatest operating rate that would be expected for a source in a 1-hour period)

The EPA has determined that these data are emission data and releasable upon request. This determination applies to data currently held by EPA as well as to information submitted to EPA in the future. Future requests for information under sections 110 and 114 of the CAA will indicate that these emission data will not be held confidential. This determination applies only to the data listed in the table. Determinations will continue to be made on a case-by-case basis for data not specified in this generic determination.

After consideration of comments on this policy, a revised policy/determination may be published.

Dated: February 8, 1991.

Michael Shapiro.
Acting Assistant Administrator for Air and Radiation.

[FR Doc. 91-4114 Filed 2-20-91: 8:45 am]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

Enclosure 4

JAN - 5 2007

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

DESIGNATION OF AUTHORIZED REPRESENTATIVE FOR STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES (SECTION 111), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (SECTION 112), SOLID WASTE COMBUSTION (SECTION 129), AND FEDERAL OZONE MEASURES (SECTION 183)

Under contract EPD-06-118, Research Triangle Institute (RTI) (prime contractor) and EC/R, Inc.; BCS, Inc.; Eastern Research Group, Inc.; Innovar Environmental, Inc.; MACTEC Federal Programs, Inc. (subcontractors) are hereby designated Authorized Representatives of the Administrator of the United States Environmental Protection Agency for the purpose of assisting in the development of standards of performance for new stationary sources under 42 U.S.C. 7411, national emission standards for hazardous air pollutants under 42 U.S.C. 7412, solid waste combustion under 42 U.S.C. 7429, and Federal ozone measures under 42 U.S.C. 7511 (b).

This designation is made pursuant to the Clean Air Act, 42 U.S.C. 7414. The United States Code provides that, upon presentation of this credential, the Authorized Representatives named herein: (1) shall have a right of entry to, upon, or through any premises in which an emission source is located or in which records required to be maintained under 42 U.S.C. 7414 (a) (1) are located and (2) may at reasonable times have access to and copy any records, inspect any monitoring equipment or method required under 42 U.S.C. 7414 (a) (1), and sample any emissions that the owner or operator of such source is required to sample.

Authorized Representatives of the Administrator are subject to the provisions of 42 U.S.C. 7414 (c) respecting confidentiality of methods or processes entitled to protection as trade secrets, as implemented by 40 CFR 2.301 (h) (41 FR 36912, September 1, 1976).

Designation Expires: March 31, 2011

Sincerely,

Jenny Noonan Edmonds
for
Stephen D. Page
Director
Office of Air Quality Planning
and Standards

Enclosure 5

January 2002

Summary of Procedures for Safeguarding Clean Air Act Confidential Business Information

1. Purpose

This memorandum describes U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS) policy and procedures set forth for the handling of information claimed as Confidential Business Information (CBI), whether submitted voluntarily or obtained under Section 114 of the Clean Air Act (CAA), and governed by EPA regulations in 40 Code of Federal Regulations (CFR), Part 2, Subpart B, and other EPA regulations and policies.

2. Reference Documents:

a. Clean Air Act, as amended.
b. 40 CFR, Chapter 1, Part 2, Subpart B - Confidentiality of Business Information.
c. EPA Information Security Manual.
d. Clean Air Act Confidential Business Information Security Manual (January 2002).

3. Exception:

This document was prepared as a summary of data gathering and handling procedures used by the OAQPS of the EPA. Nothing in this document shall be construed as superseding or being in conflict with any applicable regulations, statutes, or policies to which EPA is subject.

4. Definition:

Confidential Business Information - Information claimed by the provider to be confidential. This information may be identified with such titles as trade secret, secret, administrative secret, company secret, secret proprietary, privileged, administrative confidential, company confidential, confidential proprietary, or proprietary. NOTE: These markings should not be confused with the classification markings of national security information identified in Executive Order 11652.

5. Background

Section 114 (c) of the CAA, as amended, reads as follows:

"Any records, reports, or information obtained under subsection (a) shall be available to the public, except that upon a showing satisfactory to the Administrator by any person that records, reports, or information, or particular part thereof (other than emission data), to which the Administrator has access under this section if made public, would divulge methods or processes entitled to protection as trade secrets of such person, the Administrator shall consider such record, report, or information or particular portion thereof confidential in accordance with the purposes of Section 1905 of Title 18 of the United States Code, except that such record, report, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this Act or when relevant in any proceeding under this Act."

The treatment of CBI by EPA, including data obtained under Section 114 of the CAA, is governed by 40 CFR Part 2. These regulations require EPA offices to include a notice with each request for information to inform the business of: (1) its right to assert a claim of confidentiality covering part or all of the information, (2) the method for asserting a claim, and (3) the effect of failure to assert a claim at time of submission. In addition, the regulations: (1) set forth procedures for the safeguarding of confidential information, (2) contain provisions for providing confidential information to authorize representatives, (3) contain provisions for the release of information to the Congress, Comptroller General, other Federal agencies, State and local governments, and Courts, (4) permit the disclosure of information within EPA to employees with an official need for the information, and (5) prohibit wrongful use of such information and cite penalties for wrongful disclosure. Further, the regulations contain the Agency's basic rule concerning the treatment of requests for information under the Freedom of Information Act (FOIA) (5 U.S.C. 552).

6. Procedures:

a. Request for Information.

Each request for information made under the provisions of Section 114(a) is signed by the Division Director. The request includes standard enclosure "EPA's Information Gathering Authority under Section 114 of the Clean Air Act" which was designed to meet the requirement of 40 CFR Part 2 discussed above.

b. Receipt of CAA CBI.

Upon receipt of information for which confidential treatment has been requested, the OAQPS Document Control Officer (DCO) logs in the material and a permanent file is established. If part of the material is claimed to be confidential, that portion should be marked "Subject to Confidentiality Claim." In compliance with Sections 2.204 and 2.208 of 40 CFR

Part 2, the Group Leader responsible for the requested information reviews the information to determine the validity of the confidentiality claim as prescribed by the sections. If the information is clearly not confidential, the Group Leader prepares a letter for the signature of the responsible Division Director to notify the business of this finding. Information claimed as confidential is hand carried to the OAQPS CBI Office to be logged into the OAQPS CAA CBI tracking system and filed for safekeeping. The OAQPS CAA CBI tracking system provides a brief description of the material (submitter, subject, number of pages, etc.), identifies it with the correct project number or work assignment number, and lists those persons who are authorized to have access to the information. A record of personnel accessing the information (Attachment A) is also kept on filed. By regulation, confidential information must be so marked or designated by the originator. The EPA takes additional measures to ensure that the proprietary designation is uniformly indicated and immediately observable. All unmarked or undesignated information (except as noted below) may be authorized for public release.

c. Storage of CAA CBI.

Folders, documents, or material containing CAA CBI (as defined) shall be secured according to the instructions listed in the OAQPS Security Manual. In addition, the CBI storage area that has been identified specifically for that purpose is equipped with a supplementary locking device. The storage area and files are under the direct control of the OAQPS DCO.

Access to the storage area is limited to the DCO, Document Control Assistant, and the minimum number of persons required to effectively maintain normal business operations as directed by the Director, Planning, Resources, and Regional Management Staff (PRRMS).

Files may be issued upon confirmation that the requesting individual is authorized to receive the information. All confidential files must be returned no later than close of business on the same day. The intended user must sign the CBI Control Record when checking out files.

Individuals signing out confidential files are responsible for their safekeeping. Files must never be left unattended. The information must not be disclosed to any non-authorized personnel.

Storage procedures for CAA CBI by an authorized representative of EPA (see Section d. below) must be, at a minimum, as secure as those established for EPA offices within OAQPS. Whenever CBI is removed from the EPA files to be transmitted to an authorized representative, a notation is made in the file's control record and transfer log indicating what information was transmitted, the date, and the recipient. The authorized representative returns a signed receipt to the DCO.

d. Access to CAA CBI.

Only authorized EPA employees may open or distribute CAA CBI.

Only employees who require, have a need to know, and are authorized access to CAA CBI in the performance of their official duties are permitted to review documents and, upon receiving a confidential document, must sign and date the form shown in Attachment A to certify their access to the document.

The Group Leader having primary responsibility for the CAA CBI provides a memorandum to the DCO designating those personnel authorized to access specific CBI. No person is automatically entitled to access based solely on grade, position, or security clearance. The names of persons granted access to CAA CBI are placed on the CAA CBI access list. The CAA CBI access list indicates the "specific" CBI each person is permitted to see. The access list is reviewed and updated periodically.

Companies under contract to perform work for the EPA may be designated authorized representatives of EPA. As authorized representatives, contractors may be granted access to CAA CBI. The following conditions apply when it has been determined that disclosure is necessary:

(1) The contractor designated as a representative and its employees (a) may use such confidential information only for the purpose of carrying out the work required, (b) must refrain from disclosing the information to anyone other than EPA without having received from EPA prior written approval of each affected business or of an EPA legal office, and (c) must return to EPA all copies of the information (and any abstracts or excerpts there from) upon request or whenever the information is no longer required for the performance of the work.

(2) The authorized contractor designated as a representative must obtain a written confidentiality agreement from each of its employees who will have access to the information. A copy of each employee agreement (Attachment B) must be furnished to EPA before access is permitted.

(3) The contractor designated as an authorized representative must agree that the conditions in the contract concerning the use and disclosure of CAA CBI are included for the benefit of, and shall be enforceable by, both EPA and any affected business having a proprietary interest in the information.

Information may be released to or accessed by EPA employees other than OAQPS employees only upon approval of the Director, PRRMS.

Requests for CAA CBI from other Federal agencies, Congress, the Comptroller General, Courts, etc., are processed in accordance with 40 CFR Part 2, Subpart B.

Requests under the FOIA are handled in accordance with 40 CFR Part 2, Subpart A. The FOIA Coordinator must be consulted prior to responding to any request for information if a claim of confidentiality has been asserted or if there is reason to believe that a claim might be made if the business knew release was intended.

e. Use and Disclosure of CAA CBI.

The CAA CBI, as defined, may not be used in publications, supporting documentation, memoranda, etc., that become a part of the public domain, except as provided for in 40 CFR Part 2, Subpart B. The CAA CBI may not be summarized without the approval of the Group Leader responsible for the CAA CBI. Any authorized reproductions must be logged into the CAA CBI document tracking system and treated according to the same procedures applicable to the original confidential material. Documents, materials, or extracts of information generated by EPA which contain CAA CBI must be stamped "Subject to Confidentiality Claim" and a cover sheet must be attached to identify the material as CBI.

f. Handling of Other Information.

Reports, memoranda, documents, etc., prepared by EPA or its authorized representatives are not normally circulated outside EPA for comment or review prior to publication except in such cases as described in section 6 above. However, because industrial-data-gathering visits, plant inspections, and source testing can involve inadvertent receipt of CAA CBI, it is the policy of OAQPS to protect all parties involved in the following manner:

(1) Prior to or at the inception of a plant inspection, data-gathering visit, or source test, EPA or its authorized representative discusses with a responsible industry official the information sought, how it is to be used, and how it is to be protected. A copy of this summary is usually provided to the industry official being consulted.

(2) Following an inspection, visit, or test, a trip report is prepared to include, as practicable, all information received by EPA or its authorized representative during the visit or test. The report may be prepared by either EPA or its authorized representative. The draft report is clearly identified with an attached yellow cover sheet. A second copy of the draft trip report is forwarded by EPA to the responsible industry official for review. The responsible industry official is requested by cover letter to review the report, clearly mark any information considered to be confidential, and return the edited copy to the responsible EPA employee within the time specified. The original draft is kept in the CBI file until the edited copy is returned by the business firm.

(3) When the reviewed copy is returned to EPA, information designated confidential is placed in the CBI files as described above. The original draft of the trip report is edited to delete the confidential information and the trip report is authorized for release.

Attachments (2)

ENCLOSURE 5

ATTACHMENT A: EXAMPLE RECORD FORM FOR CBI ACCESS

CAA CONFIDENTIAL BUSINESS INFORMATION CONTROL RECORD

DATE RECEIVED:	RESPONSIBLE GROUP:	CONTROL NUMBER:
DATE OF DOCUMENT:	DOCUMENT AUTHOR:	
DESCRIPTION (PROVIDING ORGANIZATION, TITLE, SUBJECT, NUMBER OF COPIES, NUMBER OF PAGES)		
RETURN DATE:	DESTRUCTION DATE:	INITIALS:

EACH PERSON WHO IS GIVEN ACCESS TO THIS DOCUMENT MUST FILL IN THE INFORMATION BELOW.

CHECK-OUT			CHECK-IN		
SIGNATURE	DATE	TIME	SIGNATURE	DATE	TIME

CAA Form 1 (Rev. 01/02)

ENCLOSURE 5

ATTACHMENT B: EXAMPLE AUTHORIZATION FORM FOR CBI ACCESS

I. AUTHORIZATION FOR ACCESS TO CAA CBI FOR FEDERAL EMPLOYEES

FULL NAME	POSITION
SSN	OFFICE

It is the responsibility of each Authorizing Official* to ensure that the employees under his/her supervision who require access to CAA CBI:

1. Sign the Confidentiality Agreement for Federal Employees
2. Are fully informed regarding their security responsibilities for CAA CBI.
3. Obtain access only to that CAA CBI required to perform their official duties

SIGNATURE OF AUTHORIZING OFFICIAL*	TELEPHONE NO.	DATE
TITLE	LOCATION	

II. CONFIDENTIALITY AGREEMENT FOR FEDERAL EMPLOYEES

I understand that, in accordance with my official duties, I will have access to certain Confidential Business Information submitted under the Clean Air Act (CAA) (42 U.S.C. 7401 et seq.)

I understand that, under 18 U.S.C. 1905 and 18 U.S.C 1924I am liable for a possible fine of up to $1,000 and/or imprisonment for up to one year, if I willfully disclose CAA Confidential Business Information to any person not authorized to receive it. Additionally, I understand that, I may be subject to disciplinary action for violation of this agreement with penalties ranging up to and including dismissal.

I am aware that, I may be subject to criminal penalties under 18 U.S.C. 1001 if I have made any statement of material facts knowing that such statement is false or if I willfully conceal any material fact.

I agree that, upon the termination of my duties, transfer or departure from the Environmental Protection Agency, I will return all materials containing CAA Confidential Business Information in my possession to the OAQPS CBI Office.

I certify that I have read and understand these procedures and those outlined in the CAA CBI Security Manual.

SIGNATURE	TELEPHONE NO.	DATE

III. THE UNDERSIGNED CERTIFIES THE ALL TRAINING AND TEST REQUIREMENTS HAVE BEEN MET BY THE EMPLOYEE.

SIGNATURE CBI MANAGER/DCO	TELEPHONE NO.	DATE

IV. ANNUAL RE-CERTIFICATION: I certify that, in conjunction with my duties, I require access to CAA CBI. I am current with all CBI handling procedures and security guidelines as outlined in the CCA CBI Security Manual.

Date		Date		Date		Date		Date		Date	
Initial		Initial		Initial		Initial		Initial		Initial	
Date		Date		Date		Date		Date		Date	
Initial		Initial		Inital		Initial		Initial		Initial	

CAA CBI From 2 (Rev. 01/02) * Must be Division Director (or equivalent) or above.

METHOD 9060A

TOTAL ORGANIC CARBON

1.0 SCOPE AND APPLICATION

1.1 This method is used to determine the concentration of organic carbon in ground water, surface and saline waters, and domestic and industrial wastes. Some restrictions are noted in Secs. 2.0 and 3.0.

1.2 This method is most applicable to measurement of organic carbon above 1 mg/L.

2.0 SUMMARY OF METHOD

2.1 Organic carbon is measured using a carbonaceous analyzer. This instrument converts the organic carbon in a sample to carbon dioxide (CO_2) by either catalytic combustion or wet chemical oxidation. The CO_2 formed is then either measured directly by an infrared detector or converted to methane (CH_4) and measured by a flame ionization detector. The amount of CO_2 or CH_4 in a sample is directly proportional to the concentration of carbonaceous material in the sample.

2.2 Carbonaceous analyzers are capable of measuring all forms of carbon in a sample. However, because of various properties of carbon-containing compounds in liquid samples, the manner of preliminary sample treatment as well as the instrument settings will determine which forms of carbon are actually measured. The forms of carbon that can be measured by this method are:

1. Soluble, nonvolatile organic carbon: e.g., natural sugars.
2. Soluble, volatile organic carbon: e.g., mercaptans, alkanes, low molecular weight alcohols.
3. Insoluble, partially volatile carbon: e.g., low molecular weight oils.
4. Insoluble, particulate carbonaceous materials: e.g., cellulose fibers.
5. Soluble or insoluble carbonaceous materials adsorbed or entrapped on insoluble inorganic suspended matter: e.g., oily matter adsorbed on silt particles.

2.3 Carbonate and bicarbonate are inorganic forms of carbon and must be separated from the total organic carbon value. Depending on the instrument manufacturer's instructions, this separation can be accomplished by either a simple mathematical subtraction, or by removing the carbonate and bicarbonate by converting them to CO_2 with degassing prior to analysis.

3.0 INTERFERENCES

3.1 Carbonate and bicarbonate carbon represent an interference under the terms of this test and must be removed or accounted for in the final calculation.

3.2 This procedure is applicable only to homogeneous samples which can be injected into the apparatus reproducibly by means of a microliter-type syringe or pipet. The openings of the syringe or pipet limit the maximum size of particle which may be included in the sample.

3.3 Removal of carbonate and bicarbonate by acidification and purging with nitrogen, or other inert gas, can result in the loss of volatile organic substances.

4.0 APPARATUS AND MATERIALS

4.1 Apparatus for blending or homogenizing samples -- Generally, a Waring-type blender is satisfactory.

4.2 Apparatus for total and dissolved organic carbon

4.2.1 Several companies manufacture analyzers for measuring carbonaceous material in liquid samples. The most appropriate system should be selected based on consideration of the types of samples to be analyzed, the expected concentration range, and the forms of carbon to be measured.

4.2.2 No specific analyzer is recommended as superior. If the technique of chemical oxidation is used, the laboratory must be certain that the instrument is capable of achieving good carbon recoveries in samples containing particulates.

5.0 REAGENTS

5.1 <u>ASTM Type II water</u> (ASTM D1193) -- Water should be monitored for impurities, and should be boiled and cooled to remove CO_2.

5.2 <u>Potassium hydrogen phthalate, stock solution</u>, 1,000 mg/L carbon -- Dissolve 0.2128 g of potassium hydrogen phthalate (primary standard grade) in Type II water and dilute to 100.0 mL.

<u>NOTE</u>: Sodium oxalate and acetic acid are not recommended as stock solutions.

5.3 <u>Potassium hydrogen phthalate, standard solutions</u> -- Prepare standard solutions from the stock solution by dilution with Type II water.

5.4 <u>Carbonate-bicarbonate, stock solution</u>, 1,000 mg/L carbon -- Weigh 0.3500 g of sodium bicarbonate and 0.4418 g of sodium carbonate and transfer both to the same 100-mL volumetric flask. Dissolve with Type II water.

5.5 <u>Carbonate-bicarbonate, standard solution</u> -- Prepare a series of standards similar to Step 5.3.

<u>NOTE</u>: This standard is not required by some instruments.

5.6 <u>Blank solution</u> -- Use the same Type II water as was used to prepare the standard solutions.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 Sampling and storage of samples in glass bottles is preferable. Sampling and storage in plastic bottles such as conventional polyethylene and cubitainers is permissible if it is established that the containers do not contribute contaminating organics to the samples.

NOTE: A brief study performed in the EPA Laboratory indicated that Type II water stored in new, 1-qt cubitainers did not show any increase in organic carbon after 2 weeks' exposure.

6.2 Because of the possibility of oxidation or bacterial decomposition of some components of aqueous samples, the time between sample collection and the start of analysis should be minimized. Also, samples should be kept cool (4 °C) and protected from sunlight and atmospheric oxygen.

6.3 In instances where analysis cannot be performed within 2 hr from time of sampling, the sample is acidified (pH $\leq$ 2) with HCl or H_2SO_4.

7.0 PROCEDURE

7.1 Homogenize the sample in a blender.

NOTE: To avoid erroneously high results, inorganic carbon must be accounted for. The preferred method is to measure total carbon and inorganic carbon and to obtain the organic carbon by subtraction. If this is not possible, follow Steps 7.2 and 7.3 prior to analysis; however, volatile organic carbon may be lost.

7.2 Lower the pH of the sample to 2.

7.3 Purge the sample with nitrogen for 10 min.

7.4 Follow instrument manufacturer's instructions for calibration, procedure, and calculations.

7.5 For calibration of the instrument, a series of standards should be used that encompasses the expected concentration range of the samples.

7.6 Quadruplicate analysis is required. Report both the average and the range.

8.0 QUALITY CONTROL

8.1 All quality control data should be maintained and available for easy reference or inspection.

8.2 Employ a minimum of one blank per sample batch to determine if contamination or any memory effects are occurring.

8.3 Verify calibration with an independently prepared check standard every 15 samples.

8.4 Run one spike duplicate sample for every 10 samples. A duplicate sample is a sample brought through the whole sample preparation and analytical process.

9.0 METHOD PERFORMANCE

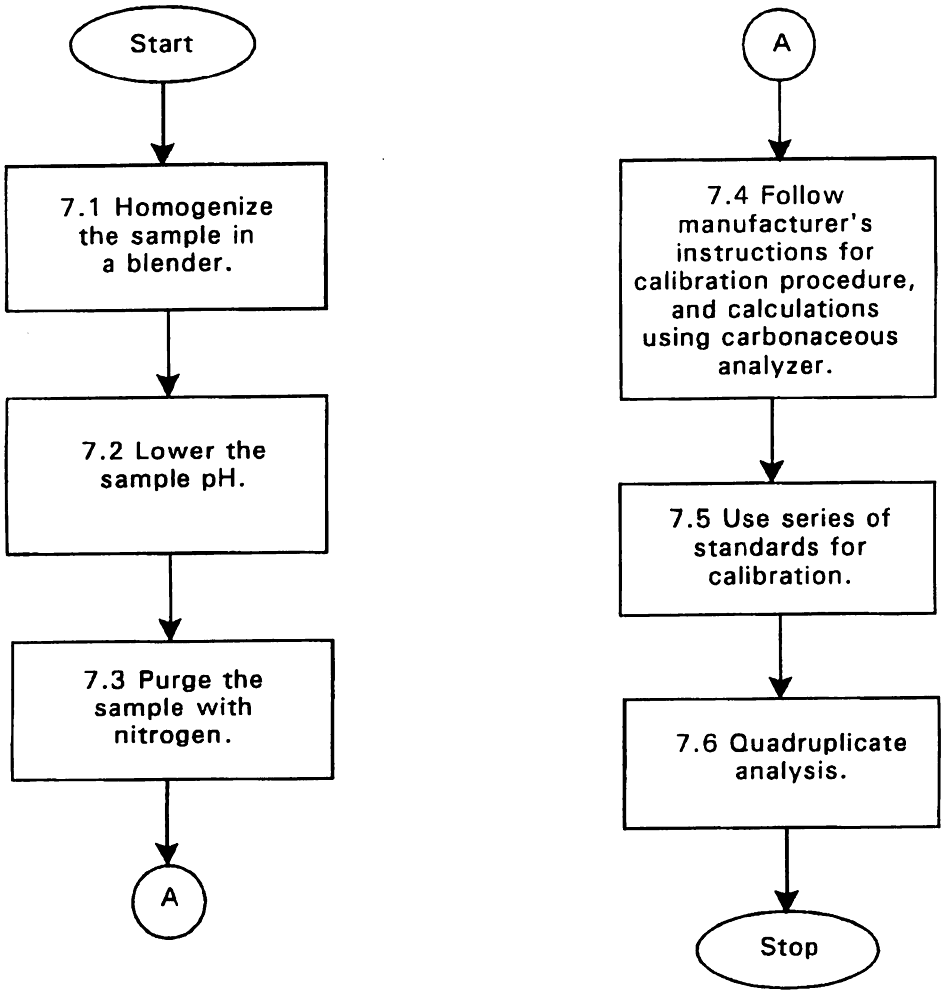
9.1 Precision and accuracy data are available in Method 415.1 of Methods for Chemical Analysis of Water and Wastes.

10.0 REFERENCES

1. Annual Book of ASTM Standards, Part 31, "Water," Standard D 2574-79, p. 469 (1976).

2. Standard Methods for the Examination of Water and Wastewater, 14th ed., p. 532, Method 505 (1975).

Method 9060A
TOTAL ORGANIC CARBON



Determination of Total Organic Carbon in Sediment
(Lloyd Kahn Method)
July 27, 1988

Prepared by: Lloyd Kahn, Quality Assurance Specialist

Affiliation: U.S. Environmental Protection Agency, Region II
Environmental Services Division
Monitoring Management Branch
Edison, New Jersey 08837

Determination of Total Organic Carbon in Sediment

1. Scope and Application

1.1 This method describes protocols for the determination of organic carbon in ocean sediments.

1.2 Although the detection limit ma vary with procedure or instrument, a minimum reporting value of 100 mg/kg will be required for the ocean dumping/dredging program.

1.3 Several types of determinations, which are considered equivalent are presented.

1.4 Data are reported in mg/kg on a dry weight basis.

1.5 Wet combustion methods are not considered to be equivalent to the pyrolytic methods herein described.

2. Summary of Method

2.1 Inorganic carbon from carbonates and bicarbonates is removed by acid treatment.

2.2 The organic compounds are decomposed by pyrolysis in the presence of oxygen or air.

2.3 The carbon dioxide that is formed is determined by direct nondispersive infrared detection, flame ionization gas chromatography after catalytic conversion of the carbon dioxide to methane; thermal conductivity gas chromatography, differential thermal conductivity detection by sequential removal of water and carbon dioxide; or thermal conductivity detection following removal of water with magnesium perchlorate.

3. Sample Handling and Preservation

3.1 Collect sediments in glass jars with Teflon or aluminum foil. Cool and maintain at 4°C. Analyze within 14 days.

4. Interferences

4.1 Volatile organics in the sediments may be lost in the decarbonation step resulting in a low bias.

4.2 Bacterial decomposition and volatilization of the organic compounds are minimized by maintaining the sample at 4°C, analyzing within the specified holding time, and analyzing the wet sample.

5. Apparatus

5.1 Drying oven maintained at 103°-105°C.

5.2 Analytical instrument options:

5.2.1 Perkin Elmer Model 240C Elemental Analyzer or equivalent.

5.2.1.1 In this instrument, the sample from Section 7.2 is pyrolyzed under pure oxygen, water is removed by magnesium perchlorate and the carbon dioxide is removed by ascarite. The decrease in signal obtained by differential thermal conductivity detectors placed between the combustion gas stream before and after the ascarite tube is a measure of the organic carbon content.

5.2.2 Carlo Erba Model 1106-CHN Analyzer or equivalent.

5.2.2.1 In this apparatus, the sample is pyrolyzed in an induction type furnace, and the resultant carbon dioxide is chromatographically separated and analyzed by a differential thermal conductivity detector.

5.2.3 LECO Models WR-12, WR-112, or CR-12 carbon determinators or Models 600 or 800 CHN analyzers.

5.2.3.1 In the LECO WR-12, the sample is burned in a high frequency induction furnace, the carbon dioxide is selectively adsorbed at room temperature in a molecular sieve. It is subsequently released by heating and is measured by a thermal conductivity detector. The WR-112 is an upgraded WR-12 employing microprocessor electronics and a printer to replace the electronic digital voltmeter.

5.2.3.2 In the LECO CR-12 carbon determinator, the sample is combusted in oxygen, moisture and dust are removed by appropriate traps and the carbon dioxide is measured by a selective, solid state, infrared microprocessor and the carbon content is displayed on a digital readout and recorded on an integral printer.

5.2.3.3 In the LECO CHN-600 and CHN-800 elemental analyzers, the sample is burned under oxygen in a resistance furnace and the carbon dioxide is measured by a selective infrared detector.

5.2.4 Dohrman Model DC-85 Digital High Temperature TOC Analyzer

5.2.4.1 In this instrument, the sample is burned in a resistance furnace under oxygen, the interfering gases are removed by a sparger/scrubber system and the carbon dioxide is measured by non-dispersive infrared detectors and shown on a digital display in concentration units.

5.3 No specific analyzer is recommended as superior. The above listing is for information only and is not intended to restrict the use of other unlisted instruments capable of analyzing TOC. The instruments to be used must have the following specifications:

5.3.1 A combustion boat which is heated in a stream of oxygen or air in a resistance or induction-type furnace to completely convert organic substances to CO_2 and water.

5.3.2 A means to physically or by measurement technique to separate water and other interferants from CO_2.

5.3.3 A means to quantitatively determine CO2 with adequate sensitivity (100 mg/kg), and precision (25% at the 95% confidence level as demonstrated by repetitive measurements of a well mixed ocean sediment sample).

5.4 A strip chart or other permanent recording device to document the analysis.

6. Reagents

6.1 Distilled water used in preparation of standards and for dilution of samples should be ultra pure to reduce the carbon concentration of the blank.

6.2 Potassium hydrogen phthalate, stock solution, 100 mg carbon/liter: Dissolve 0.2128 g of potassium hydrogen phthalate (Primary standard Grade) in distilled water and dilute to 100.0 ml.

6.3 Potassium hydrogen phthalate, standard solutions: prepare standard solutions from the stock solution by dilutions with distilled water.

6.4 Phosphoric acid solution, 1:1 by volume.

7. Procedure

7.1 Weigh the well mixed sample (up to 500 mg) into the combustion boat or cup. Add 1:1 phosphoric acid drop-wise until effervescence stops. Heat to 75°C.

7.2 Analyze the residue according to the instrument manufacturer's instructions.

7.3 Determine percent residue on a separate sample aliquot as follows:

7.3.1 Heat a clean 25 ml beaker at 103-105°C for one hour. Cool in desiccator, weigh to the nearest mg and store in desiccator until use.

7.3.2 Add 1 g, weighed to the nearest mg, of an aliquot of the well-mixed sample.

7.3.3 Dry and heat in the 103-105°C oven for 1 hour. Cool in desiccator. Weigh to the nearest mg.

8. Calibration

8.1 Follow instrument manufacturer's instructions.

8.2 Prepare calibration curve plotting mg carbon vs. instrument response, using 4 standards and a blank covering the analytical range of interest.

9. Precision and Accuracy:

9.1 The precision and accuracy will differ with the various instruments and matrices and must be determined by the laboratories reporting the data. To initiate a control chart, a representative sample of well-mixed sediment should be analyzed 15 times to determine the analytical precision. Set up a control chart showing 3 times the standard deviation limits for precision.

9.2 Subsequently during analysis of environmental samples, take one sample per batch of 20 or less and run in quadruplicate. Calculate standard deviation and report with initial control chart data.

9.3 If the sample being run in quadruplicate exceeds the 3 standard deviation limit, identify error and rerun environmental samples in that batch alone with the quadruplicate sample.

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, INC.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/01/07	7:00 Am	Sand composite	TOC 297053	
6/01/07		Limestone composite	TOC 297054	
6/01/07		Calcium sludge composite	TOC 297055	
6/01/07		Filter cake composite	TOC 297056	
6/01/07		Clay composite	TOC 297057	
6/01/07		FCC (catalyst) composite	TOC 297058	
6/01/07		Slag composite	TOC 297059	
6/01/07		Alakali bypass composite	TOC 297060	
6/01/07	7:00 Am	ESP dust (CKD) composite	TOC 297061	

Samples shipped to lab by: [signature]	Date: 6.07.2007	Time: 11:20
Samples relinquished to lab by: [signature]	Date: 6.07.2007	Time: 12:25
Samples received at lab by: [signature]	Date: 6-7-2007	Time: 12:25

T 26°C [signature] 6-8-2007 9:30

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: **Analysys Inc.**

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/2/07	7:00 Am	Sand composite	TOC 297062	
6/2/07		Limestone composite	TOC 297063	
6/2/07		Calcium sludge composite	TOC 297064	
6/2/07		Filter cake composite	TOC 297065	
6/2/07		Clay composite	TOC 297066	
6/2/07		FCC (catalyst) composite	TOC 297067	
6/2/07		Slag composite	TOC 297068	
6/2/07		Alakali bypass composite	TOC 297069	
6/2/07	7:00 Am	ESP dust (CKD) composite	TOC 297070	

Samples shipped to lab by: [signature]	Date: 6.07.2007	Time: 11:2[illegible]
Samples relinquished to lab by: [signature]	Date: 6.07.2007	Time: 12:25
Samples received at lab by: [signature]	Date: 6-7-2007	Time: 12:25

T 6°c [signature] 6-8-2007 9:30

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys. Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/03/07	7:00 AM	Sand composite	TOC 297071	
6/03/07		Limestone composite	TOC 297072	
6/03/07		Calcium sludge composite	TOC 297073	
6/03/07		Filter cake composite	TOC 297074	
6/03/07		Clay composite	TOC 297075	
6/03/07		Slag composite	TOC 297076	
6/03/07		Alakali bypass composite	TOC 297077	
6/03/07	7:00 am	ESP dust (CKD) composite	TOC 297078	

Samples shipped to lab by: [signature]	Date: 6.07.2007	Time: 11:20
Samples relinquished to lab by: [signature]	Date: 6.07.2007	Time: 12:25
Samples received at lab by: [signature]	Date: 6.07.2007	Time: 12:25

TL 6°C [signature] 6-8-2007 9:30

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/04/07	7:00 Am	Sand composite	TOC 297079	
6/04/07		Limestone composite	TOC 297080	
6/04/07		Calcium sludge composite	TOC 297081	
6/04/07		Filter cake composite	TOC 297082	
6/04/07		Clay composite	TOC 297083	
6/04/07		FCC (catalyst) composite	TOC 297084	
6/04/07		Slag composite	TOC 297085	
6/04/07		Alakali bypass composite	TOC 297086	
6/04/07	7:01Am	ESP dust (CKD) composite	TOC 297087	

Samples shipped to lab by: [signature]	Date: 6.07.2007	Time: 11:20a
Samples relinquished to lab by: [signature]	Date: 6.07.2007	Time: 12:25p
Samples received at lab by: M Humphry	Date: 6-7-2007	Time: 12:25

TL6°C Marie Allen 6-8-2007 9:30

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement — Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102 — Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX — Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/5/07	7:00 Am	Limestone composite	TOC 297088	
6/5/07		Sand composite	TOC 297089	
6/5/07		Slag composite	TOC 297090	
6/5/07		FCC (catalyst) composite	TOC 297091	
6/5/07		Calcium sludge composite	TOC 297092	
6/5/07		Filter cake composite	TOC 297093	
6/5/07		Clay composite	TOC 297094	
6/5/07		Alakali bypass composite	TOC 297095	
6/5/07	7:00 Am	ESP dust (CKD) composite	TOC 297096	

Samples shipped to lab by: [signature]	Date: 6.07.2007	Time: 11:20
Samples relinquished to lab by: [signature]	Date: 6.07.2007	Time: 12:25
Samples received at lab by: [signature]	Date: 6-7-2007	Time: 12:25

T 2.6°C [signature] 6-8-2007 9:30

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/6/07	7:00 Am	Limestone composite	TOC 297097	
6/6/07		Sand composite	TOC 297098	
6/6/07		Slag composite	TOC 297099	
no ~~6/6/07~~		~~FCC (catalyst) composite~~	~~TOC~~ not Received	
6/6/07		Calcium sludge composite	TOC 297100	
6/6/07		Filter cake composite	TOC 297101	
6/6/07		Clay composite	TOC 297102	
6/6/07		Alakali bypass composite	TOC 297103	
6/6/07	7:00 Am	ESP dust (CKD) composite	TOC 297104	

Samples shipped to lab by: [signature]	Date: 6.07.2007	Time: 11:20am
Samples relinquished to lab by: [signature]	Date: 6.07.2007	Time: 12:25
Samples received at lab by: [signature]	Date: 6-7-2007	Time: 12:25
T 6°C [signature]	6-8-07	9:30

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R-R
6/07/07	7:00am	Limestone composite	TOC 195970	
6/07/07	7:00am	Sand composite	TOC 195971	
6/07/07	7:00am	Slag composite	TOC 195972	
6/07/07	7:00am	Calcium sludge composite	TOC 195973	
6/07/07	7:00am	Filter cake composite	TOC 195974	
6/07/07	7:00am	Clay composite	TOC 195975	
6/07/07	7:00am	Alakali bypass composite	TOC 195976	
6/07/07	7:00am	ESP dust (CKD) composite	TOC 195977	
6/07/07	7:00am	FCC composite	TOC 195978	

Samples shipped to lab by: [signature]	Date: 6/14/07	Time: 10:28am
Samples relinquished to lab by: [signature]	Date: 6/14/07	Time: 11:23am
Samples received at lab by: [signature]	Date: 6/14/07	Time: 11:23

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Joe Levo

Phone: Joe Levo (512) 555-555

Analysys, Inc. Fax: (512)555-5555

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/8/07	7:00am	Sand composite	TOC 195979	
6/8/07	7:00am	Limestone composite	TOC 195980	
6/8/07	7:00am	Calcium sludge composite	TOC 195981	
6/8/07	7:00am	Filter cake composite	TOC 195982	
6/8/07	7:00am	Clay composite	TOC 195983	
6/8/07	7:00am	FCC (catalyst) composite	TOC 195984	
6/8/07	7:00am	Slag composite	TOC 195985	
6/8/07	7:00am	Alakali bypass composite	TOC 195986	
6/8/07	7:00am	ESP dust (CKD) composite	TOC 195987	

Samples shipped to lab by:	Date: 6/14/07	Time: 10:28
Samples relinquished to lab by:	Date: 6/14/07	Time: 11:23
Samples received at lab by:	Date: 6/14/07	Time: 1123

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Joe Levo

Phone: Joe Levo (512) 555-555

Analysys, Inc. Fax: (512)555-5655

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/9/07	7:00am	Sand composite	TOC 195988	
6/9/07	7:00am	Limestone composite	TOC 195989	
6/9/07	7:00am	Calcium sludge composite	TOC 195990	
6/9/07	7:00am	Filter cake composite	TOC 195991	
6/9/07	7:00am	Clay composite	TOC 195992	
6/9/07	7:00am	FCC (catalyst) composite	TOC 195993	
6/9/07	7:00am	Slag composite	TOC 195994	
6/9/07	7:00am	Alakali bypass composite	TOC 195995	
6/9/07	7:00am	ESP dust (CKD) composite	TOC 195996	

Samples shipped to lab by: [illegible]	Date: 6/14/07	Time: 10:28
Samples relinquished to lab by: [illegible]	Date: 6/14/07	Time: 11:23
Samples received at lab by: MHumphry	Date: 6/14/07	Time: 11:23

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Joe Levo

Phone: Joe Levo (512) 555-555

Analysys, Inc. Fax: (512)555-5555

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	S.R.
6/10/07	7:00am	Sand composite	TOC 195997	
6/10/07	7:00am	Limestone composite	TOC 195998	
6/10/07	7:00am	Calcium sludge composite	TOC 195999	
6/10/07	7:00am	Filter cake composite	TOC 196000	
6/10/07	7:00am	Clay composite	TOC 196001	
		FCC (catalyst) composite	TOC	
6/10/07	7:00am	Slag composite	TOC 196002	
6/10/07	7:00am	Alakali bypass composite	TOC 196003	
6/10/07	7:00am	ESP dust (CKD) composite	TOC 196004	

Samples shipped to lab by:	Date: 6/14/07	Time: 10:28
Samples relinquished to lab by:	Date: 6/14/07	Time: 11:25
Samples received at lab by:	Date: 6/14/07	Time: 11:25

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Joe Levo

Phone: Joe Levo (512) 555-555

Analysys, Inc. Fax: (512)555-5555

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/11/07	7:00am	Sand composite	TOC 196005	
6/11/07	7:00am	Limestone composite	TOC 196006	
6/11/07	7:00am	Calcium sludge composite	TOC 196007	
6/11/07	7:00am	Filter cake composite	TOC 196008	
6/11/07	7:00am	Clay composite	TOC 196009	
6/11/07	7:00am	FCC (catalyst) composite	TOC 196010	
6/11/07	7:00am	Slag composite	TOC 196011	
6/11/07	7:00am	Alakali bypass composite	TOC 196012	
6/11/07	7:00am	ESP dust (CKD) composite	TOC 196013	

Samples shipped to lab by: [illegible]	Date: 6/14/07	Time: 10:28a
Samples relinquished to lab by: [illegible]	Date: 6/14/07	Time: 11:25
Samples received at lab by: [illegible]	Date: 6/15/07	Time: 11:23

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Joe Levo

Phone: Joe Levo (512) 555-555

Analysys, Inc. Fax: (512)555-5555

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	[illegible]
6/12/07	7:00am	Sand composite	TOC 196030	
6/12/07	7:00am	Limestone composite	TOC 196014	
6/12/07	7:00am	Calcium sludge composite	TOC 196015	
6/12/07	7:00am	Filter cake composite	TOC 196016	
6/12/07	7:00am	Clay composite	TOC 196017	
6/12/07	7:00am	FCC (catalyst) composite	TOC 196018	
6/12/07	7:00am	Slag composite	TOC 196019	
6/12/07	7:00am	Alakali bypass composite	TOC 196020	
6/12/07	7:00am	ESP dust (CKD) composite	TOC 196021	

Samples shipped to lab by: [signature]	Date: 6/14/07	Time: 10:[illegible]
Samples relinquished to lab by: [signature]	Date: 6/14/07	Time: 11:2[illegible]
Samples received at lab by: M Murphy	Date: 6/14/07	Time: 11:25

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Joe Levo

Phone: Joe Levo (512) 555-555

Analysys, Inc. Fax: (512)555-5555

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	[illegible]
6/13/07	7:00am	Sand composite	TOC 196022	
6/13/07	7:00am	Limestone composite	TOC 196023	
6/13/07	7:00am	Calcium sludge composite	TOC 196024	
6/13/07	7:00am	Filter cake composite	TOC 196025	
6/13/07	7:00am	Clay composite	TOC 196026	
NP ~~6/13/07~~	~~7:00am~~	~~FCC (catalyst) composite~~	~~TOC~~ NP	
6/13/07	7:00am	Slag composite	TOC 196027	
6/13/07	7:00am	Alakali bypass composite	TOC 196028	
6/13/07	7:00am	ESP dust (CKD) composite	TOC 196029	

Samples shipped to lab by: [signature]	Date: 6/14/07	Time: 10:28a
Samples relinquished to lab by: [signature]	Date: 6/14/07	Time: 11:23a
Samples received at lab by: M Humphrey	Date: 6/14/07	Time: 11:23

Please send copy(s) with each batch of sample(s) to the designated facility.

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196376	6/14/07	7:00 am	Limestone composite	TOC	
196377	6/14/07	7:00 am	Sand composite	TOC	
196378	6/14/07	7:00 am	Slag composite	TOC	
196379	6/14/07	7:00 am	FCC (catalyst) composite	TOC	
196380	6/14/07	7:00 am	Calcium sludge composite	TOC	
196381	6/14/07	7:00 am	Filter cake composite	TOC	
196382	6/14/07	7:00 am	Clay composite	TOC	
196383	6/14/07	7:00 am	Alakali bypass composite	TOC	
196384	6/14/07	7:00 am	ESP dust (CKD) composite	TOC	

Samples shipped to lab by: [signature]	Date: 6.21.07	Time: 5:25pm
Samples relinquished to lab by: [signature]	Date: 6.22.07	Time: 11:52
Samples received at lab by: [signature]	Date: 6-22-07	Time: 11:37

Please send copy(s) with each batch of sample(s) to the designated facility. T 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196385	6/15/07	7:00 am	Limestone composite	TOC	
196386	6/15/07	7:00 am	Sand composite	TOC	
196387	6/15/07	7:00 am	Slag composite	TOC	
196388	6/15/07	7:00 am	FCC (catalyst) composite	TOC	
196389	6/15/07	7:00 am	Calcium sludge composite	TOC	
196390	6/15/07	7:00 am	Filter cake composite	TOC	
196391	6/15/07	7:00 am	Clay composite	TOC	
196392	6/15/07	7:00 am	Alakali bypass composite	TOC	
196393	6/15/07	7:00 am	ESP dust (CKD) composite	TOC	

Samples shipped to lab by:	Date: 6.21.07	Time: 5:25
Samples relinquished to lab by:	Date: 6.22.07	Time: 11:57
Samples received at lab by:	Date: 6-22-07	Time: 11:37

Please send copy(s) with each batch of sample(s) to the designated facility. T L 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196394	6/16/07	7:00 am	Limestone composite	TOC	
196395	6/16/07	7:00 am	Sand composite	TOC	
196396	6/16/07	7:00 am	Slag composite	TOC	
196397	6/16/07	7:00 am	FCC (catalyst) composite	TOC	
196398	6/16/07	7:00 am	Calcium sludge composite	TOC	
196399	6/16/07	7:00 am	Filter cake composite	TOC	
196400	6/16/07	7:00 am	Clay composite	TOC	
196401	6/16/07	7:00 am	Alakali bypass composite	TOC	
196402	6/16/07	7:00 am	ESP dust (CKD) composite	TOC	

Samples shipped to lab by: [signature]	Date: 6.21.07	Time: 5:25
Samples relinquished to lab by: [signature]	Date: 6.22.07	Time: 11:52
Samples received at lab by: [signature]	Date: 6.22.07	Time: 11:37

Please send copy(s) with each batch of sample(s) to the designated facility. TL 6°C

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196403	6/17/07	7:00 am	Limestone composite	TOC	
196404	6/17/07	7:00 am	Sand composite	TOC	
196405	6/17/07	7:00 am	Slag composite	TOC	
196406	6/17/07	7:00 am	Calcium sludge composite	TOC	
196407	6/17/07	7:00 am	Filter cake composite	TOC	
196408	6/17/07	7:00 am	Clay composite	TOC	
196409	6/17/07	7:00 am	Alakali bypass composite	TOC	
196410	6/17/07	7:00 am	ESP dust (CKD) composite	TOC	
			* Note: No FCC available to sample		

Samples shipped to lab by:	Date: 6.21.07	Time: 5:25
Samples relinquished to lab by:	Date: 6.22.07	Time: 11:37
Samples received at lab by:	Date: 6-22-07	Time: 1137

Please send copy(s) with each batch of sample(s) to the designated facility. TL 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196411	6/18/07	7:00 am	Limestone composite	TOC	
196412	6/18/07	7:00 am	Sand composite	TOC	
196413	6/18/07	7:00 am	Slag composite	TOC	
196414	6/18/07	7:00 am	FCC (catalyst) composite	TOC	
196415	6/18/07	7:00 am	Calcium sludge composite	TOC	
196416	6/18/07	7:00 am	Filter cake composite	TOC	
196417	6/18/07	7:00 am	Clay composite	TOC	
196418	6/18/07	7:00 am	Alakali bypass composite	TOC	
196419	6/18/07	7:00 am	ESP dust (CKD) composite	TOC	

Samples shipped to lab by:	Date: 6.21.07	Time: 5:25
Samples relinquished to lab by:	Date: 6.22.07	Time: 11:32
Samples received at lab by:	Date: 6-22-07	Time: 11:37

Please send copy(s) with each batch of sample(s) to the designated facility. TL 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196420	6/19/07	7:00 am	Limestone composite	TOC	
196421	6/19/07	7:00 am	Sand composite	TOC	
196422	6/19/07	7:00 am	Slag composite	TOC	
196423	6/19/07	7:00 am	FCC (catalyst) composite	TOC	
196424	6/19/07	7:00 am	Calcium sludge composite	TOC	
196425	6/19/07	7:00 am	Filter cake composite	TOC	
196426	6/19/07	7:00 am	Clay composite	TOC	
196427	6/19/07	7:00 am	Alakali bypass composite	TOC	
196428	6/19/07	7:00 am	ESP dust (CKD) composite	TOC	

Samples shipped to lab by:	Date: 6.21.07	Time: 5:25p
Samples relinquished to lab by:	Date: 6.22.07	Time: 11:37
Samples received at lab by:	Date: 6-22-07	Time: 11:37

Please send copy(s) with each batch of sample(s) to the designated facility. TL6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

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Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196429	6/20/07	7:00 am	Limestone composite	TOC	
196430	6/20/07	7:00 am	Sand composite	TOC	
196431	6/20/07	7:00 am	Slag composite	TOC	
196432	6/20/07	7:00 am	FCC (catalyst) composite	TOC	
196433	6/20/07	7:00 am	Calcium sludge composite	TOC	
196434	6/20/07	7:00 am	Filter cake composite	TOC	
196435	6/20/07	7:00 am	Clay composite	TOC	
196436	6/20/07	7:00 am	Alakali bypass composite	TOC	
196437	6/20/07	7:00 am	ESP dust (CKD) composite	TOC	

Samples shipped to lab by:	Date: 6.21.07	Time: 5:25pm
Samples relinquished to lab by:	Date: 6.22.07	Time: 11:37
Samples received at lab by:	Date: 6.22.07	Time: 11:37

Please send copy(s) with each batch of sample(s) to the designated facility. TL 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

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Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/21/07	7:00 am	Limestone composite	TOC 297815	
6/21/07	7:00 am	Sand composite	TOC 297816	
6/21/07	7:00 am	Slag composite	TOC 297817	
6/21/07	7:00 am	FCC (catalyst) composite	TOC 297818	
6/21/07	7:00 am	Calcium sludge composite	TOC 297819	
6/21/07	7:00 am	Filter cake composite	TOC 297820	
6/21/07	7:00 am	Clay composite	TOC 297821	
6/21/07	7:00 am	Alakali bypass composite	TOC 297822	
6/21/07	7:00 am	ESP dust (CKD) composite	TOC 297823	

Samples shipped to lab by: [signature]	Date: 6.28.07	Time: 5:35
Samples relinquished to lab by: [signature]	Date: 6.28.07	Time: 9:23
Samples received at lab by: M Humphry	Date: 6-28-07	Time: 16:23

Please send copy(s) with each batch of sample(s) to the designated facility. 7.6 C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/22/07	7:00 am	Limestone composite	TOC 297824	
6/22/07	7:00 am	Sand composite	TOC 297825	
6/22/07	7:00 am	Slag composite	TOC 297826	
6/22/07	7:00 am	FCC (catalyst) composite	TOC 297827	
6/22/07	7:00 am	Calcium sludge composite	TOC 297828	
6/22/07	7:00 am	Filter cake composite	TOC 297829	
6/22/07	7:00 am	Clay composite	TOC 297830	
6/22/07	7:00 am	Alakali bypass composite	TOC 297831	
6/22/07	7:00 am	ESP dust (CKD) composite	TOC 297832	

Samples shipped to lab by: [signature]	Date: 6.28.07	Time: 3:30
Samples relinquished to lab by: [signature]	Date: 6.28.07	Time: 4:25
Samples received at lab by: M Humphry	Date: 6-28-07	Time: 16 23

Please send copy(s) with each batch of sample(s) to the designated facility. 7L 6°C

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R/R
6/23/07	7:00 am	Limestone composite	TOC 297833	
6/23/07	7:00 am	Sand composite	TOC 297834	
6/23/07	7:00 am	Slag composite	TOC 297835	
6/23/07	7:00 am	Calcium sludge composite	TOC 297836	
6/23/07	7:00 am	Filter cake composite	TOC 297837	
6/23/07	7:00 am	Clay composite	TOC 297838	
6/23/07	7:00 am	Alakali bypass composite	TOC 297839	
6/23/07	7:00 am	ESP dust (CKD) composite	TOC 297840	
		* Note: No FCC available to sample		

Samples shipped to lab by: [signature]	Date: 6. 28. 07	Time: 3:50pm
Samples relinquished to lab by: [signature]	Date: 6.28.07	Time: 9:23am
Samples received at lab by: M Humphry	Date: 6-28-07	Time: 16:23

Please send copy(s) with each batch of sample(s) to the designated facility. TL 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/24/07	7:00 am	Limestone composite	TOC 297841	
6/24/07	7:00 am	Sand composite	TOC 297842	
6/24/07	7:00 am	Slag composite	TOC 297843	
6/24/07	7:00 am	Calcium sludge composite	TOC 297844	
6/24/07	7:00 am	Filter cake composite	TOC 297845	
6/24/07	7:00 am	Clay composite	TOC 297846	
6/24/07	7:00 am	Alakali bypass composite	TOC 297847	
6/24/07	7:00 am	ESP dust (CKD) composite	TOC 297848	
		* Note: No FCC available to sample		

Samples shipped to lab by: [signature]	Date: 6.28.07	Time: 5:5[illegible]
Samples relinquished to lab by: [signature]	Date: 6.28.07	Time: 9:[illegible]
Samples received at lab by: [signature]	Date: 6.28.07	Time: 16:23

Please send copy(s) with each batch of sample(s) to the designated facility. TL6C

TXI Hunter Plant

7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/25/07	7:00 am	Limestone composite	TOC 297849	
6/25/07	7:00 am	Sand composite	TOC 297850	
6/25/07	7:00 am	Slag composite	TOC 297851	
6/25/07	7:00 am	Calcium sludge composite	TOC 297852	
6/25/07	7:00 am	Filter cake composite	TOC 297853	
6/25/07	7:00 am	Clay composite	TOC 297854	
6/25/07	7:00 am	Alakali bypass composite	TOC 297855	
6/25/07	7:00 am	ESP dust (CKD) composite	TOC 297856	
		* Note: No FCC available to sample		

Samples shipped to lab by: [signature]	Date: 6.28.07	Time: 5:30pm
Samples relinquished to lab by: [signature]	Date: 6.28.07	Time: 4:23pm
Samples received at lab by: M Murphy	Date: 6-28-07	Time: 16:23

Please send copy(s) with each batch of sample(s) to the designated facility. T-6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/26/07	7:00 am	Limestone composite	TOC 297857	
6/26/07	7:00 am	Sand composite	TOC 297858	
6/26/07	7:00 am	Slag composite	TOC 297859	
6/26/07	7:00 am	Calcium sludge composite	TOC 297860	
6/26/07	7:00 am	Filter cake composite	TOC 297861	
6/26/07	7:00 am	Clay composite	TOC 297862	
6/26/07	7:00 am	Alakali bypass composite	TOC 297863	
6/26/07	7:00 am	ESP dust (CKD) composite	TOC 297864	
		* Note: No FCC available to sample		

Samples shipped to lab by: [signature]	Date: 6.28.07	Time: 3:30 pm
Samples relinquished to lab by: [signature]	Date: 6.28.07	Time: 4:23 pm
Samples received at lab by: M Tumpling	Date: 6.28.07	Time: 16:23

Please send copy(s) with each batch of sample(s) to the designated facility. TL 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

Date	Time	Sample Description	Analysis Required	R.R.
6/27/07	7:00 am	Limestone composite	TOC 297865	
6/27/07	7:00 am	Sand composite	TOC 297866	
6/27/07	7:00 am	Slag composite	TOC 297867	
6/27/07	7:00 am	Calcium sludge composite	TOC 297868	
6/27/07	7:00 am	Filter cake composite	TOC 297869	
6/27/07	7:00 am	Clay composite	TOC 297870	
6/27/07	7:00 am	Alakali bypass composite	TOC 297871	
6/27/07	7:00 am	ESP dust (CKD) composite	TOC 297872	
		* Note: No FCC available to sample		

Samples shipped to lab by: [signature]	Date: 6.28.07	Time: 3:30p
Samples relinquished to lab by: [signature]	Date: 6.28.07	Time: 4:23p
Samples received at lab by: M Humphry	Date: 6-28-07	Time: 16:23

Please send copy(s) with each batch of sample(s) to the designated facility. T 26°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Contact: H. Borchers / T. Wigley

Address: 7781 FM 1102

Phone: 512-396-4244 (x 229 or x270)

City / State: New Braunfels, TX

Fax: 512-396-7064

Zip Code: 78132

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196700	6/28/07	7:00 am	Limestone composite	TOC	
196701	6/28/07	7:00 am	Sand composite	TOC	
196702	6/28/07	7:00 am	Slag composite	TOC	
196703	6/28/07	7:00 am	Calcium sludge composite	TOC	
196704	6/28/07	7:00 am	Filter cake composite	TOC	
196705	6/28/07	7:00 am	Clay composite	TOC	
196706	6/28/07	7:00 am	Alakali bypass composite	TOC	
196707	6/28/07	7:00 am	ESP dust (CKD) composite	TOC	
			* Note: No FCC available to sample		

Samples shipped to lab by: [signature]	Date: 7.06.07	Time: 8:17a
Samples relinquished to lab by: [signature]	Date: 7.06.07	Time: 9:00a
Samples received at lab by: [signature]	Date: 7/6/07	Time: 1600

Please send copy(s) with each batch of sample(s) to the designated facility. T L 6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: **Analysys Inc.**

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	RR
196708	6/29/07	7:00 am	Limestone composite	TOC	
196709	6/29/07	7:00 am	Sand composite	TOC	
196710	6/29/07	7:00 am	Slag composite	TOC	
196711	6/29/07	7:00 am	Calcium sludge composite	TOC	
196712	6/29/07	7:00 am	Filter cake composite	TOC	
196713	6/29/07	7:00 am	Clay composite	TOC	
196714	6/29/07	7:00 am	Alakali bypass composite	TOC	
196715	6/29/07	7:00 am	ESP dust (CKD) composite	TOC	
			* Note: No FCC available to sample		

Samples shipped to lab by: [signature]	Date: 7.06.07	Time: 2:17pm
Samples relinquished to lab by: [signature]	Date: 7.06.07	Time: 9:00am
Samples received at lab by: [signature]	Date: 7/10/07	Time: 1600

Please send copy(s) with each batch of sample(s) to the designated facility. T 2.6°C

TXI Hunter Plant
7781 FM 1102
New Braunfels, TX 78132

Receiving Facility: Analysys Inc.

Sample submitted to: Analysys, Inc.

Phone: (512) 385-5886

Analysys, Inc. Fax: (512)385-7411

Chain of Custody

Sending Facility:

Company Name: TXI Hunter Cement

Address: 7781 FM 1102

City / State: New Braunfels, TX

Zip Code: 78132

Contact: H. Borchers / T. Wigley

Phone: 512-396-4244 (x 229 or x270)

Fax: 512-396-7064

Reason for Request: EPA Request

	Date	Time	Sample Description	Analysis Required	R.R.
196716	7/04/07	7:00 am	Limestone composite	TOC	
196717	7/04/07	7:00 am	Sand composite	TOC	
196718	7/04/07	7:00 am	Slag composite	TOC	
196719	7/04/07	7:00 am	Calcium sludge composite	TOC	
196720	7/04/07	7:00 am	Filter cake composite	TOC	
196721	7/04/07	7:00 am	Clay composite	TOC	
196722	7/04/07	7:00 am	Alakali bypass composite	TOC	
196723	7/04/07	7:00 am	ESP dust (CKD) composite	TOC	
196724	7/04/07	7:00 am	FCC composite	TOC	

Samples shipped to lab by: [signature]	Date: 7.06.07	Time: 2:17pm
Samples relinquished to lab by: [signature]	Date: 7.06.07	Time: 4:20pm
Samples received at lab by: M Humphrey	Date: 7/10/07	Time: 1600

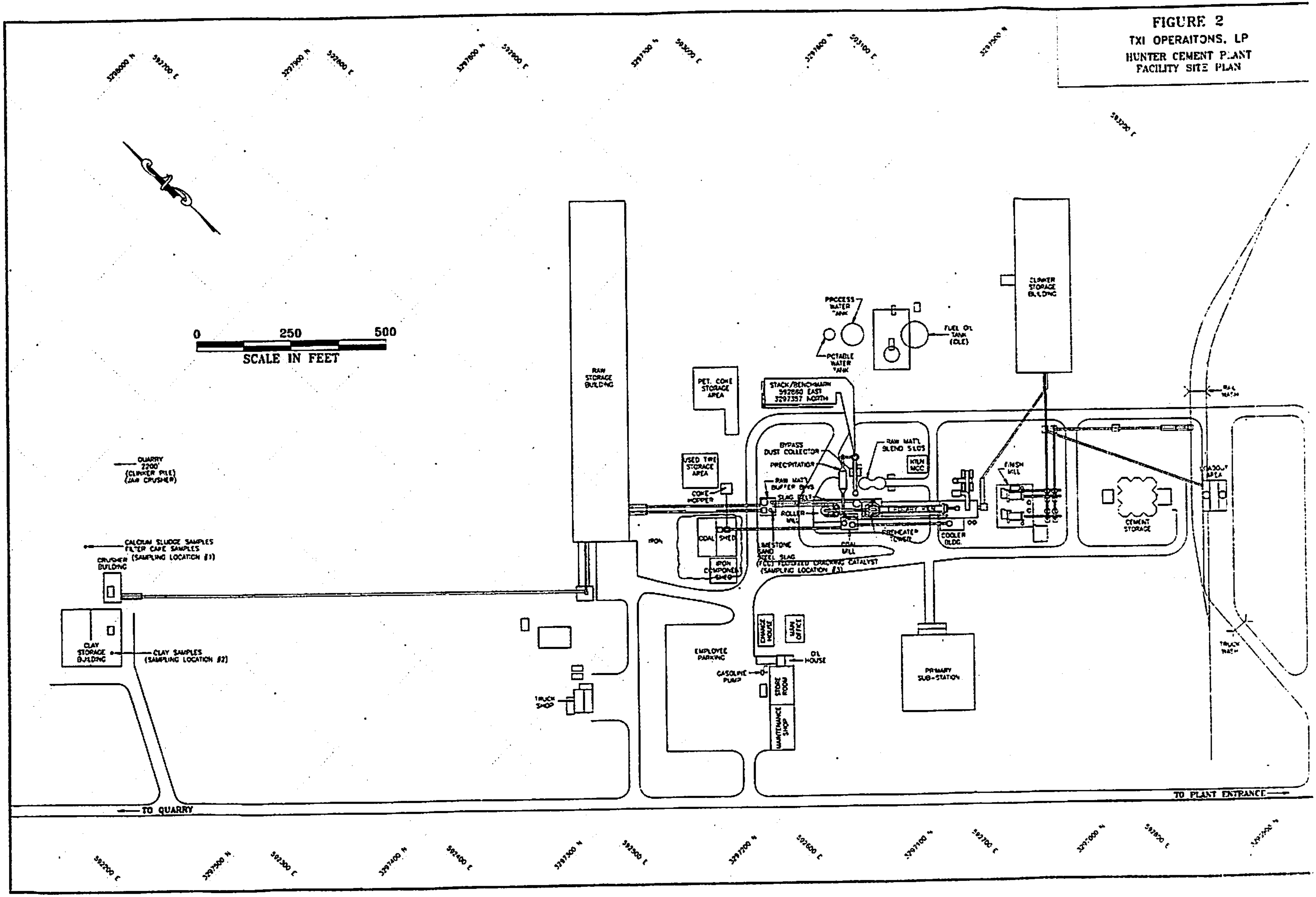
Please send copy(s) with each batch of sample(s) to the designated facility. TL 6°C

FIGURE 2

TXI OPERAITONS, LP

HUNTER CEMENT PLANT

FACILITY SITE PLAN



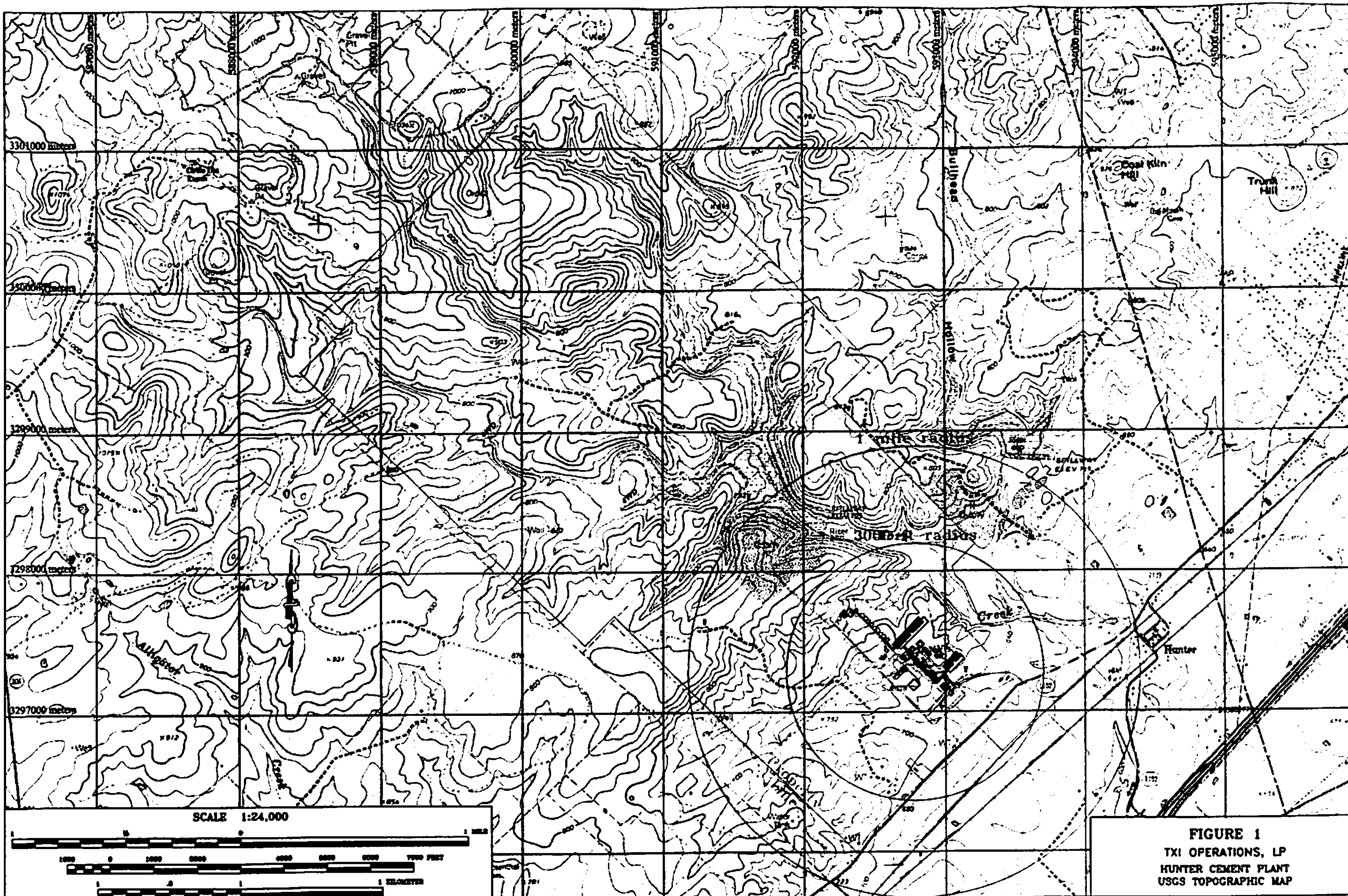


FIGURE 1
TXI OPERATIONS, LP
HUNTER CEMENT PLANT
USGS TOPOGRAPHIC MAP

En-tellect Intelligent Environmental Choices
300 Bryce Canyon Drive Cedar Park, Texas 78613-2308 Phone: (512) 335-4467 Fax: (512) 335-5774 e-mail: en-tellect@austin.rr.com

February 13, 2002

Mr. Peter Goerdel
EPA Region VI
1445 Ross Avenue
Dallas, TX 75202-2733

RE: TXI Operations, L.P.
Hunter Cement Plant
Notification of Source Status Testing

Dear Mr. Goerdel:

The purpose of this letter is to provide you notification that TXI Operations, LP intends to conduct area source status testing at the Hunter Cement Plant during the week of April 15, 2002. The testing will be conducted pursuant to 40 CFR §63.1352. The testing will be conducted by Clean Air Engineering, Inc. which is based out of Palantine, Illinois and Houston, Texas.

Name and Mailing Address of Owner/Operator

TXI Operations, L.P.
Hunter Cement Plant
7781 FM 1102
New Braunfels, Texas 78132

Address (physical location)

7781 FM 1102; 8 miles north of New Braunfels

Identification of the relevant standard and the source's compliance date

The purpose of this test is to determine the sources status using the methods specified in §63.1352 for HCl and Organic HAPs.

Compliance Date: June 10, 2002

Source Description and Pollutant Identification

TXI Operations, L.P. operates a dry process cement manufacturing plant in Comal County near Hunter, Texas. The facility was permitted in 1979 and began operations in

1980. The kiln is equipped with a preheater and alkali bypass system. The facility is currently permitted to utilize coal, petroleum coke, natural gas and tire derived fuel and currently produces up to 101.2 tons/hr and 886,351 tons/yr of clinker.

The plant also includes an in-line roller mill, finish mill, clinker cooler and other material handling equipment typical of a portland cement plant.

The point source (EPN 1-DE-3) is the only source associated with emissions of organic HAPs, D/F and HCl. Metal HAPs are emitted from this source as-well-as various particulate emitting material processing and handling sources throughout the plant.

If you have any questions concerning this notification, please do not hesitate to contact either Gene Pettey at (512) 396-4244 or me at (512) 335-4467.

Sincerely,

Jay Lindholm

Jay Lindholm
Vice President

cc: Mr. Steve Hagle, TNRCC - Operating Permits Division, Austin, Texas
Mr. Richard Garcia, TNRCC - Region 13, San Antonio, Texas
Mr. Gene Pettey, TXI - Hunter Cement Plant, New Braunfels, Texas

Entellect Environmental
For TXI Operations, L.P.
Hunter Cement Plant
7781 FM 1102
New Braunfels, Texas 78132

PROTOCOL ON PC MACT COMPLIANCE TESTING

Performed for:
ENTELLECT ENVIRONMENTAL
FOR TXI OPERATIONS, L.P.
HUNTER CEMENT PLANT
KILN STACK

Client Reference No: 63927
CAE Protocol No: 9101
Revision 0: March 19, 2002

Submitted by,

____
Brenton Berridge, P.E.
Manager, Houston Regional Office

CONTENTS

PROJECT OVERVIEW

TXI Operations, L.P. contracted Clean Air Engineering to perform PC MACT (40 CFR Part 63, Subpart LLL) testing at their facility located in New Braunfels, Texas for compliance purposes. The testing will be performed to help in determining whether the plant can be considered an area source or a major source.

The test parameters will include the following HAP pollutants:

- volatile organic compounds* (VOC);
- hydrogen chloride (HCl)
- flue gas composition (e.g., O_2, CO_2, H_2O);
- flue gas temperature;
- flue gas flow rate.

The testing will be performed using both a GC/FID as well as an FTIR. The specific compounds to be analyzed for will be:

- Benzene by GC/FID
- Toluene by GC/FID
- Hexane by GC/FID
- Naphthalene by GC/FID or FTIR
- Phenol by GC/FID or FTIR
- Xylene by GC/FID or FTIR
- Hydrogen Chloride by FTIR
- Formaldehyde by FTIR

*The analytical method used will be determined based on detection limits of the GC/FID and FTIR after the preliminary concentrations of the compounds is determined.

PROJECT OVERVIEW

The testing will take place at the Kiln Stack during the week of April 15, 2002. Coordinating the field testing will be:

Rex Coffman – TXI Operations, L.P.
Edgar Sawyer - TNRCC
Brenton Berridge - Clean Air Engineering

Table 1-1:
Summary of Testing

Source Constituent	Sampling Method	Permit Limit[1]
Kiln Stack		
Total HCl & HAPs (ton/yr)	EPA M18, M320/321	25

[1] Permit limits obtained from PC MACT requirements.

Table 1-2:
Proposed Testing Schedule

Day	Activity	Location	Test Method	Repli-cates	Sample Time
1-2	Mobilization/Set-Up				
3	Calibrations and Preliminary Sampling	Kiln Stack	1-4, 18, 320/321		
4	HAP Compounds	Kiln Stack Raw Mill On	1-4, 18, 320/321	3	60 min
5	HAP Compounds	Kiln Stack Raw Mill Off	1-4, 18, 320/321	3	60 min
6	Demobilization				

DESCRIPTION OF INSTALLATION

TXI Operations, L.P. operates a dry process portland cement manufacturing plant in Comal County near Hunter, Texas. The facility will be permitted in 1979 and began operations in 1980. The kiln is equipped with a preheater alkali bypass system which is combined with the kiln exhaust into a single stack. The facility is currently permitted to utilize coal, petroleum coke, natural gas and tire derived fuel. The current production rate is up to 101.2 tons/hr and 886,351 tons/yr of clinker. There is also an in line roller/raw mill which normally operates, but the kiln can operate for a limited time with it out of operation.

The testing will be performed at the Kiln Stack.

A schematic of the process indicating sampling locations is shown in Figure 2-1.

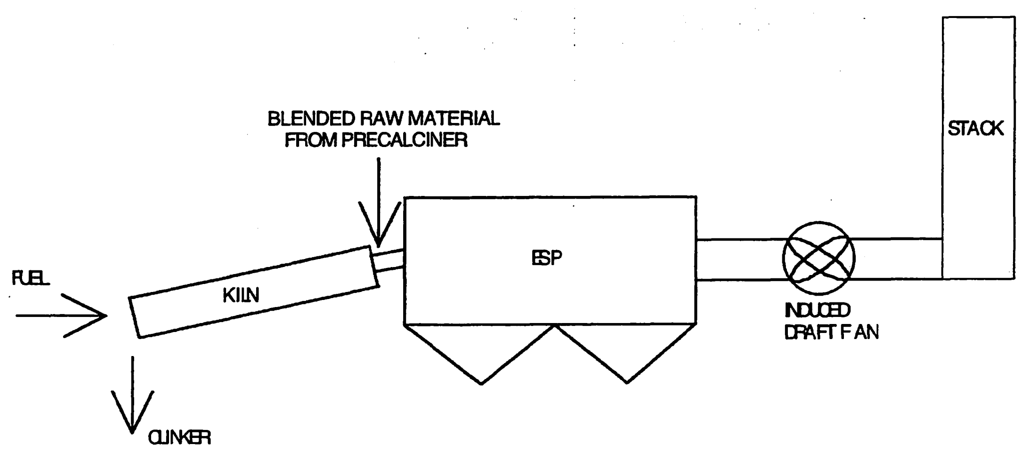


Figure 2-1: Process Schematic

METHODOLOGY

The sampling will follow procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 4, 18 and 320. The following table summarizes the methods and their respective sources.

Table 3-1:
Summary of Sampling Procedures

Title 40 CFR Part 60 Appendix A	
Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for the Determination of Dry Molecular Weight"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 18	"Measurement of Gaseous Organic Compound Emissions by Gas Chromatography"
Title 40 CFR Part 63 Appendix A	
Method 320	"Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy"
Method 321	"Measurement of Gaseous Hydrogen Chloride Emissions at Portland Cement Kilns by Fourier Transform Infrared (FTIR) Spectroscopy"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR).

These sampling, recovery and analytical procedures are summarized on pages 3-2 through 3-9.

All equipment will be calibrated at the Clean Air Engineering laboratory prior to shipment to the job site. The GC/FID will be pre-calibrated at the laboratory to develop response times and detection limits. A post-test calibration will be performed on the meter boxes at the conclusion of testing to verify that calibration will be maintained throughout the test program.

SAMPLING POINT DETERMINATION

Sampling point locations will be determined according to EPA Method 1.

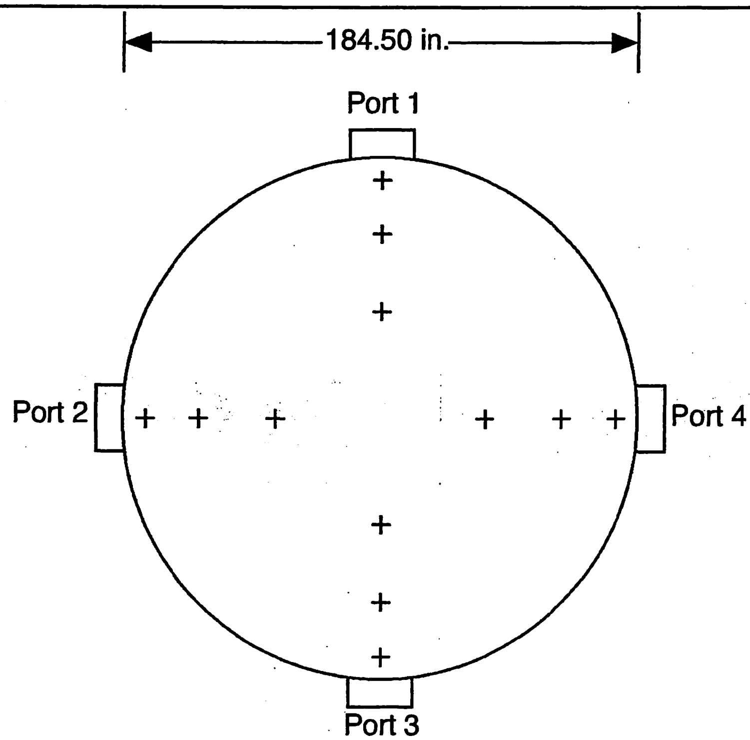
Table 3-2 outlines the sampling point configurations. Figure 3-1 through illustrates the sampling points and orientation of sampling ports for each of the sources tested in the program.

**Table 3-2:
Sampling Points**

Location	Constituent	Method	Run No.	Ports	Points per Port	Minutes per Point	Total Minutes	Figure
Unit 1 Stack	Flows/Moistures	1-4	1-6	4	3	5	60	4-1

The pollutant sampling will occur at the approximate center of the stack.

SAMPLING POINT DETERMINATION (CONTINUED)



Traverse Point	Port to Point Distance (in.)
1	
2	
3	

Diameters upstream from disturbance: >8 diameters Limit: 2
Diameters downstream from disturbance: >2 diameters Limit: 0.5

Figure 3-1: Kiln Stack Traverse Point Determination (EPA Method 1)

VELOCITY AND VOLUMETRIC FLOW RATE - EPA METHOD 2

EPA Method 2 will be used to determine the gas velocity and flow rate at the Stack. Figure 3-2 includes the components of the EPA Method 2 sampling apparatus.

Each set of velocity determinations includes the measurement of gas velocity pressure and gas temperature at each of the EPA Method 1 traverse points. The velocity pressures are measured with a Type S pitot tube. Gas temperature measurements are made using a Type K thermocouple and digital pyrometer.

GAS COMPOSITION AND MOLECULAR WEIGHT - EPA METHOD 3

In order to determine the oxygen (O_2) concentration, carbon dioxide (CO_2) concentration and gas molecular weight, a time-integrated sample of the gas will be obtained and analyzed in accordance with EPA Method 3. The gas sample will be collected into a vinyl sample bag from the moisture testing. The contents of the bag will be analyzed for O_2 and CO_2 concentrations using an Orsat gas analyzer.

MOISTURE CONTENT - EPA METHOD 4

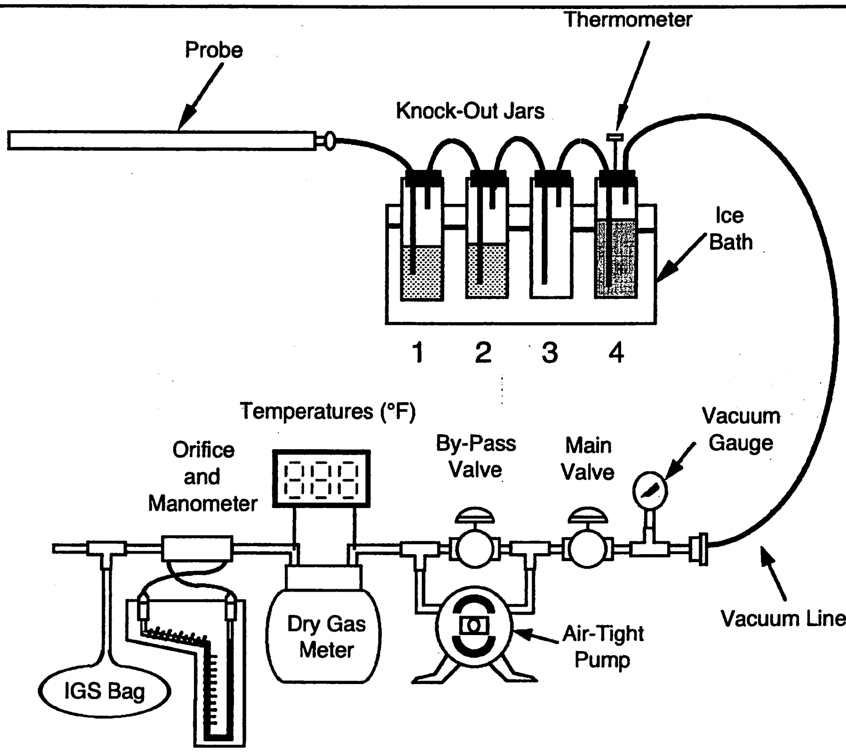
The flue gas moisture content at the Stack will be determined in accordance with EPA Method 4. Figure 3-2 shows the major components of the EPA Method 4 sampling apparatus. The gas moisture will be determined by quantitatively condensing the water in a chilled knock-out jar train. The amount of moisture condensed is determined both volumetrically and gravimetrically. A dry gas meter will be used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled is used to calculate the gas moisture content in accordance with EPA Method 4 calculations.

After passing through the probe, the sample gas enters a knock-out jar condenser system for drying of the gas. The condenser system consists of four leak-free glass knock-out jars and rubber leak-free connectors. The first two knockout jars each contain 100 milliliters of distilled water. The third knock-out jar will be empty, and the fourth contains 300 grams of silica gel. All four of the knock-out jars will be placed in an ice bath for the duration of the test.

The metering system includes a vacuum gauge, a leak-free pump, thermometers accurate to within ±5.0°F and a dry gas meter accurate to within 2%.

Before and after each test, the sample apparatus will be leak checked. A leakage rate of less than the 0.02 cfm will be considered acceptable.

MOISTURE CONTENT (CONTINUED)



Knock-Out Jar Contents
1) 100 ml water
2) 100 ml water
3) empty
4) 300 g silica gel

Figure 3-2: Moisture Sampling Apparatus (EPA Method 4)

METHODOLOGY

SPECIATED VOLATILE ORGANIC COMPOUNDS - EPA METHOD 18

EPA Method 18 will be used to measure concentrations of benzene, toluene, hexane, naphthalene, phenol and xylene. This method specifies the use of a variety of sampling techniques coupled with analysis by Gas Chromatography (GC) with a Flame Ionization Detector (FID).

At the Stack a VOST sampling meter will be used to pull gas through one charcoal and one XAD sample tubes in order to concentrate the sample to obtain lower detection limits. Figure 3-3 illustrates the sampling train which will be used. The sample tubes will be desorbed on-site using carbon disulfide.

An aliquot of the desorbed sample will then be injected into the GC injection port for analysis. The chromatographic method (e.g. oven temperature program) will simultaneously begin.

The Recovery Study required by Method 18 will be performed by running a colocated train simultaneously with the sample train for 3 runs. The second train will have the adsorbent tubes spiked with the compounds of interest to show the recovery efficiency.

Data from the chromatograms will be reduced by identifying peaks and matching their retention times with those of the known standards. Peak areas will be calculated using computer integration. Results will be calculated by mathematically comparing the area of the sample to the area of the standards using a least-squares regression analysis.. Results will be calculated as total micrograms of each analyte.

Standards for the GC/FID analysis will be made by dissolving known amounts of each analyte in carbon disulfide. Concentrations will be determined as micrograms/milliliter for each analyte.

Calibration response curves will be prepared using a least-squares regression analysis. At least three calibration points will be generated for the response curves for each compound. At least three injections will be performed for each calibration point. The percent difference of each injection from the mean of all injections will be less than ± 5%. The relative standard deviation for the results of each injection for each calibration point will be less than ± 5%.

VOLATILE EMISSIONS TESTING (CONTINUED)

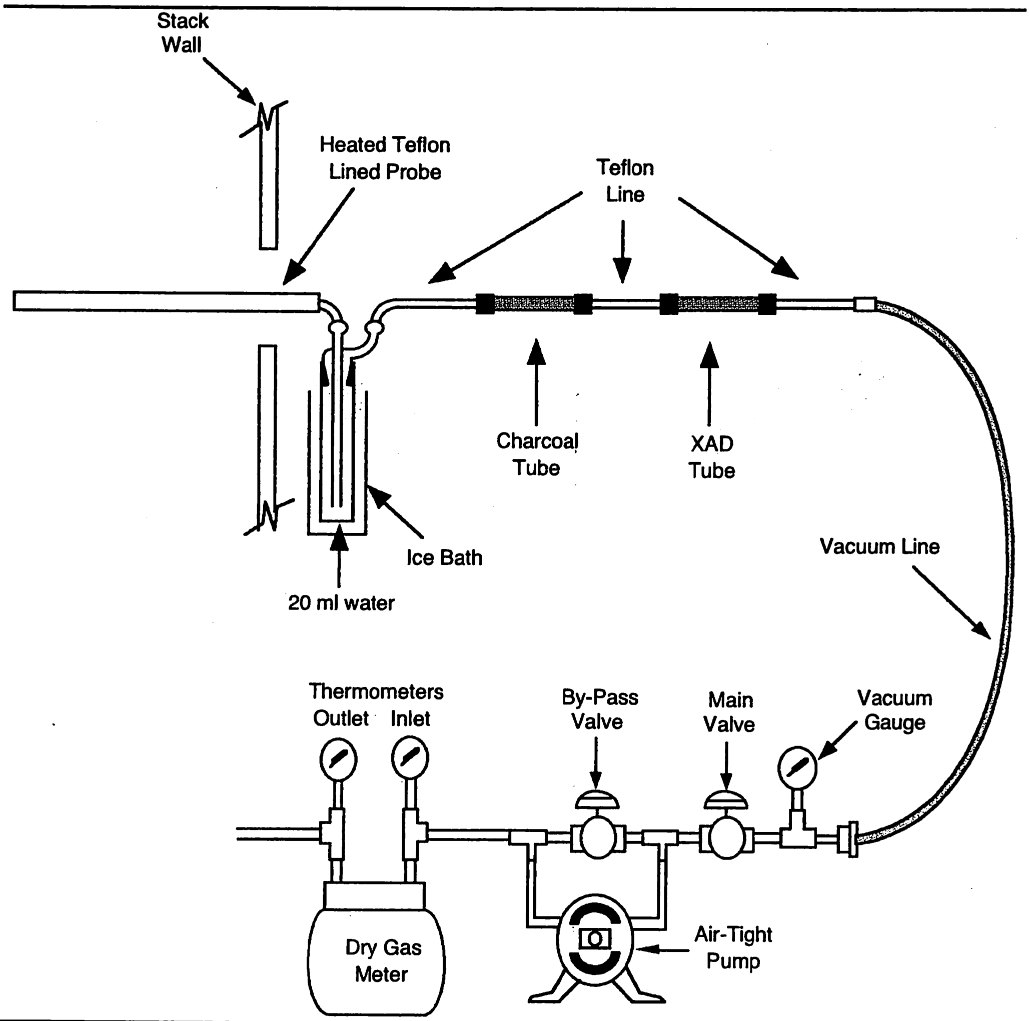


Figure 3-3: Stack Sampling Apparatus (EPA Method 18)

HYDROGEN CHLORIDE AND HAPS TESTING - EPA METHOD 320/321

The gaseous hydrogen chloride, formaldehyde and the tentative 3 additional HAP compound emissions will be determined using procedures detailed in EPA Method 320/321. Figure 3-4 illustrates the EPA Method 320/321 sampling apparatus. An integrated sample will be extracted from the gas stream through a heated probe, heated filter, Teflon sample line and heated pump. The sample then enters a heated manifold that introduces a known quantity of sample into the FTIR cell. FTIR performance will be verified using a 20 ppm ethylene calibration transfer standard (CTS) prior to and after each sampling event per Method 320 and 321. A calibration gas containing sulfur hexafluoride and hydrogen chloride will be used for analyte spiking. The calibration gas and CTS will be introduced into the probe tip. All flows will be controlled with calibrated flow meters. The sample will be continuously extracted with FTIR absorbance scans every six minutes or less.

Infrared absorption spectroscopy is performed by directing an infrared beam through a sample to a detector. The frequency-dependent infrared absorbance of the sample is measured by comparing this detector signal to a signal obtained without a sample in the beam path (background). There is a linear relationship between infrared absorption and compound concentration. This frequency dependent relationship is known as absorptivity. The absorptivity is measured by preparing standard samples in the laboratory of compounds at known concentrations and detector conditions. A correlation is then made between the standards (reference spectra) and the sample gas analysis. The relative intensities determine the sample gas concentrations.

The FTIR analyzer consists of a medium-high resolution interferometer, heated fixed path absorption cell, a mercury cadmium telluride (MCT) detector (liquid nitrogen cooled), electronics package and computer. The gas transport path inside the FTIR is heated to 180°C, while the absorption cell is maintained at 150°C.

The interferometer/electronics package is operated at a nominal spectral resolution of 0.5 wavenumber (0.5 cm^{-1}). The heated absorption cell is a fixed pathlength of 10 meters. The mirrors and cell interior are gold plated. The IR beam splitter and all optical windows are made of zinc selenide.

The method is self-validating by performing field spikes with a known concentration of the target compound. The QA/QC procedures can be found in reference in Methods 320 and 321.

HYDROGEN CHLORIDE (CONTINUED)

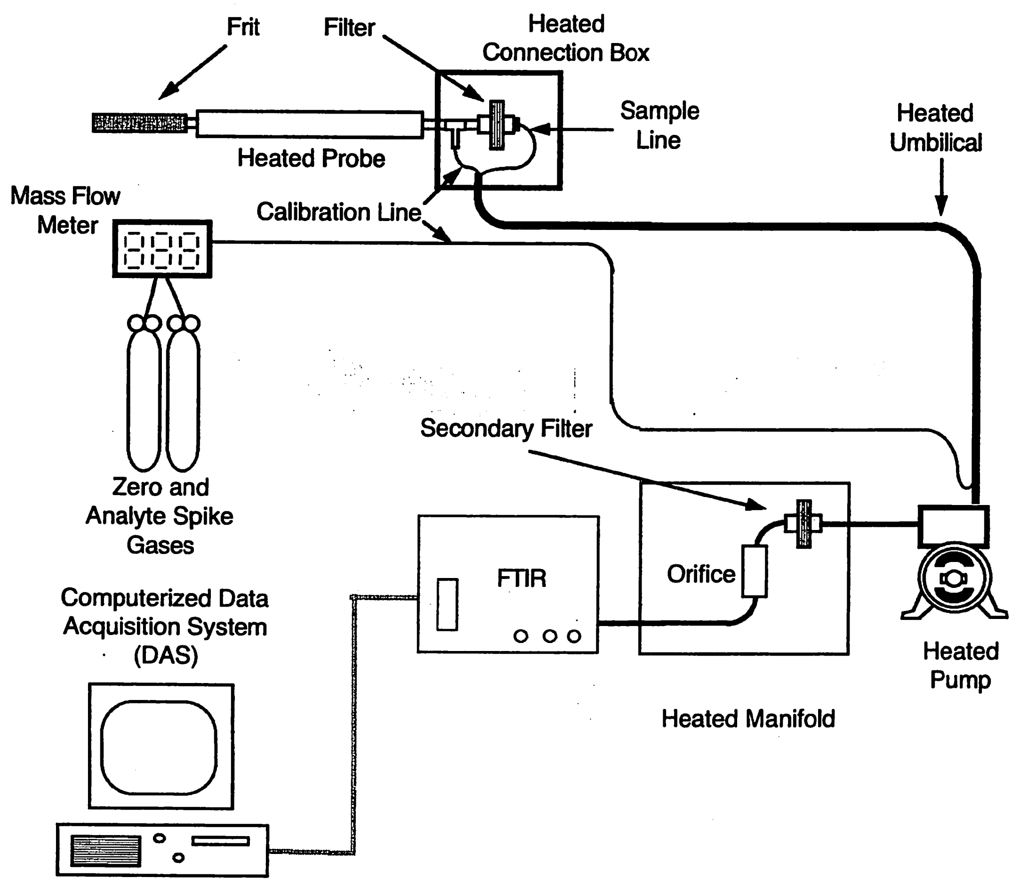


Figure 3-4: FTIR Hydrogen Chloride Sampling Apparatus (EPA Method 321)

CleanAir

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Suite 130
Houston, TX 77073-6041
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www.cleanair.com

TXI Operations, L.P.
Hunter Cement Plant
7781 FM 1102
New Braunfels, Texas 78132

REPORT ON PC MACT COMPLIANCE TESTING

Performed for:
TXI OPERATIONS, L.P.
KILN STACK
HUNTER CEMENT PLANT

Client Reference No: 63927
CAE Project No: 9101
Revision 0: May 26, 2002

To the best of our knowledge, the data presented in this report are accurate and complete.

Submitted by,

Brenton E. Berridge, P.E.
Manager, Houston Regional Office

Reviewed by,

Eric Rodriguez
Project Manager

CONTENTS

PROJECT OVERVIEW

TXI Operations, L.P. contracted Clean Air Engineering to perform PC MACT (40 CFR Part 63, Subpart LLL) testing at their facility located in New Braunfels, Texas for compliance purposes. The testing was performed to help in determining whether the plant can be considered an area source or a major source.

- volatile organic compounds (VOC);
- hydrogen chloride (HCl)
- flue gas composition (e.g., O_2, CO_2, H_2O);
- flue gas temperature;
- flue gas flow rate.

The testing was performed using both a GC/FID as well as an FTIR. The specific compounds analyzed for were:

Compound	Analyzer	Method
Benzene	GC/FID	18
Hexane	GC/FID	18
Naphthalene	GC/FID	18
Phenol	GC/FID	18
Toluene	GC/FID	18
Xylene	GC/FID	18
Hydrogen Chloride	FTIR	321
Formaldehyde	FTIR	320

The testing took place at the Kiln Stack on April 17 through 19. Coordinating the field testing were:

Kerri Kerr – TXI Operations, L.P.
Jay Lindholm – Entellect Environmental
Brenton Berridge - Clean Air Engineering

Table 1-1:
Summary of Test Results

Source, Condition Constituent	Sampling Method	Average Emission	Permit Limit[1]
Kiln Stack, Raw Mill On			
Total HAPs (ton/yr)	EPA M18, M320/321	12.20	25
Kiln Stack, Raw Mill Off			
Total HAPs (ton/yr)	EPA M18, M320/321	13.72	25

[1] Permit limits obtained from PC MACT requirements.

The Method 18 testing was performed using sorbent tubes and anlyzed on-site with a GC/FID. The first 3 runs (Raw Mill On) were performed with a charcoal tube followed with an XAD tube. During the analysis it was found that the phenol was trapped in the charcoal tube and an acceptable spike recovery was not obtained. It was decided to change the order of the tubes (XAD followed by charcoal) in order to solve the problem. A trial spike showed that this would work. The Raw Mill On condition was sampled again (Runs 7 through 9) in order to get the recoveries. The duplicate trains were run during Runs 1 through 6 and are numbered as 1B through 6B. The spike recoveries are shown in the Appendix, Section B.

The majority of the compounds analyzed for with the GC/FID were at non-detect levels. The results are reported using these minimum detect values calculated according to Method 18. Due to the low detection levels obtained by using the sorbent tube procedure, the emissions were in compliance with the area source requirements.

Runs 1A through 6A and 7 through 9 were used in the averages. The "B" runs are only used to show the recovery percentages. Only the Phenol results from Runs 1 through 3 are not used in the average as they did not pass the recovery requirements.

The duplicate trains were operated at the same point 4 feet into the stack a the same location. The setup used for both trains is shown in Section 4.

The results of the Method 18 data are shown in the Appendix Section F, however due to the size of the backup data, it is provided on CD-ROM at the end of the report. The FTIR data is provided in this section as well with the actual spectra archived at Clean Air Engineering.

The test conditions and results of analysis are presented in Tables 2-1 through 2-4 on pages 2-1 through 2-4.

En▸tellect Intelligent Environmental Choices

Bryce Canyon Drive Cedar Park, Texas 78613-2308 Phone: (512) 335-4467 Fax: (512) 335-5774 e-mail: en-tellect@austin.rr.com

June 3, 2002

Mr. Peter Goerdel
EPA Region VI
1445 Ross Avenue
Dallas, TX 75202-2733

RE: TXI Operations, L.P.
Hunter Cement Plant
TNRCC Account No. CS-0018-B
Area Source Determination Results

Dear Mr. Goerdel:

The purpose of this letter is to provide you notification that TXI Operations, LP's Hunter Cement Plant has conducted the required testing to show that this facility is an area source under the PC MACT rules (40 CFR Part 63, Subpart LLL). The testing was conducted during the week of April 15, 2002. The testing was conducted pursuant to 40 CFR §63.1352 by Clean Air Engineering, Inc. which is based out of Palantine, Illinois and Houston, Texas. Following testing all potental HAP emissions including organic HAPs, HCl, metal HAPs and dioxin and furan emissions were totaled. The total HAP potential emissions at this facility were determined to be 14 tons/yr. No individual HAP emissions exceeded 10 tons/yr and the aggregate emissions are less than 25 tons/yr. Therefore, this facility is defined as an area source. A summary of HAP emissions and the determination of the roller mill up versus the roller mill down is provided in Attachment A of this document. The determination of metal HAP emissions is provided in Attachment B of this document. Finally, the test report from the organic HAPs and HCl testing is included as Attachment C.

Name and Mailing Address of Owner/Operator

TXI Operations, L.P.
Hunter Cement Plant
7781 FM 1102
New Braunfels, Texas 78132

Address (physical location)

7781 FM 1102; 8 miles north of New Braunfels

Identification of the relevant standard and the source's compliance date

The purpose of this test is to determine the sources status using the methods specified in §63.1352 for HCl and Organic HAPs.

Compliance Date: June 14, 2002

Source Description and Pollutant Identification

TXI Operations, L.P. operates a dry process cement manufacturing plant in Comal County near Hunter, Texas. The facility was permitted in 1979 and began operations in 1980. The kiln is equipped with a preheater and alkali bypass system. The facility is currently permitted to utilize coal, petroleum coke, natural gas and tire derived fuel and currently produces up to 101.2 tons/hr and 886,351 tons/yr of clinker.

The plant also includes an in-line roller mill, finish mill, clinker cooler and other material handling equipment typical of a portland cement plant.

The point source (EPN 1-DE-3) is the only source associated with emissions of organic HAPs, D/F and HCl. Metal HAPs are emitted from this source as-well-as various particulate emitting material processing and handling sources throughout the plant.

If you have any questions concerning this notification, please do not hesitate to contact either Gene Pettey at (512) 396-4244 or me at (512) 335-4467.

Sincerely,

Jay Lindholm

Jay Lindholm
Vice President

cc: Mr. Steve Hagle, TNRCC - Operating Permits Division, Austin, Texas
Mr. Edgar Sawyer, TNRCC - Region 13, San Antonio, Texas
Mr. Gene Pettey, TXI - Hunter Cement Plant, New Braunfels, Texas
Mr. Rex Coffman, TXI - Midlothian Cement Plant, Midlothian, Texas

Attachment A
Emission Summary of HAPs

EMISSION SUMMARY OF HAPS
FOR THE HUNTER CEMENT PLANT

Description	PTE Mill up tons/yr	PTE Mill Down tons/yr	Total* tons/yr
Organic HAPs + HCl	12.2	13.72	12.352
Metals From all Sources			1.653
Dioxin and Furan Emissions			1.1156E-06
Total HAPs Emissions			**14.005**

* - Mill up Versus Mill down equals 90% mill up to 10% mill down

Historical Mill Up Versus Mill Down
Hunter Cement Plant

Year	Months	Kiln Hours	Roller Mill Hours	Roller Mill % of Kiln Operation
1996-1997	June-May	8063.7	7179.3	89.03%
1997-1998	June-May	8361.2	7611.5	91.03%
1998-1999	June-May	7657	6887	89.94%
1999-2000	June-May	7725	6836	88.49%
2000-2001	June-May	7983	7313	91.61%
Average		7957.98	7165.36	90.04%

Attachment B
HAP Metals Emissions Summary

TXI OPERA[illegible]NS, LP

HUNTER CE[illegible] PLANT

METALS SUMMARY

Plant Description: TXI Operations, LP Hunter Cement Plant
Account Number: CS-0018-B

Group	EPN	Activity	Material & Solid Fuel Utilization		Particulate Emissions	MACT Identified (HAPS) Metals										
			Type	Throughput (ton/yr)	TSP (ton/yr)	Antimony (ton/yr)	Arsenic (ton/yr)	Beryllium (ton/yr)	Cadmium (ton/yr)	Chromium (ton/yr)	Cobalt (ton/yr)	Lead (ton/yr)	Manganese (ton/yr)	Mercury (ton/yr)	Nickel (ton/yr)	Selenium (ton/yr)
Transfers	01	Truck Unloading to Apron Feeder	Limestone	483,736	0.00411	0.000000002	0.00000001	0.000000001	0.000000004	0.00000001	0.00000001	0.00000002	0.0000017	0.000000002	0.00000001	0.0000000008
	04	Conveyor Transfer	Limestone	56,238	0.00046	0.000000000	0.00000000	0.000000000	0.000000000	0.00000000	0.00000000	0.00000000	0.00000002	0.0000000000	0.00000000	0.0000000001
	07	6x20 Belly Pan to Stacker Belt	Limestone	483,736	0.00399	0.000000002	0.00000001	0.000000001	0.000000004	0.00000001	0.00000001	0.00000002	0.0000017	0.000000002	0.00000001	0.0000000008
	10	5x15 Belly Pan to Stacker Belt	Limestone	33,862	0.00028	0.000000000	0.00000000	0.000000000	0.000000000	0.00000000	0.00000000	0.00000000	0.00000001	0.0000000000	0.00000000	0.0000000001
	12	Recycle Conveyor to Conveyor	Limestone	33,862	0.00028	0.000000000	0.00000000	0.000000000	0.000000000	0.00000000	0.00000000	0.00000000	0.00000001	0.0000000000	0.00000000	0.0000000001
	27	Conveyor Transfer	Limestone	320,976	0.00265	0.000000001	0.00000001	0.000000000	0.000000003	0.00000001	0.00000001	0.00000001	0.00000011	0.0000000001	0.00000001	0.0000000005
Drops	1-AE-4	F E loader drop to truck	Limestone	1,147,819	3.0877	0.00001680	0.00000753	0.000000485	0.000003088	0.0000772	0.0000772	0.0001704	0.0013061	0.0000001235	0.0000908	0.0000006175
	1-AE-6	Clinker drop from truck	Clinker	5,077	0.0297	0.00005686	0.00000077	0.00000048	0.00000033	0.00008715	0.00000092	0.00002744	0.00016426	0.00000033	0.00000080	0.00001244
	1-AE-11	L S drop to crusher	Limestone	1,147,819	0.9263	0.000000504	0.00000226	0.000000145	0.000000926	0.00000232	0.00000232	0.00000511	0.00003918	0.0000000371	0.00000272	0.0000019
	1-AE-12	Clay hopper	Clay	137,456	0.0147	0.000000003	0.00000004	0.00000001	0.00000001	0.00000012	0.00000007	0.00000029	0.00000166	0.000000001	0.00000017	0.000000003
	1-AE-14	Clay truck drop	Clay	137,456	0.0147	0.000000003	0.00000004	0.000000001	0.00000001	0.00000012	0.00000007	0.00000029	0.00000166	0.000000001	0.00000017	0.000000003
	1-AE-15	Clinker drop to hopper	Clinker	5,077	0.0594	0.00011372	0.00000154	0.00000095	0.00000065	0.00017430	0.00000184	0.0000549	0.00032852	0.00000065	0.00000160	0.0000249
	1-AE-16	Hopper to stacker	Clinker	5,077	0.0594	0.00011372	0.00000154	0.00000095	0.00000065	0.00017430	0.00000184	0.0000549	0.00032852	0.00000065	0.00000160	0.0000249
	1-AE-17	Clinker drop to truck	Clinker	3,216	0.0376	0.00007204	0.00000098	0.00000060	0.00000041	0.00011041	0.00000117	0.0000348	0.00020811	0.00000041	0.00000102	0.0000158
	1-AE-18	Clinker crusher hopper	Clinker	3,216	0.0376	0.00007204	0.00000098	0.00000060	0.00000041	0.00011041	0.00000117	0.0000348	0.00020811	0.00000041	0.00000102	0.0000158
	1-AE-20	Reclaimed clinker drop	Clinker	3,216	0.0376	0.00007204	0.00000098	0.00000060	0.00000041	0.00011041	0.00000117	0.0000348	0.00020811	0.00000041	0.00000102	0.0000158
	1-AE-21	Reclaimed clinker drop to Feed Hopper #1	Clinker	3,216	0.0188	0.00003602	0.00000049	0.00000030	0.00000021	0.00005521	0.00000058	0.0000174	0.00010405	0.00000021	0.00000051	0.0000788
	1-AE-22	Feed Hopper Drop to Screw Conveyor 1	Clinker	3,216	0.0038	0.00000720	0.00000010	0.00000006	0.00000004	0.00001104	0.00000012	0.00000348	0.00002081	0.00000004	0.00000010	0.00000158
	1-AE-23	Reclaimed clinker drop to Feed Hopper #2	Clinker	3,216	0.0188	0.00003602	0.00000049	0.00000030	0.00000021	0.00005521	0.00000058	0.0000174	0.00010405	0.00000021	0.00000051	0.0000788
	1-AE-24	Feed Hopper Drop to Screw Conveyor 2	Clinker	3,216	0.0038	0.00000720	0.00000010	0.00000006	0.00000004	0.00001104	0.00000012	0.00000348	0.00002081	0.00000004	0.00000010	0.00000158
	1-BE-3	Sand dump fugitives	Sand	96,501	0.0208	0.00000003	0.00000009	0.00000002	0.00000006	0.00007504	0.00000005	0.00000104	0.00067140	0.000000001	0.00000085	0.00000009
	1-BE-6	Iron Additive dump to pile	Slag	48,406	0.0286	0.00000003	0.00000012	0.00000003	0.00000008	0.00010322	0.00000007	0.00000143	0.00092352	0.000000001	0.00000117	0.00000012
	1-BE-10	Iron Additive Drop	Slag	48,406	0.0086	0.00000001	0.00000004	0.00000001	0.00000002	0.00003097	0.00000002	0.00000043	0.00027706	0.000000000	0.00000035	0.00000004
	1-DE-5	CKD drop to outhaul truck	CKD	16,915	0.0020	0.00000002	0.00000003	0.000000001	0.00000001	0.00000010	N/A	0.00000014	N/A	0.0000000002	0.00000003	0.00000013
	1-EE-3	Drop to pile fugitives	Coal	114,803	0.0273	0.00000001	0.00000004	0.00000005	0.00000055	0.00000136	0.00000136	0.00000273	0.00000148	0.000000003	0.00000136	0.00000003
			Coke	0	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	1-EE-4	Loader to coal hopper	Coal	114,803	0.0082	0.00000000	0.00000001	0.00000002	0.00000016	0.00000041	0.00000041	0.00000082	0.00000044	0.000000001	0.00000041	0.00000001
	1-EE-4pc	Loader to coke hopper	Coke	0	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	1-EE-5	Hopper to coal belt	Coal	114,803	0.0545	0.00000002	0.00000009	0.00000011	0.00000109	0.00000273	0.00000273	0.00000545	0.00000295	0.000000006	0.00000273	0.00000006
	1-EE-5pc	Hopper to coke belt	Coke	0	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	1-EE-6pc	Coke belt to coke feeder	Coke	0	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	1-EE-7pc	Coke feeder to coal belt	Coke	0	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	1-EE-8	Coal belt to coal bin	Coal	114,803	0.0082	0.00000000	0.00000001	0.00000002	0.00000016	0.00000041	0.00000041	0.00000082	0.00000044	0.000000001	0.00000041	0.00000001
	1-EE-9	Coal belt B to coal bin B	Coal	114,803	0.0082	0.00000000	0.00000001	0.00000002	0.00000016	0.00000041	0.00000041	0.00000082	0.00000044	0.000000001	0.00000041	0.00000001
	1-FE-18	Clinker reclaim fugitives	Clinker	3,216	0.0188	0.00003602	0.00000049	0.00000030	0.00000021	0.00005521	0.00000058	0.00001738	0.00010405	0.00000021	0.00000051	0.0000788
	1-GE-9	Gypsum / Solid Fuel undertrack unloader	Gypsum	49,231	0.0064	0.000000003	0.00000002	0.000000001	0.000000006	0.00000002	0.00000002	0.00000004	0.00000027	0.0000000003	0.00000002	0.0000000013
			Coal	78,447	0.0102	0.00000000	0.00000002	0.00000002	0.00000020	0.00000051	0.00000051	0.00000102	0.00000055	0.000000001	0.00000051	0.00000001
	1-GE-10	Gypsum / Solid Fuel drop to belt	Gypsum	49,231	0.0064	0.000000003	0.00000002	0.000000001	0.000000006	0.00000002	0.00000002	0.00000004	0.00000027	0.0000000003	0.00000002	0.0000000013
			Coal	78,447	0.0102	0.00000000	0.00000002	0.00000002	0.00000020	0.00000051	0.00000051	0.00000102	0.00000055	0.000000001	0.00000051	0.00000001
	1-GE-11	Drop chute fugitives	Coal	78,447	0.0373	0.00000001	0.00000006	0.00000007	0.00000075	0.00000186	0.00000186	0.00000373	0.00000202	0.000000004	0.00000186	0.00000004
			Coke	0	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	1-GE-12	Gypsum anhydrite dumps	Gypsum	14,634	0.0126	0.000000007	0.00000003	0.000000002	0.000000013	0.00000003	0.00000003	0.00000007	0.00000054	0.0000000005	0.00000004	0.0000000025
	PC-1A	FE Loader Drop to Grizzley Screen	Clinker	5,077	0.0297	0.00005686	0.00000077	0.00000048	0.00000033	0.00008715	0.00000092	0.00002744	0.000164	0.00000033	0.00000080	0.00001244
	PC-1B	Grizzley Drop to Pile	Clinker	5,077	0.0297	0.00005686	0.00000077	0.00000048	0.00000033	0.00008715	0.00000092	0.00002744	0.000164	0.00000033	0.00000080	0.00001244
	PC-2	Drop to Storage	Clinker	5,077	0.0297	0.00005686	0.00000077	0.00000048	0.00000033	0.00008715	0.00000092	0.00002744	0.000164	0.00000033	0.00000080	0.00001244
	02	Apron Feeder Drop to Grizzly Feeder	Limestone	483,736	0.6506	0.000000354	0.00000159	0.000000102	0.000000651	0.00000163	0.00000163	0.00000359	0.00002752	0.000000026	0.00000191	0.0000013
	08	Stacker Belt Drop to Screenings Stkple.	Limestone	56,238	0.0756	0.000000041	0.00000018	0.000000012	0.000000076	0.00000019	0.00000019	0.00000042	0.00000320	0.0000000030	0.00000022	0.00000015
	11a	Stacker Belt Drop to Common Base Stkple.	Limestone	253,169	0.3405	0.000000185	0.00000083	0.000000053	0.000000341	0.00000085	0.00000085	0.00000188	0.00001440	0.0000000136	0.00000100	0.00000068
	16a	Stacker Belt Drop to Grade 1 Base	Limestone	67,807	0.0912	0.000000050	0.00000022	0.000000014	0.000000091	0.00000023	0.00000023	0.00000050	0.00000386	0.0000000036	0.00000027	0.00000018

TXI OPER[…]NS, LP

HUNTER CEN[…] PLANT

METALS SUMMARY

Plant Description: TXI Operations, LP Hunter Cement Plant
Account Number: CS-0018-B

Group	EPN	Activity	Material & Solid Fuel Utilization: Type	Material & Solid Fuel Utilization: Throughput (ton/yr)	Particulate Emissions: TSP (ton/yr)	MACT Identified (HAPS) Metals: Antimony (ton/yr)	Arsenic (ton/yr)	Beryllium (ton/yr)	Cadmium (ton/yr)	Chromium (ton/yr)	Cobalt (ton/yr)	Lead (ton/yr)	Manganese (ton/yr)	Mercury (ton/yr)	Nickel (ton/yr)	Selenium (ton/yr)
				(acres)												
Piles	1-I-1	Outside Clinker Storage	Clinker	1.78	0.6251	0.00119706	0.00001625	0.00001000	0.00000688	0.00183465	0.00001938	0.00057759	0.00345802	0.00000688	0.00001688	0.00026191
	1-BE-3	Sand Stockpile	Sand	0.40	0.0421	0.00000005	0.00000018	0.00000005	0.00000012	0.00015213	0.00000011	0.00000211	0.00136116	0.000000002	0.00000172	0.00000018
	1-BE-6	Iron Additive Stockpile	Slag	0.50	0.0527	0.00000006	0.00000023	0.00000006	0.00000015	0.00019016	0.00000013	0.00000263	0.00170145	0.000000002	0.00000215	0.00000022
	1-BE-7	Coal Pile Wind Erosion	Limestone	0.63	0.3053	0.000000166	0.00000074	0.000000048	0.000000305	0.00000076	0.00000076	0.00000169	0.00001291	0.0000000122	0.00000090	0.0000000611
	1-BE-7pc	Coke Pile Wind Erosion	Coke	0.00	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	1-GE-13	Gypsum stockpile fugitives	Gypsum	0.20	0.0337											
	1-GE-14	Anhydrite storage fugitives	Anhydrite	0.00	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	11	Common Base Stockpile	Limestone	0.10	0.0169	0.000000009	0.00000004	0.000000003	0.000000017	0.00000004	0.00000004	0.00000009	0.00000071	0.0000000007	0.00000005	0.0000000034
	16	Grade 1 Base Stockpile	Limestone	0.50	0.0843	0.000000046	0.00000021	0.000000013	0.000000084	0.00000021	0.00000021	0.00000047	0.00000357	0.0000000034	0.00000025	0.0000000169
	21	Screening Stockpile	Limestone	0.20	0.0337	0.000000018	0.00000008	0.000000005	0.000000034	0.00000008	0.00000008	0.00000019	0.00000143	0.0000000013	0.00000010	0.0000000067
Screening & Crushing	1-AE-19	Hopper to crusher/crushing	Clinker	8,293	0.0003	0.00000056	0.00000001	0.00000000	0.00000000	0.00000085	0.00000001	0.00000027	0.00000161	0.00000000	0.00000001	0.00000012
	PC-1	Portable Crusher	Clinker	8,293	0.0003	0.00000056	0.00000001	0.00000000	0.00000000	0.00000085	0.00000001	0.00000027	0.00000161	0.00000000	0.00000001	0.00000012
	03	Horizontal Impact Crusher	Limestone	483,736	0.0051	0.000000003	0.00000001	0.000000001	0.000000005	0.00000001	0.00000001	0.00000003	0.00000021	0.0000000002	0.00000001	0.0000000010
	05	6x20/ 3-Deck Screen	Limestone	483,736	0.0427	0.000000023	0.00000010	0.000000007	0.000000043	0.00000011	0.00000011	0.00000024	0.00000180	0.0000000017	0.00000013	0.0000000085
	09	5x15/ 2 Deck Screen	Limestone	483,736	0.0427	0.000000023	0.00000010	0.000000007	0.000000043	0.00000011	0.00000011	0.00000024	0.00000180	0.0000000017	0.00000013	0.0000000085
Baghouses	1-AE-1	Rock Crushing and Transfer	Limestone	1,147,819	1.6031	0.000000872	0.00000391	0.000000252	0.000001603	0.00000401	0.00000401	0.00000885	0.00006781	0.0000000641	0.00000471	0.0000003206
	1-AE-2	Sampling Tower	Limestone	1,147,819	0.3728	0.000000203	0.00000091	0.000000059	0.000000373	0.00000093	0.00000093	0.00000206	0.00001577	0.0000000149	0.00000110	0.0000000746
	1-BE-1	Raw Feed	Limestone	1,152,059	1.2624	0.000000687	0.00000308	0.000000198	0.000001262	0.00000316	0.00000316	0.00000697	0.00005340	0.0000000505	0.00000371	0.0000002525
			Clay	137,456	0.1506	0.000000030	0.00000045	0.00000014	0.00000015	0.00000126	0.00000074	0.00000294	0.00001702	0.000000006	0.00000173	0.000000030
			Sand	96,501	0.1058	0.00000013	0.00000046	0.00000011	0.00000031	0.00038198	0.00000026	0.00000529	0.00341769	0.000000004	0.00000433	0.00000045
			FCC	19,847	0.0217	0.00000004	0.00000008	0.00000001	0.00000002	0.00000014	0.00000066	0.00000108	0.00000020	0.0000000009	0.00000336	0.00000001
			Slag	48,406	0.0531	0.00000006	0.00000023	0.00000006	0.00000015	0.00019156	0.00000013	0.00000265	0.00171399	0.000000002	0.00000217	0.00000023
	1-BE-2	Raw Bins	Limestone	1,152,059	1.2624	0.000000687	0.00000308	0.000000198	0.000001262	0.00000316	0.00000316	0.00000697	0.00005340	0.0000000505	0.00000371	0.0000002525
			Clay	137,456	0.1506	0.000000030	0.00000045	0.00000014	0.00000015	0.00000126	0.00000074	0.00000294	0.00001702	0.000000006	0.00000173	0.000000030
			Sand	96,501	0.1058	0.00000013	0.00000046	0.00000011	0.00000031	0.00038198	0.00000026	0.00000529	0.00341769	0.000000004	0.00000433	0.00000045
			FCC	19,847	0.0217	0.00000004	0.00000008	0.00000001	0.00000002	0.00000014	0.00000066	0.00000108	0.00000020	0.0000000009	0.00000336	0.00000001
			Slag	48,406	0.0531	0.00000006	0.00000023	0.00000006	0.00000015	0.00019156	0.00000013	0.00000265	0.00171399	0.000000002	0.00000217	0.00000023
	1-DE-1	Blend Silos	Limestone	1,147,819	1.9122	0.000001040	0.00000467	0.000000300	0.000001912	0.00000478	0.00000478	0.00001056	0.00008089	0.0000000765	0.00000562	0.0000003824
	1-DE-2	Feed Transfer	Limestone	1,147,819	0.9561	0.000000520	0.00000233	0.000000150	0.000000956	0.00000239	0.00000239	0.00000528	0.00004044	0.0000000382	0.00000281	0.0000001912
	1-DE-2a	Air Slide Feed Bucket Elevator	Limestone	1,147,819	1.5935	0.000000867	0.00000389	0.000000250	0.000001594	0.00000398	0.00000398	0.00000880	0.00006741	0.0000000637	0.00000468	0.0000003187
	1-EE-1	Coal Mill	Coal	114,803	1.7083	0.00000068	0.00000268	0.00000342	0.00003417	0.00008541	0.00008541	0.00017083	0.00009242	0.000000183	0.00008541	0.00000188
	1-FE-1	Clinker Bin	Clinker	819,143	1.7194	0.00329271	0.00004471	0.00002751	0.00001891	0.00504652	0.00005330	0.00158875	0.00951188	0.00001891	0.00004642	0.00072044
	1-FE-2	Clinker Barn	Clinker	819,143	3.7543	0.00718946	0.00009761	0.00006007	0.00004130	0.01101883	0.00011638	0.00346896	0.02076871	0.00004130	0.00010137	0.00157305
	1-FE-3	Gypsum Transfer	Gypsum	49,231	1.7194	0.000000935	0.00000420	0.000000270	0.000001719	0.00000430	0.00000430	0.00000949	0.00007273	0.0000000688	0.00000506	0.0000003439
	1-FE-4	Gypsum Bins	Gypsum	49,231	1.7375	0.000000945	0.00000424	0.000000273	0.000001737	0.00000434	0.00000434	0.00000959	0.00007350	0.0000000695	0.00000511	0.0000003475
	1-FE-5	Clinker Outhaul Belt	Clinker	845,862	1.0141	0.00194194	0.00002637	0.00001623	0.00001115	0.00297629	0.00003144	0.00093700	0.00560983	0.00001115	0.00002738	0.00042489
	1-FE-6	Clinker Merrick Feeder	Clinker	845,862	1.7083	0.00327133	0.00004441	0.00002733	0.00001879	0.00501376	0.00005296	0.00157844	0.00945012	0.00001879	0.00004612	0.00071576
	1-FE-7	Clinker Transfer Point No.1	Clinker	845,862	3.4165	0.00654265	0.00008883	0.00005466	0.00003758	0.01002751	0.00010591	0.00315687	0.01890024	0.00003758	0.00009225	0.00143153
	1-FE-8	Fringe Bin	Clinker	845,862	1.7375	0.00332730	0.00004517	0.00002780	0.00001911	0.00509954	0.00005386	0.00160544	0.00961181	0.00001911	0.00004691	0.00072801
	1-FE-9	Fringe Bin	Clinker	845,862	1.7194	0.00329271	0.00004471	0.00002751	0.00001891	0.00504652	0.00005330	0.00158875	0.00951188	0.00001891	0.00004642	0.00072044
	1-FE-14	Gypsum/Anhydrite Merrick Feeder	Gypsum	49,231	1.7083	0.000000929	0.00000417	0.000000268	0.000001708	0.00000427	0.00000427	0.00000943	0.00007226	0.0000000683	0.00000502	0.0000003417
	1-FE-16	Clinker Bin	Clinker	845,862	1.7375	0.00332730	0.00004517	0.00002780	0.00001911	0.00509954	0.00005386	0.00160544	0.00961181	0.00001911	0.00004691	0.00072801
	1-FE-17	Clinker into Hopper	Clinker	5,077	0.0435	0.00008334	0.00000113	0.00000070	0.00000048	0.00012773	0.00000135	0.00004021	0.00024074	0.00000048	0.00000117	0.00001823
	1-GE-4	#1 Gypsum Transfer	Gypsum	49,231	1.0425	0.000000567	0.00000254	0.000000164	0.000001042	0.00000261	0.00000261	0.00000575	0.00004410	0.0000000417	0.00000306	0.0000002085
	1-GE-5	#2 Gypsum Transfer	Gypsum	49,231	1.0317	0.000000561	0.00000252	0.000000162	0.000001032	0.00000258	0.00000258	0.00000569	0.00004364	0.0000000413	0.00000303	0.0000002063
	1-HE-1	Finish Silo Vent	Clinker	450,333	1.6901	0.00323657	0.00004394	0.00002704	0.00001859	0.00496049	0.00005239	0.00156167	0.00934971	0.00001859	0.00004563	0.00070816
	1-HE-2	Finish Silo Vent	Clinker	424,265	1.6901	0.00323657	0.00004394	0.00002704	0.00001859	0.00496049	0.00005239	0.00156167	0.00934971	0.00001859	0.00004563	0.00070816
	1-HE-3	FK Pump	Clinker	16,915	0.1137	0.00021776	0.00000296	0.00000182	0.00000125	0.00033374	0.00000353	0.00010507	0.00062905	0.00000125	0.00000307	0.00004765

TXI OPER[illegible]NS, LP

HUNTER CEM[illegible] PLANT

METALS SUMMARY

Plant Description: TXI Operations, LP Hunter Cement Plant
Account Number: CS-0018-B

Group	EPN	Activity	Material & Solid Fuel Utilization		Particulate Emissions	MACT Identified (HAPS) Metals										
			Type	Throughput (ton/yr)	TSP (ton/yr)	Antimony (ton/yr)	Arsenic (ton/yr)	Beryllium (ton/yr)	Cadmium (ton/yr)	Chromium (ton/yr)	Cobalt (ton/yr)	Lead (ton/yr)	Manganese (ton/yr)	Mercury (ton/yr)	Nickel (ton/yr)	Selenium (ton/yr)
Baghouses (cont.)	1-HE-4	Load Bin	Clinker	691,587	0.9880	0.00189198	0.00002569	0.00001581	0.00001087	0.00289973	0.00003063	0.00091289	0.00546551	0.00001087	0.00002668	0.00041396
	1-HE-5	Load Bin	Clinker	691,587	0.1895	0.00036293	0.00000493	0.00000303	0.00000208	0.00055624	0.00000588	0.00017512	0.00104842	0.00000208	0.00000512	0.00007941
	1-HE-6	FK Pump	Clinker	691,587	0.5928	0.00113519	0.00001541	0.00000948	0.00000652	0.00173984	0.00001838	0.00054774	0.00327931	0.00000652	0.00001601	0.00024838
	1-HE-7	Loadout	Clinker	691,587	0.9880	0.00189198	0.00002569	0.00001581	0.00001087	0.00289973	0.00003063	0.00091289	0.00546551	0.00001087	0.00002668	0.00041396
	1-HE-8	Loadout	Clinker	691,587	0.1895	0.00036293	0.00000493	0.00000303	0.00000208	0.00055624	0.00000588	0.00017512	0.00104842	0.00000208	0.00000512	0.00007941
	1-HE-10	#3 Loadout Bin	Clinker	691,587	0.9880	0.00189198	0.00002569	0.00001581	0.00001087	0.00289973	0.00003063	0.00091289	0.00546551	0.00001087	0.00002668	0.00041396
Finish Mills	1-GE-1	Finish Mill Stack #1	Clinker	450,333	6.3047	0.01207343	0.00016392	0.00010087	0.00006935	0.01850418	0.00019544	0.00582551	0.03487739	0.00006935	0.00017023	0.00264165
	1-GE-2	Finish Mill Stack #2	Clinker	424,265	5.9397	0.01137454	0.00015443	0.00009504	0.00006534	0.01743305	0.00018413	0.00548829	0.03285848	0.00006534	0.00016037	0.00248874
	1-GE-7	Mill Stack	Clinker	450,333	1.8013	0.00344955	0.00004683	0.00002882	0.00001981	0.00528691	0.00005584	0.00166443	0.00996497	0.00001981	0.00004864	0.00075476
	1-GE-8	Mill Stack	Clinker	424,265	1.6971	0.00324987	0.00004412	0.00002715	0.00001867	0.00498087	0.00005261	0.00156808	0.00938814	0.00001867	0.00004582	0.00071107
Clinker Cooler	1-DE-4	Clinker Cooler	Clinker	819,143	12.2767	0.02350993	0.00031919	0.00019643	0.00013504	0.03603219	0.00038058	0.01134369	0.06791485	0.00013504	0.00033147	0.00514395
Stack	1-DE-3	Main Stack	Clinker	819,143	84.5819	0.16197426	0.00219913	0.00135331	0.00093040	0.24824776	0.00262204	0.07815364	0.46790684	0.00093040	0.00228371	0.03543980
					Totals:	0.26413327	0.00364565	0.00221478	0.00157828	0.40665011	0.00442816	0.12778017	0.77924739	0.00151825	0.00391180	0.05779782
					Total Metal Emissions	*1.65290568*										

Attachment C
Organic and HCl HAP Test Report

RESULTS

Table 2-1: Kiln Stack – HAP Concentrations by Method 18, Raw Mill On

Run No.		1A	2A	3A	Average
Date (2002)		April 17	April 17	April 17	
Start Time (approx.)		12:00	13:58	15:42	
Stop Time (approx.)		13:00	14:58	16:47	
Gas Conditions					
O_2	Oxygen (dry volume %)	10.5	10.5	10.4	**10.5**
CO_2	Carbon dioxide (dry volume %)	16.5	16.1	16.3	**16.3**
B_{wo}	Moisture (% by volume)	18.48	18.95	18.71	**18.71**
Q_{std}	Volumetric flow rate, standard (dscfm)	151,900	161,300	168,900	**160,700**
BENZENE					
C	Concentration (ppmdv)	<0.10	<0.04	<0.05	**<0.07**
E	Emission rate (lb/hr)	0.19	0.09	0.11	**0.13**
E	Emission rate(tons/yr)[1]	0.85	0.38	0.46	**0.56**
HEXANE					
C	Concentration (ppmdv)	<0.02	<0.02	<0.02	**<0.02**
E	Emission rate (lb/hr)	0.04	0.04	0.04	**0.04**
E	Emission rate(tons/yr)[1]	0.16	0.16	0.19	**0.17**
NAPHTHALENE					
C	Concentration (ppmdv)	<0.01	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.03	0.03	0.04	**0.03**
E	Emission rate(tons/yr)[1]	0.13	0.13	0.16	**0.14**
PHENOL[2]					
C	Concentration (ppmdv)	<0.06	<0.06	<0.07	
E	Emission rate (lb/hr)	0.14	0.14	0.17	
E	Emission rate(tons/yr)[1]	0.61	0.60	0.74	
TOLUENE					
C	Concentration (ppmdv)	<0.03	<0.03	<0.04	**<0.03**
E	Emission rate (lb/hr)	0.07	0.07	0.09	**0.08**
E	Emission rate(tons/yr)[1]	0.32	0.31	0.38	**0.34**
XYLENE (m-, p-)					
C	Concentration (ppmdv)	<0.07	<0.07	<0.08	**<0.07**
E	Emission rate (lb/hr)	0.18	0.17	0.21	**0.19**
E	Emission rate(tons/yr)[1]	0.77	0.76	0.94	**0.82**
XYLENE (o-)					
C	Concentration (ppmdv)	<0.03	<0.03	<0.04	**<0.04**
E	Emission rate (lb/hr)	0.09	0.09	0.11	**0.09**
E	Emission rate(tons/yr)[1]	0.38	0.38	0.47	**0.41**

< Indicates the value was below the detection limit. These values are used in the calculations.
[1] Calculation based on 8,760 operating hours per year
[2] Phenol did not pass the spike recovery requirements and is not used in the average.

Table 2-1 (continued): Kiln Stack – HAP Concentrations by Method 18, Raw Mill On

Run No.		7	8	9	Average
Date (2002)		April 19	April 19	April 19	
Start Time (approx.)		08:45	10:00	11:11	
Stop Time (approx.)		09:52	11:03	12:15	
Gas Conditions					
O_2	Oxygen (dry volume %)	10.5	10.5	10.5	**10.5**
CO_2	Carbon dioxide (dry volume %)	16.4	16.3	16.3	**16.3**
B_{wo}	Moisture (% by volume)	17.89	17.59	17.49	**17.66**
Q_{std}	Volumetric flow rate, standard (dscfm)	171,200	169,000	167,700	**169,300**
BENZENE					
C	Concentration (ppmdv)	<0.78	<0.39	<0.11	**<0.43**
E	Emission rate (lb/hr)	1.63	0.80	0.23	**0.89**
E	Emission rate(tons/yr)[1]	7.15	3.51	1.02	**3.89**
HEXANE					
C	Concentration (ppmdv)	<0.01	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.03	0.03	0.03	**0.03**
E	Emission rate(tons/yr)[1]	0.14	0.15	0.14	**0.14**
NAPHTHALENE					
C	Concentration (ppmdv)	<0.02	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.06	0.03	0.03	**0.04**
E	Emission rate(tons/yr)[1]	0.27	0.12	0.11	**0.17**
PHENOL					
C	Concentration (ppmdv)	<0.02	<0.02	<0.02	**<0.02**
E	Emission rate (lb/hr)	0.04	0.04	0.04	**0.04**
E	Emission rate(tons/yr)[1]	0.18	0.19	0.18	**0.18**
TOLUENE					
C	Concentration (ppmdv)	<0.05	<0.03	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.13	0.07	0.06	**0.09**
E	Emission rate(tons/yr)[1]	0.57	0.29	0.27	**0.38**
XYLENE (m-, p-)					
C	Concentration (ppmdv)	<0.05	<0.06	<0.05	**<0.06**
E	Emission rate (lb/hr)	0.15	0.16	0.15	**0.15**
E	Emission rate(tons/yr)[1]	0.66	0.71	0.66	**0.68**
XYLENE (o-)					
C	Concentration (ppmdv)	<0.05	<0.03	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.15	0.08	0.08	**0.10**
E	Emission rate(tons/yr)[1]	0.66	0.35	0.33	**0.45**

< Indicates the value was below the detection limit. These values are used in the calculations.
[1] Calculation based on 8,760 operating hours per year

RESULTS

Table 2-2:
Kiln Stack – HAP Concentrations by Method 320 & 321, Raw Mill On

Run No.		**1**	**2**	**3**	**Average**
Date (2002)		April 17	April 17	April 17	
Start Time		10:51	13:42	15:30	
Stop Time		12:58	14:48	16:31	
Gas Conditions					
O_2	Oxygen (dry volume %)	10.5	10.5	10.4	**10.5**
B_{wo}	Moisture in sample (% by volume)	18.48	18.48	18.48	**18.48**
Q_{std}	Volumetric flow rate, standard (dscfm)[1]	151,900	161,300	168,900	**160,700**
HYDROGEN CHLORIDE (M321)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	**0.51**	**0.83**	**0.37**	**0.57**
C_{gas}	Concentration moisture corrected (ppmdv)	**0.63**	**1.02**	**0.45**	**0.70**
E	Emission rate (lb/hr)	**0.54**	**0.93**	**0.44**	**0.64**
E	Emission rate (ton/yr)[2]	**2.36**	**4.08**	**1.91**	**2.78**
FORMALDEHYDE (M320)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	**1.39**	**1.37**	**1.08**	**1.28**
C_{gas}	Concentration moisture corrected (ppmdv)	**1.71**	**1.68**	**1.32**	**1.57**
E	Emission rate (lb/hr)	**1.21**	**1.27**	**1.05**	**1.18**
E	Emission rate (ton/yr)[2]	**5.31**	**5.55**	**4.58**	**5.15**

[1] Volumetric flow rates obtained from concurrent Methods 1-4 testing.
[2] Based on 8,760 hours/year of operation.

RESULTS

Table 2-3: Kiln Stack – HAP Concentrations by Method 18, Raw Mill Off

Run No.		4A	5A	6A	Average
Date (2002)		April 18	April 18	April 18	
Start Time (approx.)		10:05	12:10	14:36	
Stop Time (approx.)		11:11	13:18	15:40	
Gas Conditions					
O_2	Oxygen (dry volume %)	9.90	10.1	10.0	**10.0**
CO_2	Carbon dioxide (dry volume %)	15.5	15.6	15.6	**15.6**
B_{wo}	Moisture (% by volume)	20.35	19.20	18.27	**19.27**
Q_{std}	Volumetric flow rate, standard (dscfm)	121,800	118,000	122,000	**120,600**
BENZENE					
C	Concentration (ppmdv)	<0.15	<0.06	<0.16	**<0.12**
E	Emission rate (lb/hr)	0.22	0.09	0.24	**0.18**
E	Emission rate(tons/yr)[1]	0.94	0.38	1.07	**0.80**
HEXANE					
C	Concentration (ppmdv)	<0.02	<0.02	<0.01	**<0.02**
E	Emission rate (lb/hr)	0.03	0.04	0.02	**0.03**
E	Emission rate(tons/yr)[1]	0.14	0.16	0.10	**0.13**
NAPHTHALENE					
C	Concentration (ppmdv)	<0.01	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.03	0.03	0.02	**0.03**
E	Emission rate(tons/yr)[1]	0.12	0.13	0.08	**0.11**
PHENOL					
C	Concentration (ppmdv)	<0.02	<0.03	<0.02	**<0.02**
E	Emission rate (lb/hr)	0.04	0.05	0.03	**0.04**
E	Emission rate(tons/yr)[1]	0.18	0.21	0.13	**0.18**
TOLUENE					
C	Concentration (ppmdv)	<0.04	<0.04	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.06	0.07	0.05	**0.06**
E	Emission rate(tons/yr)[1]	0.28	0.32	0.20	**0.26**
XYLENE (m-, p-)					
C	Concentration (ppmdv)	<0.08	<0.09	<0.05	**<0.07**
E	Emission rate (lb/hr)	0.15	0.18	0.11	**0.15**
E	Emission rate(tons/yr)[1]	0.68	0.78	0.48	**0.65**
XYLENE (o-)					
C	Concentration (ppmdv)	<0.04	<0.05	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.08	0.09	0.06	**0.07**
E	Emission rate(tons/yr)[1]	0.34	0.39	0.24	**0.32**

< Indicates the value was below the detection limit. These values are used in the calculations.
[1] Calculation based on 8,760 operating hours per year

RESULTS

Table 2-4:
Kiln Stack – HAP Concentrations by Method 320 & 321, Raw Mill Off

Run No.		4	5	6	Average
Date (2002)		April 18	April 18	April 18	
Start Time		10:05	12:10	14:36	
Stop Time		11:11	13:18	15:40	
Gas Conditions					
O_2	Oxygen (dry volume %)	9.9	10.1	10.0	**10.0**
B_{wo}	Moisture in sample (% by volume)	20.35	19.20	18.27	**19.27**
Q_{std}	Volumetric flow rate, standard (dscfm)[1]	121,800	118,000	122,000	**120,600**
HYDROGEN CHLORIDE (M321)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	**1.33**	**2.13**	**2.18**	**1.88**
C_{gas}	Concentration moisture corrected (ppmdv)	**1.67**	**2.64**	**2.67**	**2.32**
E	Emission rate (lb/hr)	**1.15**	**1.77**	**1.85**	**1.59**
E	Emission rate (ton/yr)[2]	**5.06**	**7.74**	**8.09**	**6.96**
FORMALDEHYDE (M320)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	**1.28**	**1.05**	**1.28**	**1.20**
C_{gas}	Concentration moisture corrected (ppmdv)	**1.61**	**1.30**	**1.57**	**1.49**
E	Emission rate (lb/hr)	**0.92**	**0.72**	**0.89**	**0.84**
E	Emission rate (ton/yr)[2]	**4.01**	**3.14**	**3.91**	**3.69**

[1] Volumetric flow rates obtained from concurrent Methods 1-4 testing.
[2] Based on 8,760 hours/year of operation.

RESULTS

Table 2-1:
Kiln Stack – HAP Concentrations by Method 18, Raw Mill On

Run No.		1A	2A	3A	Average
Date (2002)		April 17	April 17	April 17	
Start Time (approx.)		12:00	13:58	15:42	
Stop Time (approx.)		13:00	14:58	16:47	
Gas Conditions					
O_2	Oxygen (dry volume %)	10.5	10.5	10.4	**10.5**
CO_2	Carbon dioxide (dry volume %)	16.5	16.1	16.3	**16.3**
B_{wo}	Moisture (% by volume)	18.48	18.95	18.71	**18.71**
Q_{std}	Volumetric flow rate, standard (dscfm)	151,900	161,300	168,900	**160,700**
BENZENE					
C	Concentration (ppmdv)	<0.10	<0.04	<0.05	**<0.07**
E	Emission rate (lb/hr)	0.19	0.09	0.11	**0.13**
E	Emission rate(tons/yr)[1]	0.85	0.38	0.46	**0.56**
HEXANE					
C	Concentration (ppmdv)	<0.02	<0.02	<0.02	**<0.02**
E	Emission rate (lb/hr)	0.04	0.04	0.04	**0.04**
E	Emission rate(tons/yr)[1]	0.16	0.16	0.19	**0.17**
NAPHTHALENE					
C	Concentration (ppmdv)	<0.01	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.03	0.03	0.04	**0.03**
E	Emission rate(tons/yr)[1]	0.13	0.13	0.16	**0.14**
PHENOL[2]					
C	Concentration (ppmdv)	<0.06	<0.06	<0.07	
E	Emission rate (lb/hr)	0.14	0.14	0.17	
E	Emission rate(tons/yr)[1]	0.61	0.60	0.74	
TOLUENE					
C	Concentration (ppmdv)	<0.03	<0.03	<0.04	**<0.03**
E	Emission rate (lb/hr)	0.07	0.07	0.09	**0.08**
E	Emission rate(tons/yr)[1]	0.32	0.31	0.38	**0.34**
XYLENE (m-, p-)					
C	Concentration (ppmdv)	<0.07	<0.07	<0.08	**<0.07**
E	Emission rate (lb/hr)	0.18	0.17	0.21	**0.19**
E	Emission rate(tons/yr)[1]	0.77	0.76	0.94	**0.82**
XYLENE (o-)					
C	Concentration (ppmdv)	<0.03	<0.03	<0.04	**<0.04**
E	Emission rate (lb/hr)	0.09	0.09	0.11	**0.09**
E	Emission rate(tons/yr)[1]	0.38	0.38	0.47	**0.41**

< Indicates the value was below the detection limit. These values are used in the calculations.
[1] Calculation based on 8,760 operating hours per year
[2] Phenol did not pass the spike recovery requirements and is not used in the average.

Table 2-1 (continued):
Kiln Stack – HAP Concentrations by Method 18, Raw Mill On

Run No.		7	8	9	Average
Date (2002)		April 19	April 19	April 19	
Start Time (approx.)		08:45	10:00	11:11	
Stop Time (approx.)		09:52	11:03	12:15	
Gas Conditions					
O_2	Oxygen (dry volume %)	10.5	10.5	10.5	**10.5**
CO_2	Carbon dioxide (dry volume %)	16.4	16.3	16.3	**16.3**
B_{wo}	Moisture (% by volume)	17.89	17.59	17.49	**17.66**
Q_{std}	Volumetric flow rate, standard (dscfm)	171,200	169,000	167,700	**169,300**
BENZENE					
C	Concentration (ppmdv)	<0.78	<0.39	<0.11	**<0.43**
E	Emission rate (lb/hr)	1.63	0.80	0.23	**0.89**
E	Emission rate(tons/yr)[1]	7.15	3.51	1.02	**3.89**
HEXANE					
C	Concentration (ppmdv)	<0.01	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.03	0.03	0.03	**0.03**
E	Emission rate(tons/yr)[1]	0.14	0.15	0.14	**0.14**
NAPHTHALENE					
C	Concentration (ppmdv)	<0.02	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.06	0.03	0.03	**0.04**
E	Emission rate(tons/yr)[1]	0.27	0.12	0.11	**0.17**
PHENOL					
C	Concentration (ppmdv)	<0.02	<0.02	<0.02	**<0.02**
E	Emission rate (lb/hr)	0.04	0.04	0.04	**0.04**
E	Emission rate(tons/yr)[1]	0.18	0.19	0.18	**0.18**
TOLUENE					
C	Concentration (ppmdv)	<0.05	<0.03	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.13	0.07	0.06	**0.09**
E	Emission rate(tons/yr)[1]	0.57	0.29	0.27	**0.38**
XYLENE (m-, p-)					
C	Concentration (ppmdv)	<0.05	<0.06	<0.05	**<0.06**
E	Emission rate (lb/hr)	0.15	0.16	0.15	**0.15**
E	Emission rate(tons/yr)[1]	0.66	0.71	0.66	**0.68**
XYLENE (o-)					
C	Concentration (ppmdv)	<0.05	<0.03	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.15	0.08	0.08	**0.10**
E	Emission rate(tons/yr)[1]	0.66	0.35	0.33	**0.45**

< Indicates the value was below the detection limit. These values are used in the calculations.
[1] Calculation based on 8,760 operating hours per year

RESULTS

Table 2-2:
Kiln Stack – HAP Concentrations by Method 320 & 321, Raw Mill On

Run No.		1	2	3	Average
Date (2002)		April 17	April 17	April 17	
Start Time		10:51	13:42	15:30	
Stop Time		12:58	14:48	16:31	
Gas Conditions					
O_2	Oxygen (dry volume %)	10.5	10.5	10.4	**10.5**
B_{wo}	Moisture in sample (% by volume)	18.48	18.48	18.48	**18.48**
Q_{std}	Volumetric flow rate, standard (dscfm)[1]	151,900	161,300	168,900	**160,700**
HYDROGEN CHLORIDE (M321)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	**0.51**	**0.83**	**0.37**	**0.57**
C_{gas}	Concentration moisture corrected (ppmdv)	**0.63**	**1.02**	**0.45**	**0.70**
E	Emission rate (lb/hr)	**0.54**	**0.93**	**0.44**	**0.64**
E	Emission rate (ton/yr)[2]	**2.36**	**4.08**	**1.91**	**2.78**
FORMALDEHYDE (M320)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	**1.39**	**1.37**	**1.08**	**1.28**
C_{gas}	Concentration moisture corrected (ppmdv)	**1.71**	**1.68**	**1.32**	**1.57**
E	Emission rate (lb/hr)	**1.21**	**1.27**	**1.05**	**1.18**
E	Emission rate (ton/yr)[2]	**5.31**	**5.55**	**4.58**	**5.15**

[1] Volumetric flow rates obtained from concurrent Methods 1-4 testing.
[2] Based on 8,760 hours/year of operation.

RESULTS

Table 2-3: Kiln Stack – HAP Concentrations by Method 18, Raw Mill Off

Run No.		4A	5A	6A	Average
Date (2002)		April 18	April 18	April 18	
Start Time (approx.)		10:05	12:10	14:36	
Stop Time (approx.)		11:11	13:18	15:40	
Gas Conditions					
O_2	Oxygen (dry volume %)	9.90	10.1	10.0	**10.0**
CO_2	Carbon dioxide (dry volume %)	15.5	15.6	15.6	**15.6**
B_{wo}	Moisture (% by volume)	20.35	19.20	18.27	**19.27**
Q_{std}	Volumetric flow rate, standard (dscfm)	121,800	118,000	122,000	**120,600**
BENZENE					
C	Concentration (ppmdv)	<0.15	<0.06	<0.16	**<0.12**
E	Emission rate (lb/hr)	0.22	0.09	0.24	**0.18**
E	Emission rate(tons/yr)[1]	0.94	0.38	1.07	**0.80**
HEXANE					
C	Concentration (ppmdv)	<0.02	<0.02	<0.01	**<0.02**
E	Emission rate (lb/hr)	0.03	0.04	0.02	**0.03**
E	Emission rate(tons/yr)[1]	0.14	0.16	0.10	**0.13**
NAPHTHALENE					
C	Concentration (ppmdv)	<0.01	<0.01	<0.01	**<0.01**
E	Emission rate (lb/hr)	0.03	0.03	0.02	**0.03**
E	Emission rate(tons/yr)[1]	0.12	0.13	0.08	**0.11**
PHENOL					
C	Concentration (ppmdv)	<0.02	<0.03	<0.02	**<0.02**
E	Emission rate (lb/hr)	0.04	0.05	0.03	**0.04**
E	Emission rate(tons/yr)[1]	0.18	0.21	0.13	**0.18**
TOLUENE					
C	Concentration (ppmdv)	<0.04	<0.04	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.06	0.07	0.05	**0.06**
E	Emission rate(tons/yr)[1]	0.28	0.32	0.20	**0.26**
XYLENE (m-, p-)					
C	Concentration (ppmdv)	<0.08	<0.09	<0.05	**<0.07**
E	Emission rate (lb/hr)	0.15	0.18	0.11	**0.15**
E	Emission rate(tons/yr)[1]	0.68	0.78	0.48	**0.65**
XYLENE (o-)					
C	Concentration (ppmdv)	<0.04	<0.05	<0.03	**<0.04**
E	Emission rate (lb/hr)	0.08	0.09	0.06	**0.07**
E	Emission rate(tons/yr)[1]	0.34	0.39	0.24	**0.32**

< Indicates the value was below the detection limit. These values are used in the calculations.
[1] Calculation based on 8,760 operating hours per year

RESULTS

Table 2-4:
Kiln Stack – HAP Concentrations by Method 320 & 321, Raw Mill Off

Run No.		4	5	6	Average
Date (2002)		April 18	April 18	April 18	
Start Time		10:05	12:10	14:36	
Stop Time		11:11	13:18	15:40	
Gas Conditions					
O_2	Oxygen (dry volume %)	9.9	10.1	10.0	**10.0**
B_{wo}	Moisture in sample (% by volume)	20.35	19.20	18.27	**19.27**
Q_{std}	Volumetric flow rate, standard (dscfm)[1]	121,800	118,000	122,000	**120,600**
HYDROGEN CHLORIDE (M321)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	1.33	2.13	2.18	1.88
C_{gas}	Concentration moisture corrected (ppmdv)	1.67	2.64	2.67	2.32
E	Emission rate (lb/hr)	1.15	1.77	1.85	1.59
E	Emission rate (ton/yr)[2]	5.06	7.74	8.09	6.96
FORMALDEHYDE (M320)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	1.28	1.05	1.28	1.20
C_{gas}	Concentration moisture corrected (ppmdv)	1.61	1.30	1.57	1.49
E	Emission rate (lb/hr)	0.92	0.72	0.89	0.84
E	Emission rate (ton/yr)[2]	4.01	3.14	3.91	3.69

[1] Volumetric flow rates obtained from concurrent Methods 1-4 testing.
[2] Based on 8,760 hours/year of operation.

DESCRIPTION OF INSTALLATION

TXI Operations, L.P. operates a dry process portland cement manufacturing plant in Comal County near Hunter, Texas. The facility was permitted in 1979 and began operations in 1980. The kiln is equipped with a preheater alkali bypass system which is combined with the kiln exhaust into a single stack. The facility is currently permitted to utilize coal, petroleum coke, natural gas and tire derived fuel. The current production rate is up to 101.2 tons/hr and 886,351 tons/yr of clinker. There is also an in line roller/raw mill which normally operates, but the kiln can operate for a limited time with it out of operation.

The testing will be performed at the Kiln Stack.

A schematic of the process indicating sampling locations is shown in Figure 3-1.

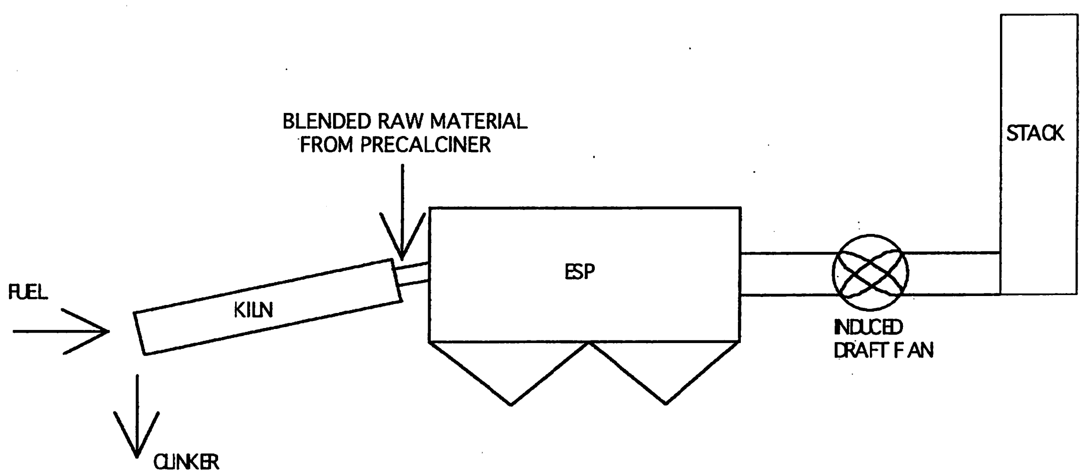


Figure 3-1: Process Schematic

METHODOLOGY

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 4, 18, 320 and 321. The following table summarizes the methods and their respective sources.

Table 4-1:
Summary of Sampling Procedures

Title 40 CFR Part 60 Appendix A	
Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for the Determination of Dry Molecular Weight"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 18	"Measurement of Gaseous Organic Compound Emissions by Gas Chromatography"
Title 40 CFR Part 63 Appendix A	
Method 320	"Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy"
Method 321	"Measurement of Gaseous Hydrogen Chloride Emissions at Portland Cement Kilns by Fourier Transform Infrared (FTIR) Spectroscopy"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR).

Major aspects of the sampling, recovery and analytical procedures are summarized on pages 4-2 through 4-9.

All equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site. A post calibration was performed on each meter box at the conclusion of testing to verify that calibration was maintained throughout the test program. Calibration sheets can be found in Appendix Section C.

SAMPLING POINT DETERMINATION

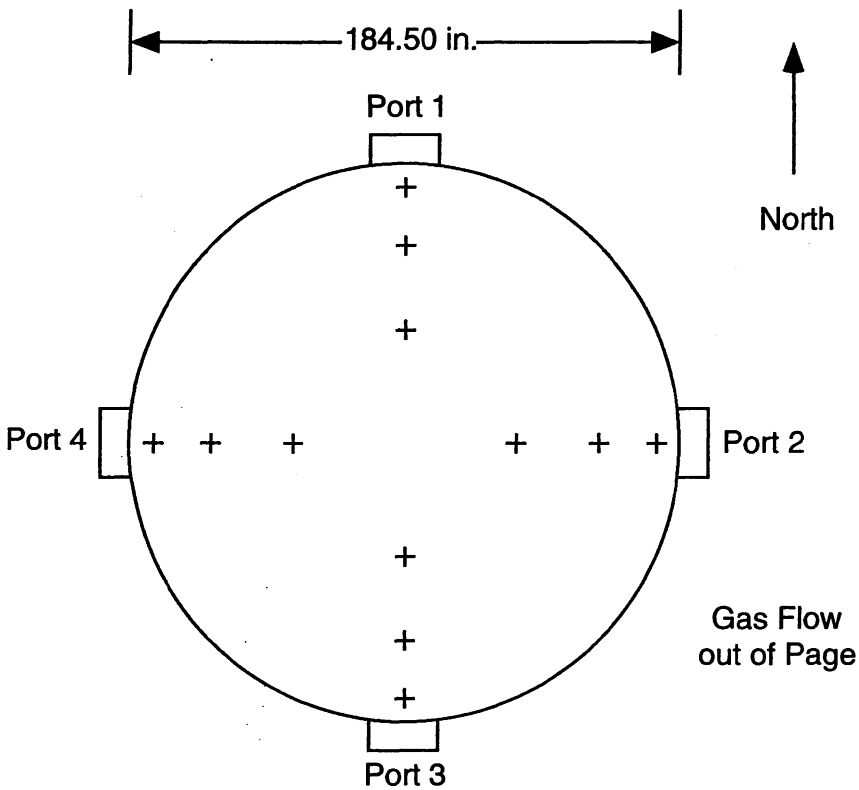
Sampling point locations were determined according to EPA Method 1.

Table 4-2 outlines the sampling point configurations. Figure 4-1 illustrates the sampling points and orientation of sampling ports for each of the sources tested in the program.

Table 4-2:
Sampling Points

Location	Constituent	Method	Run No.	Ports	Points per Port	Minutes per Point	Total Minutes	Figure
Kiln Stack	Flows/Moistures	1-4	1-6	4	3	5	60	4-1

SAMPLING POINT DETERMINATION (CONTINUED)



Traverse Point	Port to Point Distance (in.)
1	54.6
2	27.0
3	8.0

Diameters to upstream disturbance: 7.2 Limit: 2.0
Diameters to downstream disturbance: 9.8 Limit: 0.5

Figure 4-1: Kiln Stack Sampling Point Determination (EPA Method 1)

METHODOLOGY

VELOCITY AND VOLUMETRIC FLOW RATE - EPA METHOD 2

EPA Method 2 was used to determine the gas velocity and flow rate at the Stack. Figure 4-2 includes the components of the EPA Method 2 sampling apparatus.

Each set of velocity determinations included the measurement of gas velocity pressure and gas temperature at each of the EPA Method 1 traverse points. The velocity pressures were measured with a Type S pitot tube. Gas temperature measurements were made using a Type K thermocouple and digital pyrometer.

GAS COMPOSITION AND MOLECULAR WEIGHT - EPA METHOD 3

In order to determine the oxygen (O_2) concentration, carbon dioxide (CO_2) concentration and gas molecular weight, a time-integrated sample of the gas was obtained and analyzed in accordance with EPA Method 3. The gas sample was collected into a vinyl sample bag from the moisture testing. The contents of the bag was analyzed for O_2 and CO_2 concentrations using an Orsat gas analyzer.

MOISTURE CONTENT - EPA METHOD 4

The flue gas moisture content at the Stack was determined in accordance with EPA Method 4. Figure 4-2 shows the major components of the EPA Method 4 sampling apparatus. The gas moisture was determined by quantitatively condensing the water in a chilled knock-out jar train. The amount of moisture condensed was determined both volumetrically and gravimetrically. A dry gas meter was used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled was used to calculate the gas moisture content in accordance with EPA Method 4 calculations.

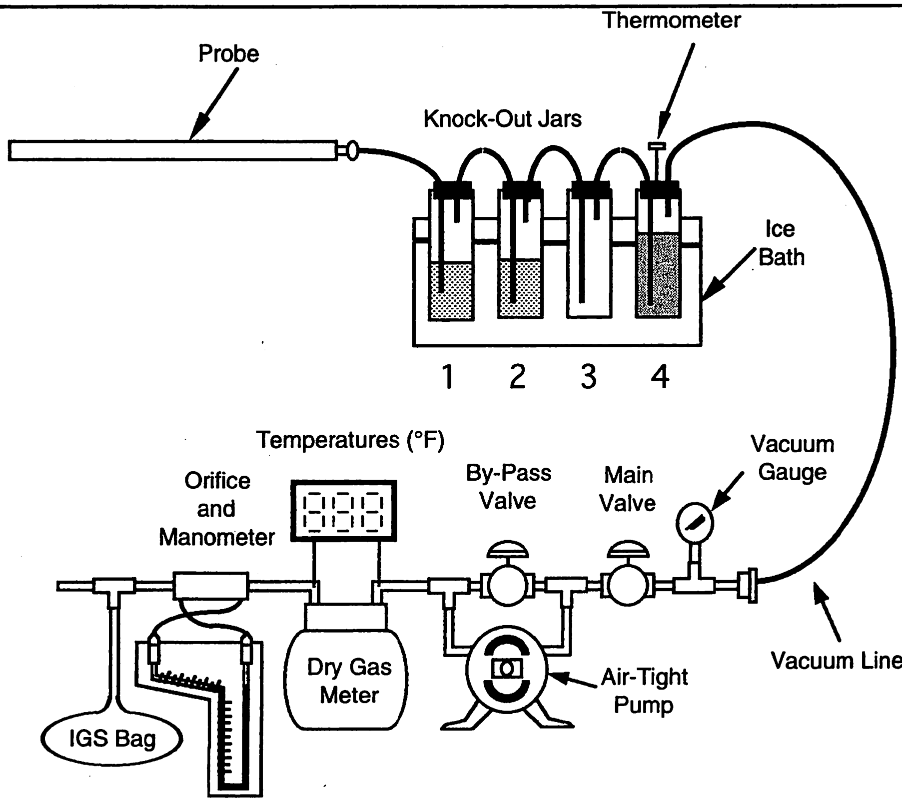
After passing through the probe, the sample gas entered a knock-out jar condenser system for drying of the gas. The condenser system consisted of four leak-free glass knock-out jars and rubber leak-free connectors. The first two knockout jars each contained 100 milliliters of distilled water. The third knock-out jar was empty, and the fourth contained 300 grams of silica gel. All four of the knock-out jars were placed in an ice bath for the duration of the test.

The metering system included a vacuum gauge, a leak-free pump, thermometers accurate to within ±5.0°F and a dry gas meter accurate to within 2%.

Before and after each test, the sample apparatus was leak checked. A leakage rate of less than the 0.02 cfm was considered acceptable.

METHODOLOGY

MOISTURE CONTENT (CONTINUED)



Knock-Out Jar Contents
1) 100 ml water
2) 100 ml water
3) empty
4) 300 g silica gel

Figure 4-2: Moisture Sampling Apparatus (EPA Method 4)

METHODOLOGY

SPECIATED VOLATILE ORGANIC COMPOUNDS - EPA METHOD 18

EPA Method 18 was used to measure concentrations of benzene, toluene, hexane, naphthalene, phenol and xylene. This method specifies the use of a variety of sampling techniques coupled with analysis by Gas Chromatography (GC) with a Flame Ionization Detector (FID).

At the Stack a VOST sampling meter was used to pull gas through one XAD and one charcoal sorbent sample tubes in order to concentrate the sample to obtain lower detection limits. Figure 4-3 illustrates the sampling train which was used. The sample tubes were desorbed on-site using methanol and carbon disulfide, respectively.

An aliquot of the desorbed sample was then injected into the GC injection port for analysis. The chromatographic method (e.g. oven temperature program) was simultaneously begin.

The Recovery Study required by Method 18 was performed by running a colocated train simultaneously with the sample train for 3 runs. Three additional runs were performed at the Raw Mill On condition due a poor spike recovery for Phenol during the first 3 runs. The second train had the sorbent tubes spiked with the compounds of interest to show the recovery efficiency.

Data from the chromatograms was reduced by identifying peaks and matching their retention times with those of the known standards. Peak areas were then calculated using computer integration. Results are calculated by mathematically comparing the area of the sample to the area of the standards using a least-squares regression analysis. Results were calculated as total micrograms of each analyte.

Standards for the GC/FID analysis were made by dissolving known amounts of each analyte in methanol or carbon disulfide. Concentrations were determined as micrograms/milliliter for each analyte.

Calibration response curves were prepared using a least-squares regression analysis. At least three calibration points were generated for the response curves for each compound. At least three injections were performed for each calibration point. The percent difference of each injection from the mean of all injections was less than ± 5%. The relative standard deviation for the results of each injection for each calibration point was less than ± 5%.

VOLATILE EMISSIONS TESTING (CONTINUED)

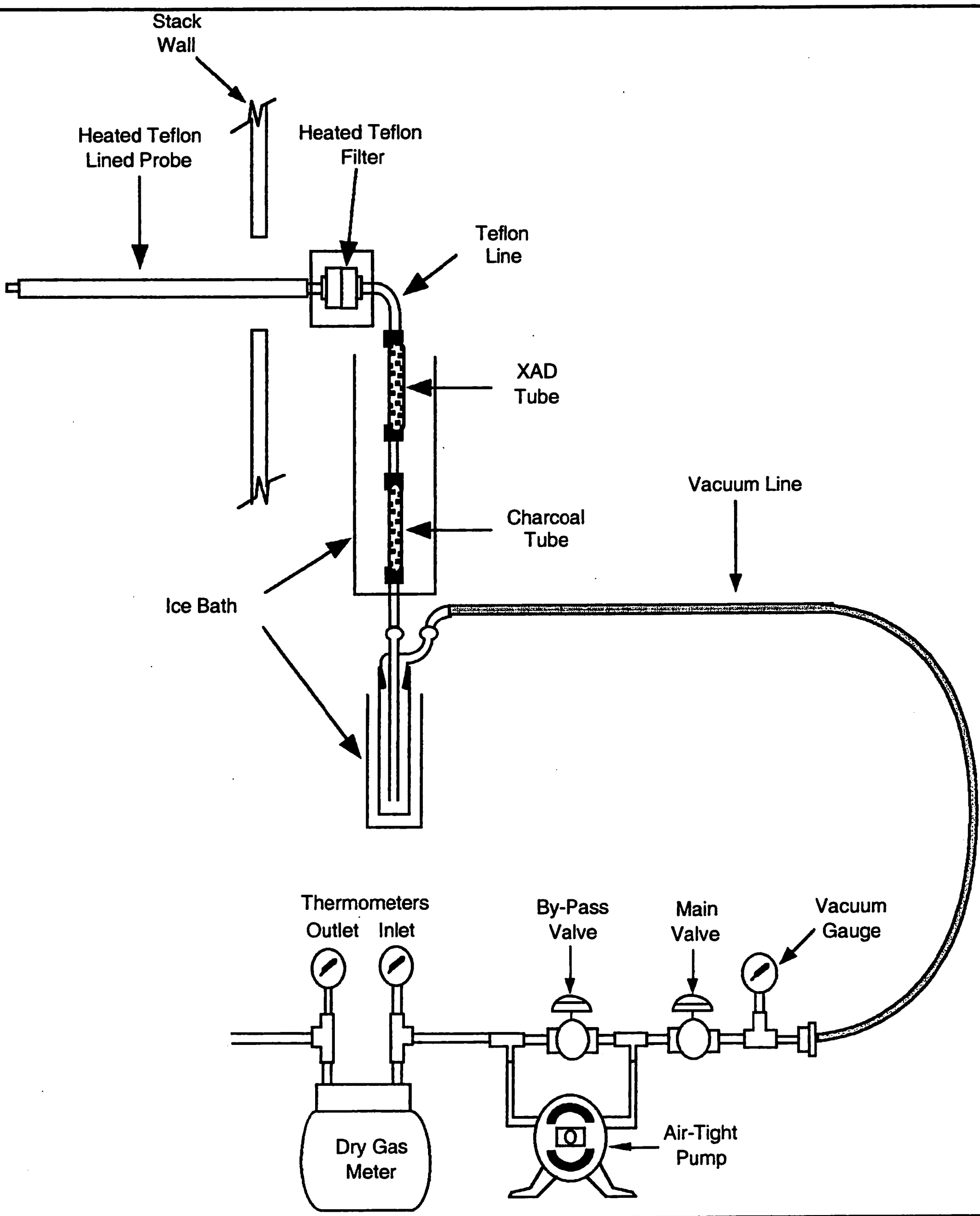


Figure 4-3: Stack Sampling Apparatus (EPA Method 18)

HYDROGEN CHLORIDE AND FORMALDEHYDE TESTING - EPA METHOD 320/321

The gaseous hydrogen chloride and formaldehyde emissions were determined using procedures detailed in EPA Method 320/321. Figure 4-4 illustrates the EPA Method 320/321 sampling apparatus. An integrated sample was extracted from the gas stream through a heated probe, heated filter, Teflon sample line and heated pump. The sample then entered a heated manifold that introduced a known quantity of sample into the FTIR cell. FTIR performance was verified using an ethylene calibration transfer standard (CTS) prior to and after each sampling event per Method 320 and 321. A calibration gas containing sulfur hexafluoride and hydrogen chloride was used for analyte spiking. The calibration gas and CTS were introduced into the probe tip. All flows were controlled with calibrated flow meters. The sample was continuously extracted with FTIR absorbance scans every six minutes or less.

Infrared absorption spectroscopy is performed by directing an infrared beam through a sample to a detector. The frequency-dependent infrared absorbance of the sample is measured by comparing this detector signal to a signal obtained without a sample in the beam path (background). There is a linear relationship between infrared absorption and compound concentration. This frequency dependent relationship is known as absorptivity. The absorptivity is measured by preparing standard samples in the laboratory of compounds at known concentrations and detector conditions. A correlation is then made between the standards (reference spectra) and the sample gas analysis. The relative intensities determine the sample gas concentrations.

The FTIR analyzer consists of a medium-high resolution interferometer, heated fixed path absorption cell, a mercury cadmium telluride (MCT) detector (liquid nitrogen cooled), electronics package and computer. The gas transport path inside the FTIR is heated to 180°C, while the absorption cell is maintained at 150°C.

The interferometer/electronics package is operated at a nominal spectral resolution of 0.5 wavenumber (0.5 cm^{-1}). The heated absorption cell is a fixed pathlength of 10 meters. The mirrors and cell interior are gold plated. The IR beam splitter and all optical windows are made of zinc selenide.

The method is self-validating by performing field spikes with a known concentration of the target compound. The QA/QC procedures can be found in reference in Methods 320 and 321.

HYDROGEN CHLORIDE (CONTINUED)

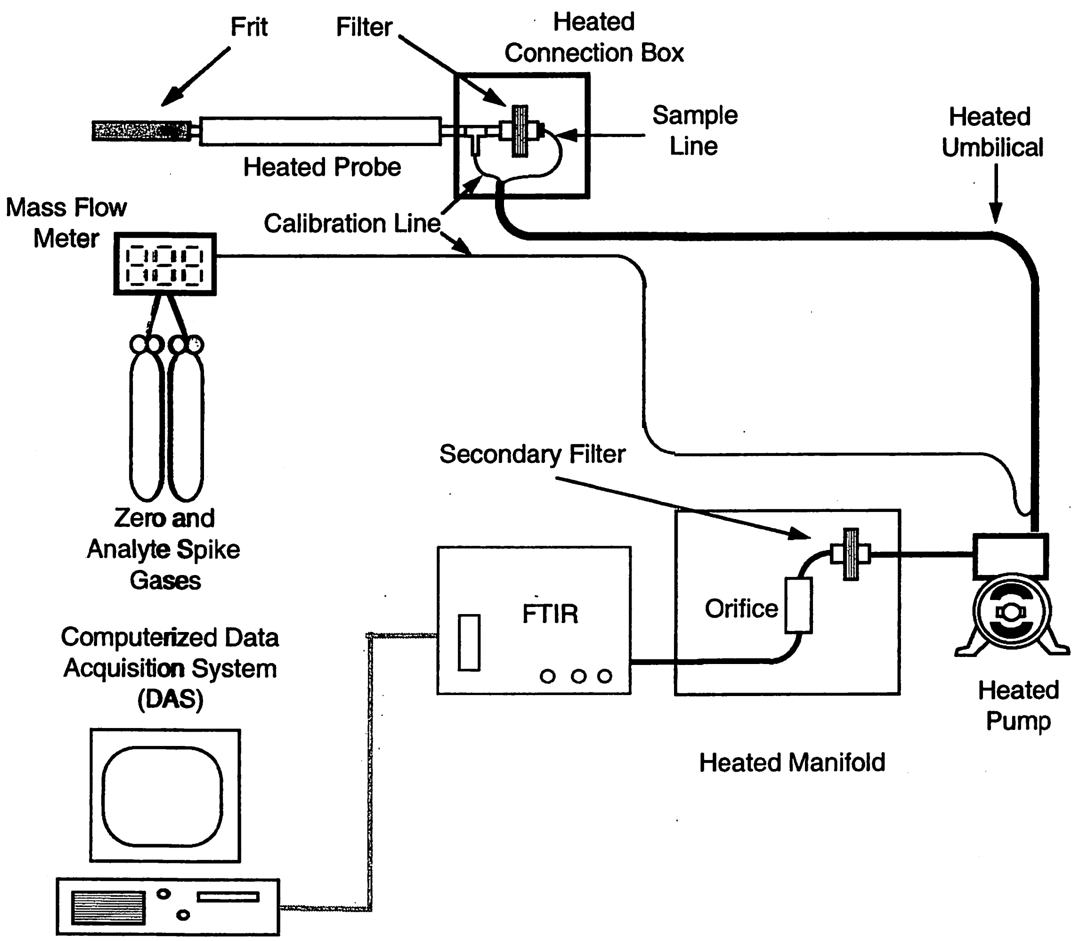


Figure 4-4: FTIR Hydrogen Chloride Sampling Apparatus (EPA Method 321)

APPENDIX

SAMPLE CALCULATIONS

A

SAMPLE CALCULATIONS
KILN STACK, RAW MILL OFF, RUN 4

The tables presenting the results are generatsd electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

1. Volume of water collected (wscf)

$$V_{wstd} = (0.04707)(V_{lc})$$
$$= (0.04707)(176.0)$$
$$= 8.28 \text{ wscf}$$

Where:

V_{lc}	total volume of liquid collected in impingers and silica gel (ml)
V_{wstd}	volume of water collected at standard conditions (ft^3)
0.04707	conversion factor (ft^3/ml)

2. Volume of gas metered, standard conditions (dscf)

$$V_{mstd} = \frac{(17.64)(V_m)\left(P_{bar} + \frac{\Delta H}{13.6}\right)(Y_d)}{(460 + T_m)}$$

$$= \frac{(17.64)(33.92)\left(29.92 + \frac{1.00}{13.6}\right)(1.0015)}{(460 + 82)}$$

$$= 32.43 \text{ dscf}$$

Where:

P_{bar}	barometric pressure (in. Hg)
T_m	average dry gas meter temperature (°F)
V_m	volume of gas sample through the dry gas meter at meter conditions (ft^3)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
Y_d	gas meter correction factor (dimensionless)
ΔH	average pressure drop across meter box orifice (in. H_2O)
17.64	conversion factor (°R/in. Hg)
13.6	conversion factor (in. H_2O/in. Hg)
460	°F to °R conversion constant

3. Sample gas pressure (in. Hg)

$$P_s = P_{bar} + \left(\frac{P_g}{13.6}\right)$$

$$= 29.25 + \left(\frac{0.1}{13.6}\right)$$

$$= 29.26 \text{ in. Hg}$$

Where:

P_{bar}	barometric pressure (in. Hg)
P_g	sample gas static pressure (in. H_2O)
P_s	absolute sample gas pressure (in. Hg)
13.6	conversion factor (in. H_2O/in. Hg)

SAMPLE CALCULATIONS (CONTINUED)

4. Actual vapor pressure (in. Hg)[1]

$$P_v = P_s$$
$$= 29.26 \text{ in. Hg}$$

Where:

P_v vapor pressure, actual (in. Hg)
P_s absolute sample gas pressure (in. Hg)

5. Moisture content (%)

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}} \times 100\%$$
$$= \frac{8.28}{32.43 + 8.28}$$
$$= 0.2035$$

Where:

B_{wo} proportion of water vapor in the gas stream by volume (%)
V_{mstd} volume of gas sample through the dry gas meter at standard conditions (ft^3)
V_{wstd} volume of water collected at standard conditions (ft^3)

6. Saturated moisture content (%)

$$B_{ws} = \frac{(P_v)}{(P_s)} \times 100\%$$
$$= \frac{(29.26)}{(29.26)}$$
$$= 1.00$$
$$\times 100\% = 100\ \%$$

Where:

B_{ws} proportion of water vapor in the gas stream by volume at saturated conditions (%)
P_s absolute sample gas pressure (in. Hg)
P_v vapor pressure, actual (in. Hg)

Whichever moisture value is smaller is used for B_{wo} in the following calculations.

[1] For effluent gas temperatures over 212°F, P_v is assumed to be equal to P_s.

SAMPLE CALCULATIONS (CONTINUED)

7. Molecular weight of dry gas stream (lb/lb·mole)

$$M_d = M_{CO_2}\frac{(CO_2)}{(100)} + M_{O_2}\frac{(O_2)}{(100)} + M_{CO+N_2}\frac{(CO+N_2)}{(100)}$$

$$= 44.0\frac{(15.5)}{(100)} + 32.0\frac{(9.9)}{(100)} + 28.0\frac{(74.6)}{(100)}$$

$$= 30.88\,\frac{\text{lb}}{\text{lb}\cdot\text{mole}}$$

Where:

M_d	dry molecular weight of sample gas (lb/lb·mole)
M_{CO_2}	molecular weight of carbon dioxide (lb/lb·mole)
M_{O_2}	molecular weight of oxygen (lb/lb·mole)
M_{CO+N_2}	molecular weight of carbon monoxide and nitrogen (lb/lb·mole)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)
O_2	proportion of oxygen in the gas stream by volume (%)
$CO+N_2$	proportion of carbon monoxide and nitrogen in the gas stream by volume (%)
100	conversion factor (%)

8. Molecular weight of sample gas (lb/lb·mole)

$$M_s = (M_d)(1 - B_{wo}) + (M_{H_2O})(B_{wo})$$

$$= (30.88)(1 - 0.2035) + (18.0)(0.2035)$$

$$= 28.26\,\frac{\text{lb}}{\text{lb}\cdot\text{mole}}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
M_d	dry molecular weight of sample gas (lb/lb·mole)
M_{H_2O}	molecular weight of water (lb/lb·mole)
M_s	molecular weight of sample gas, wet basis (lb/lb·mole)

SAMPLE CALCULATIONS (CONTINUED)

9. Velocity of sample gas (ft/sec)

$$V_s = (K_p)(C_P)\left(\sqrt{\Delta P}\right)\left(\sqrt{\frac{(T_s + 460)}{(M_s)(P_s)}}\right)$$

$$= (85.49)(0.84)(0.291)\left(\sqrt{\frac{(288 + 460)}{(28.26)(29.26)}}\right)$$

$$= 19.9\,\frac{ft}{sec}$$

Where:

K_p	velocity pressure constant $\left(\frac{ft}{sec}\left[\frac{(lb/lb\cdot mole)(in.\ Hg)}{(°R)(in.\ H_2O)}\right]\right)$
C_p	pitot tube coefficient
M_s	molecular weight of sample gas, wet basis (lb/lb·mole)
P_s	absolute sample gas pressure (in. Hg)
T_s	average sample gas temperature (°F)
V_s	sample gas velocity (ft/sec)
$\sqrt{\Delta P}$	average square roots of velocity heads of sample gas (in. H_2O)
460	°F to °R conversion constant

10. Total flow of sample gas (acfm)

$$Q_a = (60)(A_s)(V_s)$$

$$= (60)(185.66)(19.9)$$

$$= 221{,}800 \text{ acfm}$$

Where:

A_s	cross sectional area of sampling location (ft^2)
Q_a	volumetric flow rate at actual conditions (acfm)
V_s	sample gas velocity (ft/sec)
60	conversion factor (sec/min)

SAMPLE CALCULATIONS (CONTINUED)

11. Total flow of sample gas (dscfm)

$$Q_{std} = \frac{(Q_a)(P_s)(17.64)(1 - B_{wo})}{(\overline{T}_s + 460)}$$

$$= \frac{(221{,}800)(29.26)(17.64)(1 - 0.2035)}{(288 + 460)}$$

$$= 121{,}800 \text{ dscfm}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
P_s	absolute sample gas pressure (in. Hg)
Q_a	volumetric flow rate at actual conditions (acfm)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
$\overline{T}_s$	average sample gas temperature (°F)
17.64	conversion factor (°R/in. Hg)
460	°F to °R conversion constant

12. Volatile organic concentration, benzene (ppmdv)[1]

$$C_{ppmdv} = \frac{(m_i)(385.3)(1E6)}{(453590000)(V_{mstd})(MW_i)}$$

$$= \frac{(8.69)(385.3)(1E6)}{(453.59E6)(0.65)(78.12)}$$

$$= 0.15 \text{ ppmdv}$$

Where:

C_{ppmdv}	concentration of compound i (ppmdv)
m_i	mass of compound i (μg)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
MW_i	molecular weight of compound i (lb/lb-mol)
385.3	conversion factor (dscf/lb-mol)
1E6	conversion factor (ppm)
453.59E6	conversion factor (μg/lb)

Hexane	86.18 (lb/lb-mol)
Naphthalene	128.17 (lb/lb-mol)
Phenol	94.11 (lb/lb-mol)
Toluene	92.14 (lb/lb-mol)
Xylene	106.2 (lb/lb-mol)

[1] The calculations for the other M18 compounds are done in a similar manner

SAMPLE CALCULATIONS (CONTINUED)

13. Concentration correction, Benzene (moisture corrected to ppmwv)[1]

$$C_{ppmwv} = \frac{(C_{ppmdv})}{(1 - B_{wo})}$$

$$= \frac{(0.15)}{(1 - 0.2035)}$$

$$= 0.12 \text{ ppmwv}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
C_{ppmdv}	concentration calibrated for drift (ppmdv)
C_{ppmwv}	concentration calibrated for drift (ppmwv)

14. Emissions rate, Benzene (lb/hr)[1]

$$E_{lb/hr} = \frac{(C_{ppmdv})(M_i)(Q_{std})(60)}{(385.3)(1E6)}$$

$$= \frac{(0.15)(78.12)(121{,}800)(60)}{(385.3)(1E6)}$$

$$= 0.22 \frac{lb}{hr}$$

Where:

C_{ppmdv}	measured concentration of compound i (ppmwv)
$E_{lb/hr}$	emission rate (lb/hr)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
M_i	molecular weight of compound i
1E6	conversion factor (ppm)
385.3	conversion factor (ft^3/lb·mole)
60	conversion factor (min/hr)

[1] The calculations for all the other compounds are done in a similar manner

SAMPLE CALCULATIONS (CONTINUED)

15. Emissions rate, Benzene (ton/yr)[1]

$$E_{ton/yr} = \frac{(E_{lb/hr})(8,760)}{(2,000)}$$

$$= \frac{(0.22)(8,760)}{(2,000)}$$

$$= 0.94 \frac{ton}{yr}$$

Where:

$E_{ton/yr}$	emission rate (lb/hr)
$E_{lb/hr}$	emission rate (lb/hr)
8,760	conversion factor (hr/yr)
2,000	conversion factor (lb/ton)

16. Spike recovery, Benzene (%)[2]

$$SR = \frac{(C_{spiked,i})}{(C_{spike,i} + C_{unspiked,i})}(100)$$

$$= \frac{(0.75)}{(0.55 + 0.15)}(100)$$

$$= 106.9\ \%$$

Where:

SR	spike recovery for compound i (%)
$C_{spiked,i}$	concentration of spiked train, compound i (ppmdv)
$C_{spike,i}$	concentration of spike, compound i (ppmdv)
$C_{unspiked,i}$	concentration of unspiked train, compound i (ppmdv)

[1] The calculations for all the other compounds are done in a similar manner

[2] The calculations for the other M18 compounds are done in a similar manner

PARAMETERS

B

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

VELOCITY AND MOISTURE PARAMETERS

Run No.		1	2	3
Date (2002)		April 17	April 17	April 17
Start Time (approx.)		12:00	13:58	15:42
Stop Time (approx.)		13:10	15:04	16:47
Sampling Conditions				
Y_d	Dry gas meter correction factor	1.0015	1.0015	1.0015
C_p	Pitot tube coefficient	0.84	0.84	0.84
P_g	Static pressure (in. H_2O)	0.1	0.1	0.1
A_s	Sample location area (ft^2)	185.66	185.66	185.66
P_{bar}	Barometric pressure (in. Hg)	29.25	29.25	29.25
O_2	Oxygen (dry volume %)	10.5	10.5	10.4
CO_2	Carbon dioxide (dry volume %)	16.5	16.1	16.3
V_{lc}	Liquid collected (ml)	170.3	157.6	154.7
V_m	Volume metered, meter conditions (ft^3)	37.37	33.53	33.48
T_m	Dry gas meter temperature (°F)	88	87	88
T_s	Sample temperature (°F)	247	246	246
ΔH	Meter box orifice pressure drop (in. H_2O)	1.25	1.00	1.00
Θ	Total sampling time (min)	60	60	60
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	8.02	7.42	7.28
V_{mstd}	Volume metered, standard (ft^3)	35.35	31.74	31.65
P_s	Sample gas pressure, absolute (in. Hg)	29.26	29.26	29.26
P_v	Vapor pressure, actual (in. Hg)	29.26	29.26	29.26
B_{wo}	Moisture in sample (% by volume)	18.48	18.95	18.71
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$	Velocity head ($\sqrt{}$in. H_2O)	0.347	0.370	0.387
M_d	MW of sample gas, dry (lb/lb-mole)	31.06	31.00	31.02
M_s	MW of sample gas, wet (lb/lb-mole)	28.65	28.53	28.59
V_s	Velocity of sample (ft/sec)	22.9	24.5	25.5
Q_a	Volumetric flow rate, actual (acfm)	255,300	272,400	284,000
Q_{std}	Volumetric flow rate, standard (dscfm)	151,900	161,300	168,900

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

VELOCITY AND MOISTURE PARAMETERS

Run No.		**4**	**5**	**6**
Date (2002)		April 18	April 18	April 18
Start Time (approx.)		10:05	12:10	14:36
Stop Time (approx.)		11:11	13:18	15:40
Sampling Conditions				
Y_d	Dry gas meter correction factor	1.0015	1.0015	1.0015
C_p	Pitot tube coefficient	0.84	0.84	0.84
P_g	Static pressure (in. H_2O)	0.1	0.1	0.1
A_s	Sample location area (ft^2)	185.66	185.66	185.66
P_{bar}	Barometric pressure (in. Hg)	29.25	29.25	29.25
O_2	Oxygen (dry volume %)	9.9	10.1	10.0
CO_2	Carbon dioxide (dry volume %)	15.5	15.6	15.6
V_{lc}	Liquid collected (ml)	176.0	154.7	145.2
V_m	Volume metered, meter conditions (ft^3)	33.92	32.35	32.27
T_m	Dry gas meter temperature (°F)	82	87	87
T_s	Sample temperature (°F)	288	295	296
ΔH	Meter box orifice pressure drop (in. H_2O)	1.00	1.00	1.00
Θ	Total sampling time (min)	60	60	60
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	8.28	7.28	6.83
V_{mstd}	Volume metered, standard (ft^3)	32.43	30.65	30.58
P_s	Sample gas pressure, absolute (in. Hg)	29.26	29.26	29.26
P_v	Vapor pressure, actual (in. Hg)	29.26	29.26	29.26
B_{wo}	Moisture in sample (% by volume)	20.35	19.20	18.27
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$	Velocity head ($\sqrt{}$in. H_2O)	0.291	0.280	0.287
M_d	MW of sample gas, dry (lb/lb-mole)	30.88	30.90	30.90
M_s	MW of sample gas, wet (lb/lb-mole)	28.26	28.42	28.54
V_s	Velocity of sample (ft/sec)	19.9	19.2	19.6
Q_a	Volumetric flow rate, actual (acfm)	221,800	213,600	218,700
Q_{std}	Volumetric flow rate, standard (dscfm)	121,800	118,000	122,000

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack

VELOCITY AND MOISTURE PARAMETERS

Run No.		**7**	**8**	**9**
Date (2002)		April 19	April 19	April 19
Start Time (approx.)		08:45	10:00	11:11
Stop Time (approx.)		09:52	11:03	12:15
Sampling Conditions				
Y_d	Dry gas meter correction factor	1.0015	1.0015	1.0015
C_p	Pitot tube coefficient	0.84	0.84	0.84
P_g	Static pressure (in. H_2O)	0.1	0.1	0.1
A_s	Sample location area (ft^2)	185.66	185.66	185.66
P_{bar}	Barometric pressure (in. Hg)	29.25	29.25	29.25
O_2	Oxygen (dry volume %)	10.5	10.5	10.5
CO_2	Carbon dioxide (dry volume %)	16.4	16.3	16.3
V_{lc}	Liquid collected (ml)	148.5	146.4	144.8
V_m	Volume metered, meter conditions (ft^3)	33.17	33.49	33.72
T_m	Dry gas meter temperature (°F)	76	78	83
T_s	Sample temperature (°F)	247	246	246
ΔH	Meter box orifice pressure drop (in. H_2O)	1.00	1.00	1.00
Θ	Total sampling time (min)	60	60	60
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	6.99	6.89	6.82
V_{mstd}	Volume metered, standard (ft^3)	32.08	32.28	32.15
P_s	Sample gas pressure, absolute (in. Hg)	29.26	29.26	29.26
P_v	Vapor pressure, actual (in. Hg)	29.26	29.26	29.26
B_{wo}	Moisture in sample (% by volume)	17.89	17.59	17.49
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$	Velocity head ($\sqrt{}$in. H_2O)	0.389	0.383	0.380
M_d	MW of sample gas, dry (lb/lb-mole)	31.04	31.03	31.03
M_s	MW of sample gas, wet (lb/lb-mole)	28.71	28.74	28.75
V_s	Velocity of sample (ft/sec)	25.6	25.2	25.0
Q_a	Volumetric flow rate, actual (acfm)	285,600	280,600	278,200
Q_{std}	Volumetric flow rate, standard (dscfm)	171,200	169,000	167,700

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

VOLATILE ORGANICS PARAMETERS

Run No.		1A	2A	3A
Date (2002)		April 17	April 17	April 17
Start Time (approx.)		12:00	13:58	15:42
Stop Time (approx.)		13:00	14:58	16:47
Sampling Locations				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	21.40	23.00	19.70
V_m	Volume metered, meter conditions (ft^3)	0.76	0.81	0.70
ΔH	Meter box orifice pressure drop (in. H_2O)	1.20	1.00	1.10
Y_d	Dry gas meter correction factor	0.9935	0.9935	0.9935
T_m	Dry gas meter temperature (°F)	88	89	90
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.71	0.76	0.65
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	10.5	10.5	10.4
CO_2	Carbon dioxide (dry volume %)	16.5	16.1	16.3
B_{wo}	Moisture (% by volume)	18.48	18.95	18.71
Q_a	Volumetric flow rate, actual (acfm)	255,300	272,400	284,000
Q_{std}	Volumetric flow rate, standard (dscfm)	151,900	161,300	168,900
BENZENE				
	µg	<6.84	<3.06	<3.06
C	Concentration (ppmdv)	<0.10	<0.04	<0.05
C	Concentration (ppmwv)	<0.09	<0.04	<0.04
E	Emission rate(lb/hr)	<0.19	<0.09	<0.11
E	Emission rate(tons/yr)[1]	<0.85	<0.38	<0.46
HEXANE				
	µg	<1.29	<1.29	<1.29
C	Concentration (ppmdv)	<0.02	<0.02	<0.02
C	Concentration (ppmwv)	<0.01	<0.01	<0.02
E	Emission rate(lb/hr)	<0.04	<0.04	<0.04
E	Emission rate(tons/yr)[1]	<0.16	<0.16	<0.19
NAPHTHALENE				
	µg	<1.06	<1.06	<1.06
C	Concentration (ppmdv)	<0.01	<0.01	<0.01
C	Concentration (ppmwv)	<0.01	<0.01	<0.01
E	Emission rate(lb/hr)	<0.03	<0.03	<0.04
E	Emission rate(tons/yr)[1]	<0.13	<0.13	<0.16

< Indicates the value was below the detection limit. These values are used in the calculations.
1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

VOLATILE ORGANICS PARAMETERS

	Run No.	1A	2A	3A
	Date (2002)	April 17	April 17	April 17
	Start Time (approx.)	12:00	13:58	15:42
	Stop Time (approx.)	13:00	14:58	16:47
Sampling Locations				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	21.40	23.00	19.70
V_m	Volume metered, meter conditions (ft^3)	0.76	0.81	0.70
ΔH	Meter box orifice pressure drop (in. H_2O)	1.20	1.00	1.10
Y_d	Dry gas meter correction factor	0.9935	0.9935	0.9935
T_m	Dry gas meter temperature (°F)	88	89	90
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.71	0.76	0.65
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	10.5	10.5	10.4
CO_2	Carbon dioxide (dry volume %)	16.5	16.1	16.3
B_{wo}	Moisture (% by volume)	18.48	18.95	18.71
Q_a	Volumetric flow rate, actual (acfm)	255,300	272,400	284,000
Q_{std}	Volumetric flow rate, standard (dscfm)	151,900	161,300	168,900
PHENOL				
	µg	<4.91	<4.91	<4.91
C	Concentration (ppmdv)	<0.06	<0.06	<0.07
C	Concentration (ppmwv)	<0.05	<0.05	<0.06
E	Emission rate(lb/hr)	<0.14	<0.14	<0.17
E	Emission rate(tons/yr)[1]	<0.61	<0.60	<0.74
TOLUENE				
	µg	<2.55	<2.55	<2.55
C	Concentration (ppmdv)	<0.03	<0.03	<0.04
C	Concentration (ppmwv)	<0.03	<0.03	<0.03
E	Emission rate(lb/hr)	<0.07	<0.07	<0.09
E	Emission rate(tons/yr)[1]	<0.32	<0.31	<0.38
XYLENE (m-, p-)				
	µg	<6.22	<6.22	<6.22
C	Concentration (ppmdv)	<0.07	<0.07	<0.08
C	Concentration (ppmwv)	<0.06	<0.05	<0.06
E	Emission rate(lb/hr)	<0.18	<0.17	<0.21
E	Emission rate(tons/yr)[1]	<0.77	<0.76	<0.94

< Indicates the value was below the detection limit. These values are used in the calculations.
1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

VOLATILE ORGANICS PARAMETERS

Run No.		**1A**	**2A**	**3A**
Date (2002)		April 17	April 17	April 17
Start Time (approx.)		12:00	13:58	15:42
Stop Time (approx.)		13:00	14:58	16:47
Sampling Locations				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	21.40	23.00	19.70
V_m	Volume metered, meter conditions (ft^3)	0.76	0.81	0.70
ΔH	Meter box orifice pressure drop (in. H_2O)	1.20	1.00	1.10
Y_d	Dry gas meter correction factor	0.9935	0.9935	0.9935
T_m	Dry gas meter temperature (°F)	88	89	90
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.71	0.76	0.65
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	10.5	10.5	10.4
CO_2	Carbon dioxide (dry volume %)	16.5	16.1	16.3
B_{wo}	Moisture (% by volume)	18.48	18.95	18.71
Q_a	Volumetric flow rate, actual (acfm)	255,300	272,400	284,000
Q_{std}	Volumetric flow rate, standard (dscfm)	151,900	161,300	168,900
XYLENE (o-)				
	µg	<3.10	<3.10	<3.10
C	Concentration (ppmdv)	<0.03	<0.03	<0.04
C	Concentration (ppmwv)	<0.03	<0.03	<0.03
E	Emission rate(lb/hr)	<0.09	<0.09	<0.11
E	Emission rate(tons/yr)[1]	<0.38	<0.38	<0.47

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1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

SPIKED TRAINS AND RECOVERIES

Run No.		1B	2B	3B
Date (2002)		April 17	April 17	April 17
Start Time (approx.)		12:00	13:58	15:42
Stop Time (approx.)		13:00	14:58	16:47
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	22.80	22.80	22.80
V_m	Volume metered, meter conditions (ft^3)	0.81	0.81	0.81
ΔH	Meter box orifice pressure drop (in. H_2O)	1.20	1.00	1.10
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	90	92	94
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.75	0.75	0.74
BENZENE				
	µg (spike plus actual concentration)	27.46	31.31	40.21
	µg (spike concentration)	23.36	24.53	47.90
C	Concentration of spiked train (ppmdv)	0.40	0.46	0.59
C	Concentration of spike (ppmdv)	0.34	0.36	0.70
C	Concentration of unspiked train (ppmdv)	0.10	0.04	0.05
	Spike Recovery (%)	89.8%	113.7%	78.2%
HEXANE				
	µg (spike plus actual concentration)	13.93	19.68	30.62
	µg (spike concentration)	16.36	18.18	28.18
C	Concentration of spiked train (ppmdv)	0.18	0.26	0.41
C	Concentration of spike (ppmdv)	0.22	0.24	0.37
C	Concentration of unspiked train (ppmdv)	0.02	0.02	0.02
	Spike Recovery (%)	78.6%	101.2%	103.2%
NAPHTHALENE				
	µg (spike plus actual concentration)	15.75	14.27	21.11
	µg (spike concentration)	20.02	17.79	26.69
C	Concentration of spiked train (ppmdv)	0.14	0.13	0.19
C	Concentration of spike (ppmdv)	0.18	0.16	0.24
C	Concentration of unspiked train (ppmdv)	0.01	0.01	0.01
	Spike Recovery (%)	74.5%	75.8%	75.7%

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

SPIKED TRAINS AND RECOVERIES

Run No.		1B	2B	3B
Date (2002)		April 17	April 17	April 17
Start Time (approx.)		12:00	13:58	15:42
Stop Time (approx.)		13:00	14:58	16:47
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	22.80	22.80	22.80
V_m	Volume metered, meter conditions (ft^3)	0.81	0.81	0.81
ΔH	Meter box orifice pressure drop (in. H_2O)	1.20	1.00	1.10
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	90	92	94
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.75	0.75	0.74
PHENOL				
	µg (spike plus actual concentration)	4.91	4.91	4.91
	µg (spike concentration)	27.49	27.49	45.36
C	Concentration of spiked train (ppmdv)	0.06	0.06	0.06
C	Concentration of spike (ppmdv)	0.33	0.33	0.55
C	Concentration of unspiked train (ppmdv)	0.06	0.06	0.07
	Spike Recovery (%)	15.0%	15.2%	9.6%
TOLUENE				
	µg (spike plus actual concentration)	27.46	24.16	37.06
	µg (spike concentration)	24.76	22.51	36.01
C	Concentration of spiked train (ppmdv)	0.34	0.30	0.46
C	Concentration of spike (ppmdv)	0.30	0.28	0.45
C	Concentration of unspiked train (ppmdv)	0.03	0.03	0.04
	Spike Recovery (%)	100.0%	96.6%	95.2%
XYLENE (m-, p-)				
	µg (spike plus actual concentration)	35.36	48.80	68.96
	µg (spike concentration)	39.65	43.07	67.93
C	Concentration of spiked train (ppmdv)	0.38	0.52	0.74
C	Concentration of spike (ppmdv)	0.42	0.46	0.73
C	Concentration of unspiked train (ppmdv)	0.07	0.07	0.08
	Spike Recovery (%)	76.5%	99.2%	91.9%

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

SPIKED TRAINS AND RECOVERIES

Run No.		**1B**	**2B**	**3B**
Date (2002)		April 17	April 17	April 17
Start Time (approx.)		12:00	13:58	15:42
Stop Time (approx.)		13:00	14:58	16:47
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	22.80	22.80	22.80
V_m	Volume metered, meter conditions (ft^3)	0.81	0.81	0.81
ΔH	Meter box orifice pressure drop (in. H_2O)	1.20	1.00	1.10
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	90	92	94
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.75	0.75	0.74
XYLENE (o-)				
	µg (spike plus actual concentration)	23.22	27.13	45.25
	µg (spike concentration)	25.12	25.12	46.48
C	Concentration of spiked train (ppmdv)	0.25	0.29	0.49
C	Concentration of spike (ppmdv)	0.27	0.27	0.50
C	Concentration of unspiked train (ppmdv)	0.03	0.03	0.04
	Spike Recovery (%)	81.8%	96.3%	90.4%

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

VOLATILE ORGANICS PARAMETERS

Run No.		4A	5A	6A
Date (2002)		April 18	April 18	April 18
Start Time (approx.)		10:05	12:10	14:36
Stop Time (approx.)		11:11	13:18	15:40
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	19.40	16.50	27.40
V_m	Volume metered, meter conditions (ft^3)	0.69	0.58	0.97
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.20
Y_d	Dry gas meter correction factor	0.9935	0.9935	0.9935
T_m	Dry gas meter temperature (°F)	82	88	88
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.65	0.55	0.91
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	9.90	10.1	10.0
CO_2	Carbon dioxide (dry volume %)	15.5	15.6	15.6
B_{wo}	Moisture (% by volume)	20.35	19.20	18.27
Q_a	Volumetric flow rate, actual (acfm)	221,800	213,600	218,700
Q_{std}	Volumetric flow rate, standard (dscfm)	121,800	118,000	122,000
BENZENE				
	µg	<8.69	<3.06	<13.73
C	Concentration (ppmdv)	<0.15	<0.06	<0.16
C	Concentration (ppmwv)	<0.12	<0.05	<0.13
E	Emission rate(lb/hr)	<0.22	<0.09	<0.24
E	Emission rate(tons/yr)[1]	<0.94	<0.38	<1.07
HEXANE				
	µg	<1.29	<1.29	<1.29
C	Concentration (ppmdv)	<0.02	<0.02	<0.01
C	Concentration (ppmwv)	<0.02	<0.02	<0.01
E	Emission rate(lb/hr)	<0.03	<0.04	<0.02
E	Emission rate(tons/yr)[1]	<0.14	<0.16	<0.10
NAPHTHALENE				
	µg	<1.06	<1.06	<1.06
C	Concentration (ppmdv)	<0.01	<0.01	<0.01
C	Concentration (ppmwv)	<0.01	<0.01	<0.01
E	Emission rate(lb/hr)	<0.03	<0.03	<0.02
E	Emission rate(tons/yr)[1]	<0.12	<0.13	<0.08

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1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

VOLATILE ORGANICS PARAMETERS

Run No.		4A	5A	6A
Date (2002)		April 18	April 18	April 18
Start Time (approx.)		10:05	12:10	14:36
Stop Time (approx.)		11:11	13:18	15:40
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	19.40	16.50	27.40
V_m	Volume metered, meter conditions (ft^3)	0.69	0.58	0.97
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.20
Y_d	Dry gas meter correction factor	0.9935	0.9935	0.9935
T_m	Dry gas meter temperature (°F)	82	88	88
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.65	0.55	0.91
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	9.90	10.1	10.0
CO_2	Carbon dioxide (dry volume %)	15.5	15.6	15.6
B_{wo}	Moisture (% by volume)	20.35	19.20	18.27
Q_a	Volumetric flow rate, actual (acfm)	221,800	213,600	218,700
Q_{std}	Volumetric flow rate, standard (dscfm)	121,800	118,000	122,000
PHENOL				
	µg	<1.70	<1.70	<1.70
C	Concentration (ppmdv)	<0.02	<0.03	<0.02
C	Concentration (ppmwv)	<0.02	<0.02	<0.01
E	Emission rate(lb/hr)	<0.04	<0.05	<0.03
E	Emission rate(tons/yr)[1]	<0.18	<0.21	<0.13
TOLUENE				
	µg	<2.55	<2.55	<2.55
C	Concentration (ppmdv)	<0.04	<0.04	<0.03
C	Concentration (ppmwv)	<0.03	<0.03	<0.02
E	Emission rate(lb/hr)	<0.06	<0.07	<0.05
E	Emission rate(tons/yr)[1]	<0.28	<0.32	<0.20
XYLENE (m-, p-)				
	µg	<6.22	<6.22	<6.22
C	Concentration (ppmdv)	<0.08	<0.09	<0.05
C	Concentration (ppmwv)	<0.06	<0.07	<0.04
E	Emission rate(lb/hr)	<0.15	<0.18	<0.11
E	Emission rate(tons/yr)[1]	<0.68	<0.78	<0.48

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1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

VOLATILE ORGANICS PARAMETERS

Run No.		4A	5A	6A
Date (2002)		April 18	April 18	April 18
Start Time (approx.)		10:05	12:10	14:36
Stop Time (approx.)		11:11	13:18	15:40
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	19.40	16.50	27.40
V_m	Volume metered, meter conditions (ft^3)	0.69	0.58	0.97
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.20
Y_d	Dry gas meter correction factor	0.9935	0.9935	0.9935
T_m	Dry gas meter temperature (°F)	82	88	88
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.65	0.55	0.91
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	9.90	10.1	10.0
CO_2	Carbon dioxide (dry volume %)	15.5	15.6	15.6
B_{wo}	Moisture (% by volume)	20.35	19.20	18.27
Q_a	Volumetric flow rate, actual (acfm)	221,800	213,600	218,700
Q_{std}	Volumetric flow rate, standard (dscfm)	121,800	118,000	122,000
XYLENE (o-)				
	µg	<3.10	<3.10	<3.10
C	Concentration (ppmdv)	<0.04	<0.05	<0.03
C	Concentration (ppmwv)	<0.03	<0.04	<0.02
E	Emission rate(lb/hr)	<0.08	<0.09	<0.06
E	Emission rate(tons/yr)[1]	<0.34	<0.39	<0.24

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1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

SPIKED TRAINS AND RECOVERIES

Run No.		4B	5B	6B
Date (2002)		April 18	April 18	April 18
Start Time (approx.)		10:05	12:10	14:36
Stop Time (approx.)		11:11	13:18	15:40
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	21.80	23.60	28.90
V_m	Volume metered, meter conditions (ft^3)	0.77	0.83	1.02
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.20
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	85	88	92
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.72	0.78	0.95
BENZENE				
	µg (spike plus actual concentration)	49.81	41.15	44.26
	µg (spike concentration)	36.93	35.45	31.02
C	Concentration of spiked train (ppmdv)	0.75	0.57	0.51
C	Concentration of spike (ppmdv)	0.55	0.49	0.36
C	Concentration of unspiked train (ppmdv)	0.15	0.06	0.16
	Spike Recovery (%)	106.9%	103.4%	97.6%
HEXANE				
	µg (spike plus actual concentration)	19.98	19.89	32.23
	µg (spike concentration)	24.99	21.04	28.93
C	Concentration of spiked train (ppmdv)	0.27	0.25	0.34
C	Concentration of spike (ppmdv)	0.34	0.27	0.30
C	Concentration of unspiked train (ppmdv)	0.02	0.02	0.01
	Spike Recovery (%)	75.6%	86.9%	106.5%
NAPHTHALENE				
	µg (spike plus actual concentration)	9.02	14.91	23.98
	µg (spike concentration)	10.34	18.60	23.77
C	Concentration of spiked train (ppmdv)	0.08	0.13	0.17
C	Concentration of spike (ppmdv)	0.09	0.16	0.17
C	Concentration of unspiked train (ppmdv)	0.01	0.01	0.01
	Spike Recovery (%)	78.3%	74.1%	96.4%

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

SPIKED TRAINS AND RECOVERIES

Run No.		4B	5B	6B
Date (2002)		April 18	April 18	April 18
Start Time (approx.)		10:05	12:10	14:36
Stop Time (approx.)		11:11	13:18	15:40
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	21.80	23.60	28.90
V_m	Volume metered, meter conditions (ft^3)	0.77	0.83	1.02
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.20
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	85	88	92
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.72	0.78	0.95
PHENOL				
	µg (spike plus actual concentration)	18.50	16.41	21.61
	µg (spike concentration)	21.67	19.26	24.07
C	Concentration of spiked train (ppmdv)	0.23	0.19	0.21
C	Concentration of spike (ppmdv)	0.27	0.22	0.23
C	Concentration of unspiked train (ppmdv)	0.02	0.03	0.02
	Spike Recovery (%)	78.5%	75.7%	83.6%
TOLUENE				
	µg (spike plus actual concentration)	26.44	22.93	17.04
	µg (spike concentration)	27.76	22.72	17.67
C	Concentration of spiked train (ppmdv)	0.34	0.27	0.17
C	Concentration of spike (ppmdv)	0.35	0.27	0.17
C	Concentration of unspiked train (ppmdv)	0.04	0.04	0.03
	Spike Recovery (%)	86.4%	87.0%	83.8%
XYLENE (m-, p-)				
	µg (spike plus actual concentration)	43.98	43.51	55.64
	µg (spike concentration)	47.00	41.78	52.23
C	Concentration of spiked train (ppmdv)	0.49	0.45	0.47
C	Concentration of spike (ppmdv)	0.52	0.43	0.44
C	Concentration of unspiked train (ppmdv)	0.08	0.09	0.05
	Spike Recovery (%)	81.5%	85.9%	94.8%

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

SPIKED TRAINS AND RECOVERIES

Run No.		**4B**	**5B**	**6B**
Date (2002)		April 18	April 18	April 18
Start Time (approx.)		10:05	12:10	14:36
Stop Time (approx.)		11:11	13:18	15:40
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	21.80	23.60	28.90
V_m	Volume metered, meter conditions (ft^3)	0.77	0.83	1.02
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.20
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	85	88	92
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.72	0.78	0.95
XYLENE (o-)				
	µg (spike plus actual concentration)	19.20	22.05	23.60
	µg (spike concentration)	21.15	21.15	22.47
C	Concentration of spiked train (ppmdv)	0.21	0.23	0.20
C	Concentration of spike (ppmdv)	0.23	0.22	0.19
C	Concentration of unspiked train (ppmdv)	0.04	0.05	0.03
	Spike Recovery (%)	78.0%	86.2%	91.8%

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

VOLATILE ORGANICS PARAMETERS

Run No.		7	8	9
Date (2002)		April 19	April 19	April 19
Start Time (approx.)		08:45	10:00	11:11
Stop Time (approx.)		09:52	11:03	12:15
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	28.20	25.90	27.60
V_m	Volume metered, meter conditions (ft^3)	1.00	0.91	0.97
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.10
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	85	84	87
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.94	0.86	0.91
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	10.5	10.5	10.5
CO_2	Carbon dioxide (dry volume %)	16.4	16.3	16.3
B_{wo}	Moisture (% by volume)	17.89	17.59	17.49
Q_a	Volumetric flow rate, actual (acfm)	285,600	280,600	278,200
Q_{std}	Volumetric flow rate, standard (dscfm)	171,200	169,000	167,700
BENZENE				
	µg	<67.45	<30.85	<9.56
C	Concentration (ppmdv)	<0.78	<0.39	<0.11
C	Concentration (ppmwv)	<0.64	<0.32	<0.09
E	Emission rate(lb/hr)	<1.63	<0.80	<0.23
E	Emission rate(tons/yr)	<7.15	<3.51	<1.02
HEXANE				
	µg	<1.29	<1.29	<1.29
C	Concentration (ppmdv)	<0.01	<0.01	<0.01
C	Concentration (ppmwv)	<0.01	<0.01	<0.01
E	Emission rate(lb/hr)	<0.03	<0.03	<0.03
E	Emission rate(tons/yr)	<0.14	<0.15	<0.14
NAPHTHALENE				
	µg	<2.57	<1.06	<1.06
C	Concentration (ppmdv)	<0.02	<0.01	<0.01
C	Concentration (ppmwv)	<0.01	<0.01	<0.01
E	Emission rate(lb/hr)	<0.06	<0.03	<0.03
E	Emission rate(tons/yr)	<0.27	<0.12	<0.11

< Indicates the value was below the detection limit. These values are used in the calculations.
1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

VOLATILE ORGANICS PARAMETERS

Run No.		7	8	9
Date (2002)		April 19	April 19	April 19
Start Time (approx.)		08:45	10:00	11:11
Stop Time (approx.)		09:52	11:03	12:15
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	28.20	25.90	27.60
V_m	Volume metered, meter conditions (ft^3)	1.00	0.91	0.97
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.10
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	85	84	87
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.94	0.86	0.91
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	10.5	10.5	10.5
CO_2	Carbon dioxide (dry volume %)	16.4	16.3	16.3
B_{wo}	Moisture (% by volume)	17.89	17.59	17.49
Q_a	Volumetric flow rate, actual (acfm)	285,600	280,600	278,200
Q_{std}	Volumetric flow rate, standard (dscfm)	171,200	169,000	167,700
PHENOL				
	µg	<1.70	<1.70	<1.70
C	Concentration (ppmdv)	<0.02	<0.02	<0.02
C	Concentration (ppmwv)	<0.01	<0.01	<0.01
E	Emission rate(lb/hr)	<0.04	<0.04	<0.04
E	Emission rate(tons/yr)	<0.18	<0.19	<0.18
TOLUENE				
	µg	<5.36	<2.55	<2.55
C	Concentration (ppmdv)	<0.05	<0.03	<0.03
C	Concentration (ppmwv)	<0.04	<0.02	<0.02
E	Emission rate(lb/hr)	<0.13	<0.07	<0.06
E	Emission rate(tons/yr)	<0.57	<0.29	<0.27
XYLENE (m-, p-)				
	µg	<6.22	<6.22	<6.22
C	Concentration (ppmdv)	<0.05	<0.06	<0.05
C	Concentration (ppmwv)	<0.04	<0.05	<0.05
E	Emission rate(lb/hr)	<0.15	<0.16	<0.15
E	Emission rate(tons/yr)	<0.66	<0.71	<0.66

< Indicates the value was below the detection limit. These values are used in the calculations.
1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

VOLATILE ORGANICS PARAMETERS

Run No.		**7**	**8**	**9**
Date (2002)		April 19	April 19	April 19
Start Time (approx.)		08:45	10:00	11:11
Stop Time (approx.)		09:52	11:03	12:15
Sampling Conditions				
P_b	Barometric pressure (in. Hg)	29.25	29.25	29.25
V_m	Volume metered, meter conditions (liter)	28.20	25.90	27.60
V_m	Volume metered, meter conditions (ft^3)	1.00	0.91	0.97
ΔH	Meter box orifice pressure drop (in. H_2O)	1.10	1.10	1.10
Y_d	Dry gas meter correction factor	0.9896	0.9896	0.9896
T_m	Dry gas meter temperature (°F)	85	84	87
Calculated Results				
$V_{m,std}$	Volume metered, standard (ft^3)	0.94	0.86	0.91
Results from Velocity and Moisture Parameters				
O_2	Oxygen (dry volume %)	10.5	10.5	10.5
CO_2	Carbon dioxide (dry volume %)	16.4	16.3	16.3
B_{wo}	Moisture (% by volume)	17.89	17.59	17.49
Q_a	Volumetric flow rate, actual (acfm)	285,600	280,600	278,200
Q_{std}	Volumetric flow rate, standard (dscfm)	171,200	169,000	167,700
XYLENE (o-)				
	µg	<6.27	<3.10	<3.10
C	Concentration (ppmdv)	<0.05	<0.03	<0.03
C	Concentration (ppmwv)	<0.04	<0.02	<0.02
E	Emission rate(lb/hr)	<0.15	<0.08	<0.08
E	Emission rate(tons/yr)	<0.66	<0.35	<0.33

< Indicates the value was below the detection limit. These values are used in the calculations.
1 Calculation based on 8,760 operating hours per year

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill On

FTIR PARAMETERS

Run No.		1	2	3	Average
Date (2002)		April 17	April 17	April 17	
Start Time		10:51	13:42	15:30	
Stop Time		12:58	14:48	16:31	
Gas Conditions					
T_s	Temperature (°F)	247	246	246	**246**
O_2	Oxygen (dry volume %)	10.5	10.5	10.4	**10.5**
CO_2	Carbon Dioxide (dry volume %)	16.5	16.1	16.3	**16.3**
B_{wo}	Moisture in sample (% by volume)	18.48	18.48	18.48	**18.48**
Q_a	Volumetric flow rate, actual (acfm)[1]	255,300	272,400	284,000	**270,567**
Q_{std}	Volumetric flow rate, standard (dscfm)[1]	151,900	161,300	168,900	**160,700**
HYDROGEN CHLORIDE (M321)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	0.51	0.83	0.37	**0.57**
C_{gas}	Concentration moisture corrected (ppmdv)	0.63	1.02	0.45	**0.70**
E	Emission rate (lb/hr)	0.54	0.93	0.44	**0.64**
E	Emission rate (ton/yr)[2]	2.36	4.08	1.91	**2.78**
FORMALDEHYDE (M320)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	1.39	1.37	1.08	**1.28**
C_{gas}	Concentration moisture corrected (ppmdv)	1.71	1.68	1.32	**1.57**
E	Emission rate (lb/hr)	1.21	1.27	1.05	**1.18**
E	Emission rate (ton/yr)[2]	5.31	5.55	4.58	**5.15**

[1] Volumetric flow rates obtained from concurrent Methods 1-4 testing.
[2] Based on 8,760 hours/year of operation.

TXI - HUNTER
Clean Air Project No. 9101
Kiln Stack
Raw Mill Off

FTIR PARAMETERS

Run No.		**4**	**5**	**6**	**Average**
Date (2002)		April 18	April 18	April 18	
Start Time		10:05	12:10	14:36	
Stop Time		11:11	13:18	15:40	
Gas Conditions					
T_s	Temperature (°F)	288	295	296	**293**
O_2	Oxygen (dry volume %)	9.9	10.1	10.0	**10.0**
CO_2	Carbon Dioxide (dry volume %)	15.5	15.6	15.6	**15.6**
B_{wo}	Moisture in sample (% by volume)	20.35	19.20	18.27	**19.27**
Q_a	Volumetric flow rate, actual (acfm)[1]	221,800	213,600	218,700	**218,033**
Q_{std}	Volumetric flow rate, standard (dscfm)[1]	121,800	118,000	122,000	**120,600**
HYDROGEN CHLORIDE (M321)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	1.33	2.13	2.18	**1.88**
C_{gas}	Concentration moisture corrected (ppmdv)	1.67	2.64	2.67	**2.32**
E	Emission rate (lb/hr)	1.15	1.77	1.85	**1.59**
E	Emission rate (ton/yr)[2]	5.06	7.74	8.09	**6.96**
FORMALDEHYDE (M320)					
C_{gas}	Concentration from FTIR analysis (ppmwv)	1.28	1.05	1.28	**1.20**
C_{gas}	Concentration moisture corrected (ppmdv)	1.61	1.30	1.57	**1.49**
E	Emission rate (lb/hr)	0.92	0.72	0.89	**0.84**
E	Emission rate (ton/yr)[2]	4.01	3.14	3.91	**3.69**

[1] Volumetric flow rates obtained from concurrent Methods 1-4 testing.
[2] Based on 8,760 hours/year of operation.

CALIBRATION DATA

C

SAMPLE PROBE CALIBRATION DATA

Probe Type: S-TYPE **I.D. number:** 67SP-120-02

Thermocouple Calibration

Reference Type: TC Reference I.D. No: LAB 1 Pyrometer I.D. No: LAB 1 Degrees: F

Point No.	Target Temp.	Reference Temp	Indicated Temp	Temp Difference	% Difference	Specification
1	ice-32F	34.9	34.6	0.3	0.86	
2	ambient-70F	76.5	75.8	0.7	0.92	%Difference ≤ 1.5
3	hot oil-150F					
4	boiling H2O-212F	212.5	212	0.5	0.24	
5	hot oil-320F					

Does assembly meet specifications? YES / NO → If "NO" thermocouple must be replaced. YES

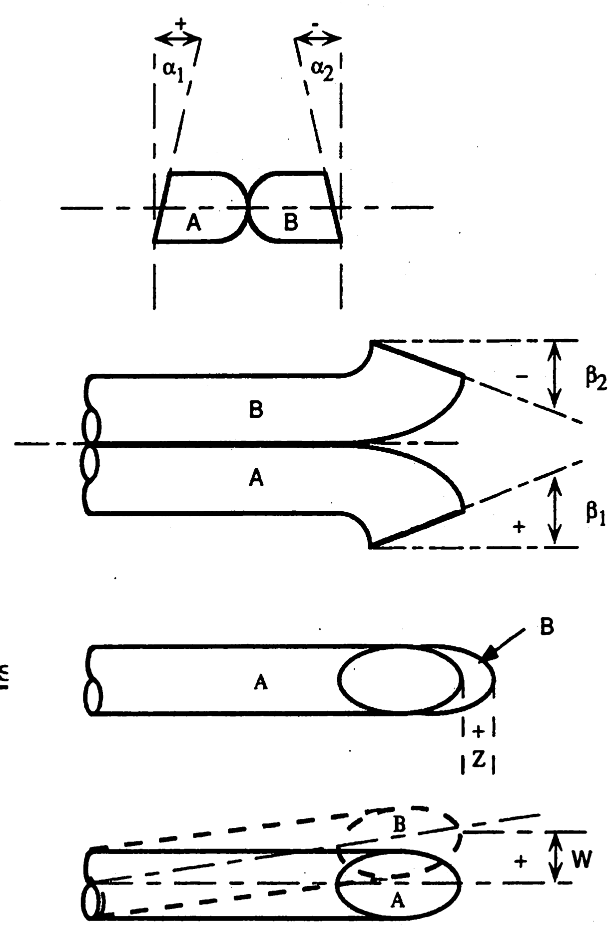
Geometric Pitot Calibration

Is pitot assembly in good repair? YES / NO If "NO" explain: YES

If repairs are required, pitot does not meet specification.

"S" Pitot

Measurement		Specification
α1= 2	α2= 0	<10°
β1= 3	β2= 0	<5°
Z= 0.09 inches		<0.125
W= 0.005 inches		<0.031



Does assembly meet specifications? YES / NO YES

All specifications are from EPA-600/9-76-005, section 3.1

PROBE Cp = YES **Calibrated by:** C. Bechtold **Date:** 1/15/02

CS 011 Probe/Pitot Cal
BB, Dpt 67-4/1/98

Clean Air Engineering

Meter Box Full Test Calibration

DATE: 4/11/02 Operator: R.R.

Meter Box No: 85-1				Meter Box ΔH@: 1.7793						Meter Box Y_d: 1.0015					Barometric Pressure: 29.52		
				Standard Meter Gas Volume			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)				
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds}	Initial	Final	V_d	Inlet	Outlet	T_{ds}	Inlet	T_o	T_d	Time	Y_d	H@
0.949	3.00	-1.80	1.0000	0.0	10.000	10.000	237.120	247.224	10.104	68.5	68.5	68.5	86.0	76.0	81.0	10.38	1.0011	1.8202
0.951	3.00	-1.80	1.0000	0.0	10.000	10.000	247.224	257.350	10.126	68.5	68.5	68.5	86.0	76.0	81.0	10.36	0.9989	1.8132
0.393	0.50	-1.20	1.0000	0.0	5.000	5.000	260.814	265.874	5.060	68.5	68.5	68.5	80.0	76.0	78.0	12.53	1.0017	1.7682
0.395	0.50	-1.20	1.0000	0.0	5.000	5.000	265.874	270.922	5.048	68.5	68.5	68.5	80.0	76.0	78.0	12.48	1.0040	1.7541
0.681	1.50	-1.50	1.0000	0.0	10.000	10.000	274.511	284.632	10.121	68.5	68.5	68.5	84.0	76.0	80.0	14.46	1.0020	1.7661
0.684	1.50	-1.50	1.0000	0.0	10.000	10.000	284.632	294.769	10.137	68.5	68.5	68.5	85.0	76.0	80.5	14.41	1.0014	1.7540
															AVERAGE		1.0015	1.7793

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H_20)
ΔP	Inlet Pressure Differential (in. H_20)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_20)

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
4.7	5.0
9.9	10.0
15.1	15.0
20.0	20.0
24.7	25.0

Thermometers

Standard (°F)	Inlet	Outlet

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P/13.6}{P_b + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64\,(V_{ds})\,(P_b)}{(T_{ds} + 460)\,(\Theta)}$$

Clean Air Engineering

Pyrometer Calibration Test Report

Pyrometer No.:	85-1	Office:	Palatine, Il
Calibrated By:	R.R.	Client:	
Date:	4/11/02	Job Number:	

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	50 °F
100 °F	100 °F
150 °F	150 °F
200 °F	201 °F
250 °F	252 °F
300 °F	302 °F
350 °F	351 °F
400 °F	401 °F
450 °F	450 °F
500 °F	500 °F
550 °F	550 °F
600 °F	602 °F

Calibration Reference Information

Reference Used:	Omega CL23A	Serial No:	T-225950
Calibrated By:	Omega Engineering;Inc.	Date:	3/15/02
Report No:	RF-T-225950		

CAE
Clean Air Engineering

Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 9113
Location Of Test Houston
Date Of Test 4/23/02
Operator Name C. Bechtold

Meter No. 85-1
Y_d 1.0015
delta H 1.7793
Full-Test Cal.Date 4/11/02

Orifice I.D 84-A-3
Orifice K' 0.5679
Orifice Cal. Date 11/20/01

Leak Checks
Neg. Press. x Pass / Fail
Pos. Press. x Pass / Fail

Leak Checks Must Have No Movement Of Manometer For One Minute.
All Leak Checks Must Pass In Order for Test to be Valid.

Barom. Press.(P_b) 29.10 in.Hg

RUN	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temp. Inlet (F)	Meter Temp. Outlet (F)	Ambient Temp. T_{amb} (F)	Orifice delta H (in.W.C)	Vacuum (in.H.G)	Net Run Time (minutes)	Net Meter Volume for Run-V_m (dcf)	Avg. Meter Temp. for Run-T_m (F)	DGM Calibration Factor-Y_i	Percent Variation for delta Y_i
	0.0	619.11	78	77								
1	5	622.92	78	77	77	1.8	16	5	3.81	77.5	0.9755	-0.2167
2	10	626.72	81	78	78	1.8	16	5	3.8	79.5	0.9808	0.3248
3	15	630.54	82	78	78	1.8	16	5	3.82	80	0.9766	-0.1080
										Average Y_i	0.9776	
										Cal. Error	-2.3819	

delta Y_i must be less than or equal to 2 %

Cal. Error must be less than or equal to 5 %

Operator Signature : C. Bechtold

Vost Meter Full Test Calibration

DATE: 9/5/01 Operator: M. V.

Meter Box No: 71-V15										Meter Box Y_d: 0.9935					Barometric Pressure: 29.60			
				Standard Meter Gas Volume			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds}	Initial	Final	V_d	Inlet	Outlet	T_{ds}	Inlet	T_o	T_d	Time	Y_d	
0.035	1.70	-1.00	1.0000	0.0	1.030	1.030	6565.59	6595.12	1.0429	76.0	76.0	76.0	82.0	82.0	82.0	28.44	0.9920	
0.035	1.70	-1.00	1.0000	0.0	1.250	1.250	6595.12	6631.01	1.2675	76.0	76.0	76.0	84.0	84.0	84.0	34.38	0.9942	
0.035	1.70	-1.00	1.0000	0.0	1.000	1.200	6697.45	6732.00	1.2202	76.0	76.0	76.0	86.0	85.0	85.5	33.17	0.9942	
															AVERAGE		0.9935	

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential giving 0.75cfm of air at 68°F and 29.92 in. Hg (in. H_2O)

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
4.4	5.0
9.7	10.0
14.8	15.0
19.3	20.0
25.1	25.0

Thermometers

Standard (°F)	Inlet	Outlet

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P/13.6}{P_b + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64\,(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

CAE

Clean Air Engineering

Pyrometer Calibration Test Report

Pyrometer No.:	71-V15	Office:	Palatine, Il
Calibrated By:	M . V .	Client:	
Date:	9/5/01	Job Number:	

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	48 °F
100 °F	98 °F
150 °F	148 °F
200 °F	199 °F
250 °F	249 °F
300 °F	299 °F
350 °F	349 °F
400 °F	399 °F
450 °F	449 °F
500 °F	499 °F
550 °F	549 °F
600 °F	599 °F

Calibration Reference Information

Reference Used:	Omega CL23A	Serial No:	T-225950
Calibrated By:	Omega Engineering;Inc.	Date:	3/15/01
Report No:	RF-T-225950		

Clean Air Engineering

Vost Meter Full Test Calibration

DATE: 3/20/02 Operator: M. V.

Meter Box No:	84-V1								Meter Box Y_{df}	0.9896				Barometric Pressure:			29.52	
				Standard Meter Gas Volume (ft^3)			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds}	Initial	Final	V_d	Inlet	Outlet	T_{ds}	Inlet	T_o	T_d	Time	Y_d	
0.036	1.30	-0.90	1.0000	0.0	1.000	1.000	2272.58	2301.41	1.0182	69.0	69.0	69.0	77.0	76.0	76.5	27.60	0.9907	
0.036	1.30	-0.90	1.0000	0.0	1.000	1.000	2301.41	2330.29	1.0199	69.0	69.0	69.0	77.0	76.0	76.5	27.57	0.9889	
0.036	1.30	-0.90	1.0000	0.0	1.000	1.000	2387.28	2416.15	1.0196	69.0	69.0	69.0	77.0	76.0	76.5	27.62	0.9893	
															AVERAGE		0.9896	

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
4.8	5.0
9.7	10.0
14.8	15.0
19.8	20.0
23.9	24.0

Thermometers

Standard (°F)	Inlet	Outlet

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6}\right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64\,(V_{ds})\,(P_b)}{(T_{ds} + 460)(\Theta)}$$

Clean Air Engineering

Pyrometer Calibration Test Report

Pyrometer No.:	84-V1	Office:	Palatine, Il
Calibrated By:	M . V .	Client:	
Date:	3/20/02	Job Number:	

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	50 °F
100 °F	100 °F
150 °F	150 °F
200 °F	201 °F
250 °F	251 °F
300 °F	301 °F
350 °F	351 °F
400 °F	401 °F
450 °F	451 °F
500 °F	501 °F
550 °F	551 °F
600 °F	601 °F

Calibration Reference Information

Reference Used:	Omega CL23A	Serial No:	T-225950
Calibrated By:	Omega Engineering;Inc.	Date:	3/15/01
Report No:	RF-T-225950		

CAE
Clean Air Engineering

CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
1290 COMBERMERE STREET, TROY, MI 48083
Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information
Project No.: 05-88771-001
Item No.: 05020001290PA
P.O. No.: 51499-71-65000

Cylinder Number: 1A7839
Cylinder Size: A
Certification Date: 02/12/2002
Expiration Date: 02/12/2004

Customer

CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET
PALATINE, IL 60067

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE	20.1	PPM	2
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

NIST

APPROVED BY: [signature] DATE: 2-12-02

Scott Specialty Gases

Shipped From: 1290 COMBERMERE STREET
TROY MI 48083
Phone: 248-589-2950 Fax: 248-589-2134

C E R T I F I C A T E   O F   A N A L Y S I S

CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET

PALATINE IL 60067

PROJECT #: 05-88241-003
PO#: 51471-71-65000
ITEM #: 0501813 AL
DATE: 1/28/02

CYLINDER #: ALM058557
FILL PRESSURE: 02000 PSIG

PURE MATERIAL: NITROGEN CAS# 7727-37-9

GRADE: ZERO GAS

PURITY: 99.998%

IMPURITY	MAXIMUM CONCENTRATIONS
THC	0.5 PPM

ANALYST: Bill Ratoff

CUSTOM CLASS

Scott Specialty Gases
1290 COMBERMERE STREET,TROY,MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: Custom Class Calibration Standard

Product Information
Project No.: 05-90122-003
Item No.: 0502H303485ZA
P.O. No.: 51569-71-65000

Cylinder Number: NXA9354
Cylinder Size: A
Certification Date: 04/02/2002
Expiration Date: 10/01/2002

Customer

CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET
PALATINE, IL 60067

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
HYDROGEN CHLORIDE	149.	PPM	5
SULFUR HEXAFLUORIDE	5.11	PPM	10
NITROGEN		BALANCE	

TRACEABILITY

Description	Traceability Type	Traceable To
BLEND PROCESS TRACEABILITY	WEIGHT	NIST
ANALYTICAL TRACEABILITY	GAS STANDARDS	

APPROVED BY: Bl Patff

DATE: 4-2-02

FIELD DATA

D

TEST LOCATION: STACK

CYCLONIC FLOW CHECK FIELD DATA SHEET

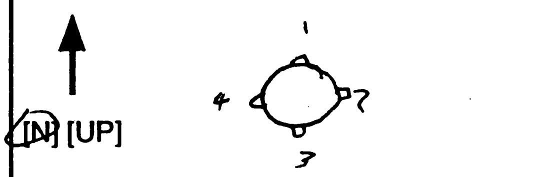
PAGE 1 **OF** 1

UNIT: STACK 1

Client TXI	Project No. 7109
Plant HUNTER	Date 4/18/02
Meter Operator R. Hernandez	
Probe Operator D. Bedikian	

Probe I.D. No. 6758-120-B	Pitot Cp 0.84
Pitot Leak Check Before: ☑	After: Good ☑ Bad ☐

Cross-Section of Test Location



Amb. Temp. (°F) 88.8	Bar. Press. 29.35 [in Hg] [mbar]

Duct Dimensions (in.) 184.5 d			
Static Press. (in. H_2O) 0.1	Port Len. (in.) 24	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]

Start Time: 9:20	Stop Time: 9:52

Traverse Point Number	Velocity Pressure at 0° (in H2O)	Rotation Angle α giving 0 v.p.	Traverse Point Number	Velocity Pressure at 0° (in H2O)	Rotation Angle α giving 0 v.p.	Traverse Point Number	Velocity Pressure at 0° (in H2O)	Rotation Angle α giving 0 v.p.	Traverse Point Number	Velocity Pressure at 0° (in H2O)	Rotation Angle α giving 0 v.p.	Notes
3-1	0.00	0										
2	0.03	10										
3	0.00	0										
2-1	0.03	-15										
2	0.03	-15										
3	0.01	-10										
1-1	0.00	0										
2	0.02	10										
3	0.02	10										
4-1	0.03	10										
2	0.00	0										
3	0.00	0										

Total of abosulute values of α

Average of abosulute values of α 6.67

Procedure: Position the pitot perpendicular to the expected direction of gas flow (0 degrees reference). Note the velocity pressure. If zero, acceptable flow condition exists, if not zero, rotate the pitot up to +/- 90 degrees (rotation angle called alpha α.) Determine and record the value of the rotation angle (α) to the nearest degree. See reference method 1, section 2.4. Calculate the average of the absolute values of α. Assign values of zero to points which require no rotation. If the average of α is greater than 20 degrees , the overall condition of the flow is unacceptable and an alternative method of velocity and sample traversing must be used.

Clean Air Engineering

DS 002C Cyclonic Check
CNVS/TRG.R2-1/12/95

ORSAT READINGS

TEST LOCATION: KILN STACK

PAGE 1 **OF** 1

Client TXI	Project Number 9101	Fo = $\frac{20.9 - \%O_2}{\%CO_2}$	
Plant HUNTER	Unit 1		
Orsat ID 39-507 (HIGH RANGE)	Fuel Type COAL +	Leak Check Passed ☑	

Run Number	Method Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Fo	Analyst	Analysis Date	Analysis Time
1E	3/4	1	16.4	26.8	10.4		PB	4/17/02	1530
RAW MILL ON		2	16.5	27.0	10.5				
		3	16.5	27.0	10.5				
		Avg.	16.5		10.5				
2	3/4	1	16.2	26.6	10.4		PB	4/17/02	1630
RAW MILL ON		2	16.2	26.6	10.4				
		3	16.0	26.6	10.6				
		Avg.	16.1		10.5				
3	3/4	1	16.2	26.6	10.4		PB	4/17/02	1730
RAW MILL ON		2	16.2	26.6	10.4				
		3	16.4	26.8	10.4				
		Avg.	16.3		10.4				
4	3/4	1	15.6	25.4	9.8		PB	4/18/02	
RAW MILL OFF		2	15.6	25.4	9.8				
		3	15.4	25.4	10				
		Avg.	15.5		9.9				
5	3/4	1	15.6	25.6	10.0		PB	4/18/02	
RAW MILL OFF		2	15.6	25.6	10.0				
		3	15.6	25.8	10.2				
		Avg.	15.6		10.1				
6	3/4	1	15.6	~~15.6~~ 25.6	10.0		PB	4/18/02	
RAW MILL OFF		2	15.6	25.6	10.0				
		3	15.5	25.5	10.0				
		Avg.	15.6		10.0				

Repeat the analysis procedure until the results of any three analyses differ by no more than 0.2 percent by volume. Average the three acceptable values and report the results to the nearest 0.1 percent. Calculate Fo to verify results.

Acceptable ranges for Fo:

Coal:	Anthracite and lignite	1.016-1.130	Gas:	Natural	1.600-1.836
	Bituminous	1.083-1.230		Propane	1.434-1.586
Oil:	Distillate	1.260-1.413		Butane	1.405-1.553
	Residual	1.210-1.370	Wood:		1.000-1.120

Clean Air Engineering

DS 012 Orsat

ORSAT READINGS

TEST LOCATION: KILN STACK **PAGE** 1 **OF** 1

Client TXI	Project Number 9101	$Fo = \frac{20.9 - \%O_2}{\%CO_2}$
Plant HUNTER	Unit 1	
Orsat ID 39-507 (HIGH)	Fuel Type COAL+	Leak Check Passed ☑

Run Number	Method Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Fo	Analyst	Analysis Date	Analysis Time
7		1	16.3	26.8	10.5		KH	4/18/02	
RAW MILL ON		2	16.4	26.9	10.5				
		3	16.4	26.9	10.5				
		Avg.	16.4		10.5				
8		1	16.3	26.7	10.4		RH	4/18/02	
RAW MILL ON		2	16.3	26.8	10.5				
		3	16.4	26.9	10.5				
		Avg.	16.3		10.5				
9		1	16.3	26.8	10.5		KH	4/18/02	
RAW MILL ON		2	16.3	26.8	10.5				
		3	16.3	26.7	10.4				
		Avg.	16.3		10.5				
		1							
		2							
		3							
		Avg.							
		1							
		2							
		3							
		Avg.							
		1							
		2							
		3							
		Avg.							

Repeat the analysis procedure until the results of any three analyses differ by no more than 0.2 percent by volume. Aver[age] the three acceptable values and report the results to the nearest 0.1 percent. Calculate Fo to verify results.

Acceptable ranges for Fo:

Coal:	Anthracite and lignite	1.016-1.130	Gas:	Natural	1.600-1.836
	Bituminous	1.083-1.230		Propane	1.434-1.586
Oil:	Distillate	1.260-1.413		Butane	1.405-1.553
	Residual	1.210-1.370	Wood:		1.000-1.120

Clean Air Engineeri[ng]

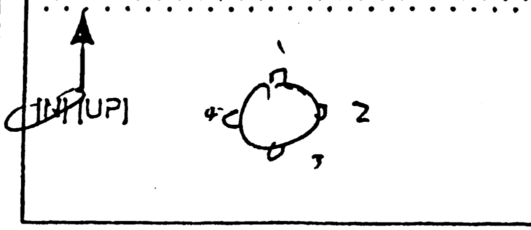
VELOCITY DETERMINATION FIELD DATA SHEET

TEST LOCATION: STACK

UNIT: 1

Client: TXI	Project No: 9101
Plant: Mid Hunter	Date: 4/17/02
Meter Operator: R. Hernandez	
Probe Operator: D. Bed Kier	
Source of Moisture and Molecular Weight Data: M-4	

Cross-Section of Test Location



Amb. Temp. (°F) 84	Bar. Press.: 29.25 (in. Hg) (mbar)
Pitot Cp: 0.84	Probe I.D. No: 07-SP-00-02
Duct Diameters from Disturbance: Downstream	Upstream
First point all the way (In) (Out)	Port Len. (in.): 24
Gas Flow (In) (Out) of page	
Duct Dimensions (in.): 184.5	

Run 1		Load		Run 2		Load		Run 3		Load		Run		Load	
Start Time 12:05		Stop Time 12:30		Start Time 14:10		Stop Time 14:38		Start Time 15:50		Stop Time 16:30		Start Time		Stop Time	
Static Press. (in. H_2O) 0.10				Static Press. (in. H_2O) 0.10				Static Press. (in. H_2O) 0.10				Static Press. (in. H_2O)			
Post-Test Leak Check: Pass ☑ Fail ☐				Post-Test Leak Check: Pass ☑ Fail ☐				Post-Test Leak Check: Pass ☑ Fail ☐				Post-Test Leak Check: Pass ☐ Fail ☐			
Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
2-1	248	0.14		2-1	246	0.13		2-1	245	0.14					
2	248	0.13		2	246	0.12		2	245	0.14					
3	246	0.19		3	246	0.21		3	244	0.23					
1-1	247	0.14		1-1	247	0.15		1-1	246	0.15					
2	247	0.12		2	247	0.15		2	245	0.16					
3	246	0.23		3	246	0.25		3	245	0.27					
4-1	247	0.10		4-1	247	0.12		4-1	245	0.14					
2	247	0.09		2	246	0.10		2	246	0.12					
3	246	0.08		3	246	0.10		3	245	0.10					
3-1	247	0.10		3-1	247	0.13		3-1	247	0.14					
2	248	0.08		2	247	0.12		2	246	0.13					
3	247	0.09		3	246	0.10		3	246	0.11					
Total		4.1684				4.4419				4.6380					
Average	247.00	0.3474			246.42	0.3702			245.41	0.3865					

DB

* Sum of square roots.

Circle correct bracketed units on data sheet.

DS 002 Velocity
CNVS/TRG.R3-11/2/94

Clean Air Engineering

TEST LOCATION: STACK

VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 1 OF 1

UNIT: 1

Client: TXI	Project No.: 9101
Plant: HUNTER	Date: 4/18/02
Meter Operator: R. Hernandez	
Probe Operator: D. Bedikian	
Source of Moisture and Molecular Weight Data: M4-4	

Cross-Section of Test Location

(In) [UP]

4 2

Amb. Temp. (°F) 84.2	Bar. Press.: 29.25 (in. Hg) [mbar]
Pitot Cp: 0.84	Probe I.D. No.: L-7 SP120-002
Duct Diameters from Disturbance: Downstream · Upstream	
First point all the way (In) [Out]	Port Len. (in.)
Gas Flow: [In] (Out) of page	
Duct Dimensions (ft.): 184.50	

Run 4		Load		Run 5		Load		Run 6		Load		Run		Load	
Start Time 10:20		Stop Time 10:45		Start Time 12:15		Stop Time 12:33		Start Time 14:40		Stop Time 15:15		Start Time		Stop Time	
Static Press. (in. H_2O) 0.1				Static Press. (in. H_2O) 0.1				Static Press. (in. H_2O)				Static Press. (in. H_2O)			
Post-Test Leak Check Pass ☑ Fail ☐				Post-Test Leak Check Pass ☑ Fail ☐				Post-Test Leak Check Pass ☑ Fail ☐				Post-Test Leak Check Pass ☐ Fail ☐			
Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in H_2O)	Notes
3-1	258	0.13		4-1	297	0.10		3-1	295	0.07					
2	260	0.12			297	0.08			296	0.07					
3	258	0.17			295	0.05			296	0.05					
2-1	298	0.07		1-1	297	0.09		4-1	296	0.11					
2	302	0.07			296	0.09			297	0.08					
3	301	0.06			296	0.08			297	0.08					
1-1	298	0.08		2-1	295	0.09		1-1	297	0.10					
2	299	0.08		2	295	0.09			296	0.10					
3	298	0.06		3	296	0.07			296	0.08					
4-1	298	0.08		3-1	288	0.07		2-1	296	0.09					
2	295	0.07		2	295	0.08			296	0.09					
3	295	0.06		3	294	0.06			296	0.08					
Total		3.2135				3.3625				3.4482					
Average	288.33	0.2918			295.0833	0.2802			296.1667	0.2874					

DS 002 Velocity
CNVS/TRG.R3-11/2/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

TEST LOCATION: STACK

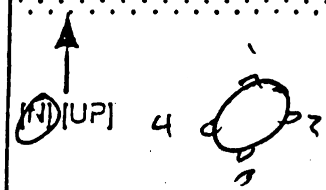
VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 1 OF 1

UNIT: 1

Client: TXI	Project No.: 9101
Plant: HUNTER	Date: 4/19/02
Meter Operator: R. Hernandez	
Probe Operator: D. Bedikine	
Source of Moisture and Molecular Weight Data: M1-4	

Cross-Section of Test Location



Amb. Temp. (°F) 80	Bar. Press: 29.25 (in. Hg) [mbar]
Pitot Cp: 0.84	Probe I.D. No.: 6758-120-002
Duct Diameters from Disturbance: Downstream	Upstream
First point all the way [In] [Out]	Port Len.: (in.) 24
Gas Flow [In] (Out) of page	
Duct Dimensions (in.): 184.50	

Run 7	Load
Start Time 8:55	Stop Time 9:30
Static Press. (in. H_2O) 0.1	
Post-Test Leak Check Pass ☑	Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
2-1	246	0.15	
2	247	0.14	
3	247	0.14	
1-1	247	0.17	
2	248	0.16	
3	247	0.15	
4-1	246	0.16	
2	246	0.16	
3	247	0.13	
3-1	246	0.16	
2	247	0.15	
3	246	0.15	
Total	2960	*4.67	
Average	246.7	0.3892	

Run 8	Load
Start Time 10:12	Stop Time 10:48
Static Press. (in. H_2O) 0.1	
Post-Test Leak Check Pass ☑	Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
2-1	244	0.15	
2	248	0.15	
3	248	0.14	
1-1	245	0.16	
2	246	0.16	
3	246	0.14	
4-1	246	0.16	
2	247	0.14	
3	247	0.13	
3-1	246	0.15	
2	244	0.14	
3	246	0.14	
Total	2955	*4.5933	
Average	246.3	0.3828	

Run 9	Load
Start Time 11:15	Stop Time 11:48
Static Press. (in. H_2O) 0.1	
Post-Test Leak Check Pass ☑	Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
2-1	245	0.15	
2	246	0.14	
3	245	0.14	
1-1	246	0.15	
2	247	0.16	
3	247	0.15	
4-1	247	0.15	
2	246	0.15	
3	247	0.14	
3-1	246	0.14	
2	246	0.13	
3	246	0.13	
Total	2945	*4.5543	
Average	246.2	.3795	

Run	Load
Start Time	Stop Time
Static Press. (in. H_2O)	
Post-Test Leak Check Pass ☐	Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
Total			
Average			

DS 002 Velocity
CNVS/TRG.P3-11/2/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

MOISTURE DETERMINATION FIELD DATA SHEET

LOCATION: STACK

PAGE 1 OF 1

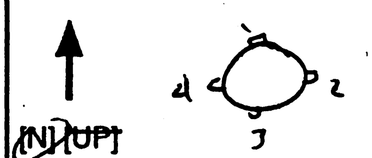
UNIT: 1 RUN: 1

Client	TXI	Project No.	9101
Plant	Hunter	Date	4/17/02
Meter Operator	R. Hernandez		
Probe Operator	D. Badikian		

Meter Box No.	85-1
Meter Yd	1.0015 ΔH@ 1.7793

Leak Rate Before	0.002	(cfm) @	18	(in.Hg)
Leak Rate After	0.002	(cfm) @	10	(in.Hg)

Cross-Section of Test Location



Duct Dimensions (in.)	184.5

Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
0.1	24		

Amb. Temp. (°F)	84.4	Bar. Press.	29.25 ~~[in. Hg]~~ [mbar]
Liner Material	S.S.		

H_2O	154.9 [ml] [gm]	Silica Gel (gm)	15.4
Total V_{lc}	170.3 gm		

Start Time:	12:00	Stop Time:	13:10

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) 298.82	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
3-1	5	1.5	302.47	N/A	54	92	90	4	
2	10		305.87		53	92	90	4	
3	15		309.17		50	92	89	4	T_{Avg} = 247.00 DB
4-1	20		312.52		48	92	88	4	$\sqrt{\Delta P}$ avg = 0.3474
2	25		316.03		49	90	88	4	
3	30		319.34		47	90	86	4	
1-1	35	1.0	322.15		45	89	86	4	
2	40		324.88		45	88	86	4	
3	45		327.77		44	87	85	4	
2-1	50		330.65		44	86	85	4	
2	55		333.37		45	86	85	4	
3	60		336.19		46	85	84	4	
	Total		37.37			84.08	86.83		
	Average					87.96			

DS 004 Moisture
CNVS/TRG.R1-11/2/94

Circle correct bracketed units on data sheet.

Clean Air Engineering

MOISTURE DETERMINATION FIELD DATA SHEET

TEST LOCATION: STACK

UNIT: 1 **RUN:** 2

PAGE 1 **OF** 1

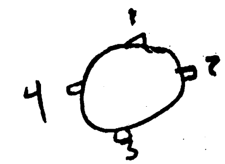
Client	TXI	Project No.	9101
Plant	HUNTER	Date	4/17/02
Meter Operator	R. Hernandez		
Probe Operator	D. Bedikian		

Meter Box No.	85-1
Meter Yd	1.0015 ΔH@1.7793

Leak Rate Before	0.002 (cfm) @	17	(in.Hg)
Leak Rate After	0.002 (cfm) @	8	(in.Hg)

Cross-Section of Test Location

[N] [UP]



Duct Dimensions (in.)	184.5 d		
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
0.1	24		

Amb. Temp. (°F) 89.6	Bar. Press. 29.25 [in Hg] [mbar]		
Liner Material	SS		

H_2O 146.0 [ml] [gm]		Silica Gel (gm)	11.6 gm
Total V_{lc} 157.6 g			
Start Time:	13:58	Stop Time:	15:04

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft^3) 336.27	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
4-1	5	1.0	339.07	N/A	49	87	86	3	
2	10		341.89		48	87	86	3	
3	15		344.69		47	87	86	3	
3-1	20		347.51		45	88	86	3	
2	25		350.30		44	88	86	3	$T_{s\,Avg}$ = 246.42
3	30		353.09		43	88	86	3	
2-1	35		355.89		43	89	86	3	$\sqrt{\Delta P}_{Avg}$ = 0.3702
2	40		358.47		42	89	87	3	
3	45		361.45		43	89	87	3	
1-1	50		364.25		45	89	87	3	
2	55		367.02		46	89	87	3	
3	60		369.80		46	89	87	3	
	Total		33.53			88.25	86.42		
	Average	1.0				87.33			

DS 004 Moisture ... /94
...S/TRG.R...

Circle correct bracketed units on data sheet

Clean Air Engineering

TEST LOCATION: STACK

UNIT: 1 RUN: 3

MOISTURE DETERMINATION FIELD DATA SHEET

PAGE 1 OF 1

Client	TXI	Project No.	9101
Plant	HUNTER	Date	4/17/02
Meter Operator	R. Hernandez		
Probe Operator	D. Bidikian		

Meter Box No.	85-1
Meter Yd	1.0015 / ΔH@ 1.7793

Leak Rate Before	0.003 (cfm) @	9	(in.Hg)
Leak Rate After	0.002 (cfm) @	7	(in.Hg)

Cross-Section of Test Location

[N] [UP]

1 2 3 4

Duct Dimensions (in.)	184.5		
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
0.1	24		

Amb. Temp. (°F) 92	Bar. Press. 29.25 [in. Hg] [mbar]		
Liner Material	S.S.		

H_2O	140.40 [ml] [gm]	Silica Gel (gm)	14.3 g
Total V_{lc}	154.7 g		

Start Time:	15:42	Stop Time:	16:47

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) 369.87	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
4-1	5	1.0	372.64	N/A	49	89	87	2	
2	10		375.44		47	88	87	2	
3	15		378.25		46	88	87	2	
3-1	20		381.04		45	89	88	2	
2	25		383.82		44	89	88	2	$T_{s\,AVG}$ = 245.41
3	30		386.63		44	89	88	2	
1-1	35		389.42		45	89	88	2	$\sqrt{\Delta P}_{AVG}$ = 0.3865
2	40		392.19		43	89	88	2	
3	45		394.98		45	89	88	2	
2-1	50		397.77		46	88	87	2	
2	55		400.56		48	88	87	2	
3	60		403.37		51	88	87	2	
	Total		33.48			88.56	87.50		
	Average	1.0				88.04			

DS 004 Moisture
CNVS/TRG.R1-11/2/94

Circle correct bracketed units on data sheet.

Clean Air Engineering

MOISTURE DETERMINATION FIELD DATA SHEET

TEST LOCATION: STACK

UNIT: 1 RUN: 4

PAGE 1 OF 1

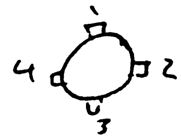
Client	TXI	Project No.	901
Plant	HUNTER	Date	4/18/02
Meter Operator	R. Hernandez		
Probe Operator	D. Bedikian		

Meter Box No.	85-1
Meter Yd	1.0015 ΔH@ 1.7793

Leak Rate Before	0.002 (cfm) @	9	(in.Hg)
Leak Rate After	0.002 (cfm) @	10	(in.Hg)

Cross-Section of Test Location

[N] [UP]



Duct Dimensions (in.)	184.5

Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
~~1.6~~ 0.1	24		

Amb. Temp. (°F) 83.6	Bar. Press. 29.25 [in. Hg] [mbar]
Liner Material	S.S.

H_2O 158.8 [ml] [gm]	Silica Gel (gm) 17.2g
Total V_{lc} 176.0g	

Start Time: 10:05	Stop Time: 11:11

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) 403.44	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
3-1	5	1.0	406.28	N/A	46	81	78	2	
2	10		409.10		45	81	78	2	
3	15		411.93		44	83	79	2	T_s AVG = 288.33
4-1	20		414.78		43	83	80	2	$\sqrt{\Delta P}$ AVG = 0.2678
2	25		417.57		43	84	80	2	
3	30		420.42		42	86	81	2	
1-1	35		423.36		41	85	81	2	
2	40		426.19		42	83	81	2	
3	45		428.93		44	83	81	2	
2-1	50		431.76		45	83	81	2	
2	55		434.57		44	85	82	2	
3	60		437.36		45	85	82	2	
	Total		33.92			83.5	80.33		
	Average					81.92			

DS 004 Moisture
CNVS/TRG.R1-[illegible]04

Circle correct bracketed units on data sheet

Clean Air Engineering

MOISTURE DETERMINATION
FIELD DATA SHEET

TEST LOCATION: STACK

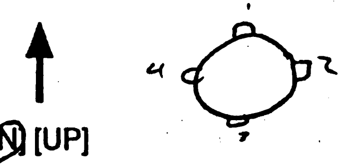
UNIT: 1 RUN: 5

Client	TXI	Project No.	9101
Plant	HUNTER	Date	4/18/02
Meter Operator	R. Hernandez		
Probe Operator	D. Bedikian		

Meter Box No.	85-1
Meter Yd	1.0015 ΔH@ 1.7793

Leak Rate Before	0.002 (cfm) @	12	(in.Hg)
Leak Rate After	0.002 (cfm) @	9	(in.Hg)

Cross-Section of Test Location



[In] [UP]

Duct Dimensions (in.)	184.5 d		
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
0.10	24		

Amb. Temp. (°F) 89.6		Bar. Press. 29.25	[in. Hg] [mbar]
Liner Material	S.S.		

H_2O	148.0 [ml] [gm]	Silica Gel (gm)	6.7g
Total V_{lc}	154.7g		

Start Time:	12:40	Stop Time:	13:18

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft^3) 437.45	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
3-1	5	1.0	440.13	N/A	54	89	85	2	
2	10		442.87		52	89	85	2	
3	15		445.59		50	89	86	2	
4-1	20		448.31		47	91	86	2	T_s AVG = 295.0833
2	25		451.05		46	91	87	2	$\sqrt{\Delta P}$ AVG = 0.2802
3	30		453.72		44	88	87	2	
1-1	35		456.56		43	86	85	2	
2	40		459.16		43	86	85	2	
3	45		461.83		44	87	85	2	
2-1	50		464.57		45	87	85	2	
2	55		467.20		46	87	85	2	
3	60		469.80		45	87	85	2	
	Total		32.35			88.08	85.50		
	Average					86.79			

Circle correct bracketed units on data sheet.

DS 004 Moisture
CNVS/TRG.R1-11/2/94

Clean Air Engineering

MOISTURE DETERMINATION FIELD DATA SHEET

TEST LOCATION: STACK

UNIT: 1 RUN: 6

PAGE 1 OF 1

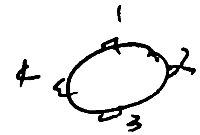
Client: TXI	Project No. 9109
Plant: Hunter	Date 4/18/02
Meter Operator: R. Hernandez	
Probe Operator: D. Bedikian	

Meter Box No.	85-1
Meter Yd	1.0015 ΔH@ 1.7793

Leak Rate Before	0.002	(cfm) @	14	(in.Hg)
Leak Rate After	0.004	(cfm) @	11	(in.Hg)

Cross-Section of Test Location

[N] [UP]



Duct Dimensions (in.)	184.5		
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out]	Point No. 1 all the way of page [In] [Out]
0.1	24		

Amb. Temp. (°F) 89.2	Bar. Press. 24.05 [in. Hg] [mbar]
Liner Material S.S.	

H_2O 131.2 [ml] [gm]	Silica Gel (gm) 14.0
Total V_{lc} 145.2g	

Start Time: 14:36	Stop Time: 15:40

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) 469.92	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
3-1	5	1.0	472.63	N/A	48	85	85	2	
2	10		475.32		46	87	85	2	
3	15		478.02		45	87	85	2	T_s AVG = 296.1667
4-1	20		480.69		44	87	85	2	$\sqrt{\Delta P}$ AVG = 0.2874
2	25		483.38		42	87	85	2	
3	30		486.05		43	87	86	2	
1-1	35		488.76		43	87	86	2	
2	40		491.42		45	88	86	2	
3	45		494.12		46	89	87	2	
2-1	50		496.81		46	89	87	2	
2	55		499.51		47	89	87	2	
3	60		502.19		47	89	87	2	
	Total		32.27			87.58	85.92		
	Average					86.75			

DS 004 Moisture
CNVS/TRG.R 2/94

Circle correct bracketed units on data sheet

Clean Air Engineering

MOISTURE DETERMINATION FIELD DATA SHEET

TEST LOCATION: STACK

UNIT: 1 RUN: 7

PAGE 1 OF 1

Client	TXI	Project No.	9101
Plant	HUNTER	Date	4/19/02
Meter Operator	R. Hernandez		
Probe Operator	D. Bedikian		
Meter Box No.	85-1		
Meter Yd	1.0015 ΔH@ 1.7793		
Leak Rate Before	0.002 (cfm) @ 10 (in.Hg)		
Leak Rate After	0.002 (cfm) @ 10 (in.Hg)		

Cross-Section of Test Location

[N] [UP]

Duct Dimensions (in.)	184.5 d		
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
0.1	24		

Amb. Temp. (°F) 80.2	Bar. Press. 29.25 [in. Hg] [mbar]
Liner Material S.S.	

H_2O 138.2 [ml] [gm]	Silica Gel (gm) 10.3 g
Total V_{lc} 148.5 g	
Start Time: 8:45	Stop Time: 9:52

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft^3) 502.42	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
3-1	5	1.0	505.30	N/A	47	75	74	2	
2	10		508.09		46	75	74	2	
3	15		510.81		45	76	74	2	
4-1	20		513.58		45	76	74	2	T_s Avg = 246.7
2	25		516.35		43	77	74	2	$\sqrt{\Delta P}$ Avg = 0.3892
3	30		519.11		41	78	75	2	
1-1	35		521.86		42	77	75	2	
2	40		524.61		41	77	75	2	
3	45		527.36		42	77	75	2	
2-1	50		530.11		43	77	75	2	
2	55		532.92		44	77	75	2	
3	60		535.59		45	77	75	2	
	Total		33.17			76.58	74.58		
	Average	1.0				75.58			

DS 004 Moisture
CNVS/TRG.R1-11/2/94

Circle correct bracketed units on data sheet.

Clean Air Engineering

MOISTURE DETERMINATION FIELD DATA SHEET

TEST LOCATION: STACK

UNIT: 1 RUN: 8

PAGE 1 OF 1

Client	TXI	Project No.	9101
Plant	HUNTER	Date	4/19/02
Meter Operator	R. Hernandez		
Probe Operator	D. Bed. Kion		

Meter Box No.	85-1
Meter Yd	1.0015 ΔH@ 1.7793

Leak Rate Before	0.002	(cfm) @	12	(in.Hg)
Leak Rate After	0.002	(cfm) @	10	(in.Hg)

Cross-Section of Test Location

[N] [UP]

Duct Dimensions (in.)	184.5		
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
0.1	24		

Amb. Temp. (°F)	79.4	Bar. Press.	29.25 [in. Hg] [mbar]
Liner Material	S.S.		

H_2O	137.1 [ml] [gm]	Silica Gel (gm)	9.3
Total V_{lc}	146.4		

Start Time:	10:00	Stop Time:	11:03

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) 535.68	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
3-1	5	1.0	538.81	N/A	45	76	75	2	
2	10		541.62		46	76	75	2	
3	15		544.40		45	76	75	2	
4-1	20		547.32		43	78	76	2	$T_{S\,AVG}$ = 246
2	25		549.90		42	78	76	2	$\sqrt{\Delta P}_{AVG}$ = 0.3828
3	30		552.64		42	78	76	2	
1-1	35		555.54		43	78	76	2	
2	40		558.25		42	80	77	2	
3	45		560.94		43	80	77	2	
2-1	50		563.67		44	81	78	2	
2	55		566.45		45	81	78	2	
3	60		569.17		45	81	78	2	
	Total		33.49			943	917		
	Average					77.5			

DS 004 Moisture
CNVS/TRG.R /94

Circle correct bracketed units on data sheet

Clean Air Engineering

MOISTURE DETERMINATION FIELD DATA SHEET

TEST LOCATION: STACK

UNIT: 1 RUN: 9

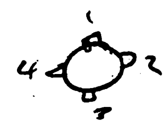
Client	TXI	Project No.	9109
Plant	HUNTER	Date	4/19/02
Meter Operator	R. Hernandez		
Probe Operator	D. Bedikian		

Meter Box No.	85-1
Meter Yd	1.0005 ΔH@ 1.7793

Leak Rate Before	0.003 (cfm) @	11	(in.Hg)
Leak Rate After	0.002 (cfm) @	8	(in.Hg)

Cross-Section of Test Location

[N] [UP]



Duct Dimensions (in.)	184.5		
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	Point No. 1 all the way [In] [Out]
0.1	24		

Amb. Temp. (°F)	84	Bar. Press.	29.25 [in. Hg] [mbar]
Liner Material	S.S.		

H_2O	135.0 [ml] [gm]	Silica Gel (gm)	9.8
Total V_{lc}	144.8		

Start Time:	11:11	Stop Time:	12:15

Traverse Point Number	Min/pt 5 Elapsed Time	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft^3) 569.32	Stack Temp. t_s (°F)	Condensor Outlet t_c (°F)	DGM Inlet $t_{m\,in}$ (°F)	DGM Outlet $t_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	Notes
3-1	5	1.0	572.14	N/A	45	81	79	2	
2	10		575.04		45	83	80	2	
3	15		577.82		43	83	80	2	
4-1	20		580.64		42	83	81	2	$T_{s\,AVG}$ = 246.2
2	25		583.47		41	84	82	2	
3	30		586.32		41	86	82	2	$\sqrt{\Delta P}_{AVG}$ = 0.3795
1-1	35		589.12		42	86	83	2	
2	40		591.93		43	87	83	2	
3	45		594.73		43	86	83	2	
2-1	50		597.51		43	86	83	2	
2	55		600.28		44	87	83	2	
3	60		603.04		44	87	83	2	
	Total		33.72			1014	982		
	Average					83.58			

DS 004 Moisture
CNVS/TRG.R1-11/2/94

Circle correct bracketed units on data sheet.

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

Location: STACK Run: 1A

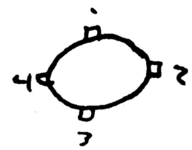
Page 1 of 1

Client TXI	Project Number 9101
Plant HUNTER	Unit 1
Date 4/17/02	Inlet/Outlet/Stack
Meter Operator R. Hernandez	
Meter Box Number 71-V15	
Yd 0.9935	

Leak Rate Before 0.004 cf/m @ 14 "Hg	
Leak Rate After ~~0.004 cf/m @ 18 "Hg~~	

Cross-Section of Test Location

N/UP



Area (ft 3)	Port Len (in.)	Gas Flow IN OUT of page
185.66	24	OUT

Ambient Temp. (°F) 89.4	
Bar. Press. 29.25 (in. Hg / mbar)	
Probe Length 5'	
Probe Material S.S. / Teflon	
IGS Bag ID No. M18 - R1	

Tube No: R1 A	Type: Charcoal
Tube No: R1 A	Type: XAD
Tube No: —	Type: —

Start Time: 12:00 AM/PM | Stop Time: 13:00 AM/PM

Min/pt / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 8504.8 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	0.2	0.3	8507.9	88/88	42	bb = 33
10	4	1.2	0.2	8508.9	88/88		bb = 20
15	5	1.2	0.2	8510.3	88/88		
20	5	1.2	0.2	8512.2	88/88		
25	6	1.0	0.25	8514.0	88/88		bb = 25
30	7	1.0	0.25	8516.0	88/88		
35	8	1.0	0.25	8517.3	88/88		
40	9	1.0	0.25	8518.6	88/88		
45	10	1.0	0.25	8520.6	88/88		
50	10	1.0	0.25	8522.6	88/88		
55	11	1.0		8524.4	88/88		
60	11	1.0		8526.2	88/88		
Total			21.40 RA	21.40			
Average							

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Ads[illegible]bing Tubes
Field Data Sheet

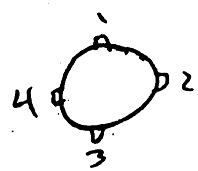
Location: Stack Run: 1B Page 1 of 1

Client TXI	Project Number ~~8~~9101
Plant Hunter	Unit 1
Date 4/17/02	Inlet/Outlet/~~Stack~~
Meter Operator R. Hernandez	
Meter Box Number 84-V1	
Yd 0.9896	

Leak Rate Before ~~0.0~~ cf/m @ 18 "Hg		
~~Leak Rate After cf/m @ "Hg~~		

Cross-Section of Test Location

(N) UP



Area (ft³)	Port Len (in.)	Gas Flow IN ~~OUT~~ of page
185.66	24	

Ambient Temp. (°F) 84.4	
Bar. Press. 29.25 (in. Hg / mbar)	
Probe Length 5'	
Probe Material S.S./Teflon	
IGS Bag ID No. M1A-R1	

Tube No: R1B	Type: Charcoal
Tube No: R1B	Type: XAD
Tube No:	Type:

Start Time: 12:00 AM/PM Stop Time: 13:00 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2599.6 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	1.2	0.3	2603.1	90/90		bb = 33
10	4	1.2	0.2	RH ~~2508.9~~ 2604.5	90/90		bb = 20
15	4	1.2	0.2	2606.1	90/90		
20	4	1.2	0.2	2608.4	90/90		
25	5	1.0	0.25	2610.2	90/90		bb = 25
30	5	1.0	0.25	2611.8	90/90		
35	6	1.0	0.25	2613.7	90/90		
40	7	1.0	0.25	2615.5 RH	90/90		
45	7	1.0	0.25	2617.7	90/90		
50	8	1.0	0.25	2619.0	90/90		
55	8	1.0	0.25	2620.5	90/90		
60	8	1.0	0.25	2622.4	90/90		
Total				22.80			
Average							

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

Location: Stack Run: 2A

Page 1 of 1

Client TXI	Project Number 9101
Plant HUNTER	Unit 1
Date 4/17/02	Inlet/Outlet/~~Stack~~
Meter Operator R. Hernandez	
Meter Box Number 71-V14	
Yd 0.9935	

Leak Rate Before 0.0	cf/m @	15	"Hg
~~Leak Rate After~~	cf/m @		"Hg

Cross-Section of Test Location

N/UP

1 2 3 4

Area (ft³)	Port Len (in.)	Gas Flow IN OUT of page
185.66	24	

Ambient Temp. (°F) 89.6	
Bar. Press. 29.25	(in Hg/ mbar)
Probe Length 5'	
Probe Material S.S. / Teflon	
IGS Bag ID No. M18 R2	

Tube No: R2A	Type: Charcoal
Tube No: R2A	Type: XAD
Tube No:	Type:

Start Time: 13:58 AM/PM Stop Time: ~~15:05~~ 1458 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 8526.6 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	2	1.0	0.40	8528.5	89/89	46	bb=25
10	2			8530.2	89/89	45	
15	3			8531.6	89/89	43	
20	4			8533.6	89/89	41	
25	5			8535.9	89/89	42	
30	6			8538.1	89/89	43	
35	7			8540.0	89/89	45	
40	7			8542.1	89/89	44	
45	7			8543.8	89/89	43	
50	8			8545.8	89/89	42	
55	8			8547.7	89/89	43	
60	9			8549.6	89/89	44	
Total							
Average				23.0			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Ad[illegible]rbing Tubes
Field Data Sheet

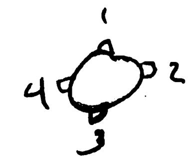
Location: STACK Run: 2B Page 1 of 1

Client TXI	Project Number 9101
Plant Hunter	Unit 1
Date 4/17/02	Inlet / Outlet / Stack
Meter Operator R. Hernandez	
Meter Box Number D. Bedikian	
Yd 0.9896	

Leak Rate Before 0.0	cf/m @ 12	"Hg
~~Leak Rate After~~	~~cf/m @~~	~~"Hg~~

Cross-Section of Test Location

N / UP



Area (ft³)	Port Len (in.)	Gas Flow IN / OUT of page
185.66	24	

Ambient Temp. (°F) 99.6	
Bar. Press. 29.25	(in. Hg / mbar)
Probe Length 5'	
Probe Material SS/Teflon	
IGS Bag ID No. MIB-R2	

Tube No: R2B	Type: Charcoal
Tube No: R2B	Type: XAD
~~Tube No:~~	~~Type:~~

Start Time: 13:58 AM/PM Stop Time: ~~15:05~~ 14:58 (BD) AM/PM

Min/ pt. Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2622.8 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	1.0	0.40	2624.9	92/92	47	bb=25
10	4			2626.9	92/92	45	
15	4			2628.8	92/92	44	
20	4			2630.5	92/92	43	
25	4			2632.3	92/92	43	
30	5			2634.3	92/92	42	
35	5			2636.0	92/92	44	
40	5			2637.8	92/92	43	
45	5			~~2639.7~~ 2639.7	92/92	44	
50	5			2641.4	92/92	42	
55	5			2642.8	92/92	44	
60	5			2644.5	92/92	45	
Total							
Average				21.7			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

Location: Stack Run: 3A

Page 1 of 1

Client Txl	Project Number 9108
Plant Hunter	Unit 1
Date 4/17/02	Inlet/Outlet/Stack
Meter Operator	
Meter Box Number 71-V15	
Yd 0.9935	

Leak Rate Before 0.0 cf/m @ 15 "Hg

~~Leak Rate After cf/m @ "Hg~~

Cross-Section of Test Location

N DUP

1, 4, 7, 7

Area (ft³)	Port Len (in.)	Gas Flow IN OUT of page
185.66	24	OUT

Ambient Temp. (°F) 94.2	
Bar. Press. 29.25	(in. Hg / mbar)
Probe Length 5'	
Probe Material SS./Teflon	
IGS Bag ID No. M18-R7	

Tube No: R3 A	Type: Charcoal
Tube No: R3 A	Type: XAD
~~Tube No:~~	~~Type:~~

Start Time: 15:42 AM/PM | Stop Time: 16:42 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 8549.9 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	3	1.1	0.33	8551.7	89/89	47	
10	3			8553.2	89/89	43	
15	3			8554.6	90/90	42	
20	4			8556.0	90/90	43	
25	5			8558.0	90/90	45	
30	5			8559.1	90/90	46	
35	5			8560.7	90/90	45	
40	6			8562.7	90/90	43	
45	6			8564.4	90/90	43	
50	7			8566.1	90/90	44	
55	7			8568.0	90/90	45	
60	7			8569.6	90/90	45	
Total							
Average				19.7			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Ads[illegible]bing Tubes
Field Dat[illegible] Sheet

Location: STACK Run: 3B Page 1 of 1

Client TXI	Project Number 9101
Plant HUNTER	Unit 1
Date 4/17/02	Inlet / Outlet / Stack
Meter Operator R. Hernandez	
Meter Box Number 84-V1	
Yd 0.9896	

Leak Rate Before 0.0 cf/m @ 10 "Hg	
~~Leak Rate After cf/m @ "Hg~~	

Cross-Section of Test Location

N / UP

Area (ft 3)	Port Len (in.)	Gas Flow IN OUT of page
0.1	24	

Ambient Temp. (°F) 94.2	
Bar. Press. 29.25	(in. Hg / mbar)
Probe Length 5'	
Probe Material S.S. / Teflon	
IGS Bag ID No. M18 - R3	

Tube No: R3B	Type: Charcoal
Tube No: R3B	Type: XAD
Tube No:	Type:

Start Time: 15:42 AM/PM Stop Time: 16:47 AM/PM

Min/ pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2644.7 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	3	1.1	0.33	2646.2	93/93	46	
10	3	1.1		2648.0	93/93	45	
15	4			2649.8	93/93	45	
20	5			2652.1	93/93	43	
25	5			2654.0	93/93	44	
30	6			2655.4	93/93	44	
35	6			2657.1	94/94	46	
40	7			2659.3	94/94	44	
45	7			2660.7	94/94	44	
50	8			2662.4	94/94	45	
55	8			2664.3	94/94	45	
60	9			2665.3	94/94	46	
Total							
Average				20.6			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

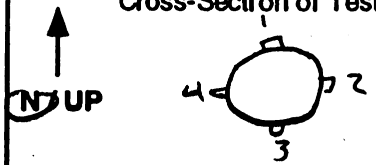
Method 18 - Adsorbing Tubes
Field Data Sheet

Location: STACK Run: 4A Page 1 of 1

Client TXI	Project Number 9101
Plant Hunter	Unit 1
Date 4/18/02	Inlet/Outlet/Stack
Meter Operator R. Hernandez	
Meter Box Number 71-V15	
Yd 0.9935	

Leak Rate Before 0.0	cf/m @ 12	"Hg
~~Leak Rate After~~	cf/m @	"Hg

Cross-Section of Test Location



Area (ft 3)	Port Len (in.)	Gas Flow IN OUT of page
185.6	24	OUT

Ambient Temp. (°F) 83.6	
Bar. Press. 29.25 (in. Hg / mbar)	
Probe Length 5'	
Probe Material S.S/ Teflon	
IGS Bag ID No. MB-R4	

Tube No: Run 4 A	Type: XAD
Tube No: Run 4A	Type: Charcoal
~~Tube No:~~	Type:

Start Time: 10:05 AM/PM Stop Time: 11:11 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 8570.8 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	6	1.1	0.33	8572.9	80/80	46	66=25
10	6			8575.0	80/80	45	
15	6			8576.5	82/82	43	
20	6			8578.2	82/82	41	
25	6			8579.9	82/82	42	
30	7			8581.3	83/83	40	
35	7			8582.9	83/83	42	
40	7			8584.2	83/83	42	
45	8			8585.7	83/83	41	
50	8			8587.3	83/83	42	
55	8			8588.9	83/83	43	
60	8			8590.2	83/83	42	
Total							
Average				19.4			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

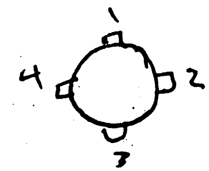
Method 18 - Adsorbing Tubes
Field Data Sheet

Location: STACK Run: 4B Page 1 of 1

Client TXI	Project Number 9101
Plant HUNTER	Unit 1
Date 4/10/02	Inlet/Outlet/Stack
Meter Operator R. Hernandez	
Meter Box Number B4 - V1	
Yd 0.9896	

Leak Rate Before 0.0	cf/m @ 15	"Hg
Leak Rate After	cf/m @	"Hg

Cross-Section of Test Location



Area (ft 3)	Port Len (in.)	Gas Flow IN OUT of page
185.6	24	

Ambient Temp. (°F) 83.6	
Bar. Press. 29.25	(in. Hg / mbar)
Probe Length 5'	
Probe Material S.S. /Teflon	
IGS Bag ID No. M18-R4	

Tube No: Run 4 B	Type: XAD
Tube No: Run 4 B	Type: CHARCOAL
Tube No:	Type:

Start Time: 10:05 AM/PM	Stop Time: 11:11 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2667.7 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	1.1	0.33	2669.0	83/83	45	66 = 25
10	4			2671.1	83/83	43	
15	4			2672.1	83/83	41	
20	4			2673.3	83/83	40	
25	5			2674.4	83/83	41	
30	5			2676.9	83/83	42	
35	6			2678.8	83/83	42	
40	6			2681.0	85/85	43	
45	6			2683.0	86/86	42	
50	6			2685.0	86/86	43	
55	6			2687.3	86/86	44	
60	6			2689.5	86/86	44	
Total							
Average				21.80			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

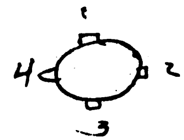
Location: Stack Run: 5A Page 1 of 1

Client TXI	Project Number 9101
Plant Hunter	Unit 1
Date 4/10/02	Inlet/Outlet/~~Stack~~
Meter Operator	
Meter Box Number 71-V15	
Yd 0.9935	

Leak Rate Before 0.0 cf/m @ 15 "Hg	
~~Leak Rate After cf/m @ "Hg~~	

Cross-Section of Test Location

N/UP



Area (ft³)	Port Len (in.)	Gas Flow IN OUT of page
185.6	24	

Ambient Temp. (°F) 84.6
Bar. Press. 29.25 (in. Hg/ mbar)
Probe Length 5'
Probe Material SS / Teflon
IGS Bag ID No. MIB-R5

Tube No: Run 5A	Type: XAD
Tube No: Run 5A	Type: Charcoal
~~Tube No:~~	~~Type:~~

Start Time: 12:10 ~~AM/PM~~ Stop Time: 13:48 ~~AM/PM~~

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 8592.4 RH / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	1.1	0.37	8594.2	88/88	48	bb=25
10	4			8595.9	88/88	46	
15	4			8597.3	88/88	44	
20	5			8598.5	89/89	43	
25	5			8599.8	90/90	42	
30	5			8600.9	90/90	42	
35	5			8602.0	88/88	41	
40	5			8603.1	88/88	42	
45	5			8604.1	88/88	42	
50	5			8605.4 RH	88/88	43	
55	5			8607.3	88/88	42	
60	5			8608.9	88/88	42	
Total							
Average				16.50			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

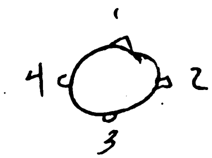
Location: STACK Run: 5B Page 1 of ___

Client TXI	Project Number 9101
Plant Hunter	Unit 1
Date 4/18/02	Inlet / Outlet / Stack
Meter Operator R. Hernandez	
Meter Box Number 84-V1	
Yd 0.9896	

Leak Rate Before 0.0	cf/m @ 13	"Hg
Leak Rate After	cf/m @	"Hg

Cross-Section of Test Location

N / UP



Area (ft³)	Port Len (in.)	Gas Flow IN OUT of page
185.6	24	

Ambient Temp. (°F) 89.6	
Bar. Press. 29.25	(in. Hg / mbar)
Probe Length 5'	
Probe Material S.S. / Teflon	
IGS Bag ID No. MB-R5	

Tube No: Run 5B	Type: XAD
Tube No: Run 5B	Type: Charcoal
~~Tube No:~~	~~Type:~~

Start Time: 12:10 AM/PM Stop Time: 1:18 AM/PM

Min/pt. Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2691.4 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	1.1	0.33	2693.0	91/91	47	bb=25
10	4			2694.5	91/91	46	
15	5			2695.9	91/91	44	
20	5			2697.2	91/91	44	
25	5			2698.8	90/90	43	
30	6			2700.0	88/88	43	
35	6			2701.5	88/88	42	
40	6			2705.5	86/86	42	
45	7			2708.6	84/84	44	
50	7			2710.5	84/84	43	
55	7			2713.4	84/84	42	
100	7			2715.0	84/84	43	
Total							
Average				23.6			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

Location: STACK Run: 6A Page 1 of 1

Client TXI	Project Number 9101
Plant Hunter	Unit 1
Date 4/18/02	Inlet/Outlet/Stack
Meter Operator R. Hernandez	
Meter Box Number 71-V15	
Yd 0.9935	

Leak Rate Before 0.0	cf/m @	15	"Hg
~~Leak Rate After~~	~~cf/m @~~		~~"Hg~~

Cross-Section of Test Location

IN / UP

1 2 3 4

Area (ft³)	Port Len (in.)	Gas Flow IN OUT of page
.85.6	24	OUT

Ambient Temp. (°F) 89.2	
Bar. Press. 29.25	(in. Hg / mbar)
Probe Length 5'	
Probe Material ss./Teflon	
IGS Bag ID No. M18 - R6	

Tube No: Run 6A	Type: XAD
Tube No: Run 6A	Type: Charcoal
~~Tube No:~~	~~Type:~~

Start Time: 14:36 AM/PM Stop Time: 15:40 AM/PM

Min/pt. / Clock Time	Pump. Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume. 8611.1 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	3	1.2	0.5	8614.3	87/87	45	66 = 30
10	3			8617.0	87/87	43	
15	3			8619.1	87/87	42	
20	4			8620.9	87/87	43	
25	4			8623.3	87/87	43	
30	5			8625.7	87/87	43	
35	6			8627.9	87/87	45	
40	6			8630.3	87/87	45	
45	7			8632.5	89/89	45	
50	7			8634.5	89/89	43	
55	7			8636.5	89/89	44	
60	7			8638.5	89/89	44	
Total							
Average				27.4			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Ad[illegible]rbing Tubes Field Da[illegible] Sheet

Location: STACK Run: 6B Page 1

Client TXI	Project Number 9101
Plant Hunter	Unit 1
Date 4/18/02	Inlet/Outlet/Stack
Meter Operator R. Hernandez	
Meter Box Number 84-V1	
Yd 0.9896	

Leak Rate Before 0.0	cf/m @ 12	"Hg
~~Leak Rate After~~	cf/m @	"Hg

Cross-Section of Test Location

N UP

1
4 2
3

Area (ft³)	Port Len (in.)	Gas Flow IN OUT of page
185.6	24	

Ambient Temp. (°F) 89.2	
Bar. Press. 27.75	(in Hg / mbar)
Probe Length 5'	
Probe Material SS./Teflon	
IGS Bag ID No. M18-R6	
Tube No: Run 6B	Type: XAD
Tube No: Run 6B	Type: Charcoal
~~Tube No:~~	~~Type:~~
Start Time: 14:36 AM/PM	Stop Time: 15:40 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2717.3 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	3	1.2	0.5	2720.2	92/92	44	66=30
10	3			2723.0	92/92	44	
15	3			2725.6	92/92	42	
20	3			2728.0	92/92	43	
25	4			2730.0	92/92	42	
30	4			2732.2	92/92	42	
35	5			2734.7	92/92	43	
40	6			2737.2	92/92	44	
45	6			2739.6	92/92	42	
50	7			2741.8	92/92	43	
55	7			2744.0	92/92	43	
60	8			2746.2	92/92	43	
Total							
Average				28.9			

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

Location: STACK Run: 7 Page 1 of 1

Client TXI	Project Number 9101		
Plant Hunter	Unit 1		
Date 4/19/02	Inlet/Outlet/Stack		
Meter Operator R. Hernandez			
Meter Box Number 84-V1			
Yd 0.9896			

Leak Rate Before 0.0 cf/m @ 14 "Hg		
Leak Rate After cf/m @ "Hg		

Cross-Section of Test Location

N / UP

1 2 3 4

Area (ft 3)	Port Len (in.)	Gas Flow IN OUT of page
185.6	24	OUT

Ambient Temp. (°F) 80.2	
Bar. Press. 29.95 (in. Hg / mbar)	
Probe Length 5'	
Probe Material S.S / Teflon	
IGS Bag ID No. M18-R7	

Tube No: Run 7A	Type: XAD
Tube No: Run 7A	Type: Charcoal
Tube No:	Type:

Start Time: 8:45 AM/PM | Stop Time: 9:53 AM/PM

Min/pt / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2746.3 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	5	1.1	0.5	2749.1	85/185	45	hh=30
10	6			2751.7	85/185	43	
15	6			2754.0	85/185	41	
20	6			2756.7	85/185	42	
25	6			2757.7	85/185	42	
30	6			2760.2	85/185	42	
35	7			2763.8	85/185	42	
40	7			2765.5	85/185	43	
45	7			2767.7	85/185	44	
50	8			2770.0	85/185	44	
55	8			2772.2	85/185	43	
100	8			2774.5	85/185	44	
Total							
Average		1.1		28.20	85		

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes Field Data Sheet

Location: STACK Run: 8 Page 1 of 1

Client: TXI	Project Number: 9101
Plant: HUNTER	Unit: 1
Date: 4/19/02	Inlet/Outlet/Stack
Meter Operator: R. Hernandez	
Meter Box Number: 81-V1	
Yd: 0.9896	

Leak Rate Before: 0.0	cf/m @	15	"Hg
Leak Rate After:	cf/m @		"Hg

Cross-Section of Test Location

N UP

Area (ft³)	Port Len (in.)	Gas Flow IN / OUT of page
185.6	24	OUT

Ambient Temp. (°F): 79.4	
Bar. Press.: 29.25	(in. Hg / mbar)
Probe Length: 5'	
Probe Material: S.S. / Teflon	
IGS Bag ID No.: M18 - R8	

Tube No: Run 8A	Type: XAD
Tube No: Run 8A	Type: Charcoal
Tube No:	Type:

Start Time: 10:00 AM/PM Stop Time: 11:03 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2775.4 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	1.1	0.5	2778.2	84/84	45	bb = 30
10	4	1.1		2780.4	84/84	43	
15	4			2781.8	84/84	41	
20	5			2783.7	84/84	40	
25	6			2785.3	84/84	41	
30	7			2787.7	84/84	42	
35	7			2790.0	84/84	43	
40	7			2792.3	84/84	42	
45	8			2794.6	84/84	43	
50	8			2796.8	84/84	44	
55				2799.0	84/84	45	
60				2801.3	84/84	45	
Total							
Average		1.1		25.90	84		

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

Method 18 - Adsorbing Tubes
Field Data Sheet

Location: STACK Run: 9 Page 1 of 1

Client TXI	Project Number 9109
Plant Hunter	Unit 1
Date 4/19/02	Inlet/Outlet/Stack
Meter Operator R. Hernandez	
Meter Box Number 84-VI	
Yd 0.9996	

Leak Rate Before 0.0	cf/m @ 15	"Hg
~~Leak Rate After~~	cf/m @	"Hg

Cross-Section of Test Location

N / UP

1 2 3 4

Area (ft 3)	Port Len (in.)	Gas Flow IN OUT of page
185.6	24	

Ambient Temp. (°F) 84.0	
Bar. Press. 29.25	(in. Hg / mbar)
Probe Length 5'	
Probe Material S.S. / Teflon	
IGS Bag ID No. M18-R9	

Tube No: RUN9 A	Type: XAD
Tube No: RUN9A	Type: Charcoal
Tube No:	Type:

Start Time: 11:11 ~~AM~~/PM	Stop Time: 12:15 AM/PM

Min/pt. / Clock Time	Pump Vacuum (in. Hg)	Orifice Setting (in H_2O)	Flow Rate L/m	Initial Volume 2802.1 / Gas Sample Volume V_m (L)	Gas Sample Temperature at Dry Gas Meter T_m (°F)	Bath Temp °F	Notes
5	4	1.1	0.5	2804.8	87/87	43	
10	5			2806.9	87/87	42	
15	6			2809.4	87/87	43	
20	5			2811.6	87/87	43	
25	6			2813.7	87/87	42	
30	4			2816.8	87/87	41	
35	6			2818.5	87/87	42	
40	6			2820.3	87/87	42	
45	6			2822.3	88/88	42	
50	6			2824.9	88/88	43	
55	6			2827.2	88/88	43	
60	6			2829.7	88/88	43	
Total							
Average		1.1		27.60	87		

DS 018T Organic Tubes
CNVS/KVSP.R2-2/7/94

Clean Air Engineering

FIELD DATA PRINTOUTS

E

Field Data Printout

Location: Kiln Stack
Test Run: 1 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02
Meter ΔH@: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.002 cfm @ 18"Hg
Leak Rate After: 0.002 cfm @ 10"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft²): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 18.5

O_2 (dry volume %): 10.5
CO_2 (dry volume %): 16.5
Start Time (approx.): 12:00
Stop Time (approx.): 13:10
H_2O (condensate, ml): 154.9
H_2O (silica, g): 15.4

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft³)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Volume (calculated) (ft³)
	0.0			298.82					
2-01	5.0	0.14	1.50	302.47	248	92	90	0.37	3.65
2-02	10.0	0.13	1.50	305.87	248	92	90	0.36	3.40
2-03	15.0	0.19	1.50	309.17	246	92	89	0.44	3.30
1-01	20.0	0.14	1.50	312.52	247	92	88	0.37	3.35
1-02	25.0	0.12	1.50	316.03	247	90	88	0.35	3.51
1-03	30.0	0.23	1.50	319.34	246	90	86	0.48	3.31
4-01	35.0	0.10	1.00	322.15	247	89	86	0.32	2.81
4-02	40.0	0.09	1.00	324.88	247	88	86	0.30	2.73
4-03	45.0	0.08	1.00	327.77	246	87	85	0.28	2.89
3-01	50.0	0.10	1.00	330.65	247	86	85	0.32	2.88
3-02	55.0	0.08	1.00	333.37	248	86	85	0.28	2.72
3-03	60.0	0.09	1.00	336.19	247	85	84	0.30	2.82
Final	60.0	0.3474	1.25	37.37	247	88			

Field Data Printout

Location: Kiln Stack
Test Run: 2 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02
Meter ΔH@: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.002 cfm @ 12"Hg
Leak Rate After: 0.002 cfm @ 8"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft²): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 18.9
O_2 (dry volume %): 10.5
CO_2 (dry volume %): 16.1
Start Time (approx.): 13:58
Stop Time (approx.): 15:04
H_2O (condensate, ml): 146.0
H_2O (silica, g): 11.6

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft³)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Volume (calculated) (ft³)
	0.0			336.27					
2-01	5.0	0.13	1.00	339.07	246	87	86	0.36	2.80
2-02	10.0	0.12	1.00	341.89	246	87	86	0.35	2.82
2-03	15.0	0.21	1.00	344.69	246	87	86	0.46	2.80
1-01	20.0	0.15	1.00	347.51	247	88	86	0.39	2.82
1-02	25.0	0.15	1.00	350.30	247	88	86	0.39	2.79
1-03	30.0	0.25	1.00	353.09	246	88	86	0.50	2.79
4-01	35.0	0.12	1.00	355.89	247	89	86	0.35	2.80
4-02	40.0	0.10	1.00	358.67	246	89	87	0.32	2.78
4-03	45.0	0.10	1.00	361.45	246	89	87	0.32	2.78
3-01	50.0	0.13	1.00	364.25	247	89	87	0.36	2.80
3-02	55.0	0.12	1.00	367.02	247	89	87	0.35	2.77
3-03	60.0	0.10	1.00	369.80	246	89	87	0.32	2.78
Final	60.0	0.37	1.00	33.53	246	87			

Field Data Printout

Location: Kiln Stack
Test Run: 3 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02
Meter ΔH@: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.003 cfm @ 9"Hg
Leak Rate After: 0.002 cfm @ 7"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft^2): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 18.7
O_2 (dry volume %): 10.4
CO_2 (dry volume %): 16.3
Start Time (approx.): 15:42
Stop Time (approx.): 16:47
H_2O (condensate, ml): 140.4
H_2O (silica, g): 14.3

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft^3)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	$T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.\ H_2O}$)	Volume (calculated) (ft^3)
	0.0			369.89					
2-01	5.0	0.14	1.00	372.64	245	89	87	0.37	2.75
2-02	10.0	0.14	1.00	375.44	245	88	87	0.37	2.80
2-03	15.0	0.23	1.00	378.25	244	88	87	0.48	2.81
1-01	20.0	0.15	1.00	381.04	246	89	88	0.39	2.79
1-02	25.0	0.16	1.00	383.82	245	89	88	0.40	2.78
1-03	30.0	0.27	1.00	386.63	245	89	88	0.52	2.81
4-01	35.0	0.14	1.00	389.42	245	89	88	0.37	2.79
4-02	40.0	0.12	1.00	392.19	247	89	88	0.35	2.77
4-03	45.0	0.10	1.00	394.98	245	89	88	0.32	2.79
3-01	50.0	0.14	1.00	397.77	247	88	87	0.37	2.79
3-02	55.0	0.13	1.00	400.56	246	88	87	0.36	2.79
3-03	60.0	0.11	1.00	403.37	246	88	87	0.33	2.81
Final	60.0	0.39	1.00	33.48	246	88			

Field Data Printout

Location: Kiln Stack
Test Run: 4 - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02
Meter $\Delta H@$: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.002 cfm @ 9"Hg
Leak Rate After: 0.002 cfm @ 10"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft^2): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 20.3
O_2 (dry volume %): 9.9
CO_2 (dry volume %): 15.5
Start Time (approx.): 10:05
Stop Time (approx.): 11:11
H_2O (condensate, ml): 158.8
H_2O (silica, g): 17.2

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft^3)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	$T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.\ H_2O}$)	Volume (calculated) (ft^3)
	0.0			403.44					
3-01	5.0	0.13	1.00	406.28	258	81	78	0.36	2.84
3-02	10.0	0.12	1.00	409.10	260	81	78	0.35	2.82
3-03	15.0	0.17	1.00	411.93	258	83	79	0.41	2.83
2-01	20.0	0.07	1.00	414.78	298	83	80	0.26	2.85
2-02	25.0	0.07	1.00	417.57	302	84	80	0.26	2.79
2-03	30.0	0.06	1.00	420.42	301	86	81	0.24	2.85
1-01	35.0	0.08	1.00	423.36	298	85	81	0.28	2.94
1-02	40.0	0.08	1.00	426.19	299	83	81	0.28	2.83
1-03	45.0	0.06	1.00	428.93	298	83	81	0.24	2.74
4-01	50.0	0.08	1.00	431.76	298	83	81	0.28	2.83
4-02	55.0	0.07	1.00	434.57	295	85	82	0.26	2.81
4-03	60.0	0.06	1.00	437.36	295	85	82	0.24	2.79
Final	60.0	0.2914	1.00	33.92	288	82			

Field Data Printout

Location: Kiln Stack
Test Run: 5 - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02
Meter ΔH@: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.002 cfm @ 12"Hg
Leak Rate After: 0.002 cfm @ 9"Hg

Method: 1-4
Testing Type: Flow/Moisture

Area (ft^2): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 19.2

O_2 (dry volume %): 10.1
CO_2 (dry volume %): 15.6
Start Time (approx.): 12:10
Stop Time (approx.): 13:18
H_2O (condensate, ml): 148.0
H_2O (silica, g): 6.7

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft^3)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Volume (calculated) (ft^3)
	0.0			437.45					
4-01	5.0	0.10	1.00	440.13	297	89	85	0.32	2.68
4-02	10.0	0.08	1.00	442.87	297	89	85	0.28	2.74
4-03	15.0	0.05	1.00	445.59	295	89	86	0.22	2.72
1-01	20.0	0.09	1.00	448.31	297	91	86	0.30	2.72
1-02	25.0	0.09	1.00	451.05	296	91	87	0.30	2.74
1-03	30.0	0.08	1.00	453.72	296	88	87	0.28	2.67
2-01	35.0	0.09	1.00	456.56	295	86	85	0.30	2.84
2-02	40.0	0.09	1.00	459.16	295	86	85	0.30	2.60
2-03	45.0	0.07	1.00	461.83	296	87	85	0.26	2.67
3-01	50.0	0.07	1.00	464.57	288	87	85	0.26	2.74
3-02	55.0	0.08	1.00	467.20	295	87	85	0.28	2.63
3-03	60.0	0.06	1.00	469.80	294	87	85	0.24	2.60
Final	60.0	0.28	1.00	32.35	295	87			

Field Data Printout

Location: Kiln Stack
Test Run: 6 - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02
Meter ΔH@: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.002 cfm @ 14"Hg
Leak Rate After: 0.004 cfm @ 11"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft²): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 18.3

O_2 (dry volume %): 10.0
CO_2 (dry volume %): 15.6
Start Time (approx.): 14:36
Stop Time (approx.): 15:40
H_2O (condensate, ml): 131.2
H_2O (silica, g): 14.0

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft³)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Volume (calculated) (ft³)
	0.0			469.92					
1-01	5.0	0.07	1.00	472.63	295	85	85	0.26	2.71
1-02	10.0	0.07	1.00	475.32	296	87	85	0.26	2.69
1-03	15.0	0.05	1.00	478.02	296	87	85	0.22	2.70
2-01	20.0	0.11	1.00	480.69	296	87	85	0.33	2.67
2-02	25.0	0.08	1.00	483.38	297	87	85	0.28	2.69
2-03	30.0	0.08	1.00	486.05	297	87	86	0.28	2.67
3-01	35.0	0.10	1.00	488.76	297	87	86	0.32	2.71
3-02	40.0	0.10	1.00	491.42	296	88	86	0.32	2.66
3-03	45.0	0.08	1.00	494.12	296	89	86	0.28	2.70
4-01	50.0	0.09	1.00	496.81	296	89	87	0.30	2.69
4-02	55.0	0.09	1.00	499.51	296	89	87	0.30	2.70
4-03	60.0	0.08	1.00	502.19	296	89	87	0.28	2.68
Final	60.0	0.29	1.00	32.27	296	87			

Field Data Printout

Location: Kiln Stack
Test Run: 7 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/19/02
Meter ΔH@: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.002 cfm @ 10"Hg
Leak Rate After: 0.002 cfm @ 10"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft²): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 17.9
O_2 (dry volume %): 10.5
CO_2 (dry volume %): 16.4
Start Time (approx.): 08:45
Stop Time (approx.): 09:52
H_2O (condensate, ml): 138.2
H_2O (silica, g): 10.3

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft³)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Volume (calculated) (ft³)
	0.0			502.42					
2-01	5.0	0.15	1.00	505.30	246	75	74	0.39	2.88
2-02	10.0	0.14	1.00	508.09	247	75	74	0.37	2.79
2-03	15.0	0.14	1.00	510.81	247	76	74	0.37	2.72
1-01	20.0	0.17	1.00	513.58	247	76	74	0.41	2.77
1-02	25.0	0.16	1.00	516.35	248	77	74	0.40	2.77
1-03	30.0	0.15	1.00	519.11	247	78	75	0.39	2.76
4-01	35.0	0.16	1.00	521.86	246	77	75	0.40	2.75
4-02	40.0	0.16	1.00	524.61	246	77	75	0.40	2.75
4-03	45.0	0.13	1.00	527.36	247	77	75	0.36	2.75
3-01	50.0	0.16	1.00	530.11	246	77	75	0.40	2.75
3-02	55.0	0.15	1.00	532.92	247	77	75	0.39	2.81
3-03	60.0	0.15	1.00	535.59	246	77	75	0.39	2.67
Final	60.0	0.3892	1.00	33.17	247	76			

Field Data Printout

Location: Kiln Stack
Test Run: 8 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/19/02
Meter $\Delta H@$: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.002 cfm @ 12"Hg
Leak Rate After: 0.002 cfm @ 10"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft²): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 17.6
O_2 (dry volume %): 10.5
CO_2 (dry volume %): 16.3
Start Time (approx.): 10:00
Stop Time (approx.): 11:03
H_2O (condensate, ml): 137.1
H_2O (silica, g): 9.3

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft³)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.\ H_2O}$)	Volume (calculated) (ft³)
	0.0			535.68					
2-01	5.0	0.15	1.00	538.81	244	76	75	0.39	3.13
2-02	10.0	0.15	1.00	541.63	248	76	75	0.39	2.82
2-03	15.0	0.14	1.00	544.40	248	76	75	0.37	2.77
1-01	20.0	0.16	1.00	547.32	245	78	76	0.40	2.92
1-02	25.0	0.16	1.00	549.90	246	78	76	0.40	2.58
1-03	30.0	0.14	1.00	552.64	246	78	76	0.37	2.74
4-01	35.0	0.16	1.00	555.54	246	78	76	0.40	2.90
4-02	40.0	0.14	1.00	558.25	247	80	77	0.37	2.71
4-03	45.0	0.13	1.00	560.94	247	80	77	0.36	2.69
3-01	50.0	0.15	1.00	563.67	246	81	78	0.39	2.73
3-02	55.0	0.14	1.00	566.45	246	81	78	0.37	2.78
3-03	60.0	0.14	1.00	569.17	246	81	78	0.37	2.72
Final	60.0	0.38	1.00	33.49	246	78			

Field Data Printout

Location: Kiln Stack
Test Run: 9 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/19/02
Meter ΔH@: 1.7793
Meter Y_d: 1.0015
Pitot C_p: 0.84
Static P: 0.1
Leak Rate Before: 0.003 cfm @ 11"Hg
Leak Rate After: 0.002 cfm @ 8"Hg

Method: 1-4
Testing Type: Flow/Moisture
Area (ft^2): 185.66

Bar. Press. (in. Hg): 29.25
Actual Moisture (%): 17.5
O_2 (dry volume %): 10.5
CO_2 (dry volume %): 16.3
Start Time (approx.): 11:11
Stop Time (approx.): 12:15
H_2O (condensate, ml): 135.0
H_2O (silica, g): 9.8

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft^3)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.\ H_2O}$)	Volume (calculated) (ft^3)
	0.0			569.32					
2-01	5.0	0.15	1.00	572.14	245	81	79	0.39	2.82
2-02	10.0	0.14	1.00	575.04	246	83	80	0.37	2.90
2-03	15.0	0.14	1.00	577.82	245	83	80	0.37	2.78
1-01	20.0	0.15	1.00	580.64	246	83	81	0.39	2.82
1-02	25.0	0.16	1.00	583.47	247	84	82	0.40	2.83
1-03	30.0	0.15	1.00	586.32	247	86	82	0.39	2.85
4-01	35.0	0.15	1.00	589.12	247	86	83	0.39	2.80
4-02	40.0	0.15	1.00	591.93	246	87	83	0.39	2.81
4-03	45.0	0.14	1.00	594.73	247	86	83	0.37	2.80
3-01	50.0	0.14	1.00	597.51	246	86	83	0.37	2.78
3-02	55.0	0.13	1.00	600.28	246	87	83	0.36	2.77
3-03	60.0	0.13	1.00	603.04	246	87	83	0.36	2.76
Final	60.0	0.38	1.00	33.72	246	83			

Field Data Printout

Location: Kiln Stack
Test Run: 1A - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9935

Start Time (approx.): 12:00
Stop Time (approx.): 13:00

Leak Rate Before: 0.0 Lpm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		8504.80			
5.0	1.2	8507.90	88	88	3.10
10.0	1.2	8508.90	88	88	1.00
15.0	1.2	8510.30	88	88	1.40
20.0	1.2	8512.20	88	88	1.90
25.0	1.2	8514.00	88	88	1.80
30.0	1.2	8516.00	88	88	2.00
35.0	1.2	8517.30	88	88	1.30
40.0	1.2	8518.60	88	88	1.30
45.0	1.2	8520.60	88	88	2.00
50.0	1.2	8522.60	88	88	2.00
55.0	1.2	8524.40	88	88	1.80
60.0	1.2	8526.20	88	88	1.80
60.0	1.20	21.40	88		

Revision 0

Field Data Printout

Location: Kiln Stack
Test Run: 1B - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 12:00
Stop Time (approx.): 13:00

Leak Rate Before: 0.0 Lpm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2599.6			
5.0	1.2	2602.1	90	90	2.50
10.0	1.2	2604.5	90	90	2.40
15.0	1.2	2606.1	90	90	1.60
20.0	1.2	2607.8	90	90	1.70
25.0	1.2	2610.2	90	90	2.40
30.0	1.2	2611.8	90	90	1.60
35.0	1.2	2613.7	90	90	1.90
40.0	1.2	2615.5	90	90	1.80
45.0	1.2	2617.7	90	90	2.20
50.0	1.2	2619.0	90	90	1.30
55.0	1.2	2620.5	90	90	1.50
60.0	1.2	2622.4	90	90	1.90
60.0	1.20	22.80	90		

Field Data Printout

Location: Kiln Stack
Test Run: 2A - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9935

Start Time (approx.): 13:58
Stop Time (approx.): 14:58

Leak Rate Before: 0.0 Lpm @ 15"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		8526.6			
5.0	1.0	8528.5	89	89	1.90
10.0	1.0	8530.2	89	89	1.70
15.0	1.0	8531.6	89	89	1.40
20.0	1.0	8533.6	89	89	2.00
25.0	1.0	8535.9	89	89	2.30
30.0	1.0	8538.1	89	89	2.20
35.0	1.0	8540.0	89	89	1.90
40.0	1.0	8542.1	89	89	2.10
45.0	1.0	8543.8	89	89	1.70
50.0	1.0	8545.8	89	89	2.00
55.0	1.0	8547.7	89	89	1.90
60.0	1.0	8549.6	89	89	1.90
60.0	1.00	23.00	89		

Field Data Printout

Location: Kiln Stack
Test Run: 2B - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 13:58
Stop Time (approx.): 14:58

Leak Rate Before: 0.0 Lpm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2622.80			
5.0	1.0	2624.90	92	92	2.10
10.0	1.0	2626.90	92	92	2.00
15.0	1.0	2628.80	92	92	1.90
20.0	1.0	2630.50	92	92	1.70
25.0	1.0	2632.30	92	92	1.80
30.0	1.0	2634.30	92	92	2.00
35.0	1.0	2636.00	92	92	1.70
40.0	1.0	2637.80	92	92	1.80
45.0	1.0	2639.70	92	92	1.90
50.0	1.0	2641.40	92	92	1.70
55.0	1.0	2642.80	92	92	1.40
60.0	1.0	2644.50	92	92	1.70
60.0	1.00	21.70	92		

Revision 0

Field Data Printout

Location: Kiln Stack
Test Run: 3A - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9935

Start Time (approx.): 15:42
Stop Time (approx.): 16:47

Leak Rate Before: 0.0 Lpm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		8549.90			
5.0	1.1	8551.70	89	89	1.80
10.0	1.1	8553.20	89	89	1.50
15.0	1.1	8554.60	90	90	1.40
20.0	1.1	8556.00	90	90	1.40
25.0	1.1	8558.00	90	90	2.00
30.0	1.1	8559.10	90	90	1.10
35.0	1.1	8560.70	90	90	1.60
40.0	1.1	8562.70	90	90	2.00
45.0	1.1	8564.40	90	90	1.70
50.0	1.1	8566.10	90	90	1.70
55.0	1.1	8568.00	90	90	1.90
60.0	1.1	8569.60	90	90	1.60
60.0	1.10	19.70	90		

Field Data Printout

Location: Kiln Stack
Test Run: 3B - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/17/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 15:42
Stop Time (approx.): 16:47

Leak Rate Before: 0.0 Lpm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2644.70			
5.0	1.1	2646.20	93	93	1.50
10.0	1.1	2648.00	93	93	1.80
15.0	1.1	2649.80	93	93	1.80
20.0	1.1	2652.10	93	93	2.30
25.0	1.1	2654.00	93	93	1.90
30.0	1.1	2655.40	93	93	1.40
35.0	1.1	2657.10	94	94	1.70
40.0	1.1	2659.30	94	94	2.20
45.0	1.1	2660.70	94	94	1.40
50.0	1.1	2662.40	94	94	1.70
55.0	1.1	2664.30	94	94	1.90
60.0	1.1	2665.30	94	94	1.00
60.0	1.10	20.60	94		

Field Data Printout

Location: Kiln Stack
Test Run: 4A - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9935

Start Time (approx.): 10:05
Stop Time (approx.): 11:11

Leak Rate Before: 0.0 Lm @ 12"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		8570.8			
5.0	1.1	8572.9	80	80	2.10
10.0	1.1	8575.0	80	80	2.10
15.0	1.1	8576.5	82	82	1.50
20.0	1.1	8578.2	82	82	1.70
25.0	1.1	8579.9	82	82	1.70
30.0	1.1	8581.3	83	83	1.40
35.0	1.1	8582.9	83	83	1.60
40.0	1.1	8584.2	83	83	1.30
45.0	1.1	8585.7	83	83	1.50
50.0	1.1	8587.3	83	83	1.60
55.0	1.1	8588.9	83	83	1.60
60.0	1.1	8590.2	83	83	1.30
60.0	1.10	19.40	82		

Field Data Printout

Location: Kiln Stack
Test Run: 4B - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 10:05
Stop Time (approx.): 11:11

Leak Rate Before: 0.0 Lpm @ 15"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2667.7			
5.0	1.1	2669.0	83	83	1.30
10.0	1.1	2671.1	83	83	2.10
15.0	1.1	2672.1	83	83	1.00
20.0	1.1	2673.3	83	83	1.20
25.0	1.1	2674.4	83	83	1.10
30.0	1.1	2676.9	83	83	2.50
35.0	1.1	2678.8	83	83	1.90
40.0	1.1	2681.0	85	85	2.20
45.0	1.1	2683.0	86	86	2.00
50.0	1.1	2685.0	87	87	2.00
55.0	1.1	2687.3	88	88	2.30
60.0	1.1	2689.5	89	89	2.20
60.0	1.10	21.80	85		

Field Data Printout

Location: Kiln Stack
Test Run: 5A - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9935

Start Time (approx.): 12:10
Stop Time (approx.): 13:18

Leak Rate Before: 0.0 Lm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		8592.4			
5.0	1.1	8594.2	88	88	1.80
10.0	1.1	8595.9	88	88	1.70
15.0	1.1	8597.3	88	88	1.40
20.0	1.1	8598.5	89	89	1.20
25.0	1.1	8599.8	90	90	1.30
30.0	1.1	8600.9	90	90	1.10
35.0	1.1	8602.0	88	88	1.10
40.0	1.1	8603.1	88	88	1.10
45.0	1.1	8604.1	88	88	1.00
50.0	1.1	8605.4	88	88	1.30
55.0	1.1	8607.3	88	88	1.90
60.0	1.1	8608.9	88	88	1.60
60.0	1.10	16.50	88		

Field Data Printout

Location: Kiln Stack
Test Run: 5B - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 12:10
Stop Time (approx.): 13:18

Leak Rate Before: 0.0 Lpm @ 13"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2691.4			
5.0	1.1	2693.0	91	91	1.60
10.0	1.1	2694.5	91	91	1.50
15.0	1.1	2695.9	91	91	1.40
20.0	1.1	2697.2	91	91	1.30
25.0	1.1	2698.8	90	90	1.60
30.0	1.1	2700.0	88	88	1.20
35.0	1.1	2701.5	88	88	1.50
40.0	1.1	2705.5	86	86	4.00
45.0	1.1	2708.6	84	84	3.10
50.0	1.1	2710.5	84	84	1.90
55.0	1.1	2713.4	84	84	2.90
60.0	1.1	2715.0	84	84	1.60
60.0	1.10	23.60	88		

Field Data Printout

Location: Kiln Stack
Test Run: 6A - Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9935

Start Time (approx.): 14:36
Stop Time (approx.): 15:40

Leak Rate Before: 0.0 Lm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		8611.10			
5.0	1.20	8614.30	87	87	3.20
10.0	1.20	8617.00	87	87	2.70
15.0	1.20	8619.10	87	87	2.10
20.0	1.20	8620.90	87	87	1.80
25.0	1.20	8623.30	87	87	2.40
30.0	1.20	8625.70	87	87	2.40
35.0	1.20	8627.90	87	87	2.20
40.0	1.20	8630.30	87	87	2.40
45.0	1.20	8632.50	89	89	2.20
50.0	1.20	8634.50	89	89	2.00
55.0	1.20	8636.50	89	89	2.00
60.0	1.20	8638.50	89	89	2.00
60.0	1.20	27.40	88		

Field Data Printout

Location: Kiln Stack
Test Run: 6B Raw Mill Off
Client: TXI - Hunter
Project No: 9101
Test Date: 4/18/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 14:36
Stop Time (approx.): 15:40

Leak Rate Before: 0.0 Lpm @ 10"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2717.3			
5.0	1.20	2720.2	92	92	2.90
10.0	1.20	2723.0	92	92	2.80
15.0	1.20	2725.6	92	92	2.60
20.0	1.20	2728.0	92	92	2.40
25.0	1.20	2730.0	92	92	2.00
30.0	1.20	2732.2	92	92	2.20
35.0	1.20	2734.7	92	92	2.50
40.0	1.20	2737.2	92	92	2.50
45.0	1.20	2739.6	92	92	2.40
50.0	1.20	2741.8	92	92	2.20
55.0	1.20	2744.0	92	92	2.20
60.0	1.20	2746.2	92	92	2.20
60.0	1.20	28.90	92		

Field Data Printout

Location: Kiln Stack
Test Run: 7 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/19/02

Method: 18
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 08:45
Stop Time (approx.): 09:52

Leak Rate Before: 0.0 Lpm @ 14"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2746.3			
5.0	1.1	2749.1	85	85	2.80
10.0	1.1	2751.7	85	85	2.60
15.0	1.1	2754.0	85	85	2.30
20.0	1.1	2756.0	85	85	2.00
25.0	1.1	2757.7	85	85	1.70
30.0	1.1	2760.2	85	85	2.50
35.0	1.1	2763.8	85	85	3.60
40.0	1.1	2765.5	85	85	1.70
45.0	1.1	2767.7	85	85	2.20
50.0	1.1	2770.0	85	85	2.30
55.0	1.1	2772.2	85	85	2.20
60.0	1.1	2774.5	85	85	2.30
60.0	1.10	28.20	85		

Field Data Printout

Location: Kiln Stack
Test Run: 8 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/19/02

Method:
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 10:00
Stop Time (approx.): 11:03

Leak Rate Before: 0.0 Lpm @ 15"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	Dry Gas Meter $T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2775.4			
5.0	1.1	2778.2	84	84	2.80
10.0	1.1	2780.1	84	84	1.90
15.0	1.1	2781.8	84	84	1.70
20.0	1.1	2783.7	84	84	1.90
25.0	1.1	2785.3	84	84	1.60
30.0	1.1	2787.7	84	84	2.40
35.0	1.1	2790.0	84	84	2.30
40.0	1.1	2792.3	84	84	2.30
45.0	1.1	2794.6	84	84	2.30
50.0	1.1	2796.8	84	84	2.20
55.0	1.1	2799.0	84	84	2.20
60.0	1.1	2801.3	84	84	2.30
60.0	1.10	25.90	84		

Field Data Printout

Location: Kiln Stack
Test Run: 9 - Raw Mill On
Client: TXI - Hunter
Project No: 9101
Test Date: 4/19/02

Method:
Collection Medium: Sorbent Tubes

Bar. Press. (in. Hg): 29.25

Meter Yd: 0.9896

Start Time (approx.): 11:11
Stop Time (approx.): 12:15

Leak Rate Before: 0.0 Lpm @ 15"Hg

Run Time	Sample ΔH (in. H_2O)	Metered (L)	Dry Gas Meter $T_{m,in}$ (°F)	$T_{m,out}$ (°F)	Volume (calculated) (L)
0.0		2802.1			
5.0	1.1	2804.8	87	87	2.70
10.0	1.1	2806.9	87	87	2.10
15.0	1.1	2809.4	87	87	2.50
20.0	1.1	2811.6	87	87	2.20
25.0	1.1	2813.7	87	87	2.10
30.0	1.1	2815.8	87	87	2.10
35.0	1.1	2818.5	87	87	2.70
40.0	1.1	2820.3	87	87	1.80
45.0	1.1	2822.3	88	88	2.00
50.0	1.1	2824.9	88	88	2.60
55.0	1.1	2827.2	88	88	2.30
60.0	1.1	2829.7	88	88	2.50
60.0	1.10	27.60	87		

LABORATORY DATA

F

TXI Hunter Cement
Clean Air Project No: 9101

Summary of Results

Laboratory Analyses

	Run Number	1A	2A	3A	4A	5A	6A	7	8	9
ne (total µg)	XAD Front 1/2	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17
	XAD Back 1/2	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17
	Charcoal Front 1/2	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29
	Charcoal Back 1/2	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29
	Total (µg)	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29
Benzene (total µg)	XAD Front 1/2	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07
	XAD Back 1/2	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07	<1.07
	Charcoal Front 1/2	3.78	<3.06	<3.06	5.63	<3.06	10.66	62.98	26.71	6.50
	Charcoal Back 1/2	<3.06	<3.06	<3.06	<3.06	<3.06	<3.06	4.47	<3.06	<3.06
	Total (µg)	<6.84	<3.06	<3.06	<8.69	<3.06	<13.73	67.45	<30.85	<9.56
Toluene (total µg)	XAD Front 1/2	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78
	XAD Back 1/2	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78	<1.78
	Charcoal Front 1/2	<2.55	<2.55	<2.55	<2.55	<2.55	<2.55	2.81	<2.55	<2.55
	Charcoal Back 1/2	<2.55	<2.55	<2.55	<2.55	<2.55	<2.55	<2.55	<2.55	<2.55
	Total (µg)	<2.55	<2.55	<2.55	<2.55	<2.55	<2.55	<5.36	<2.55	<2.55
m, p-Xylenes (total µg)	XAD Front 1/2	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01
	XAD Back 1/2	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01	<3.01
	Charcoal Front 1/2	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22
	Charcoal Back 1/2	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22
	Total (µg)	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22	<6.22
o-Xylene (total µg)	XAD Front 1/2	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81
	XAD Back 1/2	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81
	Charcoal Front 1/2	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10	3.16	<3.10	<3.10
	Charcoal Back 1/2	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10
	Total (µg)	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10	<6.27	<3.10	<3.10
ol (total µg)	XAD Front 1/2	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70
	XAD Back 1/2	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70
	Charcoal Front 1/2	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91
	Charcoal Back 1/2	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91
	Total (µg)	<4.91	<4.91	<4.91	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70
Naphthalene (total µg)	XAD Front 1/2	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06
	XAD Back 1/2	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06
	Charcoal Front 1/2	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	1.69	<0.87	<0.87
	Charcoal Back 1/2	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87
	Total (µg)	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<2.57	<1.06	<1.06

TXI Hunter Cement
Clean Air Project No: 9101

Summary of Results

Spiked Run Laboratory Analyses and Spike Recoveries

	Run Number	1B	2B	3B	4B	5B	6B
Hexane (total µg)	XAD Front 1/2	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17
	XAD Back 1/2	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17
	Charcoal Front 1/2	12.64	18.39	29.34	18.70	18.61	30.94
	Charcoal Back 1/2	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29
	Total (µg)	<13.93	<19.68	<30.62	<19.98	<19.89	<32.23
Regular Run Amount (µg)		<1.29	<1.29	<1.29	<1.29	<1.29	<1.29
Spike Amount (µg)		16.36	18.18	28.18	24.99	21.04	28.93
Spike Recovery (%)		**77.3%**	**101.1%**	**104.1%**	**74.8%**	**88.4%**	**106.9%**
Is Recovery Between 70% and 130%?		Yes	Yes	Yes	Yes	Yes	Yes
Benzene (total µg)	XAD Front 1/2	<1.07	<1.07	<1.07	2.40	2.79	<1.07
	XAD Back 1/2	<1.07	<1.07	<1.07	2.21	4.46	<1.07
	Charcoal Front 1/2	24.40	28.24	40.21	42.13	30.83	41.20
	Charcoal Back 1/2	<3.06	<3.06	<3.06	<3.06	<3.06	<3.06
	Total (µg)	<27.46	<31.31	<40.21	<49.81	<41.15	<44.26
Regular Run Amount (µg)		<6.84	<3.06	<3.06	<8.69	<3.06	<13.73
Spike Amount (µg)		23.36	24.53	47.90	36.93	35.45	31.02
Spike Recovery (%)		**88.2%**	**115.1%**	**77.6%**	**111.3%**	**107.4%**	**98.4%**
Is Recovery Between 70% and 130%?		Yes	Yes	Yes	Yes	Yes	Yes
Toluene (total µg)	XAD Front 1/2	<1.78	<1.78	<1.78	5.18	6.26	<1.78
	XAD Back 1/2	<1.78	<1.78	<1.78	4.04	6.12	<1.78
	Charcoal Front 1/2	24.91	21.61	34.52	14.67	8.00	14.49
	Charcoal Back 1/2	<2.55	<2.55	<2.55	<2.55	<2.55	<2.55
	Total (µg)	<27.46	<24.16	<37.06	<26.44	<22.93	<17.04
Regular Run Amount (µg)		<2.55	<2.55	<2.55	<2.55	<2.55	<2.55
Spike Amount (µg)		24.76	22.51	36.01	27.76	22.72	17.67
Spike Recovery (%)		**100.6%**	**96.0%**	**95.6%**	**86.1%**	**89.7%**	**82.0%**
Is Recovery Between 70% and 130%?		Yes	Yes	Yes	Yes	Yes	Yes
m, p-Xylenes (total µg)	XAD Front 1/2	<3.01	<3.01	<3.01	25.18	28.00	23.45
	XAD Back 1/2	<3.01	<3.01	<3.01	4.41	3.20	15.53
	Charcoal Front 1/2	29.89	42.58	62.74	8.11	6.09	10.45
	Charcoal Back 1/2	2.45	<6.22	<6.22	<6.22	<6.22	<6.22
	Total (µg)	<35.36	<48.80	<68.96	<43.93	<43.51	<55.64
Regular Run Amount (µg)		<6.22	<6.22	<6.22	<6.22	<6.22	<6.22
Spike Amount (µg)		39.65	43.07	67.93	47.00	41.78	52.23
Spike Recovery (%)		**73.5%**	**98.9%**	**92.4%**	**80.2%**	**89.2%**	**94.6%**
Is Recovery Between 70% and 130%?		Yes	Yes	Yes	Yes	Yes	Yes
o-Xylene (total µg)	XAD Front 1/2	<0.81	<0.81	<0.81	8.97	14.74	11.13
	XAD Back 1/2	<0.81	<0.81	<0.81	3.19	0.69	4.63
	Charcoal Front 1/2	20.12	24.03	42.15	3.93	3.52	4.74
	Charcoal Back 1/2	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10
	Total (µg)	<23.22	<27.13	<45.25	<19.20	<22.05	<23.60
Regular Run Amount (µg)		<3.10	<3.10	<3.10	<3.10	<3.10	<3.10
Spike Amount (µg)		25.12	25.12	46.48	21.15	21.15	22.47
Spike Recovery (%)		**80.1%**	**95.6%**	**90.7%**	**76.1%**	**89.6%**	**91.2%**
Is Recovery Between 70% and 130%?		Yes	Yes	Yes	Yes	Yes	Yes
Phenol (total µg)	XAD Front 1/2	<1.70	<1.70	<1.70	16.80	14.71	19.91
	XAD Back 1/2	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70
	Charcoal Front 1/2	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91
	Charcoal Back 1/2	<4.91	<4.91	<4.91	<4.91	<4.91	<4.91
	Total (µg)	<4.91	<4.91	<4.91	<18.50	<16.41	<21.61
Regular Run Amount (µg)		<4.91	<4.91	<4.91	<1.70	<1.70	<1.70
Spike Amount (µg)		27.49	27.49	45.36	21.67	19.26	24.07
Spike Recovery (%)		**0.0%**	**0.0%**	**0.0%**	**77.5%**	**78.4%**	**82.7%**
Is Recovery Between 70% and 130%?		No	No	No	Yes	Yes	Yes
Naphthalene (total µg)	XAD Front 1/2	<1.06	<1.06	<1.06	7.96	13.85	22.92
	XAD Back 1/2	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06
	Charcoal Front 1/2	14.87	13.40	20.24	<0.87	<0.87	<0.87
	Charcoal Back 1/2	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87
	Total (µg)	<15.75	<14.27	<21.11	<9.02	<14.91	<23.98
Regular Run Amount (µg)		<1.06	<1.06	<1.06	<1.06	<1.06	<1.06
Spike Amount (µg)		20.02	17.79	26.69	10.34	18.60	23.77
Spike Recovery (%)		**73.4%**	**74.2%**	**75.1%**	**77.0%**	**74.4%**	**96.4%**
Is Recovery Between 70% and 130%?		Yes	Yes	Yes	Yes	Yes	Yes

Spike Calculations

Charcoal Tube Number	1B
Date	17-Apr
Analyst	D. Rhoades
Client	TXI Hunter Cement
Project Number	9101

Compound	Concentration (µg/ml)	Spike Amount (µl)	Compound Spike Amount (µg)
Hexane	9,091	1.8	16.4
Benzene	11,682	2.0	23.4
Toluene	11,254	2.2	24.8
m-Xylene	11,069	1.7	18.8
p-Xylene	11,575	1.8	20.8
o-Xylene	12,561	2.0	25.1
Phenol	13,746	2.0	27.5
Naphthalene	11,120	1.8	20.0

Spike Calculations

Charcoal Tube Number	2B
Date	17-Apr
Analyst	D. Rhoades
Client	TXI Hunter Cement
Project Number	9101

Compound	Concentration (µg/ml)	Spike Amount (µl)	Compound Spike Amount (µg)
Hexane	9,091	2.0	18.2
Benzene	11,682	2.1	24.5
Toluene	11,254	2.0	22.5
m-Xylene	11,069	1.8	19.9
p-Xylene	11,575	2.0	23.2
o-Xylene	12,561	2.0	25.1
Phenol	13,746	2.0	27.5
Naphthalene	11,120	1.6	17.8

Spike Calculations

Charcoal Tube Number	3B
Date	17-Apr
Analyst	D. Rhoades
Client	TXI Hunter Cement
Project Number	9101

Compound	Concentration (µg/ml)	Spike Amount (µl)	Compound Spike Amount (µg)
Hexane	9,091	3.1	28.2
Benzene	11,682	4.1	47.9
Toluene	11,254	3.2	36.0
m-Xylene	11,069	3.0	33.2
p-Xylene	11,575	3.0	34.7
o-Xylene	12,561	3.7	46.5
Phenol	13,746	3.3	45.4
Naphthalene	11,120	2.4	26.7

Spike Calculations

XAD Tube Number	Sample -26
Date	18-Apr
Analyst	D. Rhoades
Client	TXI Hunter Cement
Project Number	9101

Compound	Concentration (µg/ml)	Spike Amount (µl)	Compound Spike Amount (µg)
Hexane	13,152	2.5	32.9
Benzene	14,771	3.0	44.3
Toluene	12,620	2.6	32.8
m-Xylene	14,209	2.5	35.5
p-Xylene	11,904	2.6	31.0
o-Xylene	13,219	2.5	33.0
Phenol	12,037	2.8	33.7
Naphthalene	10,336	2.4	24.8

Spike Calculations

XAD Tube Number	4B
Date	18-Apr
Analyst	D. Rhoades
Client	TXI Hunter Cement
Project Number	9101

Compound	Concentration (µg/ml)	Spike Amount (µl)	Compound Spike Amount (µg)
Hexane	13,152	1.9	25.0
Benzene	14,771	2.5	36.9
Toluene	12,620	2.2	27.8
m-Xylene	14,209	1.8	25.6
p-Xylene	11,904	1.8	21.4
o-Xylene	13,219	1.6	21.2
Phenol	12,037	1.8	21.7
Naphthalene	10,336	1.0	10.3

Spike Calculations

XAD Tube Number	5B
Date	18-Apr
Analyst	D. Rhoades
Client	TXI Hunter Cement
Project Number	9101

Compound	Concentration (µg/ml)	Spike Amount (µl)	Compound Spike Amount (µg)
Hexane	13,152	1.6	21.0
Benzene	14,771	2.4	35.5
Toluene	12,620	1.8	22.7
m-Xylene	14,209	1.6	22.7
p-Xylene	11,904	1.6	19.0
o-Xylene	13,219	1.6	21.2
Phenol	12,037	1.6	19.3
Naphthalene	10,336	1.8	18.6

Spike Calculations

XAD Tube Number	6B
Date	18-Apr
Analyst	D. Rhoades
Client	TXI Hunter Cement
Project Number	9101

Compound	Concentration (µg/ml)	Spike Amount (µl)	Compound Spike Amount (µg)
Hexane	13,152	2.2	28.9
Benzene	14,771	2.1	31.0
Toluene	12,620	1.4	17.7
m-Xylene	14,209	2.0	28.4
p-Xylene	11,904	2.0	23.8
o-Xylene	13,219	1.7	22.5
Phenol	12,037	2.0	24.1
Naphthalene	10,336	2.3	23.8

TXI-Hunter
Kiln Stack
Raw Mill On

Summary of FTIR Results

Run No.	**1**	**2**	**3**
Start Date/Time	4/17/02 12:00	4/17/02 13:58	4/17/02 15:43
End Date/Time	4/17/02 13:01	4/17/02 15:01	4/17/02 16:47
<u>Method 321</u>			
Hydrogen Chloride (ppmwv)	0.51	0.83	0.37
<u>Method 320</u>			
Formaldehyde (ppmwv)	1.39	1.37	1.08

FTIR METHOD SETUP

Method Name: HCl Kansas
Method Path: C:\JOBS\TXI\KANSAS\HCL KANSAS.ME
Method Type: AutoQuant 3.0

Non-Linear Analysis mode
Temperature & Pressure Adjustments: ON
Mass Emission Computations: OFF

Method Parameters:

Wavenumber range:	650.00 - 4500.00
Fingerprint zoom:	650.00 - 1400.00
Path Length =	7.2
Interfere Criterion =	2500
Gain number =	1
Apodization =	Triangle
Phase Correct =	Mertz
Resolution =	0.5
Baseline Correction:	Linear

Compound: Ammonia
Reference Temperature = 25
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: NH3_12.SPC
Primary: Yes
Reference concentration = 52.60
Region #1: 1043.04 - 1057.22
Region #2: 1061.38 - 1078.68
Region #3: 1083.18 - 1098.76
Region #4: 1101.70 - 1106.14
Region #5: 1120.94 - 1124.20

Compound: CO2
Reference Temperature = 180
Reference Pressure = 0.973741
Alarms: Disabled
Output: Disabled

Spectrum: CO2-20%.SPC
Primary: Yes
Reference concentration = 155.60
Region #1: 1006.01 - 1114.47
Region #2: 3417.52 - 3521.07

Compound: Ethylene
Reference Temperature = 121
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: ETY_H19A.SPC
Primary: Yes
Reference concentration = 207.60
Region #1: 819.51 - 936.81
Region #2: 990.16 - 1115.33

FTIR METHOD SETUP

Compound: Formaldehyde

Reference Temperature = 150
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: FORM-21.SPC

Reference concentration = 79.00
Region #1: 2731.00 - 2747.00
Region #2: 2755.00 - 2770.00
Region #3: 2803.00 - 2816.00

Spectrum: FORM-20.SPC

Reference concentration = 135.00
Region #1: 2731.00 - 2747.00
Region #2: 2755.00 - 2770.00
Region #3: 2803.00 - 2816.00

Spectrum: FORM-19.SPC

Primary: Yes
Reference concentration = 237.00
Region #1: 2731.00 - 2747.00
Region #2: 2755.00 - 2770.00
Region #3: 2803.00 - 2816.00

FTIR METHOD SETUP

Compound: HCl

Reference Temperature = 180
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: HCL-180-7PPMM.SPC
Reference concentration = 7.30
Region #1: 2696.05 - 2708.94
Region #2: 2723.11 - 2732.14
Region #3: 2746.31 - 2757.91
Region #4: 2766.94 - 2781.11
Region #5: 2792.71 - 2805.60
Region #6: 2813.34 - 2828.80
Region #7: 2836.54 - 2849.43

Spectrum: HCL-180-19PPMM.SPC
Reference concentration = 18.60
Region #1: 2697.79 - 2707.23
Region #2: 2722.33 - 2734.60
Region #3: 2745.92 - 2758.19
Region #4: 2769.51 - 2782.73
Region #5: 2792.16 - 2802.54
Region #6: 2816.70 - 2825.19
Region #7: 2838.40 - 2847.84

Spectrum: HCL-180-42PPMM.SPC
Primary: Yes
Reference concentration = 42.40
Region #1: 2698.12 - 2708.43
Region #2: 2723.16 - 2731.26
Region #3: 2747.46 - 2754.83
Region #4: 2769.56 - 2779.87
Region #5: 2792.39 - 2801.97
Region #6: 2815.96 - 2824.80
Region #7: 2837.32 - 2846.89

Spectrum: HCL_H1A.SPC
Reference concentration = 161.70
Region #1: 2697.14 - 2707.01
Region #2: 2723.17 - 2732.14
Region #3: 2746.50 - 2757.28
Region #4: 2768.94 - 2782.41
Region #5: 2793.18 - 2805.74
Region #6: 2814.72 - 2828.18
Region #7: 2838.96 - 2846.14

TXI-Hunter
Kiln Stack, Raw Mill On
Methods 320/321

FTIR METHOD SETUP

Compound: SF6
Reference Temperature = 121
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: SF6_H5A.SPC
Primary: Yes
Reference concentration = 3.86
Region #1: 907.35 - 996.47

Spectrum: SF6_H13A.SPC
Reference concentration = 11.02
Region #1: 907.35 - 996.47

Spectrum: SF6_H17A.SPC
Reference concentration = 33.10
Region #1: 907.35 - 1016.28

Compound: Water
Reference Temperature = 181
Reference Pressure = 1.00164
Alarms: Disabled
Output: Disabled

Spectrum: 10PCTH2O.SPC
Reference concentration = 70.00
Region #1: 1108.00 - 1151.00
Region #2: 2951.00 - 2999.61

Spectrum: 20PCTH2O.SPC
Primary: Yes
Reference concentration = 140.00
Region #1: 1108.00 - 1151.00
Region #2: 2952.00 - 2998.00

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0001	4/17/02 7:30	0.015	0.03	0	5.37E-03	0	0.08	0.166	0.08	0.052	0.06	0	7.23E-04	0	5.16E-03	
C0002	4/17/02 7:30	0	0.03	0	5.95E-03	0	0.08	0.245	0.08	0	0.07	0.001	7.38E-04	0	5.55E-03	
C0003	4/17/02 7:35	0.056	0.02	0	5.27E-03	0.044	0.06	0.032	0.08	0	0.08	0	5.61E-04	0.008	4.39E-03	
C0004	4/17/02 7:36	0	0.02	0	4.86E-03	0.003	0.07	0.15	0.09	0.007	0.11	0	6.23E-04	0.003	3.60E-03	
C0005	4/17/02 7:36	0.001	0.03	0	5.45E-03	0.095	0.06	0.193	0.1	0.05	0.11	0	6.36E-04	0.002	4.23E-03	
C0006	4/17/02 7:37	0.034	0.02	0	6.24E-03	0.069	0.1	0.016	0.07	0.083	0.14	0	8.05E-04	0.007	4.37E-03	
C0007	4/17/02 7:39	0	0.06	0	0.01	19.822	0.16	0.202	0.21	0.178	0.15	0.014	4.86E-03	0.016	9.08E-03	
C0008	4/17/02 7:40	0	0.06	0	0.01	20.029	0.16	0.397	0.21	0.113	0.14	0.012	4.96E-03	0.012	9.17E-03	
C0009	4/17/02 7:40	0	0.06	0	0.01	20.189	0.15	0	0.2	0.19	0.11	0.012	4.99E-03	0.012	8.55E-03	
C0010	4/17/02 7:41	0	0.06	0	9.79E-03	20.305	0.16	0.077	0.22	0.243	0.11	0.014	5.12E-03	0.012	0.01	
C0011	4/17/02 7:42	0	0.06	0	0.01	**20.239**	0.18	0.233	0.22	0.253	0.08	0.013	5.23E-03	0.002	8.35E-03	**Ethylene to Cell**
C0012	4/17/02 7:45	0	0.06	0	0.01	19.924	0.17	0.192	0.24	0.187	0.09	0.013	5.31E-03	0.004	0.01	
C0013	4/17/02 7:46	0	0.06	0	0.01	20.145	0.17	0.077	0.23	0.149	0.09	0.012	5.29E-03	0.004	8.61E-03	
C0014	4/17/02 7:46	0	0.06	0	0.01	19.938	0.17	0.29	0.22	0.212	0.11	0.013	5.25E-03	0.002	0.01	
C0015	4/17/02 7:47	0	0.06	0	0.01	19.863	0.16	0.487	0.22	0.253	0.12	0.012	5.15E-03	0.004	8.74E-03	
C0016	4/17/02 7:50	0	0.06	0	0.02	0	0.3	0.621	0.26	2.592	0.18	0.595	9.02E-03	0.007	0.01	
C0017	4/17/02 7:50	0.059	0.06	0	0.01	0	0.3	0.456	0.22	3.756	0.13	0.585	8.87E-03	0	0.01	
C0018	4/17/02 7:50	0	0.06	0	0.01	0	0.29	0.661	0.22	4.856	0.15	0.582	8.74E-03	0	0.01	
C0019	4/17/02 7:51	0	0.05	0	0.01	0.014	0.28	0.659	0.21	5.762	0.15	0.58	8.84E-03	0	0.01	
C0020	4/17/02 7:51	0	0.06	0	0.01	0.019	0.28	0.552	0.2	6.73	0.15	0.58	8.70E-03	0	0.01	
C0021	4/17/02 7:52	0.015	0.05	0	0.01	0.074	0.27	0.442	0.19	7.57	0.17	0.579	8.61E-03	0	0.01	
C0022	4/17/02 7:52	0.022	0.05	0	0.01	0.106	0.27	0.556	0.17	8.117	0.25	0.576	8.66E-03	0	0.01	
C0023	4/17/02 7:53	0	0.05	0	0.01	0	0.27	0.417	0.17	8.448	0.26	0.577	8.57E-03	0	0.01	
C0024	4/17/02 7:53	0	0.05	0	0.01	0	0.27	0.368	0.16	8.852	0.26	0.575	8.50E-03	0	0.01	
C0025	4/17/02 7:54	0	0.05	0	9.59E-03	0	0.27	0.401	0.17	9.37	0.25	0.576	8.54E-03	0	0.01	
C0026	4/17/02 7:54	0.058	0.06	0	0.01	0	0.27	0.323	0.17	12.781	0.36	0.575	8.52E-03	0	0.01	
C0027	4/17/02 7:54	0.003	0.06	0	9.76E-03	0	0.27	0.273	0.18	15.002	0.41	0.574	8.48E-03	0	0.02	
C0028	4/17/02 7:55	0	0.06	0	9.49E-03	0	0.27	0.125	0.18	17.664	0.47	0.574	8.38E-03	0	0.02	
C0029	4/17/02 7:55	0.047	0.05	0	8.99E-03	0	0.27	0.338	0.18	18.511	0.51	0.573	8.37E-03	0	0.02	
C0030	4/17/02 7:56	0	0.06	0	9.60E-03	0	0.28	0.149	0.18	20.174	0.54	0.573	8.42E-03	0	0.02	
C0031	4/17/02 7:56	0.042	0.05	0	9.15E-03	0	0.27	0.199	0.18	21.185	0.63	0.573	8.38E-03	0	0.02	
C0032	4/17/02 7:57	0	0.06	0	9.91E-03	0	0.27	0.216	0.18	21.571	0.66	0.572	8.34E-03	0	0.02	
C0033	4/17/02 7:57	0	0.06	0	9.91E-03	0	0.28	0.194	0.18	21.621	0.69	0.572	8.27E-03	0	0.02	
C0034	4/17/02 7:57	0.043	0.06	0	9.15E-03	0	0.27	0.024	0.17	21.488	0.68	0.571	8.33E-03	0	0.02	
C0035	4/17/02 7:58	0.069	0.05	0	8.76E-03	0	0.26	0.159	0.16	20.685	0.66	0.553	8.09E-03	0	0.02	
C0036	4/17/02 7:58	0.004	0.05	0	9.13E-03	0	0.2	0.022	0.14	7.907	0.17	0.42	6.09E-03	0	0.01	
C0037	4/17/02 7:59	0.018	0.05	0	8.59E-03	0	0.17	0.011	0.12	6.052	0.13	0.349	5.10E-03	0	8.64E-03	
C0038	4/17/02 7:59	0	0.05	0	8.11E-03	0	0.17	0.245	0.12	5.628	0.13	0.326	4.68E-03	0.002	7.09E-03	
C0039	4/17/02 8:00	0	0.05	0	8.20E-03	0	0.16	0.064	0.12	5.448	0.15	0.32	4.68E-03	0.004	7.46E-03	
C0040	4/17/02 8:00	0.023	0.05	0	8.29E-03	0	0.17	0.109	0.12	5.399	0.15	0.319	4.60E-03	0.003	7.83E-03	
C0041	4/17/02 8:00	0.005	0.05	0	8.97E-03	0	0.17	0.073	0.11	5.218	0.16	0.318	4.53E-03	0.001	7.06E-03	
C0042	4/17/02 8:01	0	0.05	0	8.20E-03	0	0.17	0	0.11	5.297	0.15	0.316	4.62E-03	0.002	6.96E-03	
C0043	4/17/02 8:01	0	0.05	0	8.23E-03	0	0.17	0	0.11	5.271	0.16	0.317	4.67E-03	0.005	8.51E-03	
C0044	4/17/02 8:02	0	0.05	0	7.99E-03	0	0.17	0	0.11	5.101	0.16	0.317	4.54E-03	0.001	6.77E-03	
C0045	4/17/02 8:02	0	0.06	0	8.15E-03	0	0.17	0	0.12	4.465	0.15	0.28	4.14E-03	0.001	6.69E-03	
C0046	4/17/02 8:03	0	0.06	0	8.04E-03	0	0.14	0	0.11	3.796	0.13	0.239	3.49E-03	0.006	5.89E-03	
C0047	4/17/02 8:03	0	0.05	0	7.68E-03	0	0.13	0	0.1	3.579	0.21	0.221	3.25E-03	0.008	7.65E-03	
C0048	4/17/02 8:03	0.049	0.06	0	7.93E-03	0	0.13	0	0.09	3.399	0.21	0.216	3.10E-03	0.003	5.83E-03	
C0049	4/17/02 8:04	0.005	0.05	0	7.06E-03	0	0.12	0.063	0.1	3.218	0.2	0.213	3.11E-03	0	5.86E-03	
C0050	4/17/02 8:04	0	0.05	0	7.39E-03	0	0.13	0	0.1	3.276	0.19	0.212	3.10E-03	0.001	7.16E-03	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On		Temperature & Pressure Adjusted Concentrations in ppm														
		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0051	4/17/02 8:05	0	0.05	0	7.28E-03	0	0.13	0	0.1	3.14	0.16	0.211	3.14E-03	0.01	7.63E-03	
C0052	4/17/02 8:05	0	0.05	0	7.30E-03	0	0.13	0	0.1	3.271	0.16	0.212	3.08E-03	0.003	5.61E-03	
C0053	4/17/02 8:06	0	0.05	0	7.16E-03	0	0.12	0	0.08	3.254	0.17	0.21	3.08E-03	0.004	7.03E-03	
C0054	4/17/02 8:06	0	0.05	0	7.42E-03	0	0.13	0	0.1	3.141	0.17	0.21	3.14E-03	0.008	6.51E-03	
C0055	4/17/02 8:13	0	0.05	0	6.60E-03	0	0.08	0	0.09	0	0.25	0.001	1.23E-03	0.006	4.80E-03	
C0056	4/17/02 8:16	0	0.02	0.001	4.61E-03	0	0.06	0.05	0.07	0.024	0.06	0	5.51E-04	0	4.48E-03	
C0057	4/17/02 8:17	0.071	0.02	0.01	4.25E-03	0	0.07	0.105	0.08	0	0.07	0	7.39E-04	0	4.05E-03	
C0058	4/17/02 8:17	0.079	0.03	0	5.51E-03	0	0.07	0	0.11	0.13	0.07	0	8.53E-04	0	5.42E-03	
C0059	4/17/02 8:17	0.044	0.02	0	4.94E-03	0	0.06	0.014	0.08	0	0.07	0	7.43E-04	0	4.24E-03	
C0060	4/17/02 8:18	0	0.02	0	5.07E-03	0	0.07	0.103	0.07	0	0.08	0	7.11E-04	0	4.32E-03	
C0061	4/17/02 8:21	0	0.02	0	4.28E-03	0.053	0.05	0.161	0.08	0.033	0.04	0.001	4.91E-04	0	4.34E-03	
C0062	4/17/02 8:21	0	0.02	0	4.61E-03	0.318	0.06	0.107	0.08	0.077	0.06	0	8.53E-04	0	3.91E-03	
C0063	4/17/02 8:27	0.196	0.12	0.001	0.05	0	0.31	1.288	0.3	0.402	0.17	0	3.31E-03	0.032	0.02	
C0064	4/17/02 8:27	0.186	0.13	0	0.05	0	0.31	1.27	0.29	0.379	0.16	0	3.18E-03	0.036	0.02	
C0065	4/17/02 8:28	0.21	0.13	0.003	0.05	0	0.3	1.159	0.29	0.317	0.16	0	3.10E-03	0.038	0.02	
C0066	4/17/02 8:30	0.223	0.13	0	0.07	20.178	0.37	1.429	0.33	0.537	0.18	0.004	5.62E-03	0.083	0.03	
C0067	4/17/02 8:30	0.237	0.13	0	0.05	20.476	0.33	1.305	0.31	0.378	0.16	0.004	5.44E-03	0.037	0.02	
C0068	4/17/02 8:31	0.274	0.13	0	0.05	20.419	0.32	1.289	0.29	0.356	0.16	0.004	5.48E-03	0.032	0.02	**Ethylene to Probe**
C0069	4/17/02 8:31	0.215	0.14	0	0.05	20.438	0.33	1.34	0.31	0.327	0.18	0.004	5.50E-03	0.022	0.02	
C0070	4/17/02 8:32	0.263	0.13	0	0.05	20.267	0.32	1.338	0.29	0.308	0.17	0.005	5.47E-03	0.038	0.02	
C0071	4/17/02 8:37	0.055	0.28	0	0.32	0	2	1.724	0.43	1.302	0.73	1.203	0.03	2.638	0.06	
C0072	4/17/02 8:37	0.023	0.28	0	0.33	0	2	1.524	0.43	1.581	0.65	1.201	0.03	2.641	0.06	
C0073	4/17/02 8:38	0	0.28	0	0.33	0	2.03	1.754	0.44	2.038	0.64	0.991	0.03	2.728	0.06	
C0074	4/17/02 8:38	0	0.29	0	0.33	0	2.06	1.714	0.45	2.076	0.64	0.451	0.02	2.982	0.06	
C0075	4/17/02 8:38	0	0.28	0	0.33	0	2.09	1.69	0.45	1.88	0.64	0.353	0.02	3.024	0.06	
C0076	4/17/02 8:39	0	0.28	0	0.33	0	2.1	1.782	0.45	1.693	0.66	0.336	0.02	3.039	0.06	
C0077	4/17/02 8:39	0	0.28	0	0.33	0	2.1	1.63	0.46	1.635	0.66	0.333	0.02	3.057	0.06	
C0078	4/17/02 8:40	0	0.28	0	0.33	0	2.08	1.656	0.44	1.582	0.62	0.331	0.02	3.061	0.06	
C0079	4/17/02 8:40	0	0.28	0	0.33	0	2.12	1.652	0.45	1.589	0.64	0.33	0.02	3.068	0.06	
C0080	4/17/02 8:41	0	0.28	0	0.33	0	2.13	1.659	0.45	1.621	0.66	0.329	0.02	3.08	0.06	
C0081	4/17/02 8:41	0	0.29	0	0.33	0	2.17	1.576	0.46	1.533	0.67	0.329	0.02	3.08	0.06	
C0082	4/17/02 8:50	0	0.29	0	0.33	0	2.27	1.58	0.45	1.919	0.69	0.323	0.02	3.073	0.06	
C0083	4/17/02 8:57	0.536	0.72	10.496	0.16	7.589	2.38	0.964	0.5	1.875	0.6	0.257	0.02	8.485	0.13	
C0084	4/17/02 8:57	1.292	1.07	12.696	0.22	3.991	2.48	0.638	0.57	2.034	0.49	0.251	0.02	17.976	0.13	
C0085	4/17/02 9:01	7.447	1.28	12.798	0.24	0	2.37	1.615	0.58	1.459	0.37	0.256	0.02	19.25	0.08	
C0086	4/17/02 9:02	7.123	1.26	12.961	0.24	0	2.38	1.543	0.58	1.421	0.45	0.254	0.02	19.208	0.08	
C0087	4/17/02 9:05	6.879	1.28	12.777	0.24	0.756	2.47	1.5	0.59	1.461	0.43	0.254	0.02	19.301	0.08	
C0088	4/17/02 9:06	7.085	1.35	12.619	0.25	1.018	2.52	1.48	0.58	1.487	0.43	0.254	0.02	19.58	0.1	
C0089	4/17/02 9:08	6.717	1.11	12.297	0.22	0.729	2.28	1.709	0.57	1.822	0.41	0.606	0.02	17.941	0.1	
C0090	4/17/02 9:10	6.292	0.95	12.116	0.21	0.772	2.14	1.644	0.55	3.806	0.28	1.039	0.03	16.612	0.08	
C0091	4/17/02 9:12	6.389	0.93	12.001	0.2	1.753	2.17	1.59	0.56	5.322	0.3	1.044	0.03	16.52	0.09	
C0092	4/17/02 9:13	6.754	0.92	11.856	0.2	5.928	2.29	1.954	0.6	6.705	0.36	1.05	0.03	16.085	0.17	
C0093	4/17/02 9:15	6.864	0.95	12.128	0.21	5.889	2.33	2.061	0.6	7.348	0.39	1.045	0.03	16.04	0.18	
C0094	4/17/02 9:17	6.941	0.91	12.063	0.2	2.927	2.23	1.742	0.57	7.331	0.38	1.044	0.03	16.561	0.09	
C0095	4/17/02 9:19	7.16	0.94	12.102	0.21	2.851	2.23	1.739	0.57	7.739	0.37	1.047	0.03	16.68	0.09	
C0096	4/17/02 9:20	7.126	0.95	11.993	0.21	2.893	2.23	1.832	0.57	8.231	0.61	1.043	0.03	16.69	0.1	
C0097	4/17/02 9:22	6.961	0.93	12.128	0.21	2.059	2.19	1.892	0.56	8.304	0.64	1.037	0.03	16.507	0.08	
C0098	4/17/02 9:24	7.019	0.95	12.159	0.21	2.469	2.24	1.887	0.57	8.795	0.74	1.034	0.03	16.418	0.09	
C0099	4/17/02 9:26	6.967	0.9	12.007	0.2	1.884	2.2	1.892	0.57	9.068	0.74	1.036	0.03	16.251	0.12	
C0100	4/17/02 9:27	6.959	0.9	12.031	0.2	2.142	2.25	1.903	0.56	9.25	0.74	1.035	0.03	16.447	0.09	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0101	4/17/02 9:29	7.043	0.96	11.832	0.21	2.245	2.29	1.943	0.57	10.134	0.77	1.028	0.03	16.791	0.1	
C0102	4/17/02 9:31	6.893	0.91	12.044	0.2	1.525	2.2	1.939	0.56	9.919	0.72	1.03	0.03	16.599	0.08	
C0103	4/17/02 9:33	7.147	0.94	11.942	0.2	1.949	2.27	1.985	0.57	12.732	0.97	1.024	0.03	16.557	0.1	
C0104	4/17/02 9:34	6.816	0.91	12.004	0.2	2.346	2.25	2.089	0.57	14.432	1.08	1.023	0.03	16.279	0.11	
C0105	4/17/02 9:36	6.676	0.88	12.127	0.19	0.972	2.14	1.95	0.55	14.114	1	1.024	0.03	16.401	0.08	
C0106	4/17/02 9:38	7.234	1.14	12.28	0.22	0.39	2.3	1.938	0.57	8.192	0.64	0.464	0.02	18.308	0.08	
C0107	4/17/02 9:40	7.471	1.41	12.493	0.28	0	2.44	1.829	0.57	3.166	0.44	0	0.02	20.061	0.07	
C0108	4/17/02 9:41	7.952	1.46	12.245	0.3	0.212	2.5	1.79	0.58	2.173	0.43	0	0.02	20.49	0.08	
C0109	4/17/02 9:43	7.922	1.46	12.381	0.28	1.53	2.56	1.817	0.6	1.815	0.46	0	0.02	20.315	0.11	
C0110	4/17/02 9:45	7.828	1.42	12.557	0.27	6.338	2.64	2.061	0.64	1.754	0.5	0	0.02	19.961	0.25	
C0111	4/17/02 9:46	7.734	1.45	12.588	0.28	0	2.5	1.683	0.58	1.317	0.53	0	0.02	20.164	0.08	
C0112	4/17/02 9:48	7.602	1.42	12.496	0.27	0.623	2.47	1.821	0.59	1.234	0.49	0	0.02	20.075	0.12	
C0113	4/17/02 9:50	5.059	0.85	10.918	0.27	1.913	1.77	1.703	0.55	5.829	0.32	1.478	0.03	13.808	0.09	
C0114	4/17/02 9:52	6.806	0.92	12.009	0.19	1.916	2.18	1.854	0.59	7.601	0.38	0.959	0.02	16.537	0.11	
C0115	4/17/02 9:53	7.46	0.98	11.976	0.2	5.176	2.3	2.491	0.63	8.875	0.74	0.961	0.03	16.322	0.22	
C0116	4/17/02 9:55	7.505	0.94	12.035	0.2	3.589	2.24	2.254	0.6	9.275	0.74	0.957	0.03	16.397	0.16	
C0117	4/17/02 9:57	7.453	0.96	11.931	0.2	2.681	2.23	2.118	0.59	11.492	0.84	0.96	0.03	16.388	0.12	
C0118	4/17/02 9:59	7.292	0.94	12.038	0.2	1.584	2.17	1.921	0.57	13.326	0.88	0.959	0.02	16.435	0.09	
C0119	4/17/02 10:00	7.248	0.96	11.876	0.2	2.006	2.19	2.122	0.58	16.097	1.05	0.956	0.02	16.316	0.12	
C0120	4/17/02 10:02	7.171	0.9	12.185	0.2	0.773	2.15	1.88	0.56	16.419	1.08	0.954	0.02	16.433	0.08	
C0121	4/17/02 10:04	7.04	0.9	12.038	0.2	1.193	2.21	1.862	0.56	18.194	1.27	0.953	0.02	16.542	0.09	
C0122	4/17/02 10:06	6.984	0.94	11.795	0.2	1.793	2.26	1.991	0.58	20.096	1.38	0.954	0.02	16.713	0.1	
C0123	4/17/02 10:07	6.877	0.92	11.943	0.2	0.985	2.17	1.912	0.55	20.008	1.18	0.956	0.02	16.849	0.07	
C0124	4/17/02 10:09	6.649	0.9	12.145	0.2	1.285	2.16	1.876	0.56	20.446	1.2	0.952	0.02	16.601	0.08	
C0125	4/17/02 10:11	6.841	0.97	11.89	0.2	4.917	2.3	2.392	0.6	22.285	1.31	0.948	0.03	16.296	0.19	
C0126	4/17/02 10:13	6.973	0.94	11.946	0.2	2.186	2.24	2.069	0.57	21.91	1.34	0.946	0.02	16.411	0.11	
C0127	4/17/02 10:14	6.69	0.9	12.071	0.2	1.281	2.2	1.854	0.56	21.801	1.34	0.947	0.02	16.417	0.08	
C0128	4/17/02 10:16	6.73	0.92	11.966	0.2	1.757	2.21	1.912	0.57	21.62	1.31	0.943	0.02	16.374	0.09	
C0129	4/17/02 10:18	6.817	0.9	11.996	0.19	1.217	2.14	1.889	0.56	21.662	1.15	0.949	0.02	16.442	0.08	
C0130	4/17/02 10:20	6.615	0.91	11.965	0.2	1.699	2.18	1.802	0.56	22.337	1.19	0.943	0.02	16.389	0.09	
C0131	4/17/02 10:21	6.556	0.9	12.132	0.2	0.944	2.16	1.751	0.55	22.307	1.24	0.942	0.02	16.553	0.07	
C0132	4/17/02 10:23	6.547	0.96	11.997	0.21	1.42	2.25	1.793	0.55	23.04	1.39	0.937	0.02	16.593	0.08	**HCl Spike to Probe**
C0133	4/17/02 10:25	6.438	0.95	11.844	0.2	2.064	2.26	1.941	0.57	23.177	1.47	0.939	0.02	16.482	0.1	
C0134	4/17/02 10:27	6.607	0.92	11.874	0.2	2.604	2.23	2.067	0.57	23.352	1.41	0.938	0.02	16.437	0.12	
C0135	4/17/02 10:28	6.534	0.95	11.831	0.2	1.944	2.2	1.982	0.57	23.352	1.31	0.943	0.02	16.581	0.1	
C0136	4/17/02 10:31	6.769	1.17	12.333	0.22	1.83	2.33	1.971	0.59	8.058	0.6	0.381	0.02	18.594	0.11	
C0137	4/17/02 10:33	6.953	1.16	12.199	0.22	1.861	2.37	2	0.6	6.003	0.35	0.359	0.02	18.631	0.11	
C0138	4/17/02 10:34	6.727	1.2	12.377	0.22	1.221	2.38	1.826	0.58	5.263	0.35	0.355	0.02	18.666	0.08	
C0139	4/17/02 10:36	6.717	1.18	12.265	0.23	0.376	2.33	1.58	0.56	4.823	0.34	0.353	0.02	18.665	0.07	
C0140	4/17/02 10:38	6.795	1.18	12.386	0.23	0.593	2.32	1.557	0.56	4.601	0.33	0.352	0.02	18.697	0.08	
C0141	4/17/02 10:40	6.595	1.17	12.367	0.23	0.597	2.29	1.543	0.56	4.353	0.32	0.352	0.02	18.685	0.07	
C0142	4/17/02 10:41	6.844	1.16	12.282	0.23	0.904	2.33	1.477	0.56	4.226	0.33	0.35	0.02	18.631	0.07	
C0143	4/17/02 10:43	6.982	1.11	12.603	0.22	0.71	2.27	1.714	0.55	3.998	0.33	0.347	0.02	18.597	0.07	
C0144	4/17/02 10:45	6.838	1.18	12.61	0.23	1.472	2.36	1.582	0.57	4.067	0.34	0.344	0.02	18.637	0.08	
C0145	4/17/02 10:47	6.884	1.15	12.565	0.23	0.747	2.3	1.515	0.57	3.968	0.33	0.345	0.02	18.627	0.07	
C0146	4/17/02 10:48	6.97	1.16	12.476	0.23	0.789	2.3	1.524	0.56	3.943	0.31	0.347	0.02	18.598	0.07	
C0147	4/17/02 10:50	6.765	1.18	12.42	0.23	0.784	2.3	1.45	0.56	3.883	0.31	0.346	0.02	18.609	0.07	
C0148	4/17/02 10:52	6.785	1.15	12.411	0.22	0.816	2.29	1.554	0.55	3.805	0.33	0.342	0.02	18.5	0.07	
C0149	4/17/02 10:53	6.633	1.14	12.501	0.22	0.436	2.29	1.719	0.54	3.523	0.59	0.183	0.02	19.009	0.07	
C0150	4/17/02 11:04	6.698	1.37	12.65	0.26	1.207	2.49	1.5	0.59	1.305	0.77	0	0.02	19.955	0.08	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On		Temperature & Pressure Adjusted Concentrations in ppm														
		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0151	4/17/02 11:06	6.765	1.36	12.654	0.26	0.999	2.45	1.428	0.57	1.189	0.75	0	0.02	20.035	0.08	
C0152	4/17/02 11:08	6.98	1.34	12.622	0.26	2.401	2.45	1.5	0.58	1.207	0.72	0	0.02	19.941	0.12	
C0153	4/17/02 11:09	6.98	1.33	12.535	0.25	5.159	2.49	1.833	0.61	1.287	0.7	0	0.02	19.806	0.2	
C0154	4/17/02 11:11	7.244	1.34	12.752	0.25	8.511	2.56	2.149	0.65	1.469	0.64	0	0.02	19.752	0.31	
C0155	4/17/02 11:13	7.263	1.34	12.647	0.25	5.756	2.54	1.821	0.61	1.214	0.77	0	0.02	19.861	0.2	
C0156	4/17/02 11:14	7.29	1.34	12.674	0.25	6.51	2.53	1.833	0.62	1.221	0.66	0	0.02	19.916	0.23	
C0157	4/17/02 11:16	7.546	1.32	12.633	0.25	5.989	2.42	1.784	0.62	1.134	0.56	0	0.02	19.899	0.21	
C0158	4/17/02 11:18	7.61	1.35	12.515	0.25	4.262	2.39	1.51	0.6	1.013	0.55	0	0.02	19.909	0.15	
C0159	4/17/02 11:20	7.509	1.36	12.508	0.25	4.562	2.45	1.586	0.6	1.029	0.57	0	0.02	19.898	0.18	
C0160	4/17/02 11:21	7.749	1.38	12.532	0.26	5.13	2.5	1.651	0.6	1.019	0.61	0	0.02	19.963	0.18	
C0161	4/17/02 11:23	7.548	1.37	12.483	0.25	6.294	2.54	1.705	0.61	1.099	0.64	0	0.02	19.906	0.22	
C0162	4/17/02 11:25	7.256	1.4	12.383	0.26	4.385	2.55	1.627	0.6	0.958	0.65	0	0.02	20.079	0.16	
C0163	4/17/02 11:27	7.049	1.38	12.508	0.25	4.416	2.49	1.572	0.6	0.948	0.64	0	0.02	20.046	0.16	
C0164	4/17/02 11:28	7.14	1.39	12.39	0.25	3.572	2.46	1.643	0.59	0.896	0.6	0	0.02	20.083	0.15	
C0165	4/17/02 11:30	7.037	1.4	12.265	0.26	5.142	2.51	1.82	0.61	0.988	0.63	0	0.02	20.048	0.21	
C0166	4/17/02 11:32	7.124	1.41	12.303	0.26	2.881	2.49	1.551	0.58	0.853	0.67	0	0.02	20.165	0.14	
C0167	4/17/02 11:34	7.032	1.4	12.428	0.25	4.492	2.54	1.918	0.61	0.997	0.72	0	0.02	20.055	0.21	
C0168	4/17/02 11:35	7.095	1.39	12.286	0.25	5.386	2.52	2.003	0.62	0.947	0.7	0	0.02	19.952	0.22	
C0169	4/17/02 11:37	7.218	1.44	12.26	0.27	3.058	2.49	1.577	0.58	0.792	0.66	0	0.02	20.382	0.15	
C0170	4/17/02 11:39	6.964	1.42	12.341	0.26	3.401	2.5	1.653	0.59	0.815	0.67	0	0.02	20.145	0.15	
C0171	4/17/02 11:41	6.779	1.41	12.339	0.25	2.991	2.49	1.589	0.58	0.812	0.68	0	0.02	20.128	0.13	
C0172	4/17/02 11:42	6.883	1.44	12.256	0.26	3.521	2.55	1.676	0.59	0.849	0.71	0	0.02	20.197	0.17	
C0173	4/17/02 11:44	6.99	1.4	12.193	0.26	8.947	2.66	2.779	0.71	1.383	0.8	0	0.02	19.711	0.44	
C0174	4/17/02 11:46	7.089	1.43	12.132	0.25	4.754	2.58	1.996	0.61	0.955	0.76	0	0.02	20.056	0.23	
C0175	4/17/02 11:48	6.751	1.42	12.101	0.26	2.545	2.5	1.67	0.58	0.749	0.72	0	0.02	20.228	0.13	
C0176	4/17/02 11:49	6.494	1.42	12.259	0.26	4.349	2.52	1.828	0.61	0.887	0.72	0	0.02	20.149	0.22	
C0177	4/17/02 11:51	6.862	1.4	12.373	0.26	6.112	2.53	2.179	0.65	1.048	0.73	0	0.02	20.019	0.3	
C0178	4/17/02 11:53	7.165	1.43	12.337	0.26	6.7	2.56	2.279	0.64	1.052	0.77	0	0.02	20.015	0.3	
C0179	4/17/02 11:55	6.992	1.38	12.297	0.26	2.942	2.46	1.88	0.59	0.794	0.77	0	0.02	20.051	0.18	
C0180	4/17/02 11:56	7.193	1.48	12.05	0.27	1.072	2.51	1.525	0.57	0.696	0.74	0	0.02	20.233	0.09	
C0181	4/17/02 11:58	7.213	1.43	12.342	0.27	2.256	2.5	1.457	0.6	0.752	0.76	0	0.02	20.174	0.14	
C0182	4/17/02 12:00	7.192	1.43	12.317	0.27	2.945	2.54	**1.585**	0.61	**0.834**	0.81	0	0.02	20.067	0.21	**Run 1**
C0183	4/17/02 12:02	7.464	1.48	12.269	0.26	1.274	2.56	**1.371**	0.58	**0.662**	0.85	0	0.02	20.205	0.1	Run 1 12:00 - 13:00
C0184	4/17/02 12:03	7.199	1.43	12.325	0.26	0.061	2.45	**1.418**	0.57	**0.601**	0.84	0	0.02	20.147	0.08	
C0185	4/17/02 12:05	7.171	1.43	12.278	0.26	0	2.41	**1.406**	0.57	**0.558**	0.8	0	0.02	20.229	0.07	
C0186	4/17/02 12:07	7.25	1.39	12.222	0.25	0.623	2.4	**1.509**	0.57	**0.647**	0.79	0	0.02	20.072	0.09	
C0187	4/17/02 12:09	7.117	1.44	12.336	0.26	0.468	2.44	**1.494**	0.58	**0.608**	0.81	0	0.02	20.15	0.08	
C0188	4/17/02 12:10	6.949	1.41	12.398	0.26	0	2.4	**1.474**	0.57	**0.6**	0.87	0	0.02	20.164	0.07	
C0189	4/17/02 12:12	6.805	1.38	12.357	0.26	0	2.35	**1.445**	0.55	**0.543**	0.89	0	0.02	20.124	0.06	
C0190	4/17/02 12:14	6.56	1.36	12.224	0.26	0	2.35	**1.302**	0.55	**0.52**	0.86	0	0.02	20.012	0.06	
C0191	4/17/02 12:16	6.533	1.31	12.433	0.25	0.108	2.28	**1.391**	0.54	**0.49**	0.82	0	0.02	20.065	0.06	
C0192	4/17/02 12:17	6.602	1.31	12.48	0.25	0.291	2.28	**1.423**	0.55	**0.492**	0.82	0	0.02	19.99	0.06	
C0193	4/17/02 12:19	6.371	1.32	12.457	0.24	0.538	2.31	**1.537**	0.55	**0.515**	0.85	0	0.02	19.95	0.07	
C0194	4/17/02 12:21	6.441	1.32	12.523	0.25	0.643	2.33	**1.386**	0.55	**0.514**	0.89	0	0.02	19.929	0.07	
C0195	4/17/02 12:23	6.51	1.25	12.757	0.24	0.381	2.26	**1.57**	0.55	**0.483**	0.91	0	0.02	19.868	0.07	
C0196	4/17/02 12:24	6.338	1.22	12.777	0.24	0	2.21	**1.633**	0.54	**0.463**	0.87	0	0.02	19.768	0.06	
C0197	4/17/02 12:26	6.478	1.3	12.65	0.25	0.075	2.27	**1.397**	0.55	**0.512**	0.86	0	0.02	19.913	0.06	
C0198	4/17/02 12:28	6.551	1.36	12.456	0.26	0.39	2.34	**1.43**	0.56	**0.514**	0.85	0	0.02	19.916	0.07	
C0199	4/17/02 12:30	6.342	1.33	12.627	0.25	0.038	2.27	**1.364**	0.56	**0.478**	0.84	0	0.02	19.934	0.06	
C0200	4/17/02 12:31	6.507	1.26	12.804	0.25	0.108	2.22	**1.64**	0.55	**0.405**	0.86	0	0.02	19.933	0.06	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On

Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0201	4/17/02 12:33	6.529	1.31	12.725	0.25	0	2.28	1.357	0.55	0.472	0.87	0	0.02	19.924	0.06	
C0202	4/17/02 12:35	6.386	1.33	12.64	0.26	0.143	2.3	1.282	0.56	0.473	0.83	0	0.02	19.951	0.06	
C0203	4/17/02 12:36	6.451	1.29	12.67	0.25	0	2.24	1.386	0.55	0.457	0.81	0	0.02	19.891	0.06	
C0204	4/17/02 12:38	6.384	1.34	12.434	0.25	0	2.28	1.279	0.55	0.52	0.82	0	0.02	19.897	0.06	
C0205	4/17/02 12:40	6.334	1.31	12.529	0.25	0.163	2.27	1.355	0.56	0.474	0.83	0	0.02	19.99	0.06	
C0206	4/17/02 12:42	6.391	1.31	12.643	0.25	0.544	2.26	1.322	0.55	0.454	0.84	0	0.02	20.018	0.06	
C0207	4/17/02 12:43	6.322	1.31	12.75	0.26	0.805	2.28	1.281	0.55	0.5	0.84	0	0.02	20.049	0.06	
C0208	4/17/02 12:45	6.447	1.34	12.701	0.26	0.729	2.3	1.188	0.56	0.471	0.81	0	0.02	20.018	0.06	
C0209	4/17/02 12:47	6.564	1.31	12.681	0.26	0.091	2.23	1.287	0.55	0.447	0.77	0	0.02	20.203	0.06	
C0210	4/17/02 12:49	6.502	1.34	12.452	0.26	0.1	2.27	1.294	0.54	0.476	0.8	0	0.02	20.169	0.06	
C0211	4/17/02 12:50	6.607	1.31	12.564	0.25	0.329	2.26	1.281	0.54	0.473	0.83	0	0.02	20.129	0.06	
C0212	4/17/02 12:52	6.756	1.35	12.501	0.25	0.381	2.31	1.206	0.55	0.455	0.84	0	0.02	20.157	0.06	
C0213	4/17/02 12:54	6.451	1.28	12.663	0.25	0.273	2.23	1.348	0.54	0.411	0.82	0	0.02	20.107	0.06	
C0214	4/17/02 12:56	6.427	1.27	12.792	0.25	0.176	2.18	1.378	0.54	0.409	0.77	0	0.02	20.004	0.06	
C0215	4/17/02 12:57	6.618	1.31	12.703	0.26	0.346	2.22	1.322	0.55	0.434	0.77	0	0.02	20.097	0.06	
C0216	4/17/02 12:59	6.533	1.34	12.716	0.26	0.417	2.26	1.315	0.55	0.444	0.78	0	0.02	20.101	0.06	
C0217	4/17/02 13:01	6.78	1.38	12.659	0.26	0.388	2.31	1.228	0.55	0.45	0.84	0	0.02	20.111	0.06	
C0218	4/17/02 13:03	6.994	1.36	12.794	0.25	0.267	2.3	1.319	0.55	0.423	0.87	0	0.02	20.049	0.06	
C0219	4/17/02 13:04	6.763	1.31	12.79	0.25	0	2.23	1.369	0.55	0.431	0.85	0	0.02	19.95	0.06	
C0220	4/17/02 13:06	6.867	1.27	12.774	0.24	0	2.18	1.468	0.54	0.405	0.83	0	0.02	19.922	0.06	
C0221	4/17/02 13:08	6.761	1.32	12.754	0.25	0	2.2	1.439	0.55	0.368	0.81	0	0.02	20.109	0.06	
C0222	4/17/02 13:10	6.47	1.32	12.822	0.25	0	2.2	1.39	0.55	0.402	0.85	0	0.02	20.129	0.06	
C0223	4/17/02 13:11	6.562	1.32	12.74	0.25	0	2.21	1.49	0.54	0.442	0.87	0	0.02	20.181	0.06	
C0224	4/17/02 13:13	6.183	1.23	12.946	0.22	0	2.25	1.493	0.54	0.36	0.91	0	0.02	19.681	0.06	
C0225	4/17/02 13:16	0.128	0.1	0	0.02	19.974	0.28	0.515	0.27	0.334	0.49	0.017	6.02E-03	0	0.02	
C0226	4/17/02 13:16	0.214	0.1	0	0.02	20.229	0.27	0.554	0.26	0.031	0.46	0.017	6.20E-03	0	0.02	
C0227	4/17/02 13:17	0.232	0.1	0	0.02	20.165	0.28	0.506	0.25	0	0.48	0.018	6.34E-03	0	0.02	**Ethylene to Cell**
C0228	4/17/02 13:17	0.198	0.1	0	0.02	20.133	0.29	0.181	0.26	0.055	0.4	0.017	6.53E-03	0	0.01	
C0229	4/17/02 13:19	0.766	0.24	0.157	0.23	20.533	1.56	1.9	0.38	1.073	1.08	0.068	0.01	0.963	0.05	
C0230	4/17/02 13:20	0.495	0.16	0	0.11	21.043	0.77	1.43	0.34	0.812	0.8	0.008	7.24E-03	0.253	0.03	
C0231	4/17/02 13:20	0.383	0.15	0	0.07	20.883	0.45	1.261	0.32	0.685	0.69	0	5.63E-03	0.123	0.03	
C0232	4/17/02 13:21	0.354	0.16	0	0.06	20.627	0.36	1.231	0.32	0.619	0.62	0	5.66E-03	0.085	0.03	
C0233	4/17/02 13:21	0.375	0.16	0	0.06	20.59	0.35	1.536	0.3	0.537	0.61	0.002	5.60E-03	0.076	0.02	
C0234	4/17/02 13:22	0.322	0.16	0	0.06	20.635	0.34	1.451	0.31	0.532	0.58	0.003	5.53E-03	0.075	0.02	**Ethylene to Probe**
C0235	4/17/02 13:22	0.353	0.16	0	0.06	20.652	0.33	1.314	0.31	0.514	0.54	0.002	5.64E-03	0.064	0.02	
C0236	4/17/02 13:22	0.349	0.16	0	0.06	20.523	0.33	1.311	0.31	0.517	0.54	0.012	5.74E-03	0.064	0.02	
C0237	4/17/02 13:24	0.571	0.25	0.126	0.24	0	2.29	1.591	0.39	44.283	2.81	6.051	0.08	0.838	0.05	
C0238	4/17/02 13:24	0.654	0.26	0.131	0.24	0	2.34	1.91	0.42	61.224	2.94	6.116	0.08	0.895	0.06	
C0239	4/17/02 13:25	1.991	0.73	3.678	0.2	0.473	2.28	1.86	0.36	65.727	2.94	3.889	0.06	6.059	0.06	
C0240	4/17/02 13:25	5.927	0.9	11.963	0.19	0	1.75	1.508	0.54	36.058	1.78	0.849	0.02	16.897	0.06	
C0241	4/17/02 13:25	6.834	1.11	12.497	0.21	0	1.91	1.621	0.56	20.106	1.52	0.364	0.02	18.809	0.06	
C0242	4/17/02 13:26	7.032	1.14	12.415	0.23	0	1.93	1.527	0.57	7.245	0.42	0.332	0.02	18.981	0.06	**HCl Spike to Probe**
C0243	4/17/02 13:26	6.933	1.12	12.457	0.21	0	1.89	1.547	0.55	5.843	0.39	0.332	0.02	18.807	0.06	
C0244	4/17/02 13:27	6.859	1.08	12.58	0.21	0	1.83	1.641	0.54	5.259	0.37	0.334	0.02	18.765	0.06	
C0245	4/17/02 13:27	6.873	1.08	12.548	0.22	0	1.83	1.577	0.55	4.841	0.36	0.333	0.02	18.789	0.06	
C0246	4/17/02 13:28	6.936	1.15	12.57	0.23	0.126	1.94	1.354	0.57	4.619	0.37	0.331	0.02	18.847	0.06	
C0247	4/17/02 13:28	6.958	1.16	12.511	0.23	0.206	1.96	1.597	0.57	4.47	0.37	0.322	0.02	18.833	0.06	
C0248	4/17/02 13:28	7.038	1.15	12.652	0.23	0	1.93	1.579	0.57	4.344	0.37	0.324	0.02	18.874	0.06	
C0249	4/17/02 13:29	6.912	1.12	12.709	0.23	0	1.91	1.582	0.57	4.147	0.37	0.323	0.02	18.865	0.06	
C0250	4/17/02 13:29	7.074	1.14	12.785	0.22	0	1.93	1.572	0.57	4.085	0.36	0.324	0.02	18.837	0.06	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On

Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0251	4/17/02 13:30	7.082	1.11	12.818	0.22	0	1.92	1.455	0.57	3.935	0.37	0.32	0.02	18.818	0.06	
C0252	4/17/02 13:30	7.019	1.12	12.593	0.23	0	1.92	1.686	0.55	3.879	0.37	0.322	0.02	18.856	0.06	
C0253	4/17/02 13:31	6.971	1.12	12.506	0.23	0	1.92	1.654	0.55	3.79	0.37	0.321	0.02	18.876	0.06	
C0254	4/17/02 13:31	6.932	1.09	12.619	0.21	0	1.88	1.555	0.55	3.733	0.37	0.32	0.02	18.86	0.06	
C0255	4/17/02 13:31	6.729	1.05	12.607	0.21	0	1.84	1.773	0.55	3.566	0.63	0.323	0.02	18.812	0.06	
C0256	4/17/02 13:32	6.606	1.05	12.538	0.21	0	1.86	1.797	0.53	3.545	0.64	0.322	0.02	18.767	0.06	
C0257	4/17/02 13:32	6.586	1.09	12.513	0.21	0.008	1.87	1.593	0.54	3.543	0.61	0.323	0.02	18.734	0.06	
C0258	4/17/02 13:33	6.473	1.08	12.603	0.22	0	1.86	1.557	0.54	3.542	0.6	0.323	0.02	18.713	0.06	
C0259	4/17/02 13:33	6.538	1.14	12.491	0.23	0	1.94	1.454	0.55	3.425	0.6	0.322	0.02	18.647	0.06	
C0260	4/17/02 13:34	6.629	1.12	12.626	0.23	0.017	1.92	1.491	0.56	3.404	0.6	0.323	0.02	18.693	0.06	
C0261	4/17/02 13:34	6.484	1.07	12.576	0.22	0.028	1.87	1.613	0.55	3.387	0.59	0.323	0.02	18.668	0.06	
C0262	4/17/02 13:35	6.52	1.12	12.334	0.22	0.033	1.89	1.637	0.53	3.315	0.57	0.323	0.02	18.618	0.06	
C0263	4/17/02 13:35	6.534	1.1	12.604	0.22	0.126	1.9	1.507	0.54	3.405	0.57	0.321	0.02	18.656	0.06	
C0264	4/17/02 13:35	6.587	1.1	12.68	0.22	0.121	1.89	1.591	0.54	3.424	0.57	0.319	0.02	18.781	0.06	
C0265	4/17/02 13:36	6.446	1.09	12.598	0.22	0.213	1.87	1.639	0.54	3.281	0.55	0.321	0.02	18.731	0.06	
C0266	4/17/02 13:36	6.459	1.08	12.465	0.22	0.196	1.87	1.749	0.54	3.304	0.57	0.321	0.02	18.708	0.06	
C0267	4/17/02 13:37	6.604	1.09	12.567	0.22	0.111	1.87	1.644	0.54	3.353	0.55	0.319	0.02	18.874	0.06	
C0268	4/17/02 13:37	6.44	1.14	12.48	0.23	0.363	1.94	1.429	0.54	3.374	0.57	0.316	0.02	18.901	0.06	
C0269	4/17/02 13:38	6.219	1.08	12.737	0.22	0.505	1.88	1.538	0.54	3.337	0.56	0.316	0.02	18.8	0.06	
C0270	4/17/02 13:38	6.136	1.06	12.705	0.22	0.371	1.88	1.624	0.54	3.271	0.59	0.316	0.02	18.678	0.06	
C0271	4/17/02 13:38	6.167	1.08	12.601	0.21	0.388	1.92	1.536	0.54	3.246	0.6	0.317	0.02	18.71	0.06	
C0272	4/17/02 13:39	6.151	1.05	12.531	0.21	0.376	1.88	1.586	0.54	3.209	0.58	0.315	0.02	18.616	0.06	
C0273	4/17/02 13:39	6.187	1.08	12.444	0.22	0.302	1.9	1.589	0.53	3.213	0.61	0.317	0.02	18.642	0.06	
C0274	4/17/02 13:40	6.261	1.07	12.597	0.22	0.609	1.9	1.507	0.54	3.307	0.6	0.318	0.02	18.764	0.06	
C0275	4/17/02 13:40	6.377	1.11	12.461	0.22	0.629	1.98	1.394	0.55	3.287	0.64	0.316	0.02	18.786	0.06	
C0276	4/17/02 13:41	6.352	1.06	12.56	0.22	0.508	1.94	1.509	0.54	3.221	0.63	0.319	0.02	18.834	0.06	
C0277	4/17/02 13:41	6.319	1.08	12.579	0.22	0.643	1.93	1.414	0.54	3.302	0.61	0.315	0.02	18.934	0.06	
C0278	4/17/02 13:41	6.442	1.05	12.682	0.23	0.556	1.91	1.353	0.55	3.314	0.62	0.318	0.02	18.766	0.06	
C0279	4/17/02 13:42	6.326	1.05	12.488	0.23	0.837	1.93	1.511	0.55	3.247	0.63	0.318	0.02	18.624	0.06	
C0280	4/17/02 13:42	6.324	1.1	12.536	0.22	0.937	1.96	1.44	0.56	3.291	0.62	0.319	0.02	18.778	0.06	
C0281	4/17/02 13:43	6.14	1.1	12.589	0.23	0.63	1.93	1.422	0.55	3.248	0.59	0.318	0.02	18.783	0.06	
C0282	4/17/02 13:43	6.051	1.07	12.648	0.22	0.526	1.9	1.464	0.55	3.211	0.57	0.319	0.02	18.742	0.06	
C0283	4/17/02 13:44	5.872	0.99	12.078	0.2	0.863	1.81	1.451	0.53	3.259	0.58	0.62	0.02	17.523	0.06	
C0284	4/17/02 13:46	0.478	0.16	0	0.06	20.512	0.34	1.259	0.32	2.655	0.43	0.004	5.79E-03	0.075	0.02	
C0285	4/17/02 13:47	0.435	0.16	0	0.06	20.569	0.34	1.303	0.31	2.457	0.42	0.004	5.78E-03	0.061	0.02	
C0286	4/17/02 13:47	0.391	0.17	0	0.06	20.332	0.34	1.284	0.32	2.303	0.42	0.002	6.05E-03	0.068	0.03	**Ethylene to Probe**
C0287	4/17/02 13:48	0.428	0.16	0	0.06	20.23	0.34	1.285	0.32	2.115	0.41	0.002	6.10E-03	0.07	0.02	
C0288	4/17/02 13:48	0.426	0.17	0	0.06	20.31	0.34	1.494	0.32	2.032	0.4	0.003	6.06E-03	0.064	0.02	
C0289	4/17/02 13:48	1.309	0.37	1.526	0.18	18.525	1.84	1.611	0.36	3.375	0.98	0.002	0.02	2.809	0.05	
C0290	4/17/02 13:49	2.312	0.38	4.521	0.32	16.773	2.19	1.288	0.44	3.757	0.54	0	0.02	5.749	0.06	
C0291	4/17/02 13:49	2.465	0.39	5.001	0.29	16.6	2.14	1.32	0.44	3.114	0.97	0	0.02	6.231	0.06	
C0292	4/17/02 13:50	2.503	0.39	5.063	0.3	16.74	2.15	1.329	0.43	2.67	0.96	0	0.02	6.295	0.06	
C0293	4/17/02 13:50	1.876	0.37	2.559	0.31	18.126	2.18	1.546	0.41	2.473	1.06	0.002	0.02	4.072	0.06	
C0294	4/17/02 13:51	0.769	0.23	0.141	0.22	20.109	1.38	1.774	0.35	2.036	0.85	0.004	0.01	0.878	0.04	
C0295	4/17/02 13:51	0.57	0.16	0	0.1	20.918	0.64	1.188	0.33	1.617	0.6	0	7.01E-03	0.215	0.03	
C0296	4/17/02 13:51	0.468	0.17	0	0.07	20.73	0.4	1.329	0.32	1.444	0.6	0	5.92E-03	0.102	0.03	**Ethylene to Cell**
C0297	4/17/02 13:52	0.431	0.16	0	0.06	20.52	0.35	1.288	0.32	1.335	0.53	0.001	5.86E-03	0.073	0.03	
C0298	4/17/02 13:52	0.93	0.36	0.874	0.08	18.724	0.98	1.415	0.27	1.788	0.67	0	9.21E-03	1.963	0.03	
C0299	4/17/02 13:54	6.712	1.3	12.576	0.26	0	2.06	1.54	0.54	2.25	0.55	0	0.02	19.948	0.06	
C0300	4/17/02 13:55	6.783	1.28	12.596	0.26	0	2.02	1.605	0.53	2.009	0.52	0	0.02	19.94	0.06	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0301	4/17/02 13:55	6.878	1.3	12.533	0.26	0	2.05	1.565	0.53	1.931	0.53	0	0.02	19.943	0.06	
C0302	4/17/02 13:55	6.877	1.31	12.447	0.25	0	2.06	1.505	0.53	1.809	0.54	0	0.02	19.891	0.06	
C0303	4/17/02 13:56	6.929	1.27	12.542	0.25	0	2.02	1.497	0.54	1.718	0.52	0	0.02	19.93	0.06	
C0304	4/17/02 13:56	6.884	1.3	12.466	0.26	0	2.05	1.502	0.53	1.674	0.54	0	0.02	19.997	0.05	
C0305	4/17/02 13:57	6.826	1.26	12.615	0.25	0	2	1.647	0.53	1.59	0.54	0	0.02	19.946	0.06	
C0306	4/17/02 13:57	6.744	1.32	12.346	0.25	0	2.08	1.547	0.53	1.561	0.54	0	0.02	20.034	0.06	
C0307	4/17/02 13:58	6.652	1.33	12.448	0.25	0	2.11	1.496	0.55	1.513	0.56	0	0.02	19.961	0.06	**Run 2**
C0308	4/17/02 13:58	6.736	1.31	12.688	0.26	0	2.07	1.482	0.55	1.452	0.68	0	0.02	19.995	0.06	Run 2 13:58 - 15:04
C0309	4/17/02 13:58	6.765	1.3	12.647	0.25	0	2.06	1.371	0.54	1.423	0.69	0	0.02	19.995	0.06	
C0310	4/17/02 13:59	6.686	1.31	12.514	0.26	0	2.07	1.595	0.53	1.342	0.72	0	0.02	19.977	0.06	
C0311	4/17/02 13:59	6.808	1.32	12.613	0.26	0	2.07	1.6	0.54	1.29	0.69	0	0.02	19.966	0.05	
C0312	4/17/02 14:00	6.88	1.29	12.83	0.24	0	2.07	1.453	0.55	1.272	0.71	0	0.02	19.938	0.06	
C0313	4/17/02 14:00	6.75	1.3	12.684	0.25	0	2.08	1.438	0.54	1.282	0.72	0	0.02	19.774	0.06	
C0314	4/17/02 14:01	6.715	1.29	12.752	0.26	0	2.08	1.527	0.54	1.176	0.72	0	0.02	19.883	0.06	
C0315	4/17/02 14:01	6.81	1.3	12.606	0.25	0	2.08	1.64	0.53	1.15	0.72	0	0.02	19.928	0.06	
C0316	4/17/02 14:01	6.889	1.35	12.502	0.26	0	2.14	1.563	0.54	1.179	0.73	0	0.02	20.097	0.06	
C0317	4/17/02 14:02	6.634	1.34	12.57	0.25	0	2.14	1.459	0.54	1.159	0.73	0	0.02	19.913	0.06	
C0318	4/17/02 14:02	6.521	1.32	12.575	0.24	0	2.11	1.568	0.54	1.123	0.71	0	0.02	19.789	0.06	
C0319	4/17/02 14:03	6.509	1.23	12.898	0.24	0	2.01	1.537	0.53	1.105	0.7	0	0.02	19.758	0.06	
C0320	4/17/02 14:03	6.484	1.28	12.726	0.24	0	2.06	1.438	0.54	1.111	0.7	0	0.02	19.776	0.06	
C0321	4/17/02 14:04	6.5	1.27	12.621	0.24	0	2.07	1.474	0.53	1.069	0.71	0	0.02	19.718	0.06	
C0322	4/17/02 14:04	6.557	1.31	12.646	0.25	0.034	2.1	1.529	0.54	1.02	0.7	0	0.02	19.787	0.06	
C0323	4/17/02 14:04	6.601	1.27	12.779	0.25	0	2.05	1.489	0.54	1.065	0.7	0	0.02	19.846	0.06	
C0324	4/17/02 14:05	6.534	1.25	12.583	0.24	0.026	2.04	1.364	0.53	0.997	0.69	0	0.02	19.742	0.06	
C0325	4/17/02 14:05	6.572	1.27	12.609	0.25	0.069	2.06	1.469	0.53	1.008	0.71	0	0.02	19.711	0.06	
C0326	4/17/02 14:06	6.411	1.32	12.426	0.25	0.234	2.11	1.512	0.53	0.961	0.7	0	0.02	19.721	0.06	
C0327	4/17/02 14:06	6.424	1.27	12.666	0.24	0.344	2.05	1.4	0.53	1.015	0.7	0	0.02	19.742	0.06	
C0328	4/17/02 14:07	6.326	1.3	12.503	0.24	0.258	2.09	1.409	0.53	0.927	0.72	0	0.02	19.785	0.06	
C0329	4/17/02 14:07	6.29	1.31	12.601	0.24	0.35	2.11	1.364	0.53	0.907	0.73	0	0.02	19.757	0.06	
C0330	4/17/02 14:08	6.219	1.29	12.624	0.24	0.442	2.09	1.516	0.54	0.896	0.74	0	0.02	19.731	0.06	
C0331	4/17/02 14:08	6.248	1.28	12.626	0.24	0.322	2.1	1.356	0.53	0.907	0.77	0	0.02	19.705	0.06	
C0332	4/17/02 14:11	6.432	1.25	12.718	0.24	0.536	2.07	1.44	0.53	0.829	0.79	0	0.02	19.784	0.06	
C0333	4/17/02 14:13	6.182	1.24	12.735	0.24	0.641	2.06	1.401	0.53	0.802	0.78	0	0.02	19.673	0.06	
C0334	4/17/02 14:14	6.311	1.28	12.673	0.23	0.412	2.08	1.386	0.53	0.74	0.75	0	0.02	19.713	0.06	
C0335	4/17/02 14:16	6.401	1.29	12.634	0.24	0.543	2.09	1.435	0.52	0.718	0.73	0	0.02	19.844	0.06	
C0336	4/17/02 14:18	6.177	1.3	12.548	0.24	0.548	2.11	1.433	0.53	0.693	0.75	0	0.02	19.772	0.06	
C0337	4/17/02 14:20	6.128	1.28	12.565	0.23	0.517	2.09	1.458	0.52	0.672	0.77	0	0.02	19.698	0.06	
C0338	4/17/02 14:21	6.2	1.29	12.597	0.24	0.716	2.1	1.442	0.53	0.677	0.79	0	0.02	19.736	0.06	
C0339	4/17/02 14:23	6.018	1.28	12.641	0.24	0.772	2.09	1.356	0.53	0.655	0.77	0	0.02	19.708	0.06	
C0340	4/17/02 14:25	6.143	1.29	12.722	0.24	0.685	2.09	1.307	0.53	0.627	0.75	0	0.02	19.711	0.06	
C0341	4/17/02 14:26	6.185	1.31	12.708	0.24	0.945	2.1	1.273	0.54	0.626	0.73	0	0.02	19.781	0.06	
C0342	4/17/02 14:28	5.896	1.31	12.673	0.24	0.971	2.11	1.294	0.53	0.622	0.76	0	0.02	19.671	0.06	
C0343	4/17/02 14:30	6.155	1.3	12.648	0.24	0.823	2.1	1.356	0.53	0.618	0.77	0	0.02	19.712	0.06	
C0344	4/17/02 14:32	6.188	1.29	12.603	0.24	0.879	2.1	1.364	0.52	0.563	0.75	0	0.02	19.623	0.06	
C0345	4/17/02 14:33	6.079	1.24	12.611	0.23	0.783	2.03	1.42	0.52	0.537	0.72	0	0.02	19.568	0.06	
C0346	4/17/02 14:35	6.277	1.21	12.628	0.23	0.662	1.99	1.431	0.52	0.535	0.68	0	0.02	19.555	0.06	
C0347	4/17/02 14:37	6.24	1.25	12.677	0.23	0.741	2.05	1.381	0.53	0.57	0.68	0	0.02	19.494	0.06	
C0348	4/17/02 14:39	6.182	1.22	12.694	0.23	0.774	2.02	1.447	0.53	0.565	0.72	0	0.02	19.474	0.06	
C0349	4/17/02 14:40	6.474	1.25	12.781	0.24	0.989	2.06	1.371	0.53	0.526	0.74	0	0.02	19.598	0.06	
C0350	4/17/02 14:42	6.484	1.27	12.754	0.24	1.134	2.08	1.272	0.54	0.537	0.72	0	0.02	19.668	0.06	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On

Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0351	4/17/02 14:44	6.351	1.28	12.659	0.24	1.037	2.08	1.319	0.53	0.484	0.7	0	0.02	19.673	0.06	
C0352	4/17/02 14:46	6.469	1.25	12.829	0.24	1.071	2.05	1.277	0.53	0.504	0.72	0	0.02	19.628	0.06	
C0353	4/17/02 14:47	6.289	1.27	12.739	0.24	0.947	2.09	1.33	0.54	0.471	0.78	0	0.02	19.678	0.06	
C0354	4/17/02 14:49	6.337	1.26	12.817	0.24	1.316	2.11	1.267	0.54	0.522	0.85	0	0.02	19.709	0.06	
C0355	4/17/02 14:51	6.348	1.25	12.718	0.23	1.121	2.1	1.333	0.53	0.452	0.87	0	0.02	19.647	0.06	
C0356	4/17/02 14:53	6.225	1.23	12.829	0.23	1.167	2.07	1.396	0.53	0.441	0.86	0	0.02	19.606	0.06	
C0357	4/17/02 14:54	6.311	1.27	12.879	0.24	1.095	2.09	1.322	0.54	0.477	0.84	0	0.02	19.663	0.06	
C0358	4/17/02 14:56	6.357	1.28	12.8	0.24	1.047	2.1	1.276	0.54	0.427	0.84	0	0.02	19.674	0.06	
C0359	4/17/02 14:58	6.194	1.26	13.01	0.24	1.305	2.1	1.262	0.55	0.464	0.9	0	0.02	19.703	0.06	
C0360	4/17/02 15:00	6.361	1.28	12.892	0.24	1.494	2.13	1.223	0.55	0.422	0.95	0	0.02	19.647	0.06	
C0361	4/17/02 15:01	6.318	1.26	12.84	0.24	0.99	2.1	1.322	0.54	0.423	0.96	0	0.02	19.554	0.06	
C0362	4/17/02 15:03	0.943	0.33	0.706	0.3	2.155	2.53	2.064	0.4	24.332	3.54	5.499	0.08	1.926	0.07	
C0363	4/17/02 15:04	0.924	0.59	2.235	0.14	0.934	2.36	1.657	0.33	53.461	3.56	4.627	0.07	4.038	0.06	
C0364	4/17/02 15:04	3.834	0.81	11.809	0.18	1.136	1.6	1.654	0.52	36.461	2.45	1.038	0.02	15.184	0.06	
C0365	4/17/02 15:05	5.233	1.02	12.69	0.22	0.588	1.8	1.485	0.54	15.451	1.76	0.402	0.02	17.821	0.06	
C0366	4/17/02 15:05	5.752	1.04	12.875	0.21	0.677	1.82	1.45	0.55	6.503	0.54	0.316	0.02	18.112	0.06	**HCl Spike to Probe**
C0367	4/17/02 15:05	5.986	1.03	13.015	0.21	0.704	1.8	1.539	0.56	5.3	0.5	0.303	0.02	18.144	0.06	
C0368	4/17/02 15:06	6.137	1.07	12.893	0.22	0.839	1.83	1.412	0.55	4.667	0.49	0.3	0.02	18.115	0.06	
C0369	4/17/02 15:06	6.103	1.04	13.028	0.22	0.848	1.8	1.624	0.55	4.2	0.48	0.32	0.02	18.062	0.06	
C0370	4/17/02 15:07	6.02	1.01	12.853	0.22	0.535	1.78	1.658	0.54	4.003	0.48	0.346	0.02	17.936	0.06	
C0371	4/17/02 15:07	5.93	1	12.88	0.21	0.822	1.76	1.531	0.54	4.011	0.48	0.333	0.02	17.895	0.06	
C0372	4/17/02 15:08	5.997	1.02	12.663	0.21	1.128	1.8	1.566	0.55	3.918	0.48	0.336	0.02	17.9	0.06	
C0373	4/17/02 15:08	5.92	0.99	12.784	0.21	1.329	1.77	1.567	0.54	3.866	0.48	0.338	0.02	17.817	0.06	
C0374	4/17/02 15:08	6.051	1.02	12.712	0.21	1.2	1.81	1.572	0.54	3.824	0.49	0.338	0.02	17.886	0.06	
C0375	4/17/02 15:09	6.201	1	12.684	0.22	1.301	1.8	1.639	0.54	3.723	0.49	0.337	0.02	17.809	0.06	
C0376	4/17/02 15:09	6.283	1.02	12.733	0.22	1.27	1.82	1.639	0.56	3.636	0.49	0.339	0.02	17.93	0.06	
C0377	4/17/02 15:10	6.344	1.02	12.707	0.21	1.227	1.82	1.533	0.54	3.558	0.9	0.338	0.02	17.872	0.06	
C0378	4/17/02 15:10	6.285	1.01	12.707	0.21	1.191	1.81	1.71	0.55	3.544	0.91	0.337	0.02	17.818	0.06	
C0379	4/17/02 15:11	6.257	1.04	12.772	0.22	1.279	1.84	1.627	0.54	3.601	0.9	0.337	0.02	17.766	0.06	
C0380	4/17/02 15:11	6.176	1.05	12.554	0.22	1.294	1.85	1.53	0.54	3.482	0.89	0.335	0.02	17.768	0.06	
C0381	4/17/02 15:12	0.921	0.28	0.337	0.26	19.115	1.59	1.892	0.37	7.7	0.77	0.353	0.02	1.298	0.05	
C0382	4/17/02 15:13	0.646	0.17	0	0.13	20.807	0.75	1.464	0.33	4.655	0.54	0.054	6.98E-03	0.312	0.03	
C0383	4/17/02 15:13	0.475	0.16	0	0.08	21.186	0.44	1.267	0.31	3.428	0.81	0.009	5.29E-03	0.129	0.03	
C0384	4/17/02 15:14	0.4	0.17	0	0.07	21.046	0.36	1.253	0.31	2.876	0.74	0.001	5.32E-03	0.082	0.02	
C0385	4/17/02 15:14	0.363	0.17	0	0.06	21.021	0.34	1.347	0.31	2.566	0.69	0.001	5.53E-03	0.075	0.02	
C0386	4/17/02 15:15	0.347	0.17	0	0.06	21.058	0.34	1.223	0.31	2.406	0.66	0	5.57E-03	0.061	0.02	
C0387	4/17/02 15:15	0.405	0.17	0	0.06	20.877	0.34	1.289	0.31	2.165	0.65	0	5.75E-03	0.061	0.02	
C0388	4/17/02 15:15	0.325	0.17	0	0.06	20.795	0.34	1.4	0.32	2.079	0.62	0	6.19E-03	0.057	0.02	
C0389	4/17/02 15:16	0.393	0.17	0	0.06	20.835	0.34	1.285	0.32	1.978	0.63	0	6.03E-03	0.051	0.02	
C0390	4/17/02 15:16	0.354	0.17	0	0.06	20.812	0.33	1.396	0.32	1.921	0.62	0	6.02E-03	0.061	0.02	**Ethylene to Probe**
C0391	4/17/02 15:17	0.31	0.18	0	0.06	20.584	0.39	1.209	0.3	1.813	0.62	0	6.59E-03	0.05	0.02	
C0392	4/17/02 15:17	0.893	0.33	0.676	0.06	19.607	0.96	1.352	0.28	2.141	0.87	0	8.96E-03	1.579	0.03	
C0393	4/17/02 15:18	3.306	0.64	10.054	0.15	11.338	1.47	1.844	0.49	3.83	0.51	0	0.01	11.066	0.05	
C0394	4/17/02 15:18	3.355	0.66	10.596	0.15	9.974	1.48	1.759	0.5	4.051	0.52	0	0.01	11.739	0.05	
C0395	4/17/02 15:18	3.359	0.66	10.263	0.15	9.605	1.52	1.756	0.49	4.044	0.54	0	0.01	11.465	0.05	
C0396	4/17/02 15:19	2.463	0.48	6.674	0.23	14.365	2.17	1.535	0.41	2.652	1.23	0	0.02	7.655	0.06	
C0397	4/17/02 15:20	0.547	0.32	0.34	0.29	20.362	2.23	1.504	0.36	1.375	1.59	0.003	0.02	1.343	0.06	
C0398	4/17/02 15:20	0.472	0.22	0.016	0.2	20.589	1.73	1.489	0.35	1.054	1.38	0.003	0.01	0.621	0.05	
C0399	4/17/02 15:21	0.306	0.17	0	0.12	21.119	1.22	1.061	0.35	0.936	1.19	0.002	8.91E-03	0.298	0.04	
C0400	4/17/02 15:21	0.135	0.16	0	0.07	21.332	0.82	0.851	0.33	0.561	1.02	0	6.22E-03	0.123	0.03	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On

Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0401	4/17/02 15:22	0.077	0.17	0	0.04	20.89	0.5	1.168	0.29	0.51	0.87	0.003	5.02E-03	0.027	0.02	
C0402	4/17/02 15:22	0.144	0.14	0	0.03	20.405	0.31	1.132	0.27	0.532	0.75	0.007	6.08E-03	0	0.02	
C0403	4/17/02 15:23	0.164	0.11	0	0.02	20.418	0.31	0.618	0.28	0.383	0.65	0.016	7.04E-03	0	0.02	
C0404	**4/17/02 15:23**	**0.166**	**0.1**	**0**	**0.02**	**20.218**	**0.37**	**0.598**	**0.26**	**0.233**	**0.57**	**0.018**	**7.91E-03**	**0**	**0.02**	**Ethylene to Cell**
C0405	4/17/02 15:23	0.207	0.1	0	0.02	20.326	0.45	0	0.25	0.218	0.51	0.013	8.50E-03	0	0.02	
C0406	4/17/02 15:24	0.11	0.1	0	0.02	20.496	0.49	0.202	0.24	0.165	0.47	0.015	8.67E-03	0	0.02	
C0407	4/17/02 15:24	0.003	0.11	0	0.02	20.325	0.53	0.157	0.22	0.228	0.45	0.013	8.98E-03	0	0.02	
C0408	4/17/02 15:27	0.218	0.1	0	0.02	0.38	0.45	0.069	0.24	0.158	0.47	0	6.61E-03	0	0.02	
C0409	4/17/02 15:27	0.011	0.1	0	0.02	0.172	0.45	0.5	0.21	0.117	0.49	0	6.97E-03	0	0.02	
C0410	4/17/02 15:28	0.181	0.1	0	0.02	0.066	0.43	0.381	0.19	0.205	0.5	0	6.78E-03	0	0.02	
C0411	4/17/02 15:28	0.155	0.09	0	0.02	0	0.43	0.315	0.19	0.085	0.51	0	6.74E-03	0	0.02	
C0412	4/17/02 15:29	0.184	0.09	0	0.02	0.069	0.41	0.404	0.17	0.131	0.51	0	6.58E-03	0	0.01	
C0413	4/17/02 15:29	0.19	0.09	0	0.02	0.03	0.4	0.477	0.17	0.093	0.5	0	6.51E-03	0	0.01	
C0414	4/17/02 15:30	0.175	0.09	0	0.02	0.047	0.42	0.167	0.17	0.221	0.49	0	6.66E-03	0	0.01	
C0415	4/17/02 15:30	0.149	0.09	0	0.02	0	0.42	0.443	0.16	0.142	0.49	0	6.75E-03	0	0.01	
C0416	4/17/02 15:34	0	0.02	0.003	3.93E-03	0.085	0.06	0.033	0.07	0.012	0.04	0	5.05E-04	0	3.85E-03	
C0417	4/17/02 15:36	0	0.03	0.001	5.04E-03	0.142	0.07	0	0.08	0	0.05	0	5.95E-04	0	4.67E-03	
C0418	4/17/02 15:38	0	0.03	0	5.19E-03	0.13	0.07	0.063	0.09	0.069	0.04	0	6.17E-04	0	5.32E-03	
C0419	4/17/02 15:43	6.669	1.05	12.763	0.23	1.504	1.87	0.935	0.56	1.019	0.32	0	0.02	18.403	0.06	**Run 3**
C0420	4/17/02 15:43	7.576	1.07	13.08	0.23	0.866	1.84	0.964	0.55	1.345	0.3	0	0.02	19.012	0.06	
C0421	4/17/02 15:44	7.809	1.11	12.875	0.24	0.832	1.86	0.857	0.55	1.376	0.28	0	0.02	19.156	0.06	Run 3 15:42 - 16:47
C0422	4/17/02 15:46	6.758	1.11	12.873	0.23	0.904	1.81	0.902	0.54	0.651	0.26	0	0.02	19.073	0.06	
C0423	4/17/02 15:48	6.577	1.15	12.804	0.24	0.816	1.86	0.918	0.54	0.501	0.26	0	0.02	19.429	0.06	
C0424	4/17/02 15:50	6.648	1.16	12.932	0.24	0.766	1.87	0.915	0.55	0.48	0.27	0	0.02	19.582	0.06	
C0425	4/17/02 15:51	6.468	1.14	13.108	0.24	0.321	1.85	0.923	0.55	0.42	0.27	0	0.02	19.535	0.06	
C0426	4/17/02 15:53	6.294	1.11	13.154	0.24	0.388	1.83	0.917	0.55	0.434	0.26	0	0.02	19.559	0.06	
C0427	4/17/02 15:55	6.359	1.13	13.023	0.24	0.555	1.84	0.868	0.54	0.402	0.24	0	0.02	19.601	0.06	
C0428	4/17/02 15:57	6.269	1.07	12.794	0.23	0.818	1.79	0.977	0.54	0.395	0.24	0	0.02	19.331	0.06	
C0429	4/17/02 15:58	6.316	1.07	12.782	0.23	0.668	1.8	0.946	0.54	0.395	0.24	0	0.02	19.208	0.06	
C0430	4/17/02 16:00	6.648	1.08	12.78	0.24	0.854	1.84	0.891	0.54	0.384	0.25	0	0.02	19.228	0.06	
C0431	4/17/02 16:02	6.1	2.04	13.734	0.59	2.676	4.69	1.064	0.61	0.005	0.57	0	0.03	19.881	0.43	
C0432	4/17/02 16:03	5.481	2	13.857	0.58	2.885	4.63	1.17	0.6	0	0.53	0	0.03	19.497	0.42	
C0433	4/17/02 16:05	5.54	2.01	13.772	0.58	2.893	4.65	1.158	0.6	0	0.48	0	0.03	19.586	0.42	
C0434	4/17/02 16:07	5.306	2.01	13.833	0.58	2.768	4.64	1.169	0.6	0	0.47	0	0.03	19.595	0.42	
C0435	4/17/02 16:09	5.444	2.01	13.827	0.58	2.792	4.64	1.226	0.6	0	0.47	0	0.03	19.558	0.42	
C0436	4/17/02 16:10	5.499	2.01	13.918	0.58	2.586	4.65	1.227	0.6	0	0.52	0	0.03	19.589	0.42	
C0437	4/17/02 16:12	5.456	2.01	13.782	0.58	2.753	4.65	1.263	0.6	0	0.57	0	0.03	19.448	0.42	
C0438	4/17/02 16:14	5.709	0.97	13.931	0.24	2.788	1.73	1.26	0.57	0.014	0.28	0	0.01	19.42	0.07	
C0439	4/17/02 16:16	5.774	0.96	13.947	0.25	2.596	1.69	1.272	0.57	0.003	0.28	0	0.01	19.433	0.07	
C0440	4/17/02 16:17	6.558	1.14	12.807	0.24	0	1.84	1.157	0.55	0.374	0.24	0	0.02	19.361	0.07	
C0441	4/17/02 16:19	6.804	1.2	12.789	0.24	0	1.87	1.016	0.55	0.331	0.25	0	0.02	19.713	0.07	
C0442	4/17/02 16:21	6.607	1.24	12.937	0.25	0	1.92	0.944	0.55	0.272	0.26	0	0.02	19.794	0.06	
C0443	4/17/02 16:23	6.316	1.22	13.212	0.25	0	1.9	1.021	0.56	0.299	0.28	0	0.02	19.738	0.06	
C0444	4/17/02 16:24	6.494	1.22	12.966	0.25	0	1.92	1.116	0.55	0.376	0.27	0	0.02	19.78	0.07	
C0445	4/17/02 16:26	6.589	1.27	12.744	0.25	1.154	2.02	1.215	0.56	0.482	0.27	0	0.02	19.812	0.08	
C0446	4/17/02 16:28	6.484	1.24	12.857	0.24	1.04	1.99	1.214	0.56	0.472	0.25	0	0.02	19.664	0.07	
C0447	4/17/02 16:30	6.912	1.24	12.696	0.24	2.347	2	1.266	0.57	0.6	0.24	0	0.02	19.678	0.1	
C0448	4/17/02 16:31	6.949	1.21	12.852	0.25	1.193	1.93	1.156	0.56	0.466	0.23	0	0.02	19.645	0.07	
C0449	4/17/02 16:33	7.071	1.23	12.751	0.25	1.707	1.96	1.167	0.55	0.461	0.24	0	0.02	19.611	0.08	
C0450	4/17/02 16:35	7.17	1.25	12.774	0.25	1.245	1.97	1.101	0.55	0.43	0.24	0	0.02	19.785	0.07	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On

Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0451	4/17/02 16:37	6.883	1.24	12.827	0.25	1.878	2	1.286	0.56	0.53	0.25	0	0.02	19.707	0.08	
C0452	4/17/02 16:38	6.901	1.27	12.799	0.25	1.007	1.99	1.072	0.56	0.441	0.24	0	0.02	20.029	0.07	
C0453	4/17/02 16:40	5.485	2.04	13.838	0.58	2.062	4.71	1.168	0.59	0	0.46	0	0.03	19.772	0.43	
C0454	4/17/02 16:42	6.107	1.18	13.076	0.24	0.549	1.86	1.034	0.55	0.36	0.25	0	0.02	19.759	0.06	
C0455	4/17/02 16:44	5.274	2.05	14.092	0.59	2.23	4.72	1.148	0.61	0	0.45	0	0.03	19.853	0.43	
C0456	4/17/02 16:45	6.479	1.21	13.021	0.25	0.331	1.89	0.946	0.55	0.359	0.24	0	0.02	19.918	0.06	
C0457	4/17/02 16:47	6.558	1.28	12.948	0.26	0.231	1.99	1.027	0.55	0.352	0.24	0	0.02	20.029	0.06	
C0458	4/17/02 16:49	0.556	0.18	0.299	0.2	0	2.17	1.405	0.36	47.967	1.28	6.075	0.08	0.774	0.05	
C0459	4/17/02 16:49	0.35	0.14	0.16	0.09	0	1.92	0.668	0.33	65.296	1.22	6.19	0.08	0.22	0.05	
C0460	4/17/02 16:50	0.29	0.15	0.133	0.07	0	1.88	1.015	0.35	75.742	1.39	6.191	0.07	0.121	0.05	
C0461	4/17/02 16:50	1.685	0.74	5.804	0.25	2.586	2.02	0.989	0.42	83.608	1.75	3.255	0.06	7.747	0.07	
C0462	4/17/02 16:51	4.787	0.76	12.355	0.2	1.357	1.57	1.396	0.56	50.51	0.99	1.072	0.02	15.96	0.07	
C0463	4/17/02 16:51	5.607	0.84	12.833	0.22	1.06	1.6	1.369	0.56	35.095	0.77	0.776	0.02	17.01	0.07	
C0464	4/17/02 16:52	5.85	0.86	12.819	0.22	1.123	1.6	1.198	0.55	28.879	0.73	0.74	0.02	17.2	0.07	
C0465	4/17/02 16:52	6.116	0.88	12.559	0.22	1.558	1.62	1.3	0.56	26.152	0.71	0.753	0.02	17.124	0.07	
C0466	4/17/02 16:52	6.17	0.85	12.646	0.22	1.795	1.59	1.369	0.56	24.738	0.7	0.764	0.02	16.984	0.07	
C0467	4/17/02 16:53	6.41	0.9	12.632	0.21	2.144	1.66	1.435	0.58	23.687	0.7	0.76	0.02	17.053	0.07	
C0468	4/17/02 16:53	6.487	0.91	12.751	0.21	1.835	1.66	1.438	0.57	22.435	0.71	0.755	0.02	17.184	0.07	
C0469	4/17/02 16:54	6.544	0.88	12.953	0.21	1.275	1.63	1.39	0.57	**22.517**	0.69	**0.752**	0.02	17.166	0.07	**HCl Spike to Probe**
C0470	4/17/02 16:54	6.61	0.92	12.646	0.22	0.82	1.64	1.222	0.56	21.754	0.67	0.748	0.02	17.178	0.06	
C0471	4/17/02 16:55	6.61	0.88	12.701	0.21	0.723	1.59	1.189	0.57	20.858	0.66	0.748	0.02	17.144	0.06	
C0472	4/17/02 16:55	6.655	0.87	12.62	0.22	0.663	1.59	1.323	0.56	20.874	0.65	0.744	0.02	17.114	0.06	
C0473	4/17/02 16:55	6.576	0.88	12.454	0.21	1.54	1.63	1.354	0.56	21.161	0.64	0.749	0.02	17	0.09	
C0474	4/17/02 16:56	6.835	0.9	12.545	0.22	2.701	1.68	1.483	0.58	21.628	0.65	0.752	0.02	17.182	0.12	
C0475	4/17/02 16:56	6.916	0.89	12.384	0.21	1.365	1.66	1.444	0.56	20.989	0.62	0.749	0.02	17.501	0.08	
C0476	4/17/02 16:57	6.837	0.86	12.355	0.21	0.91	1.61	1.204	0.55	20.207	0.6	0.744	0.02	17.194	0.07	
C0477	4/17/02 16:57	7.029	0.92	12.407	0.22	3.038	1.7	1.514	0.56	21.361	0.63	0.752	0.02	17.11	0.11	
C0478	4/17/02 16:58	7.074	0.93	12.48	0.22	3.32	1.74	1.451	0.58	20.965	0.63	0.75	0.02	17.152	0.1	
C0479	4/17/02 16:58	7.084	0.93	12.473	0.22	2.523	1.73	1.45	0.56	20.883	0.63	0.743	0.02	17.192	0.08	
C0480	4/17/02 16:58	6.974	0.93	12.593	0.22	2.526	1.73	1.478	0.56	20.647	0.62	0.742	0.02	17.119	0.09	
C0481	4/17/02 16:59	6.886	0.89	12.778	0.21	1.856	1.67	1.436	0.57	20.565	0.62	0.74	0.02	17.144	0.08	
C0482	4/17/02 16:59	6.822	0.9	12.537	0.22	1.453	1.67	1.296	0.56	20.484	0.61	0.744	0.02	17.063	0.07	
C0483	4/17/02 17:00	6.758	0.86	12.731	0.21	1.039	1.61	1.351	0.56	20.467	0.62	0.749	0.02	17.115	0.06	
C0484	4/17/02 17:00	6.664	0.85	12.734	0.22	1.132	1.59	1.214	0.55	20.539	0.63	0.742	0.02	17.05	0.06	
C0485	4/17/02 17:01	6.628	0.92	12.766	0.22	1.07	1.64	1.288	0.55	15.936	0.51	0.579	0.02	17.619	0.06	
C0486	4/17/02 17:01	6.511	0.89	12.583	0.21	1.338	1.63	1.277	0.56	15.149	0.47	0.693	0.02	17.227	0.07	
C0487	4/17/02 17:02	6.436	0.86	12.589	0.2	1.592	1.59	1.385	0.56	18.408	0.59	0.734	0.02	16.988	0.07	
C0488	4/17/02 17:02	6.318	0.88	12.572	0.21	1.589	1.62	1.242	0.56	20.122	0.65	0.744	0.02	16.992	0.07	
C0489	4/17/02 17:02	6.379	0.85	12.738	0.21	1.661	1.59	1.268	0.56	20.614	0.67	0.741	0.02	16.992	0.07	
C0490	4/17/02 17:03	6.518	0.88	12.609	0.21	2.245	1.6	1.309	0.56	20.494	0.68	0.743	0.02	16.902	0.08	
C0491	4/17/02 17:03	6.493	0.89	12.593	0.21	1.745	1.61	1.337	0.56	20.442	0.68	0.742	0.02	16.956	0.07	
C0492	4/17/02 17:04	6.463	0.83	12.718	0.21	1.139	1.54	1.23	0.56	20.335	0.68	0.738	0.02	16.929	0.06	
C0493	4/17/02 17:04	6.471	0.87	12.63	0.21	1.278	1.59	1.179	0.57	21.045	0.67	0.734	0.02	16.912	0.06	
C0494	4/17/02 17:05	6.497	0.86	12.731	0.21	1.559	1.6	1.216	0.57	20.636	0.65	0.729	0.02	16.896	0.07	
C0495	4/17/02 17:05	6.524	0.89	12.975	0.21	1.589	1.6	1.319	0.56	19.005	0.63	0.588	0.02	17.358	0.06	
C0496	4/17/02 17:05	6.5	0.92	13.054	0.23	1.62	1.64	1.396	0.56	9.311	0.33	0.469	0.02	17.743	0.07	
C0497	4/17/02 17:06	6.671	0.94	13.157	0.22	1.498	1.66	1.415	0.56	8.72	0.33	0.474	0.02	17.934	0.07	
C0498	4/17/02 17:06	6.759	1	13.096	0.23	1.285	1.69	1.235	0.56	8.179	0.32	0.472	0.02	17.953	0.06	
C0499	4/17/02 17:07	6.912	0.97	13.165	0.22	1.406	1.69	1.32	0.57	8.226	0.31	0.473	0.02	18.017	0.07	
C0500	4/17/02 17:07	7.047	1.01	12.735	0.21	1.19	1.72	1.278	0.56	8.041	0.27	0.474	0.02	18.045	0.07	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-
C0501	4/17/02 17:08	7.2	1	12.9	0.22	1.146	1.72	1.312	0.58	7.952	0.27	0.472	0.02	18.052	0.07
C0502	4/17/02 17:08	7.093	0.97	13.092	0.22	0.769	1.66	1.4	0.57	7.798	0.27	0.494	0.02	18.092	0.07
C0503	4/17/02 17:08	6.974	0.93	12.78	0.22	0.428	1.63	1.263	0.56	7.972	0.27	0.585	0.02	17.733	0.06
C0504	4/17/02 17:09	6.832	0.88	12.848	0.21	0.425	1.58	1.17	0.57	8.507	0.32	0.606	0.02	17.583	0.06
C0505	4/17/02 17:09	6.822	0.93	12.682	0.21	0.652	1.64	1.223	0.55	8.764	0.32	0.61	0.02	17.616	0.06
C0506	4/17/02 17:10	6.703	0.93	12.54	0.21	0.401	1.63	1.115	0.55	8.814	0.32	0.611	0.02	17.64	0.06
C0507	4/17/02 17:10	6.584	0.89	12.758	0.21	0.717	1.6	1.123	0.56	8.873	0.33	0.607	0.02	17.631	0.06
C0508	4/17/02 17:11	6.493	0.89	12.757	0.22	0.908	1.61	0.99	0.55	9.044	0.34	0.603	0.02	17.536	0.06
C0509	4/17/02 17:11	6.478	0.91	12.766	0.21	0.944	1.62	1.216	0.55	9.012	0.35	0.608	0.02	17.617	0.06
C0510	4/17/02 17:11	6.439	0.92	12.778	0.21	1.164	1.63	1.134	0.55	8.994	0.35	0.604	0.02	17.581	0.06
C0511	4/17/02 17:12	6.485	0.9	12.883	0.22	1.166	1.6	1.263	0.57	9.096	0.36	0.607	0.02	17.591	0.06
C0512	4/17/02 17:12	6.569	0.89	12.864	0.22	1.646	1.61	1.329	0.56	9.217	0.35	0.606	0.02	17.554	0.07
C0513	4/17/02 17:13	6.644	0.95	12.62	0.22	1.817	1.69	1.308	0.55	9.158	0.35	0.606	0.02	17.519	0.07
C0514	4/17/02 17:13	6.661	0.96	12.653	0.22	1.63	1.68	1.315	0.55	9.405	0.37	0.635	0.02	17.546	0.07
C0515	4/17/02 17:14	6.553	0.88	12.82	0.21	1.311	1.6	1.255	0.57	12.771	0.48	0.721	0.02	17.255	0.06
C0516	4/17/02 17:14	6.582	0.86	12.926	0.22	1.277	1.59	1.074	0.56	15.463	0.59	0.738	0.02	17.137	0.06
C0517	4/17/02 17:14	6.592	0.89	12.726	0.21	0.951	1.61	1.246	0.55	16.489	0.59	0.745	0.02	17.175	0.06
C0518	4/17/02 17:15	6.538	0.88	12.814	0.22	0.951	1.58	1.128	0.57	19.47	0.72	0.745	0.02	17.137	0.06
C0519	4/17/02 17:15	6.416	0.85	13.045	0.21	1.121	1.56	1.339	0.57	20.549	0.75	0.745	0.02	17.172	0.07
C0520	4/17/02 17:16	6.361	0.86	13.013	0.21	1.061	1.57	1.228	0.56	20.723	0.74	0.747	0.02	17.136	0.06
C0521	4/17/02 17:16	6.426	0.87	12.812	0.21	0.932	1.59	1.097	0.56	20.864	0.73	0.744	0.02	17.035	0.06
C0522	4/17/02 17:17	6.455	0.83	12.981	0.21	0.943	1.54	1.092	0.57	21.012	0.74	0.744	0.02	17.051	0.06
C0523	4/17/02 17:17	6.622	0.86	12.801	0.21	1.57	1.61	1.267	0.57	21.648	0.7	0.676	0.02	17.304	0.07
C0524	4/17/02 17:17	7.415	1.07	13.46	0.23	0.902	1.76	1.302	0.56	8.819	0.39	0.149	0.02	19.324	0.07
C0525	4/17/02 17:18	7.694	1.1	13.502	0.24	0.165	1.79	1.175	0.58	5.864	0.27	0.034	0.02	19.619	0.06
C0526	4/17/02 17:18	7.69	1.1	13.515	0.23	0.221	1.78	1.219	0.57	4.817	0.25	0.012	0.02	19.653	0.06
C0527	4/17/02 17:19	7.736	1.15	13.316	0.25	0.439	1.85	1.194	0.57	4.216	0.24	0	0.02	19.756	0.06
C0528	4/17/02 17:19	7.506	1.04	13.125	0.23	0.977	1.76	1.159	0.56	3.957	0.23	0.24	0.02	18.87	0.06
C0529	4/17/02 17:20	6.889	0.81	13.046	0.21	1.608	1.55	1.288	0.58	5.837	0.25	0.764	0.02	16.894	0.06
C0530	4/17/02 17:20	6.668	0.8	12.818	0.21	1.947	1.56	1.188	0.57	8.627	0.34	0.854	0.02	16.556	0.06
C0531	4/17/02 17:20	6.6	0.82	12.762	0.2	1.715	1.58	1.173	0.57	13.593	0.46	0.718	0.02	16.569	0.06
C0532	4/17/02 17:21	6.621	0.8	12.911	0.21	1.463	1.57	1.308	0.56	12.108	0.43	0.81	0.02	16.475	0.06
C0533	4/17/02 17:21	6.632	0.83	12.85	0.22	1.533	1.58	1.213	0.57	14.46	0.51	0.826	0.02	16.641	0.06
C0534	4/17/02 17:22	6.701	0.83	12.805	0.21	1.839	1.59	1.29	0.56	16.922	0.57	0.776	0.02	16.695	0.07
C0535	4/17/02 17:22	6.864	0.84	12.914	0.21	1.645	1.6	1.401	0.57	18.114	0.62	0.769	0.02	16.804	0.07
C0536	4/17/02 17:23	6.962	0.84	12.965	0.21	1.671	1.59	1.353	0.57	19.729	0.7	0.762	0.02	16.827	0.07
C0537	4/17/02 17:23	6.917	0.85	13.009	0.21	1.75	1.6	1.363	0.57	20.312	0.72	0.76	0.02	16.819	0.07
C0538	4/17/02 17:24	7.011	0.87	12.669	0.21	1.507	1.63	1.35	0.56	20.476	0.72	0.755	0.02	16.946	0.07
C0539	4/17/02 17:24	7.079	0.84	12.692	0.21	1.439	1.59	1.308	0.56	20.661	0.71	0.756	0.02	16.977	0.06
C0540	4/17/02 17:24	7.142	0.83	12.585	0.2	1.425	1.58	1.187	0.56	21.011	0.72	0.75	0.02	16.939	0.06
C0541	4/17/02 17:25	6.947	0.82	12.619	0.21	1.833	1.58	1.168	0.56	21.541	0.73	0.751	0.02	16.912	0.07
C0542	4/17/02 17:25	6.949	0.83	12.737	0.21	1.58	1.58	1.247	0.56	21.659	0.73	0.746	0.02	16.924	0.07
C0543	4/17/02 17:26	6.851	0.85	12.663	0.21	1.651	1.61	1.217	0.55	21.679	0.71	0.745	0.02	17.027	0.06
C0544	4/17/02 17:26	6.982	0.83	12.662	0.21	1.47	1.59	1.134	0.56	21.411	0.69	0.74	0.02	16.966	0.06
C0545	4/17/02 17:27	6.931	0.83	12.667	0.22	1.421	1.59	1.173	0.55	21.816	0.69	0.738	0.02	16.932	0.07
C0546	4/17/02 17:27	7.142	0.91	12.703	0.21	1.815	1.67	1.309	0.55	21.394	0.66	0.66	0.02	17.291	0.07
C0547	4/17/02 17:27	7.38	0.95	13.066	0.21	1.346	1.71	1.325	0.56	14.158	0.46	0.502	0.02	17.813	0.07
C0548	4/17/02 17:28	7.352	0.99	13.099	0.22	1.561	1.72	1.327	0.57	9.316	0.32	0.463	0.02	17.995	0.07
C0549	4/17/02 17:28	7.285	1.01	13.038	0.21	1.456	1.74	1.336	0.56	8.758	0.31	0.451	0.02	17.996	0.07
C0550	4/17/02 17:29	7.101	0.96	13.121	0.21	1.121	1.67	1.156	0.56	8.377	0.32	0.451	0.02	17.988	0.06

TXI-Hunt
Kiln Stack
Method 320 321 Raw Data

Raw Mill On		Temperature & Pressure Adjusted Concentrations in ppm														
		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0551	4/17/02 17:29	7.023	0.93	13.255	0.21	1.109	1.65	1.228	0.57	8.107	0.28	0.447	0.02	17.945	0.06	
C0552	4/17/02 17:30	6.94	0.94	13.384	0.22	1.051	1.65	1.106	0.58	7.684	0.28	0.358	0.02	18.24	0.06	
C0553	4/17/02 17:33	0.284	0.15	0.129	0.05	20.705	0.36	0.726	0.33	3.233	0.28	0.005	5.51E-03	0.078	0.02	
C0554	4/17/02 17:33	0.183	0.15	0.11	0.05	20.614	0.36	0.602	0.33	2.999	0.27	0.004	5.41E-03	0.076	0.02	
C0555	4/17/02 17:34	0.21	0.15	0.112	0.05	20.637	0.37	0.659	0.31	2.715	0.29	0.004	5.46E-03	0.077	0.02	
C0556	4/17/02 17:34	0.212	0.15	0.107	0.05	20.408	0.38	0.791	0.33	2.639	0.29	0.002	5.64E-03	0.071	0.02	
C0557	4/17/02 17:35	0.201	0.15	0.123	0.05	20.331	0.38	0.595	0.33	2.469	0.29	0.002	5.60E-03	0.068	0.02	**Ethylene to Probe**
C0558	4/17/02 17:35	0.206	0.15	0.126	0.05	20.361	0.39	0.788	0.32	2.413	0.3	0.002	5.62E-03	0.065	0.02	
C0559	4/17/02 17:36	0.166	0.15	0.128	0.05	20.315	0.38	0.529	0.32	2.269	0.29	0.002	5.68E-03	0.068	0.02	
C0560	4/17/02 17:38	6.68	0.84	12.823	0.2	5.687	1.67	1.278	0.57	4.417	0.24	0	0.01	16.781	0.08	
C0561	4/17/02 17:38	6.768	0.86	12.491	0.21	4.815	1.63	1.277	0.56	3.82	0.22	0	0.01	16.829	0.07	
C0562	4/17/02 17:39	6.784	0.81	12.715	0.2	3.684	1.57	1.3	0.56	3.607	0.22	0.168	0.01	16.808	0.06	
C0563	4/17/02 17:39	6.746	0.8	12.748	0.2	2.214	1.57	1.321	0.56	3.441	0.24	0.674	0.02	16.724	0.06	
C0564	4/17/02 17:39	6.623	0.76	12.836	0.2	1.626	1.54	1.266	0.57	3.263	0.25	0.762	0.02	16.698	0.06	
C0565	4/17/02 17:40	6.689	0.82	12.764	0.21	2.008	1.61	1.329	0.57	3.047	0.24	0.775	0.02	16.783	0.06	
C0566	4/17/02 17:40	6.643	0.77	12.945	0.21	1.671	1.56	1.151	0.58	2.913	0.25	0.782	0.02	16.842	0.06	
C0567	4/17/02 17:41	6.762	0.78	12.897	0.2	1.641	1.54	1.271	0.57	2.774	0.24	0.786	0.02	16.767	0.06	
C0568	4/17/02 17:41	6.671	0.75	13.022	0.2	1.331	1.5	1.135	0.57	2.702	0.25	0.793	0.02	16.716	0.06	
C0569	4/17/02 17:42	6.85	0.82	12.522	0.22	1.489	1.56	1.26	0.56	2.572	0.24	0.79	0.02	16.653	0.06	
C0570	4/17/02 17:42	6.967	0.8	12.732	0.2	1.354	1.53	1.21	0.56	2.493	0.26	0.792	0.02	16.777	0.06	
C0571	4/17/02 17:42	6.673	0.78	12.041	0.19	1.541	1.53	1.318	0.55	2.446	0.24	1.113	0.02	15.63	0.06	
C0572	4/17/02 17:43	4.912	0.6	10.737	0.18	3.173	1.34	1.166	0.53	2.257	0.23	2.155	0.04	11.657	0.05	
C0573	4/17/02 17:43	4.674	0.58	10.319	0.16	3.084	1.37	1.113	0.51	3.326	0.25	2.37	0.04	10.996	0.05	
C0574	4/17/02 17:44	4.586	0.57	10.396	0.16	3.086	1.38	1.006	0.53	7.002	0.26	2.392	0.05	10.93	0.05	
C0575	4/17/02 17:44	4.503	0.58	10.488	0.16	3.155	1.37	1.033	0.52	22.694	0.8	2.381	0.05	10.935	0.05	
C0576	4/17/02 17:45	4.42	0.58	10.444	0.15	3.254	1.38	1.04	0.52	28.531	0.85	2.379	0.05	10.972	0.05	
C0577	4/17/02 17:45	4.404	0.58	10.359	0.16	3.316	1.41	1.005	0.53	33.39	0.88	2.37	0.05	10.953	0.05	
C0578	4/17/02 17:46	4.359	0.58	10.382	0.17	3.474	1.41	1.03	0.53	37.268	0.91	2.381	0.05	10.963	0.05	
C0579	4/17/02 17:46	4.344	0.58	10.23	0.16	3.671	1.42	1.075	0.53	40.415	0.97	2.374	0.05	11.005	0.05	
C0580	4/17/02 17:46	4.369	0.58	10.335	0.16	3.979	1.49	1.146	0.54	43.471	0.95	2.391	0.05	11.062	0.06	
C0581	4/17/02 17:47	4.37	0.59	10.305	0.16	3.654	1.46	1.075	0.52	45.614	0.99	2.396	0.05	11.024	0.05	
C0582	4/17/02 17:47	4.373	0.59	10.452	0.16	3.593	1.45	1.052	0.53	47.578	1.05	2.381	0.05	11.053	0.05	
C0583	4/17/02 17:48	4.346	0.59	10.516	0.15	3.769	1.44	1.074	0.53	49.668	1.07	2.376	0.05	11.119	0.06	
C0584	4/17/02 17:48	4.381	0.6	10.587	0.17	3.972	1.44	1.166	0.53	51.288	1.09	2.375	0.05	11.188	0.06	
C0585	4/17/02 17:49	4.364	0.59	10.54	0.16	3.832	1.44	1.111	0.54	52.51	1.13	2.384	0.05	11.087	0.06	
C0586	4/17/02 17:49	3.45	0.44	6.929	0.18	2.404	2.03	0.844	0.44	62.355	1.28	3.643	0.07	7.808	0.08	
C0587	4/17/02 17:49	2.185	0.34	3.353	0.36	0.8	2.71	0.997	0.47	84.801	1.94	5.117	0.08	4.313	0.08	
C0588	4/17/02 17:50	1.83	0.32	2.593	0.38	0.658	2.8	1.049	0.5	97.131	2.2	5.369	0.08	3.568	0.08	
C0589	4/17/02 17:50	1.692	0.32	2.453	0.38	0.628	2.81	1.072	0.48	103.545	2.31	5.409	0.08	3.454	0.09	
C0590	4/17/02 17:51	1.706	0.32	2.469	0.38	0.939	2.81	1.037	0.48	107.621	2.38	5.397	0.09	3.43	0.09	
C0591	4/17/02 17:51	1.638	0.31	2.502	0.38	0.853	2.83	0.975	0.49	110.531	2.45	5.404	0.09	3.436	0.09	
C0592	4/17/02 17:52	1.676	0.32	2.497	0.38	0.919	2.83	1.077	0.5	112.646	2.5	5.398	0.09	3.456	0.09	
C0593	4/17/02 17:52	1.662	0.32	2.485	0.38	0.865	2.81	0.919	0.5	114.908	2.51	5.403	0.08	3.446	0.09	
C0594	4/17/02 17:52	1.712	0.32	2.488	0.38	0.913	2.85	0.977	0.49	116.253	2.55	5.402	0.09	3.462	0.09	
C0595	4/17/02 17:53	1.734	0.32	2.512	0.38	0.967	2.85	1.148	0.49	117.562	2.58	5.394	0.09	3.462	0.09	
C0596	4/17/02 17:53	1.705	0.32	2.452	0.37	0.987	2.87	1.039	0.51	118.698	2.59	5.391	0.09	3.458	0.1	
C0597	4/17/02 17:54	1.732	0.32	2.434	0.38	1.095	2.88	0.952	0.49	119.903	2.6	5.399	0.09	3.454	0.1	
C0598	4/17/02 17:54	1.754	0.32	2.438	0.38	1.237	2.88	1.013	0.5	120.549	2.6	5.4	0.09	3.437	0.1	
C0599	4/17/02 17:55	2.032	0.39	3.672	0.3	2.046	2.7	1.051	0.47	120.777	2.51	4.754	0.08	4.797	0.09	
C0600	4/17/02 17:55	4.392	0.66	11.488	0.22	4.596	1.4	1.487	0.57	92.624	1.81	1.653	0.03	12.868	0.08	

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On		Temperature & Pressure Adjusted Concentrations in ppm													
		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-
C0601	4/17/02 17:55	5.479	0.74	12.975	0.21	3.704	1.65	1.479	0.58	65.96	1.38	0.945	0.02	16.098	0.08
C0602	4/17/02 17:56	6.525	0.86	12.539	0.22	2.312	1.72	1.414	0.56	55.011	1.19	0.85	0.02	16.464	0.08
C0603	4/17/02 17:56	6.623	0.84	12.637	0.23	2.049	1.65	1.422	0.56	48.543	1.16	0.84	0.02	16.436	0.08
C0604	4/17/02 17:57	6.747	0.8	12.703	0.22	1.687	1.6	1.325	0.57	44.409	1.17	0.841	0.02	16.412	0.07
C0605	4/17/02 17:57	6.715	0.8	12.632	0.21	1.5	1.58	1.277	0.57	41.461	1.19	0.854	0.02	16.356	0.07
C0606	4/17/02 17:58	6.746	0.83	12.456	0.21	1.965	1.61	1.324	0.55	39.201	1.18	0.848	0.02	16.333	0.07
C0607	4/17/02 17:58	6.786	0.85	12.651	0.21	2.087	1.62	1.507	0.57	37.792	1.21	0.846	0.02	16.393	0.07
C0608	4/17/02 17:58	6.721	0.84	12.531	0.21	1.711	1.58	1.409	0.55	36.264	1.24	0.842	0.02	16.405	0.07
C0609	4/17/02 17:59	6.74	0.82	12.532	0.22	1.649	1.59	1.465	0.55	35.068	1.21	0.844	0.02	16.366	0.07
C0610	4/17/02 17:59	6.615	0.83	12.654	0.21	1.441	1.57	1.269	0.56	34.489	1.27	0.843	0.02	16.41	0.07
C0611	4/17/02 18:00	6.473	0.8	12.894	0.22	1.647	1.52	1.382	0.56	33.735	1.33	0.842	0.02	16.476	0.07
C0612	4/17/02 18:00	6.483	0.84	12.624	0.21	1.586	1.56	1.312	0.56	32.934	1.29	0.841	0.02	16.403	0.07
C0613	4/17/02 18:01	6.496	0.81	12.871	0.21	1.8	1.51	1.342	0.57	32.514	1.33	0.84	0.02	16.486	0.07
C0614	4/17/02 18:01	6.62	0.8	12.821	0.21	1.713	1.51	1.396	0.57	32.011	1.31	0.837	0.02	16.448	0.07
C0615	4/17/02 18:02	6.686	0.84	12.582	0.21	2.157	1.6	1.176	0.56	31.596	1.24	0.837	0.02	16.421	0.07
C0616	4/17/02 18:02	6.922	0.82	12.778	0.2	2.587	1.59	1.274	0.58	31.443	1.21	0.788	0.02	16.582	0.09
C0617	4/17/02 18:02	7.145	0.91	12.69	0.21	2.259	1.66	1.431	0.56	28.897	1.17	0.591	0.02	17.26	0.08
C0618	4/17/02 18:03	7.254	0.93	12.88	0.23	2.244	1.69	1.29	0.57	26.624	1.11	0.545	0.02	17.487	0.08
C0619	4/17/02 18:03	7.14	0.91	12.729	0.22	1.801	1.66	1.363	0.55	25.292	1.14	0.54	0.02	17.462	0.07
C0620	4/17/02 18:04	7.126	0.9	13.021	0.22	1.8	1.63	1.387	0.56	24.393	1.15	0.54	0.02	17.481	0.07
C0621	4/17/02 18:04	6.989	0.91	12.868	0.22	1.802	1.64	1.17	0.56	23.424	1.17	0.538	0.02	17.468	0.07
C0622	4/17/02 18:05	6.89	0.89	12.83	0.21	1.687	1.64	1.179	0.55	23.137	1.17	0.54	0.02	17.492	0.07
C0623	4/17/02 18:05	6.944	0.88	12.645	0.21	1.419	1.62	1.169	0.56	22.012	1.16	0.539	0.02	17.451	0.07
C0624	4/17/02 18:05	7.001	0.9	12.588	0.22	2.721	1.67	1.323	0.57	21.889	1.14	0.541	0.02	17.351	0.09
C0625	4/17/02 18:06	7.241	0.92	12.775	0.22	5.55	1.74	1.301	0.58	21.722	1.13	0.543	0.02	17.355	0.15
C0626	4/17/02 18:06	7.217	0.94	12.779	0.22	3.041	1.71	1.359	0.57	21.333	1.1	0.536	0.02	17.433	0.09
C0627	4/17/02 18:07	7.186	0.95	12.616	0.23	1.95	1.68	1.246	0.56	20.643	1.13	0.538	0.02	17.527	0.08
C0628	4/17/02 18:07	7.105	0.9	12.846	0.21	1.584	1.62	1.364	0.56	20.308	1.13	0.541	0.02	17.454	0.07
C0629	4/17/02 18:08	7.18	0.89	12.717	0.22	1.597	1.61	1.346	0.57	20.02	1.15	0.546	0.02	17.359	0.07
C0630	4/17/02 18:08	7.146	0.89	12.613	0.22	1.354	1.61	1.209	0.55	18.168	1.04	0.541	0.02	17.397	0.07
C0631	4/17/02 18:08	7.227	0.93	12.468	0.22	2.394	1.65	1.28	0.57	19.318	1.08	0.542	0.02	17.335	0.09
C0632	4/17/02 18:09	7.204	0.88	12.758	0.21	1.405	1.58	1.254	0.55	16.868	1.03	0.543	0.02	17.4	0.07
C0633	4/17/02 18:09	7.034	0.88	12.725	0.22	1.172	1.56	1.213	0.56	14.981	0.96	0.541	0.02	17.475	0.07
C0634	4/17/02 18:10	7.092	0.88	12.691	0.21	2.067	1.6	1.355	0.56	16.88	1.04	0.541	0.02	17.441	0.09
C0635	4/17/02 18:10	7.295	0.9	12.695	0.22	3.248	1.65	1.47	0.59	16.399	1.01	0.545	0.02	17.41	0.12
C0636	4/17/02 18:11	7.204	0.92	12.62	0.22	1.735	1.6	1.399	0.57	14.877	0.96	0.54	0.02	17.427	0.08
C0637	4/17/02 18:11	7.029	0.87	12.753	0.22	1.163	1.54	1.256	0.56	13.068	0.88	0.541	0.02	17.365	0.07
C0638	4/17/02 18:11	7.03	0.88	12.73	0.22	1.231	1.55	1.088	0.57	13.123	0.89	0.54	0.02	17.479	0.07
C0639	4/17/02 18:12	7.081	0.91	12.539	0.22	1.388	1.6	1.238	0.56	13.143	0.84	0.537	0.02	17.649	0.07
C0640	4/17/02 18:12	7.124	0.92	12.531	0.22	3.061	1.66	1.449	0.56	14.054	0.85	0.54	0.02	17.537	0.11
C0641	4/17/02 18:13	7.225	0.93	12.347	0.21	4.469	1.7	1.305	0.57	15.078	0.84	0.542	0.02	17.331	0.14
C0642	4/17/02 18:13	7.283	0.94	12.366	0.23	4.397	1.71	1.341	0.58	14.685	0.8	0.543	0.02	17.377	0.14
C0643	4/17/02 18:14	7.222	0.94	12.424	0.21	3.116	1.69	1.48	0.57	13.819	0.76	0.537	0.02	17.384	0.13
C0644	4/17/02 18:14	6.963	0.9	12.516	0.21	1.687	1.63	1.336	0.55	11.518	0.63	0.536	0.02	17.456	0.08
C0645	4/17/02 18:15	6.933	0.89	12.441	0.21	1.642	1.64	1.274	0.56	11.753	0.59	0.534	0.02	17.574	0.08
C0646	4/17/02 18:15	7.001	0.94	12.347	0.21	1.227	1.67	1.177	0.55	9.995	0.53	0.53	0.02	17.679	0.07
C0647	4/17/02 18:15	6.951	0.91	12.681	0.22	1.411	1.63	1.082	0.56	10.197	0.56	0.534	0.02	17.657	0.07
C0648	4/17/02 18:16	6.888	0.9	12.606	0.21	1.282	1.63	1.162	0.55	9.519	0.51	0.533	0.02	17.547	0.07
C0649	4/17/02 18:16	6.981	0.87	12.84	0.22	2.127	1.64	1.307	0.57	11.514	0.57	0.533	0.02	17.315	0.09
C0650	4/17/02 18:17	7.005	0.91	12.751	0.22	2.169	1.66	1.271	0.57	11.504	0.56	0.535	0.02	17.355	0.09

TXI-Hunter
Kiln Stack
Method 320 321 Raw Data

Raw Mill On		Temperature & Pressure Adjusted Concentrations in ppm														
		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0651	4/17/02 18:17	6.819	0.92	12.6	0.22	1.222	1.64	1.109	0.56	10.339	0.54	0.534	0.02	17.356	0.07	
C0652	4/17/02 18:18	6.881	0.89	12.744	0.21	1.088	1.59	1.057	0.57	9.402	0.53	0.538	0.02	17.295	0.07	
C0653	4/17/02 18:18	6.8	0.85	12.803	0.21	1.049	1.57	1.144	0.56	9.507	0.53	0.535	0.02	17.216	0.07	
C0654	4/17/02 18:18	6.749	0.89	12.584	0.21	1.744	1.63	1.168	0.56	10.125	0.53	0.537	0.02	17.17	0.07	
C0655	4/17/02 18:19	6.686	0.89	12.483	0.21	2.249	1.65	1.208	0.55	11.993	0.6	0.538	0.02	17.077	0.08	
C0656	4/17/02 18:19	6.498	0.88	12.556	0.22	2.111	1.61	1.356	0.55	11.241	0.61	0.568	0.02	16.986	0.08	
C0657	4/17/02 18:20	6.421	0.81	12.337	0.21	2.127	1.58	1.248	0.56	19.543	0.96	0.782	0.02	16.249	0.07	
C0658	4/17/02 18:20	6.394	0.77	12.482	0.2	1.738	1.55	1.141	0.56	22.225	1.05	0.843	0.02	16.109	0.07	
C0659	4/17/02 18:21	6.36	0.77	12.463	0.2	1.784	1.52	1.263	0.56	24.005	1.07	0.855	0.02	16.062	0.07	
C0660	4/17/02 18:21	6.334	0.81	12.457	0.21	1.825	1.57	1.209	0.55	24.884	1.08	0.861	0.02	15.977	0.07	
C0661	4/17/02 18:21	6.34	0.78	12.687	0.2	1.568	1.52	1.301	0.55	25.425	1.11	0.856	0.02	15.963	0.07	
C0662	4/17/02 18:22	6.369	0.76	12.542	0.21	1.355	1.48	1.235	0.55	25.786	1.11	0.855	0.02	15.905	0.07	
C0663	4/17/02 18:22	6.325	0.74	12.634	0.21	1.374	1.49	1.029	0.55	26.326	1.11	0.861	0.02	15.907	0.07	
C0664	4/17/02 18:23	6.351	0.76	12.644	0.21	1.594	1.51	1.173	0.55	26.983	1.1	0.857	0.02	16.005	0.07	
C0665	4/17/02 18:23	6.46	0.81	12.569	0.21	2.243	1.57	1.218	0.57	27.243	1.07	0.854	0.02	16.215	0.08	
C0666	4/17/02 18:24	6.363	0.81	12.489	0.2	1.97	1.57	1.128	0.56	27.34	1.04	0.852	0.02	16.154	0.08	
C0667	4/17/02 18:24	6.234	0.76	12.724	0.21	1.479	1.5	0.997	0.55	27.427	1.11	0.849	0.02	16.152	0.07	
C0668	4/17/02 18:24	6.151	0.79	12.527	0.21	1.618	1.55	1.269	0.55	27.413	1.03	0.846	0.02	16.056	0.07	
C0669	4/17/02 18:25	6.238	0.81	12.421	0.2	3.485	1.6	1.295	0.57	27.876	0.98	0.851	0.02	15.972	0.11	
C0670	4/17/02 18:25	6.329	0.82	12.316	0.22	5.442	1.64	1.515	0.58	28.38	0.96	0.858	0.02	15.903	0.16	
C0671	4/17/02 18:26	6.413	0.84	12.507	0.2	4.401	1.64	1.404	0.58	28.218	0.94	0.856	0.02	15.959	0.13	
C0672	4/17/02 18:26	6.46	0.82	12.741	0.2	2.784	1.61	1.237	0.58	28.397	0.93	0.853	0.02	16.098	0.1	
C0673	4/17/02 18:27	6.523	0.79	12.806	0.2	1.33	1.57	1.103	0.56	28.288	0.9	0.848	0.02	16.202	0.08	
C0674	4/17/02 18:27	6.547	0.78	12.683	0.2	0.577	1.52	1.095	0.55	28.145	0.92	0.847	0.02	16.235	0.07	
C0675	4/17/02 18:28	6.487	0.79	12.73	0.21	0.009	1.5	0.986	0.55	28.245	0.94	0.848	0.02	16.197	0.07	
C0676	4/17/02 18:28	6.439	0.74	13.168	0.2	0.039	1.47	1.016	0.56	28.306	0.96	0.854	0.02	16.157	0.07	
C0677	4/17/02 18:28	6.498	0.77	12.83	0.2	0.192	1.53	1.047	0.56	28.824	0.92	0.855	0.02	16.188	0.07	
C0678	4/17/02 18:29	6.347	0.82	12.578	0.2	1.089	1.61	1.07	0.57	28.947	0.86	0.853	0.02	16.226	0.09	
C0679	4/17/02 18:29	6.355	0.82	12.426	0.2	2.122	1.62	1.259	0.57	29.078	0.86	0.859	0.02	16.036	0.12	
C0680	4/17/02 18:30	6.513	0.79	12.718	0.21	3.161	1.59	1.435	0.58	29.479	0.91	0.862	0.02	15.92	0.16	
C0681	4/17/02 18:30	6.381	0.82	12.791	0.19	0.743	1.55	1.253	0.57	29.31	0.97	0.859	0.02	16.234	0.1	
C0682	4/17/02 18:31	6.413	0.84	12.634	0.2	0.621	1.56	1.245	0.57	29.253	0.94	0.856	0.02	16.223	0.1	
C0683	4/17/02 18:31	6.501	0.82	12.605	0.2	0.547	1.54	1.123	0.57	29.436	0.96	0.855	0.02	16.309	0.1	
C0684	4/17/02 18:31	6.496	0.82	12.539	0.19	0.347	1.54	1.075	0.55	29.072	0.95	0.847	0.02	16.359	0.08	
C0685	4/17/02 18:32	6.474	0.81	12.635	0.2	0.017	1.54	1.144	0.55	29.389	0.97	0.851	0.02	16.387	0.08	
C0686	4/17/02 18:32	6.231	0.75	12.487	0.19	1.388	1.5	1.178	0.56	30.55	0.98	1.01	0.02	15.593	0.1	
C0687	4/17/02 18:33	6.467	0.9	12.627	0.2	2.002	1.73	1.301	0.58	30.138	1.02	0.537	0.02	16.987	0.1	
C0688	4/17/02 18:33	6.376	0.87	12.803	0.21	3.515	1.73	1.253	0.57	25.559	0.86	0.302	0.01	16.849	0.11	
C0689	4/17/02 18:34	1.446	0.32	2.401	0.36	18.453	2.57	0.917	0.44	2.353	0.45	0.068	0.02	3.417	0.07	
C0690	4/17/02 18:35	0.819	0.26	0.867	0.31	19.603	2.22	0.866	0.42	1.78	0.39	0.039	0.02	1.656	0.06	
C0691	4/17/02 18:35	0.478	0.19	0.346	0.21	19.996	1.66	1.099	0.35	1.261	0.28	0.021	0.02	0.79	0.05	
C0692	4/17/02 18:35	0.323	0.16	0.21	0.13	**20.274**	1.14	0.549	0.33	0.858	0.19	0.014	0.01	0.371	0.04	**Ethylene to Cell**
C0693	4/17/02 18:36	0.171	0.16	0.125	0.07	20.72	0.73	0.24	0.33	0.478	0.22	0.008	7.98E-03	0.183	0.03	
C0694	4/17/02 18:36	0.046	0.15	0.099	0.04	20.389	0.45	0.314	0.32	0.4	0.29	0.008	5.92E-03	0.084	0.02	
C0695	4/17/02 18:37	0.097	0.13	0.041	0.03	19.986	0.3	0.416	0.32	0.354	0.37	0.01	5.46E-03	0.013	0.02	
C0696	4/17/02 18:37	0.084	0.1	0.015	0.02	19.589	0.35	0.145	0.31	0.264	0.45	0.018	5.84E-03	0	0.02	

TXI-Hunter
Kiln Stack
Raw Mill Off

Summary of FTIR Results

Run No.	4	5	6
Start Date/Time	4/18/02 10:01	4/18/02 12:10	4/18/02 14:44
End Date/Time	4/18/02 11:06	4/18/02 13:17	4/18/02 15:44
<u>Method 321</u>			
Hydrogen Chloride (ppmwv)	1.33	2.13	2.18
<u>Method 320</u>			
Formaldehyde (ppmwv)	1.28	1.05	1.28

TXI - Hunter
Kiln Stack, Raw Mill Off
Method 320/321

FTIR METHOD SETUP

Method Name: HCl Kansas
Method Path: C:\JOBS\TXI\KANSAS\HCL KANSAS.ME
Method Type: AutoQuant 3.0

Non-Linear Analysis mode
Temperature & Pressure Adjustments: ON
Mass Emission Computations: OFF

Method Parameters:

Wavenumber range:	650.00 - 4500.00
Fingerprint zoom:	650.00 - 1400.00
Path Length =	7.2
Interfere Criterion =	2500
Gain number =	1
Apodization =	Triangle
Phase Correct =	Mertz
Resolution =	0.5
Baseline Correction:	Linear

Compound: Ammonia
Reference Temperature = 25
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: NH3_12.SPC
Primary: Yes
Reference concentration = 52.60
Region #1: 1043.04 - 1057.22
Region #2: 1061.38 - 1078.68
Region #3: 1083.18 - 1098.76
Region #4: 1101.70 - 1106.14
Region #5: 1120.94 - 1124.20

Compound: CO2
Reference Temperature = 180
Reference Pressure = 0.973741
Alarms: Disabled
Output: Disabled

Spectrum: CO2-20%.SPC
Primary: Yes
Reference concentration = 155.60
Region #1: 1006.01 - 1114.47
Region #2: 3417.52 - 3521.07

FTIR METHOD SETUP

Compound: Ethylene
Reference Temperature = 121
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: ETY_H19A.SPC
Primary: Yes
Reference concentration = 207.60
Region #1: 819.51 - 936.81
Region #2: 990.16 - 1115.33

Compound: Formaldehyde
Reference Temperature = 150
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: FORM-21.SPC
Reference concentration = 79.00
Region #1: 2731.00 - 2747.00
Region #2: 2755.00 - 2770.00
Region #3: 2803.00 - 2816.00

Spectrum: FORM-20.SPC
Reference concentration = 135.00
Region #1: 2731.00 - 2747.00
Region #2: 2755.00 - 2770.00
Region #3: 2803.00 - 2816.00

Spectrum: FORM-19.SPC
Primary: Yes
Reference concentration = 237.00
Region #1: 2731.00 - 2747.00
Region #2: 2755.00 - 2770.00
Region #3: 2803.00 - 2816.00

TXI - Hunter
Kiln Stack, Raw Mill Off
Method 320/321

FTIR METHOD SETUP

Compound: HCl

Reference Temperature = 180
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: HCL-180-7PPMM.SPC

Reference concentration = 7.30
Region #1: 2696.05 - 2708.94
Region #2: 2723.11 - 2732.14
Region #3: 2746.31 - 2757.91
Region #4: 2766.94 - 2781.11
Region #5: 2792.71 - 2805.60
Region #6: 2813.34 - 2828.80
Region #7: 2836.54 - 2849.43

Spectrum: HCL-180-19PPMM.SPC

Reference concentration = 18.60
Region #1: 2697.79 - 2707.23
Region #2: 2722.33 - 2734.60
Region #3: 2745.92 - 2758.19
Region #4: 2769.51 - 2782.73
Region #5: 2792.16 - 2802.54
Region #6: 2816.70 - 2825.19
Region #7: 2838.40 - 2847.84

Spectrum: HCL-180-42PPMM.SPC

Primary: Yes
Reference concentration = 42.40
Region #1: 2698.12 - 2708.43
Region #2: 2723.16 - 2731.26
Region #3: 2747.46 - 2754.83
Region #4: 2769.56 - 2779.87
Region #5: 2792.39 - 2801.97
Region #6: 2815.96 - 2824.80
Region #7: 2837.32 - 2846.89

Spectrum: HCL_H1A.SPC

Reference concentration = 161.70
Region #1: 2697.14 - 2707.01
Region #2: 2723.17 - 2732.14
Region #3: 2746.50 - 2757.28
Region #4: 2768.94 - 2782.41
Region #5: 2793.18 - 2805.74
Region #6: 2814.72 - 2828.18
Region #7: 2838.96 - 2846.14

FTIR METHOD SETUP

Compound: SF6

Reference Temperature = 121
Reference Pressure = 1
Alarms: Disabled
Output: Disabled

Spectrum: SF6_H5A.SPC

Primary: Yes
Reference concentration = 3.86
Region #1: 907.35 - 996.47

Spectrum: SF6_H13A.SPC

Reference concentration = 11.02
Region #1: 907.35 - 996.47

Spectrum: SF6_H17A.SPC

Reference concentration = 33.10
Region #1: 907.35 - 1016.28

Compound: Water

Reference Temperature = 181
Reference Pressure = 1.00164
Alarms: Disabled
Output: Disabled

Spectrum: 10PCTH2O.SPC

Reference concentration = 70.00
Region #1: 1108.00 - 1151.00
Region #2: 2951.00 - 2999.61

Spectrum: 20PCTH2O.SPC

Primary: Yes
Reference concentration = 140.00
Region #1: 1108.00 - 1151.00
Region #2: 2952.00 - 2998.00

TXI-Hunter
Kiln Stack
Methods 320/321 Raw Data

Raw Mill Off — Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0001	4/18/02 7:53	0.026	0.02	0	3.45E-03	0	0.06	0.015	0.04	0.057	0.02	0	9.57E-04	0	2.41E-03	
C0002	4/18/02 8:02	0.154	0.06	0	0.02	20.245	0.18	0	0.26	0.204	0.16	0.014	5.11E-03	0.036	0.02	
C0003	4/18/02 8:04	0.136	0.06	0	0.02	20.151	0.18	0	0.26	0.15	0.14	0.015	5.21E-03	0.036	0.01	
C0004	4/18/02 8:05	0.122	0.06	0	0.02	20.013	0.18	0.034	0.25	0.143	0.18	0.016	5.31E-03	0.03	0.01	**Ethylene to Cell**
C0005	4/18/02 8:07	0.128	0.06	0	0.02	20.05	0.18	0	0.24	0.164	0.22	0.016	5.31E-03	0.032	0.01	
C0006	4/18/02 8:09	0.166	0.05	0	0.02	20.097	0.16	0	0.21	0.136	0.28	0.016	5.27E-03	0.02	0.01	
C0007	4/18/02 8:16	0.176	0.06	0	9.98E-03	0	0.33	0	0.14	28.023	0.75	0.723	0.01	0	0.02	
C0008	4/18/02 8:18	0.159	0.05	0	8.52E-03	0	0.32	0	0.13	29.24	0.78	0.722	0.01	0	0.02	
C0009	4/18/02 8:19	0.167	0.05	0	7.93E-03	0	0.32	0	0.13	29.827	0.85	0.723	0.01	0	0.02	
C0010	4/18/02 8:21	0.152	0.05	0	7.63E-03	0	0.31	0	0.13	29.75	0.83	0.714	9.85E-03	0	0.02	
C0011	4/18/02 8:23	0.141	0.05	0	7.78E-03	0	0.33	0	0.13	29.882	0.66	0.714	9.87E-03	0	0.02	
C0012	4/18/02 8:28	0.099	0.04	0	0.01	0	0.29	0	0.11	7.996	0.16	0.392	5.71E-03	0	9.78E-03	
C0013	4/18/02 8:30	0.076	0.05	0	9.99E-03	0	0.26	0	0.12	7.97	0.25	0.392	5.60E-03	0	8.57E-03	
C0014	4/18/02 8:32	0.102	0.05	0	9.30E-03	0	0.24	0	0.11	8.018	0.32	0.392	5.53E-03	0	7.92E-03	
C0015	4/18/02 8:33	0.095	0.05	0	8.68E-03	0	0.23	0	0.1	8.013	0.34	0.392	5.56E-03	0.002	7.61E-03	
C0016	4/18/02 8:38	0.05	0.04	0	8.86E-03	0	0.19	0	0.06	0	0.16	0	3.04E-03	0	6.56E-03	
C0017	4/18/02 8:39	0.048	0.04	0	0.01	0	0.24	0	0.05	0	0.14	0	3.54E-03	0	6.38E-03	
C0018	4/18/02 8:45	4.207	0.14	0.09	0.08	0	0.83	0.884	0.28	2.273	0.56	0	8.25E-03	0.208	0.03	
C0019	4/18/02 8:47	5.278	0.15	0.04	0.05	0	0.51	0.775	0.32	2.837	0.42	0	6.05E-03	0.073	0.02	
C0020	4/18/02 8:48	5.927	0.15	0.022	0.04	0	0.47	0.784	0.31	3.269	0.38	0	6.00E-03	0.063	0.02	
C0021	4/18/02 8:50	5.511	0.15	0.014	0.04	0	0.47	0.736	0.32	3.042	0.38	0	6.01E-03	0.06	0.02	
C0022	4/18/02 8:52	4.403	0.14	0.013	0.04	0	0.48	0.86	0.31	2.472	0.42	0	5.80E-03	0.053	0.02	
C0023	4/18/02 8:54	3.251	0.13	0.003	0.04	0	0.48	0.865	0.31	1.838	0.45	0	5.46E-03	0.056	0.02	
C0024	4/18/02 8:55	2.835	0.13	0.01	0.04	0	0.53	0.911	0.31	1.564	0.48	0	5.56E-03	0.055	0.02	
C0025	4/18/02 8:57	2.58	0.13	0.009	0.04	0	0.54	0.902	0.31	1.439	0.58	0	5.67E-03	0.057	0.02	
C0026	4/18/02 8:59	2.47	0.13	0.013	0.04	0	0.51	0.881	0.3	1.403	0.52	0	5.66E-03	0.063	0.02	
C0027	4/18/02 9:01	2.439	0.13	0.025	0.04	0	0.49	0.952	0.31	1.377	0.47	0	5.68E-03	0.06	0.02	
C0028	4/18/02 9:02	2.419	0.14	0.032	0.04	0	0.47	0.989	0.31	1.291	0.46	0	5.55E-03	0.054	0.02	
C0029	4/18/02 9:07	3.854	0.43	1.555	0.11	13.969	1.69	1.198	0.26	1.724	0.84	0	0.02	2.553	0.05	
C0030	4/18/02 9:09	2.043	0.14	0.033	0.05	19.604	0.52	0.967	0.29	1.087	0.58	0.001	7.47E-03	0.065	0.02	
C0031	4/18/02 9:11	1.816	0.14	0.025	0.04	19.739	0.5	0.911	0.3	0.927	0.53	0.002	7.27E-03	0.062	0.02	**Ethylene to Probe**
C0032	4/18/02 9:12	1.598	0.13	0.022	0.04	19.62	0.48	0.852	0.3	0.819	0.51	0.003	7.31E-03	0.058	0.02	
C0033	4/18/02 9:16	1.351	0.14	0.079	0.08	0	0.83	0.92	0.27	0.894	0.65	0	8.43E-03	0.231	0.03	
C0034	4/18/02 9:18	1.025	0.13	0.001	0.04	0	0.5	0.855	0.3	0.652	0.57	0	5.51E-03	0.055	0.02	
C0035	4/18/02 9:20	0.867	0.13	0	0.04	0	0.52	0.869	0.3	0.52	0.65	0	5.46E-03	0.064	0.02	
C0036	4/18/02 9:21	0.804	0.13	0	0.04	0	0.55	0.903	0.3	0.5	0.66	0	5.57E-03	0.057	0.02	
C0037	4/18/02 9:23	0.749	0.13	0	0.04	0	0.51	0.983	0.3	0.442	0.62	0	5.31E-03	0.059	0.02	
C0038	4/18/02 9:25	0.679	0.13	0	0.04	0	0.48	0.826	0.3	0.436	0.57	0	5.19E-03	0.06	0.02	
C0039	4/18/02 9:27	0.659	0.13	0	0.04	0	0.49	0.87	0.29	0.39	0.56	0	5.27E-03	0.059	0.02	
C0040	4/18/02 9:30	4.906	1.63	8.959	0.54	0	4.66	0.965	0.56	32.837	1.94	3.404	0.07	8.617	0.3	
C0041	4/18/02 9:32	4.931	1.63	8.957	0.54	0	4.7	0.941	0.56	55.223	2.18	3.435	0.07	8.592	0.3	
C0042	4/18/02 9:34	7.027	0.88	13.37	0.27	4.192	2.01	1.293	0.58	33.592	2.02	1.14	0.03	15.04	0.1	
C0043	4/18/02 9:36	7.509	0.96	13.466	0.23	0.77	2.11	1.15	0.56	**24.126**	1.85	**0.885**	0.02	15.914	0.08	**HCl Spike to Probe**
C0044	4/18/02 9:37	6.802	0.81	13.689	0.33	2.297	1.68	1.262	0.59	23.176	1.52	0.885	0.02	13.378	0.07	
C0045	4/18/02 9:39	11.95	0.84	13.488	0.31	0	1.66	0.986	0.59	23.507	1.61	0.884	0.02	13.368	0.06	
C0046	4/18/02 9:41	17.775	0.9	13.212	0.31	0	1.77	0.94	0.59	24.63	1.83	0.88	0.02	13.34	0.08	
C0047	4/18/02 9:43	21.842	0.92	13.273	0.3	0	1.81	0.91	0.6	25.172	1.95	0.875	0.02	13.233	0.07	
C0048	4/18/02 9:44	25.759	0.95	13.326	0.3	0.084	1.89	0.893	0.6	25.806	1.96	0.878	0.02	13.296	0.07	
C0049	4/18/02 9:50	32.001	1.03	13.369	0.3	0	1.86	0.781	0.6	7.535	0.43	0.44	0.02	14.411	0.07	
C0050	4/18/02 9:52	33.063	1.06	13.389	0.24	0	2.05	0.777	0.6	7.347	0.44	0.438	0.02	15.524	0.08	

TXI-Hunter
Kiln Stack
Methods 320/321 Raw Data

Raw Mill Off — Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0051	4/18/02 9:54	33.701	1.05	14.152	0.22	0	2.12	0.965	0.62	6.686	0.45	0.439	0.03	16.026	0.09	
C0052	4/18/02 9:58	46.84	2.45	15.975	0.6	0	5.15	1.184	0.68	2.866	0.99	0	0.05	20.801	0.45	
C0053	4/18/02 9:59	51.023	2.54	16.043	0.61	0	5.3	1.161	0.69	2.193	0.91	0	0.05	21.174	0.46	
C0054	4/18/02 10:01	52.379	2.55	15.798	0.6	0	5.31	**1.216**	0.68	**1.875**	0.86	0	0.05	21.194	0.46	**Run 4**
C0055	4/18/02 10:03	53.368	2.56	15.927	0.6	0	5.3	**1.123**	0.68	**1.695**	0.71	0	0.05	21.19	0.46	
C0056	4/18/02 10:05	53.578	2.55	15.858	0.6	0	5.29	**1.315**	0.68	**1.585**	0.74	0	0.05	21.19	0.46	Run 4 10:05 - 11:11
C0057	4/18/02 10:06	53.579	2.56	15.835	0.6	0	5.3	**1.112**	0.68	**1.522**	0.79	0	0.05	21.11	0.46	
C0058	4/18/02 10:08	55.333	2.58	16.11	0.59	0	5.32	**1.136**	0.69	**1.397**	0.97	0	0.05	20.861	0.46	
C0059	4/18/02 10:10	55.76	2.57	16.375	0.59	0	5.3	**1.145**	0.69	**1.238**	0.88	0	0.05	20.807	0.46	
C0060	4/18/02 10:12	56.243	2.57	16.15	0.58	0	5.29	**1.126**	0.68	**1.222**	0.81	0	0.06	20.783	0.46	
C0061	4/18/02 10:13	56.868	2.61	16.224	0.6	0	5.36	**1.278**	0.69	**1.182**	0.79	0	0.06	20.937	0.46	
C0062	4/18/02 10:15	56.614	2.59	16.145	0.59	0	5.31	**1.265**	0.69	**1.17**	0.82	0	0.06	20.903	0.46	
C0063	4/18/02 10:17	55.084	2.53	16.065	0.58	0	5.2	**1.32**	0.68	**1.195**	0.88	0	0.05	20.592	0.46	
C0064	4/18/02 10:19	55.928	2.64	15.786	0.61	0	5.41	**1.161**	0.68	**1.299**	0.96	0	0.06	21.34	0.47	
C0065	4/18/02 10:20	55.181	2.61	15.83	0.62	0	5.41	**1.186**	0.67	**1.249**	0.95	0	0.05	21.466	0.47	
C0066	4/18/02 10:22	55.471	2.64	15.932	0.63	0	5.47	**0.946**	0.68	**1.201**	0.95	0	0.05	21.662	0.47	
C0067	4/18/02 10:24	56.067	2.69	15.741	0.65	0	5.57	**0.982**	0.68	**1.141**	0.94	0	0.06	22.06	0.48	
C0068	4/18/02 10:26	55.528	2.74	15.292	0.68	0	5.64	**1.194**	0.68	**1.114**	0.99	0	0.06	22.396	0.49	
C0069	4/18/02 10:27	54.207	2.7	15.311	0.67	0	5.58	**1.179**	0.66	**1.36**	1.07	0	0.06	22.307	0.49	
C0070	4/18/02 10:29	53.197	2.67	15.44	0.66	0	5.53	**1.203**	0.67	**1.344**	1.09	0	0.05	22.253	0.49	
C0071	4/18/02 10:31	52.697	2.63	15.709	0.65	0	5.47	**1.179**	0.68	**1.312**	1.1	0	0.05	21.953	0.48	
C0072	4/18/02 10:32	52.968	2.59	15.746	0.62	0	5.38	**1.253**	0.67	**1.271**	1.11	0	0.05	21.403	0.47	
C0073	4/18/02 10:34	53.012	2.57	15.858	0.61	0	5.36	**1.273**	0.68	**1.278**	1.11	0	0.05	21.359	0.47	
C0074	4/18/02 10:36	53.144	2.58	15.996	0.61	0	5.37	**1.275**	0.68	**1.307**	1.17	0	0.05	21.426	0.47	
C0075	4/18/02 10:38	55.612	2.66	16.181	0.64	0	5.5	**1.29**	0.69	**1.152**	1.24	0	0.06	21.499	0.49	
C0076	4/18/02 10:39	57.891	2.7	15.958	0.64	0	5.52	**1.306**	0.7	**1.145**	1.3	0	0.06	21.364	0.49	
C0077	4/18/02 10:41	61.591	2.78	16.304	0.64	0	5.69	**1.635**	0.72	**1.545**	1.13	0	0.07	21.115	0.55	
C0078	4/18/02 10:43	60.66	2.76	16.151	0.64	0	5.64	**1.672**	0.72	**1.422**	1.34	0	0.07	21.227	0.52	
C0079	4/18/02 10:45	60.79	2.77	16.138	0.64	0	5.68	**1.474**	0.71	**1.503**	1.09	0	0.07	21.367	0.52	
C0080	4/18/02 10:46	61.293	2.78	15.83	0.64	0	5.69	**1.578**	0.71	**1.559**	1.13	0	0.07	21.385	0.52	
C0081	4/18/02 10:48	59.67	2.72	16.245	0.63	0	5.57	**1.417**	0.71	**1.417**	1.43	0	0.07	21.266	0.5	
C0082	4/18/02 10:50	58.126	2.65	16.271	0.61	0	5.43	**1.348**	0.7	**1.323**	1.39	0	0.06	21.172	0.48	
C0083	4/18/02 10:52	58.341	2.68	16.146	0.63	0	5.52	**1.428**	0.7	**1.45**	1.36	0	0.06	21.237	0.49	
C0084	4/18/02 10:53	59.134	2.69	16.417	0.62	0	5.53	**1.316**	0.71	**1.344**	1.31	0	0.06	21.351	0.49	
C0085	4/18/02 10:55	58.819	2.63	16.134	0.61	0	5.4	**1.355**	0.7	**1.225**	1.32	0	0.06	21.048	0.47	
C0086	4/18/02 10:57	58.567	2.62	15.961	0.61	0	5.38	**1.329**	0.7	**1.206**	1.38	0	0.06	21.101	0.47	
C0087	4/18/02 10:59	56.858	2.62	16.101	0.61	0	5.41	**1.361**	0.69	**1.275**	1.39	0	0.06	21.089	0.48	
C0088	4/18/02 11:00	57.368	2.62	16.143	0.61	0	5.41	**1.307**	0.69	**1.149**	1.34	0	0.06	21.122	0.47	
C0089	4/18/02 11:02	55.298	2.58	15.97	0.6	0	5.32	**1.276**	0.68	**1.379**	1.32	0	0.06	21.087	0.46	
C0090	4/18/02 11:04	55.039	2.6	16.236	0.61	0	5.36	**1.292**	0.69	**1.371**	1.29	0	0.06	21.252	0.47	
C0091	4/18/02 11:06	54.803	2.58	16.278	0.61	0	5.37	**1.223**	0.69	**1.046**	1.25	0	0.05	21.213	0.47	
C0092	4/18/02 11:12	47.811	1.34	15.306	0.24	0	2.44	1.128	0.64	28.81	2.63	0.956	0.04	17.887	0.12	
C0093	4/18/02 11:14	48.412	1.34	15.155	0.24	0	2.44	1.155	0.63	27.231	2.62	0.92	0.04	17.9	0.12	
C0094	4/18/02 11:16	47.505	1.31	15.032	0.24	0	2.42	0.992	0.62	28.113	2.72	0.913	0.04	17.979	0.11	
C0095	4/18/02 11:18	47.452	1.33	15.103	0.24	0	2.48	1.105	0.63	**29.205**	2.75	**0.916**	0.04	18.026	0.11	**HCl Spike to Probe**
C0096	4/18/02 11:19	47.217	1.32	14.914	0.24	0	2.47	1.015	0.62	29.997	2.74	0.918	0.04	18.035	0.1	
C0097	4/18/02 11:21	48.424	1.34	15.186	0.24	0	2.5	1.173	0.64	30.69	2.72	0.919	0.04	17.796	0.16	
C0098	4/18/02 11:26	58.444	1.62	16.005	0.29	4.06	2.88	1.967	0.75	21.706	2.71	0.413	0.05	19.545	0.44	
C0099	4/18/02 11:28	55.798	2.51	16.108	0.57	0	5.2	1.186	0.69	10.063	2.03	0.391	0.05	20.226	0.46	
C0100	4/18/02 11:30	55.403	2.54	16.064	0.57	0	5.24	1.213	0.69	10.487	2.13	0.4	0.05	20.07	0.48	

TXI-Hunter
Kiln Stack
Methods 320/321 Raw Data

Raw Mill Off

Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0101	4/18/02 11:31	53.76	2.48	16.103	0.55	0	5.13	1.109	0.67	9.142	1.91	0.391	0.05	20.211	0.45	
C0102	4/18/02 11:33	52.746	2.46	15.974	0.56	0	5.11	1.136	0.67	9.043	1.86	0.386	0.05	20.222	0.45	
C0103	4/18/02 11:35	52.717	2.46	16.219	0.56	0	5.1	1.076	0.69	8.943	1.87	0.378	0.05	20.092	0.45	
C0104	4/18/02 11:37	53.899	1.53	16.361	0.27	0	2.5	1.189	0.68	9.097	1.46	0.376	0.05	19.454	0.17	
C0105	4/18/02 11:42	1.534	0.16	0	0.06	20.65	0.71	0.79	0.31	3.062	0.99	0.001	6.93E-03	0.094	0.03	
C0106	4/18/02 11:44	1.212	0.16	0	0.05	20.672	0.69	0.752	0.31	2.409	0.91	0.002	6.80E-03	0.09	0.03	
C0107	4/18/02 11:46	1.053	0.16	0	0.05	**20.613**	0.68	0.954	0.31	2.203	0.84	0.002	6.87E-03	0.089	0.03	**Ethylene to Probe**
C0108	4/18/02 11:47	1.003	0.16	0	0.05	20.368	0.61	0.988	0.3	2.049	0.72	0.002	6.90E-03	0.086	0.03	
C0109	4/18/02 11:49	0.942	0.16	0	0.05	20.166	0.63	1.027	0.3	1.919	0.69	0.002	7.12E-03	0.094	0.03	
C0110	4/18/02 11:51	0.917	0.16	0	0.05	20.183	0.64	0.938	0.3	1.863	0.7	0.002	7.11E-03	0.089	0.03	
C0111	4/18/02 11:56	0.417	0.11	0	0.02	19.816	0.24	0	0.2	0.223	0.58	0.014	6.45E-03	0	0.01	
C0112	4/18/02 11:57	0.461	0.11	0	0.02	19.699	0.24	0	0.22	0.284	0.55	0.015	6.59E-03	0	0.01	
C0113	4/18/02 11:59	0.404	0.11	0	0.02	**19.557**	0.26	0	0.22	0.261	0.49	0.014	6.91E-03	0	0.01	**Ethylene to Cell**
C0114	4/18/02 12:01	0.38	0.11	0	0.02	19.426	0.28	0	0.22	0.211	0.47	0.014	7.28E-03	0	0.01	
C0115	4/18/02 12:03	0.3	0.11	0	0.02	19.41	0.28	0	0.22	0.195	0.5	0.014	7.35E-03	0	0.01	
C0116	4/18/02 12:07	53.878	2.59	16.3	0.61	0	5.39	1.338	0.68	2.144	1.07	0	0.06	21.183	0.47	
C0117	4/18/02 12:09	55.412	2.6	16.391	0.61	0	5.43	1.153	0.69	2.789	1.09	0	0.06	21.191	0.47	
C0118	4/18/02 12:10	56.703	2.66	16.237	0.62	0	5.51	**1.149**	0.69	**3.657**	1.1	0	0.06	21.3	0.48	**Run 5**
C0119	4/18/02 12:12	58.666	2.69	16.301	0.63	0	5.57	**0.976**	0.71	**4.867**	0.67	0	0.06	21.401	0.48	
C0120	4/18/02 12:14	59.129	2.71	16.005	0.63	0	5.59	**1.024**	0.7	**5.489**	0.71	0	0.06	21.475	0.49	Run 5 12:10 - 13:18
C0121	4/18/02 12:16	58.705	2.73	15.982	0.65	0	5.65	**1.098**	0.71	**4.638**	0.72	0	0.06	21.586	0.5	
C0122	4/18/02 12:17	58.264	2.69	16.163	0.63	0	5.58	**1.272**	0.7	**2.961**	1.21	0	0.06	21.49	0.49	
C0123	4/18/02 12:19	54.829	2.62	15.799	0.62	0	5.44	**1.365**	0.66	**2.156**	1.15	0	0.06	21.449	0.48	
C0124	4/18/02 12:21	53.798	2.61	15.938	0.62	0	5.44	**1.32**	0.67	**1.987**	1.09	0	0.06	21.471	0.48	
C0125	4/18/02 12:23	53.116	2.6	15.7	0.61	0	5.43	**1.383**	0.66	**1.925**	1.05	0	0.06	21.446	0.48	
C0126	4/18/02 12:24	53.306	2.62	15.848	0.62	0	5.47	**1.306**	0.67	**1.908**	1.04	0	0.06	21.601	0.48	
C0127	4/18/02 12:26	55.41	2.69	15.788	0.64	0	5.57	**1.309**	0.69	**2.136**	1.11	0	0.06	21.56	0.5	
C0128	4/18/02 12:28	54.794	2.67	15.717	0.64	0	5.54	**1.256**	0.67	**1.885**	1.13	0	0.06	21.799	0.49	
C0129	4/18/02 12:29	54.756	2.66	15.792	0.64	0	5.53	**1.204**	0.68	**1.882**	1.17	0	0.06	21.755	0.48	
C0130	4/18/02 12:31	54.106	2.64	15.759	0.64	0	5.49	**1.23**	0.67	**1.869**	1.15	0	0.06	21.679	0.48	
C0131	4/18/02 12:33	54.277	2.64	15.736	0.64	0	5.5	**1.221**	0.67	**1.793**	1.1	0	0.06	21.724	0.48	
C0132	4/18/02 12:35	54.187	2.64	15.805	0.63	0	5.49	**1.269**	0.68	**1.831**	1.1	0	0.06	21.663	0.48	
C0133	4/18/02 12:36	53.271	2.6	15.639	0.62	0	5.42	**1.268**	0.66	**1.735**	1.13	0	0.05	21.585	0.47	
C0134	4/18/02 12:38	52.943	2.6	15.573	0.62	0	5.41	**1.324**	0.66	**1.73**	1.15	0	0.05	21.558	0.47	
C0135	4/18/02 12:40	53.164	2.6	15.748	0.62	0	5.43	**1.265**	0.67	**1.669**	1.15	0	0.05	21.604	0.47	
C0136	4/18/02 12:42	53.275	2.6	15.687	0.63	0	5.43	**1.299**	0.66	**1.606**	1.13	0	0.05	21.651	0.47	
C0137	4/18/02 12:43	53.624	2.61	15.649	0.64	0	5.48	**1.182**	0.66	**1.561**	1.1	0	0.05	21.689	0.48	
C0138	4/18/02 12:45	53.754	2.61	15.936	0.64	0	5.48	**1.12**	0.67	**1.473**	1.27	0	0.06	21.699	0.48	
C0139	4/18/02 12:47	53.31	2.61	15.87	0.63	0	5.49	**1.235**	0.67	**1.523**	1	0	0.06	21.677	0.48	
C0140	4/18/02 12:49	53.22	2.64	15.537	0.64	0	5.51	**1.205**	0.66	**1.594**	1.01	0	0.06	21.743	0.48	
C0141	4/18/02 12:50	53.533	2.64	15.617	0.64	0	5.51	**1.215**	0.67	**1.662**	1.03	0	0.06	21.812	0.48	
C0142	4/18/02 12:52	53.67	2.63	15.553	0.65	0	5.5	**1.153**	0.67	**1.67**	1.06	0	0.06	21.821	0.48	
C0143	4/18/02 12:54	53.947	2.63	15.716	0.65	0	5.5	**1.048**	0.68	**1.639**	1.03	0	0.06	21.858	0.48	
C0144	4/18/02 12:56	53.613	2.64	15.649	0.64	0	5.5	**1.139**	0.67	**1.703**	1.02	0	0.06	21.741	0.48	
C0145	4/18/02 12:57	53.629	2.62	15.667	0.63	0	5.46	**1.233**	0.67	**1.768**	1	0	0.06	21.719	0.48	
C0146	4/18/02 12:59	53.89	2.64	15.577	0.66	0	5.5	**1.007**	0.68	**1.737**	1.05	0	0.06	21.933	0.48	
C0147	4/18/02 13:01	53.535	2.62	15.501	0.63	0	5.44	**1.076**	0.66	**1.789**	1.11	0	0.06	21.696	0.48	
C0148	4/18/02 13:03	54.205	2.64	15.772	0.65	0	5.49	**1.016**	0.68	**1.816**	1.14	0	0.06	21.803	0.48	
C0149	4/18/02 13:04	54.444	2.63	15.796	0.64	0	5.47	**1.121**	0.68	**1.754**	1.13	0	0.06	21.767	0.48	
C0150	4/18/02 13:06	54.755	2.65	15.784	0.65	0	5.52	**0.965**	0.68	**1.788**	1.12	0	0.06	21.855	0.48	

TXI-Hunter
Kiln Stack
Methods 320/321 Raw Data

Raw Mill Off

Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	Ethylene	Error+-	Formaldehyde	Error+-	HCl	Error+-	SF6	Error+-	Water	Error+-	
C0151	4/18/02 13:08	55.419	2.68	15.669	0.66	0	5.57	1.005	0.69	1.839	1.09	0	0.06	21.907	0.49	
C0152	4/18/02 13:10	55.43	2.69	15.715	0.66	0	5.56	0.936	0.69	1.808	1.03	0	0.06	21.939	0.48	
C0153	4/18/02 13:11	55.873	2.68	15.674	0.65	0	5.55	1.061	0.69	1.874	1.03	0	0.06	21.981	0.49	
C0154	4/18/02 13:13	54.83	2.65	15.639	0.64	0	5.48	1.326	0.67	1.773	1.07	0	0.06	21.819	0.48	
C0155	4/18/02 13:15	54.643	2.66	15.551	0.64	0	5.49	1.141	0.67	1.795	1.11	0	0.06	21.784	0.48	
C0156	4/18/02 13:17	54.632	2.65	15.474	0.64	0	5.49	1.187	0.68	1.838	1.14	0	0.06	21.759	0.48	
C0157	4/18/02 13:20	38.011	1.11	12.081	0.32	0	2.04	0.817	0.55	33.229	2.28	1.878	0.04	13.446	0.07	
C0158	4/18/02 13:22	46.489	1.34	14.591	0.24	0	2.37	1.037	0.61	25.437	2.06	0.901	0.04	18.193	0.1	
C0159	4/18/02 13:24	46.623	1.34	14.567	0.25	0	2.38	0.998	0.61	27.522	1.99	0.904	0.04	18.097	0.1	
C0160	4/18/02 13:25	47.149	1.35	14.829	0.24	0	2.36	0.977	0.62	29.936	1.99	0.927	0.04	18.178	0.11	
C0161	4/18/02 13:27	47.709	1.37	14.728	0.25	0	2.4	0.996	0.63	31.57	2.11	0.931	0.04	18.102	0.11	**HCl Spike to Probe**
C0162	4/18/02 13:29	47.885	1.36	14.812	0.24	0	2.39	1.128	0.63	33.039	2.24	0.935	0.04	18.05	0.11	
C0163	4/18/02 13:31	48.309	1.39	14.849	0.25	0	2.41	1.086	0.63	34.155	2.32	0.942	0.04	18.016	0.12	
C0164	4/18/02 13:32	48.624	1.39	15.044	0.25	0	2.4	1.099	0.64	35.35	2.2	0.954	0.04	18.068	0.12	
C0165	4/18/02 13:34	48.573	1.38	14.592	0.24	0	2.43	1.097	0.62	36.452	2.18	0.959	0.04	17.787	0.12	
C0166	4/18/02 13:39	51.716	1.56	15.883	0.29	0	2.61	1.093	0.65	23.949	1.8	0.4	0.04	19.811	0.12	
C0167	4/18/02 13:41	52.385	1.58	15.761	0.29	0	2.66	1.008	0.65	22.097	1.89	0.396	0.04	19.97	0.11	
C0168	4/18/02 13:42	52.016	1.52	15.605	0.29	0	2.58	1.049	0.64	20.842	1.99	0.397	0.04	19.889	0.12	
C0169	4/18/02 13:44	52.582	1.56	15.596	0.28	0	2.62	1.118	0.66	20.636	2.04	0.399	0.04	19.806	0.13	
C0170	4/18/02 13:46	54.964	1.63	15.486	0.27	0	2.73	1.556	0.67	21.459	2.09	0.405	0.05	19.764	0.22	
C0171	4/18/02 13:48	53.481	2.47	15.517	0.56	0	5.08	1.021	0.65	18.661	2.48	0.395	0.05	20.016	0.45	
C0172	4/18/02 13:49	53.444	2.48	15.569	0.57	0	5.11	1.084	0.67	19.518	2.14	0.401	0.05	20.066	0.45	
C0173	4/18/02 13:57	1.618	0.17	0	0.05	20.338	0.43	0.919	0.29	3.103	0.38	0.003	7.06E-03	0.091	0.02	
C0174	4/18/02 13:58	1.274	0.17	0	0.05	20.212	0.42	0.906	0.29	2.526	0.39	0.003	7.14E-03	0.087	0.02	
C0175	4/18/02 14:00	1.132	0.17	0	0.05	19.742	0.43	0.85	0.29	2.304	0.4	0.002	7.57E-03	0.082	0.02	
C0176	4/18/02 14:02	1.003	0.17	0	0.05	19.496	0.45	0.731	0.29	2.098	0.42	0.002	7.78E-03	0.09	0.02	**Ethylene to Probe**
C0177	4/18/02 14:04	0.963	0.17	0	0.05	19.308	0.47	0.958	0.3	2.014	0.46	0.002	7.99E-03	0.084	0.02	
C0178	4/18/02 14:05	0.96	0.17	0	0.05	19.344	0.54	0.896	0.29	2.016	0.55	0.001	7.79E-03	0.078	0.02	
C0179	4/18/02 14:10	2	0.25	0	0.17	14.601	1.49	1.19	0.33	2.298	1.07	0.001	0.01	0.533	0.04	
C0180	4/18/02 14:12	1.493	0.21	0	0.1	16.593	1.13	1	0.25	1.471	1.16	0.005	8.46E-03	0.339	0.03	
C0181	4/18/02 14:14	0.458	0.13	0	0.02	18.817	0.3	0.228	0.22	0.301	0.78	0.014	8.38E-03	0.02	0.01	
C0182	4/18/02 14:16	0.264	0.12	0	0.02	19.125	0.3	0.061	0.16	0.215	0.81	0.01	8.50E-03	0	0.01	
C0183	4/18/02 14:17	0.207	0.12	0	0.02	19.367	0.29	0.122	0.15	0.207	0.9	0.01	8.24E-03	0	1.00E-02	**Ethylene to Cell**
C0184	4/18/02 14:19	0.18	0.12	0	0.02	19.402	0.28	0.041	0.15	0.22	0.95	0.011	8.01E-03	0	9.62E-03	
C0185	4/18/02 14:23	0.121	0.12	0	0.02	0	0.49	0.011	0.05	0.06	0.76	0	8.39E-03	0	0.01	
C0186	4/18/02 14:25	0.095	0.12	0	0.02	0	0.47	0.018	0.05	0.017	0.83	0	8.45E-03	0	0.01	
C0187	4/18/02 14:27	4.27	0.33	0.295	0.06	0	1.13	0.456	0.16	0.486	1.45	0	8.17E-03	1.343	0.03	
C0188	4/18/02 14:32	21.182	1.89	1.064	0.66	0	3.04	1.484	0.32	3.52	0.57	0	0.04	5.386	0.2	
C0189	4/18/02 14:33	59.109	2.69	15.853	0.67	0	5.47	1.047	0.7	4.29	1.07	0	0.06	21.568	0.48	
C0190	4/18/02 14:35	61.76	2.76	15.659	0.68	0	5.59	1.211	0.7	6.305	1.2	0	0.07	21.413	0.49	
C0191	4/18/02 14:37	62.724	2.79	15.711	0.68	0	5.65	1.336	0.7	6.918	1.26	0	0.07	21.53	0.5	
C0192	4/18/02 14:39	61.083	2.73	15.796	0.67	0	5.56	1.192	0.69	4.91	1.18	0	0.07	21.512	0.5	
C0193	4/18/02 14:40	59.027	2.69	15.842	0.67	0	5.49	1.12	0.69	3.606	2.06	0	0.06	21.559	0.49	
C0194	4/18/02 14:42	58.078	2.66	15.897	0.66	0	5.53	1.263	0.69	3.137	0.41	0	0.06	21.603	0.48	
C0195	4/18/02 14:44	57.172	2.62	16.294	0.64	0	5.46	1.309	0.69	2.975	0.35	0	0.06	21.492	0.48	**Run 6**
C0196	4/18/02 14:46	56.84	2.62	16.317	0.64	0	5.48	1.134	0.69	2.914	0.44	0	0.06	21.472	0.48	
C0197	4/18/02 14:47	56.644	2.63	16.171	0.64	0	5.51	1.259	0.7	2.825	0.56	0	0.06	21.554	0.48	**Run 6 14:36 - 15:40**
C0198	4/18/02 14:49	57.526	2.68	16.523	0.65	0	5.51	1.331	0.71	2.985	1.26	0	0.06	21.454	0.48	
C0199	4/18/02 14:51	57.077	2.63	16.247	0.64	0	5.42	1.259	0.7	2.763	1.63	0	0.06	21.462	0.48	
C0200	4/18/02 14:53	57.019	2.64	16.333	0.64	0	5.43	1.216	0.7	2.656	1.64	0	0.06	21.549	0.48	

TXI-Hunter
Kiln Stack
Methods 320/32. .aw Data

Raw Mill Off — Temperature & Pressure Adjusted Concentrations in ppm

		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0201	4/18/02 14:55	56.928	2.63	16.42	0.64	0	5.49	**1.305**	0.7	**2.682**	0.36	0	0.06	21.423	0.48	
C0202	4/18/02 14:57	57.322	2.63	16.325	0.65	0	5.44	**1.153**	0.7	**2.583**	1.49	0	0.06	21.3	0.47	
C0203	4/18/02 14:59	57.297	2.62	16.225	0.66	0	5.39	**1.219**	0.7	**2.573**	1.77	0	0.06	21.224	0.47	
C0204	4/18/02 15:01	57.929	2.67	16.085	0.66	0	5.45	**1.398**	0.69	**2.697**	1.95	0	0.06	21.137	0.49	
C0205	4/18/02 15:02	59.488	2.7	16.174	0.67	0	5.51	**1.57**	0.7	**2.794**	1.99	0	0.06	21.156	0.5	
C0206	4/18/02 15:04	58.064	2.67	16.292	0.66	0	5.47	**1.291**	0.7	**2.589**	2	0	0.06	21.219	0.48	
C0207	4/18/02 15:06	57.651	2.66	16.152	0.66	0	5.44	**1.162**	0.69	**2.608**	2.02	0	0.06	21.335	0.48	
C0208	4/18/02 15:08	57.348	2.65	16.196	0.66	0	5.41	**1.285**	0.69	**2.737**	2.11	0	0.06	21.04	0.48	
C0209	4/18/02 15:09	50.889	1.48	15	0.25	0	2.48	**1.808**	0.66	**2.884**	1.91	0	0.04	17.35	0.27	
C0210	4/18/02 15:11	45.277	1.47	15.732	0.25	0	2.4	**1.321**	0.63	**2.29**	1.75	0	0.04	19.181	0.13	
C0211	4/18/02 15:13	36.103	1.28	15.197	0.23	0	2.12	**1.465**	0.6	**2.041**	1.71	0	0.03	18.506	0.11	
C0212	4/18/02 15:15	34.045	1.21	15.057	0.22	0	2.08	**1.404**	0.59	**1.874**	1.71	0	0.03	18.063	0.1	
C0213	4/18/02 15:16	34.932	1.23	15.233	0.23	0	2.16	**1.334**	0.59	**1.794**	1.74	0	0.03	18.029	0.09	
C0214	4/18/02 15:18	35.527	1.21	15.072	0.21	0	2.14	**1.296**	0.59	**1.732**	1.76	0	0.03	17.894	0.09	
C0215	4/18/02 15:20	36.022	1.2	14.683	0.21	0	2.14	**1.312**	0.58	**1.696**	1.79	0	0.03	17.559	0.09	
C0216	4/18/02 15:22	36.695	1.19	14.545	0.21	0	2.12	**1.332**	0.59	**1.728**	1.79	0	0.03	17.276	0.09	
C0217	4/18/02 15:23	38.026	1.22	14.684	0.21	0	2.17	**1.297**	0.59	**1.705**	1.75	0	0.03	17.254	0.09	
C0218	4/18/02 15:25	39.661	1.23	14.789	0.22	0	2.26	**1.227**	0.6	**1.72**	1.74	0	0.03	17.3	0.09	
C0219	4/18/02 15:27	40.928	1.29	14.605	0.22	0	2.31	**1.221**	0.6	**1.623**	1.75	0	0.03	17.333	0.09	
C0220	4/18/02 15:29	41.646	1.28	14.894	0.23	0	2.24	**1.233**	0.61	**1.601**	1.77	0	0.03	17.413	0.1	
C0221	4/18/02 15:30	41.562	1.29	14.877	0.22	0	2.21	**1.218**	0.61	**1.63**	1.57	0	0.03	17.569	0.09	
C0222	4/18/02 15:32	39.271	1.26	15.019	0.23	0	2.08	**1.218**	0.62	**1.612**	1.32	0	0.03	17.73	0.09	
C0223	4/18/02 15:34	44.47	1.39	15.576	0.24	0	2.28	**1.167**	0.63	**1.642**	1.69	0	0.04	19.052	0.1	
C0224	4/18/02 15:35	53.189	2.45	16.48	0.59	0	5.11	**1.278**	0.69	**1.839**	2	0	0.05	20.631	0.45	
C0225	4/18/02 15:37	55.568	2.47	16.354	0.59	0	5.15	**1.133**	0.69	**2.044**	2.04	0	0.05	20.609	0.45	
C0226	4/18/02 15:39	56.958	2.5	16.3	0.6	0	5.21	**1.258**	0.68	**2.247**	2.14	0	0.05	20.457	0.46	
C0227	4/18/02 15:41	58.12	2.51	16.196	0.59	0	5.21	**1.172**	0.68	**2.223**	2.16	0	0.06	20.389	0.45	
C0228	4/18/02 15:42	56.274	2.45	16.215	0.58	0	5.11	**1.088**	0.68	**2.169**	2.12	0	0.05	20.345	0.45	
C0229	4/18/02 15:44	55.541	2.45	16.263	0.57	0	5.1	**1.241**	0.68	**2.209**	2.07	0	0.05	20.384	0.45	
C0230	4/18/02 15:46	55.049	2.46	16.043	0.59	0	5.14	1.243	0.67	2.184	2.05	0	0.05	20.5	0.45	
C0231	4/18/02 15:48	55.312	2.47	16.232	0.59	0	5.16	1.238	0.67	2.106	2	0	0.05	20.556	0.45	
C0232	4/18/02 15:49	55.031	2.46	16.019	0.59	0	5.14	1.193	0.67	2.067	2.02	0	0.05	20.376	0.45	
C0233	4/18/02 15:51	54.313	2.44	15.996	0.59	0	5.11	1.263	0.67	2.016	2.03	0	0.05	20.431	0.45	
C0234	4/18/02 15:57	45.723	1.27	14.708	0.22	0.028	2.35	1.012	0.61	9.239	2.56	0.914	0.04	16.681	0.09	
C0235	4/18/02 15:59	46.376	1.28	14.962	0.22	0	2.38	1.041	0.61	24.303	5.09	0.875	0.04	16.859	0.09	
C0236	4/18/02 16:00	47.757	1.37	14.485	0.23	0	2.5	0.938	0.61	27.53	5.23	0.852	0.04	17.014	0.1	
C0237	4/18/02 16:02	47.199	1.31	15.024	0.23	0	2.41	1.025	0.62	**28.966**	5.15	**0.854**	0.04	16.997	0.1	**HCl Spike to Probe**
C0238	4/18/02 16:04	46.602	1.28	14.941	0.22	0	2.35	1.038	0.62	30.804	5.09	0.862	0.04	16.944	0.09	
C0239	4/18/02 16:07	48.12	1.35	15.167	0.24	0	2.33	1.069	0.62	22.8	4.75	0.399	0.04	17.936	0.1	
C0240	4/18/02 16:09	42.119	1.21	14.298	0.22	0	2.07	1.183	0.59	19.716	4.3	0.4	0.03	16.463	0.09	
C0241	4/18/02 16:11	39.879	1.22	14.512	0.23	0	2.04	1.344	0.6	16.359	3.72	0.4	0.03	16.591	0.09	
C0242	4/18/02 16:12	40.171	1.19	14.415	0.22	0	2.04	1.373	0.6	14.714	3.44	0.403	0.03	16.425	0.11	
C0243	4/18/02 16:14	40.026	1.23	13.97	0.24	0	2.03	1.146	0.58	13.617	3.25	0.404	0.03	16.885	0.1	
C0244	4/18/02 16:16	40.717	1.28	13.952	0.25	0	2.07	1.125	0.59	15.927	3.61	0.409	0.03	17.035	0.11	
C0245	4/18/02 16:18	41.572	1.25	14.129	0.25	0	2.12	1.498	0.6	18.624	3.96	0.41	0.03	16.777	0.14	
C0246	4/18/02 16:22	2.284	0.21	0	0.06	19.797	0.68	0.745	0.28	4.628	0.86	0.126	6.95E-03	0.105	0.03	
C0247	4/18/02 16:25	1.11	0.21	0	0.05	**19.881**	0.59	0.744	0.26	3.461	1.54	0.118	6.79E-03	0.063	0.02	**Ethylene to Probe**
C0248	4/18/02 16:27	0.907	0.21	0	0.05	20.105	0.53	0.777	0.27	2.854	1.37	0.007	7.26E-03	0.06	0.02	
C0249	4/18/02 16:32	0.429	0.16	0	0.02	19.583	0.33	0	0.2	0.275	1.33	0.014	8.76E-03	0	0.01	
C0250	4/18/02 16:34	0.388	0.16	0	0.02	19.787	0.33	0	0.2	0.187	1.32	0.012	8.90E-03	0	0.01	

TXI-Hunter
Kiln Stack
Methods 320/321 Raw Data

Raw Mill Off

		Temperature & Pressure Adjusted Concentrations in ppm														
		Ammonia	Error+-	CO2	Error+-	**Ethylene**	Error+-	**Formaldehyde**	Error+-	**HCl**	Error+-	**SF6**	Error+-	Water	Error+-	
C0251	4/18/02 16:36	0.349	0.15	0	0.02	**19.888**	0.33	0	0.2	0.182	1.27	0.012	9.07E-03	0	0.01	**Ethylene to Cell**
C0252	4/18/02 16:38	0.312	0.15	0	0.02	19.848	0.35	0	0.19	0.143	1.2	0.012	9.37E-03	0	0.01	
C0253	4/18/02 16:41	0.091	0.09	0	0.01	0	0.24	0	0.06	0.041	0.75	0	3.04E-03	0	8.73E-03	
C0254	4/18/02 16:43	0.089	0.09	0	0.02	0	0.59	0	0.05	0.017	0.97	0	2.52E-03	0	0.02	

TXI - Hunt
Kiln Stack
Method 320/321

QA SUMMARY

HCl Spikes

RUN	Raw Mill On Pre Run 1	Raw Mill On Post Run 1	Raw Mill On Post Run 2	Raw Mill On Post Run 3
File No.	C0132	C0242	C0366	C0469
Date/Time	4/17/02 10:23	4/17/02 13:26	4/17/02 15:05	4/17/02 16:54
SF6 TANK	5.1	5.1	5.1	5.1
SF6 FLOW	0.8	0.3	0.3	0.7
CELL PRESSURE	1	1	1	1
SF6 MEASURED IN SAMPLE	0.94	0.33	0.32	0.75
DILUTION FACTOR	0.184	0.065	0.062	0.147
SAMPLE FLOW	4.4	4.6	4.8	4.7
HCl				
PPM HCl. IN TANK	149	149	149	149
HCl Expected in sample, from spike	28.44	9.70	9.23	22.27
HCl Measured in sample, including spike	23.04	7.25	6.50	22.52
HCl Measured in sample, prespike	1.305	0	0	0.352
HCl Measured in sample, postspike	1.305	0	0	0.352
Native HCl Measured in sample, Avg	1.305	0	0	0.352
% RECOVERY	80.3%	74.7%	70.4%	101.1%
(Acceptable= 70% - 130%)				

Calibration Transfer Standard
CTS

RUN	Raw Mill On Pre Run 1	Raw Mill On Post Run 1	Raw Mill On Post Run 2	Raw Mill On Post Run 3
To Cell				
File #	C0011	C0227	C0404	C0692
Date, time	4/17/02 7:42	4/17/02 13:17	4/17/02 15:23	4/17/02 18:35
Effective Pathlength, meters	7	7	7	7
CTS, Ethylene, ppm v	**20.2**	**20.2**	**20.2**	**20.3**
PPM Ethylene in tank = 20.1				
(Acceptable=19.1 - 21.1)				
To probe tip				
File #	C0068	C0234	C0390	C0557
Date, time	4/17/02 8:31	4/17/02 13:22	4/17/02 15:16	4/17/02 17:35
CTS, Ethylene, ppm v	**20.4**	**20.6**	**20.8**	**20.3**
PPM Ethylene in tank = 20.1				
(Acceptable=19.1 - 21.1)				

TXI - Hunter
Kiln Stack
Method 320/321

QA SUMMARY

HCl Spikes

RUN	Raw Mill Off Pre Run 4	Raw Mill Off Post Run 4	Raw Mill Off Post Run 5	Raw Mill Off Post Run 6
File No.	C0043	C0095	C0161	C0237
Date/Time	4/18/02 9:36	4/18/02 11:18	4/18/02 13:27	4/18/02 16:02
SF6 TANK	5.1	5.1	5.1	5.1
SF6 FLOW	0.8	1	1	1
CELL PRESSURE	1	1	1	1
SF6 MEASURED IN SAMPLE	0.89	0.92	0.93	0.85
DILUTION FACTOR	0.174	0.180	0.183	0.167
SAMPLE FLOW	4.6	5.6	5.5	6.0
HCl				
PPM HCl. IN TANK	149	149	149	149
HCl Expected in sample, from spike	27.41	28.47	29.15	26.67
HCl Measured in sample, including spike	24.13	29.21	31.57	28.97
HCl Measured in sample, prespike	1.875	1.371	1.795	2.067
HCl Measured in sample, postspike	1.875	2.789	2.985	2.067
Native HCl Measured in sample, Avg	1.875	2.08	2.39	2.067
% RECOVERY	87.3%	102.8%	108.9%	109.2%
(Acceptable= 70% - 130%)				

Calibration Transfer Standard
CTS

RUN	Raw Mill Off Pre Run 4	Raw Mill Off Post Run 4	Raw Mill Off Post Run 5	Raw Mill Off Post Run 6
To Cell				
File #	C0004	C0113	C0183	C0251
Date, time	4/18/02 8:05	4/18/02 11:59	4/18/02 14:17	4/18/02 16:36
Effective Pathlength, meters	7.2	7.6	7.6	7.6
CTS, Ethylene, ppm v	**20.0**	**19.6**	**19.4**	**19.9**
PPM Ethylene in tank = 20.1				
(Acceptable=19.1 - 21.1)				
To probe tip				
File #	C0031	C0107	C0176	C0247
Date, time	4/18/02 9:11	4/18/02 11:46	4/18/02 14:02	4/18/02 16:25
CTS, Ethylene, ppm v	**19.7**	**20.6**	**19.5**	**19.9**
PPM Ethylene in tank = 20.1				
(Acceptable=19.1 - 21.1)				

OPERATING DATA

G

TXI OPERATIONS, LP
HUNTER CEMENT PLANT
AREA SOURCE DEMONSTRATION
PROCESS DATA SUMMARY

Date	Time	Test Condition	Run	Kiln Feed tons/hr	Iron tons/hr	Precip Inlet ¡F	Gas cf/min	Coal Mill A Coal tons/hr	Coal Mill B Coal/Coke tons/hr	Twr Aux Fuel gal/min	TDF tons/hr	Coal Mill B Coal tons/hr	Coal Mill B Coke tons/hr
4/17/02	1200-1300	Mill Up	1	174.78	9.45	251.30	84.21	2.92	6.14	0.00	0.07	4.91	1.23
4/17/02	1358-1458	Mill Up	2	174.88	9.44	253.28	76.82	3.49	6.03	0.00	0.07	4.82	1.21
4/17/02	1542-1647	Mill Up	3	174.78	9.42	247.67	82.94	3.43	6.02	0.00	0.06	4.82	1.20
4/18/02	1005-1111	Mill Down	4	148.67	7.71	332.80	33.31	3.35	6.08	5.99	0.07	4.86	1.22
4/18/02	1210-1318	Mill Down	5	148.67	7.71	332.80	33.31	3.35	6.08	5.99	0.07	4.86	1.22
4/18/02	1436-1540	Mill Down	6	150.16	6.50	309.43	33.61	3.44	6.04	6.01	0.07	4.83	1.21
4/19/02	0845-0952	Mill Up	7	174.70	7.57	252.37	35.62	2.92	6.22	5.99	0.54	4.97	1.24
4/19/02	1000-1103	Mill Up	8	180.38	7.94	250.01	26.44	2.90	6.16	5.99	0.83	4.93	1.23
4/19/02	1111-1215	Mill Up	9	177.63	7.74	244.08	18.89	3.45	6.13	6.00	1.02	4.91	1.23

PROTOCOL

H

Entellect Environmental
For TXI Operations, L.P.
Hunter Cement Plant
7781 FM 1102
New Braunfels, Texas 78132

PROTOCOL ON PC MACT COMPLIANCE TESTING

Performed for:

ENTELLECT ENVIRONMENTAL
FOR TXI OPERATIONS, L.P.
HUNTER CEMENT PLANT
KILN STACK

Client Reference No: 63927
CAE Protocol No: 9101
Revision 0: March 19, 2002

Submitted by,

Brenton Berridge, P.E.
Manager, Houston Regional Office

PROJECT OVERVIEW

TXI Operations, L.P. contracted Clean Air Engineering to perform PC MACT (40 CFR Part 63, Subpart LLL) testing at their facility located in New Braunfels, Texas for compliance purposes. The testing will be performed to help in determining whether the plant can be considered an area source or a major source.

The test parameters will include the following HAP pollutants:

- volatile organic compounds* (VOC);
- hydrogen chloride (HCl)
- flue gas composition (e.g., O_2, CO_2, H_2O);
- flue gas temperature;
- flue gas flow rate.

The testing will be performed using both a GC/FID as well as an FTIR. The specific compounds to be analyzed for will be:

- Benzene by GC/FID
- Toluene by GC/FID
- Hexane by GC/FID
- Naphthalene by GC/FID or FTIR
- Phenol by GC/FID or FTIR
- Xylene by GC/FID or FTIR
- Hydrogen Chloride by FTIR
- Formaldehyde by FTIR

*The analytical method used will be determined based on detection limits of the GC/FID and FTIR after the preliminary concentrations of the compounds is determined.

DESCRIPTION OF INSTALLATION

TXI Operations, L.P. operates a dry process portland cement manufacturing plant in Comal County near Hunter, Texas. The facility will be permitted in 1979 and began operations in 1980. The kiln is equipped with a preheater alkali bypass system which is combined with the kiln exhaust into a single stack. The facility is currently permitted to utilize coal, petroleum coke, natural gas and tire derived fuel. The current production rate is up to 101.2 tons/hr and 886,351 tons/yr of clinker. There is also an in line roller/raw mill which normally operates, but the kiln can operate for a limited time with it out of operation.

The testing will be performed at the Kiln Stack.

A schematic of the process indicating sampling locations is shown in Figure 2-1.

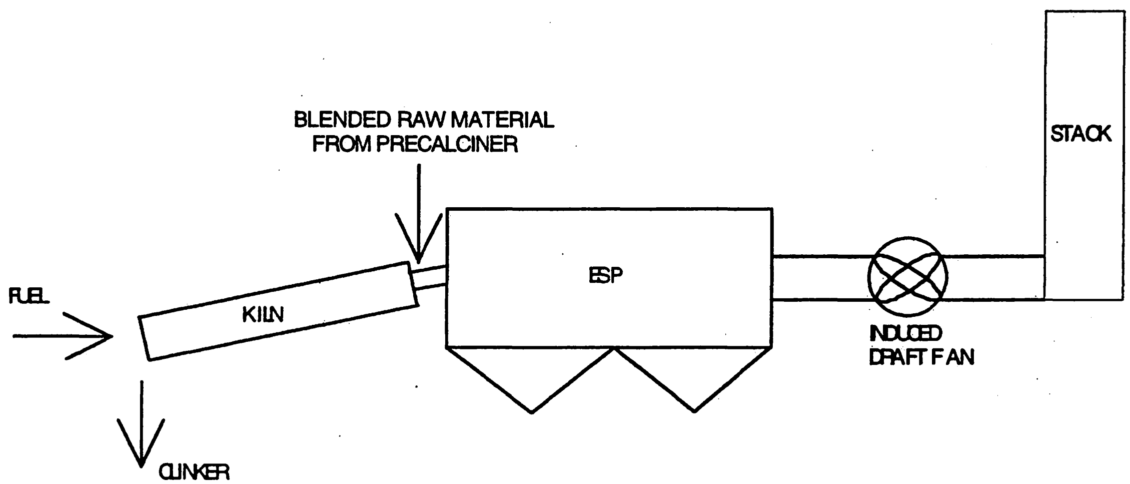


Figure 2-1: Process Schematic

SAMPLING POINT DETERMINATION

Sampling point locations will be determined according to EPA Method 1.

Table 3-2 outlines the sampling point configurations. Figure 3-1 through illustrates the sampling points and orientation of sampling ports for each of the sources tested in the program.

**Table 3-2:
Sampling Points**

Location	Constituent	Method	Run No.	Ports	Points per Port	Minutes per Point	Total Minutes	Figure
Unit 1 Stack	Flows/Moistures	1-4	1-6	4	3	5	60	4-1

The pollutant sampling will occur at the approximate center of the stack.

VELOCITY AND VOLUMETRIC FLOW RATE - EPA METHOD 2

EPA Method 2 will be used to determine the gas velocity and flow rate at the Stack. Figure 3-2 includes the components of the EPA Method 2 sampling apparatus.

Each set of velocity determinations includes the measurement of gas velocity pressure and gas temperature at each of the EPA Method 1 traverse points. The velocity pressures are measured with a Type S pitot tube. Gas temperature measurements are made using a Type K thermocouple and digital pyrometer.

GAS COMPOSITION AND MOLECULAR WEIGHT - EPA METHOD 3

In order to determine the oxygen (O_2) concentration, carbon dioxide (CO_2) concentration and gas molecular weight, a time-integrated sample of the gas will be obtained and analyzed in accordance with EPA Method 3. The gas sample will be collected into a vinyl sample bag from the moisture testing. The contents of the bag will be analyzed for O_2 and CO_2 concentrations using an Orsat gas analyzer.

MOISTURE CONTENT - EPA METHOD 4

The flue gas moisture content at the Stack will be determined in accordance with EPA Method 4. Figure 3-2 shows the major components of the EPA Method 4 sampling apparatus. The gas moisture will be determined by quantitatively condensing the water in a chilled knock-out jar train. The amount of moisture condensed is determined both volumetrically and gravimetrically. A dry gas meter will be used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled is used to calculate the gas moisture content in accordance with EPA Method 4 calculations.

After passing through the probe, the sample gas enters a knock-out jar condenser system for drying of the gas. The condenser system consists of four leak-free glass knock-out jars and rubber leak-free connectors. The first two knockout jars each contain 100 milliliters of distilled water. The third knock-out jar will be empty, and the fourth contains 300 grams of silica gel. All four of the knock-out jars will be placed in an ice bath for the duration of the test.

The metering system includes a vacuum gauge, a leak-free pump, thermometers accurate to within ±5.0°F and a dry gas meter accurate to within 2%.

Before and after each test, the sample apparatus will be leak checked. A leakage rate of less than the 0.02 cfm will be considered acceptable.

SPECIATED VOLATILE ORGANIC COMPOUNDS - EPA METHOD 18

EPA Method 18 will be used to measure concentrations of benzene, toluene, hexane, naphthalene, phenol and xylene. This method specifies the use of a variety of sampling techniques coupled with analysis by Gas Chromatography (GC) with a Flame Ionization Detector (FID).

At the Stack a VOST sampling meter will be used to pull gas through one charcoal and one XAD sample tubes in order to concentrate the sample to obtain lower detection limits. Figure 3-3 illustrates the sampling train which will be used. The sample tubes will be desorbed on-site using carbon disulfide.

An aliquot of the desorbed sample will then be injected into the GC injection port for analysis. The chromatographic method (e.g. oven temperature program) will simultaneously begin.

The Recovery Study required by Method 18 will be performed by running a colocated train simultaneously with the sample train for 3 runs. The second train will have the adsorbent tubes spiked with the compounds of interest to show the recovery efficiency.

Data from the chromatograms will be reduced by identifying peaks and matching their retention times with those of the known standards. Peak areas will be calculated using computer integration. Results will be calculated by mathematically comparing the area of the sample to the area of the standards using a least-squares regression analysis.. Results will be calculated as total micrograms of each analyte.

Standards for the GC/FID analysis will be made by dissolving known amounts of each analyte in carbon disulfide. Concentrations will be determined as micrograms/milliliter for each analyte.

Calibration response curves will be prepared using a least-squares regression analysis. At least three calibration points will be generated for the response curves for each compound. At least three injections will be performed for each calibration point. The percent difference of each injection from the mean of all injections will be less than ± 5%. The relative standard deviation for the results of each injection for each calibration point will be less than ± 5%.

HYDROGEN CHLORIDE AND HAPS TESTING - EPA METHOD 320/321

The gaseous hydrogen chloride, formaldehyde and the tentative 3 additional HAP compound emissions will be determined using procedures detailed in EPA Method 320/321. Figure 3-4 illustrates the EPA Method 320/321 sampling apparatus. An integrated sample will be extracted from the gas stream through a heated probe, heated filter, Teflon sample line and heated pump. The sample then enters a heated manifold that introduces a known quantity of sample into the FTIR cell. FTIR performance will be verified using a 20 ppm ethylene calibration transfer standard (CTS) prior to and after each sampling event per Method 320 and 321. A calibration gas containing sulfur hexafluoride and hydrogen chloride will be used for analyte spiking. The calibration gas and CTS will be introduced into the probe tip. All flows will be controlled with calibrated flow meters. The sample will be continuously extracted with FTIR absorbance scans every six minutes or less.

Infrared absorption spectroscopy is performed by directing an infrared beam through a sample to a detector. The frequency-dependent infrared absorbance of the sample is measured by comparing this detector signal to a signal obtained without a sample in the eam path (background). There is a linear relationship between infrared absorption and compound concentration. This frequency dependent relationship is known as absorptivity. The absorptivity is measured by preparing standard samples in the laboratory of compounds at known concentrations and detector conditions. A correlation is then made between the standards (reference spectra) and the sample gas analysis. The relative intensities determine the sample gas concentrations.

The FTIR analyzer consists of a medium-high resolution interferometer, heated fixed path absorption cell, a mercury cadmium telluride (MCT) detector (liquid nitrogen cooled), electronics package and computer. The gas transport path inside the FTIR is heated to 180°C, while the absorption cell is maintained at 150°C.

The interferometer/electronics package is operated at a nominal spectral resolution of 0.5 wavenumber (0.5 cm^{-1}). The heated absorption cell is a fixed pathlength of 10 meters. The mirrors and cell interior are gold plated. The IR beam splitter and all optical windows are made of zinc selenide.

The method is self-validating by performing field spikes with a known concentration of the target compound. The QA/QC procedures can be found in reference in Methods 320 and 321.

RESUMES

Brenton E. Berridge, P.E.
Manager, Houston Regional Office

Professional Profile
Mr. Berridge has nine years of experience in both compliance and diagnostic Environmental Protection Agency (EPA) source testing. He has been involved in projects utilizing EPA Part 60, 63 and 75 methods as well as NIOSH, SW, OSHA and ASTM methods. Mr. Berridge has been involved with all aspects of compliance projects, ranging from selection of appropriate testing methods to data reduction and reporting. Diagnostic projects have involved process optimization to improve emissions, reduce raw material and fuel usage and quality improvements for production lines. He has been involved in many negotiations with Regulatory Agencies including new method development.

Relevant Experience
Bayer Corporation; Orange Plant, TX
Diagnostic projects aimed toward increased production rates through adjustments in process conditions. This project included gas chromatography, EPA Methods 1-4, 25A and specialized flow techniques to measure difficult gas streams. The plant boilers were also optimized to prepare for upcoming state NOx RACT regulations. Yearly compliance tests are also performed on several production lines to keep the plant in compliance.

ENRON Engineering and Construction, Republic of Turkey
Responsible for development and implementation of a combined compliance and performance guarantee test program for a combined cycle power plant in accordance with EPA and World Bank regulations as well as procedures acceptable to the Turkish Government. Managed project following EPA Methods 1, 2, 3, 3A, 4, 5, 6C, 7E and 10 as well as Specifications 2, 3 and 4. Also, handled international shipping and travel. Involved in expert testimony for seller/owner negotiations involving plant CEM system.

Ogden Martin Systems; Hennepin, MN
HWI Compliance testing was performed for lead (BIF Method 0012), mercury (NIOSH Method 101A), particulate (Method 5), dioxin/furans (Method 23/0010), hydrogen chloride (EPA Method 26) and emission monitor certification for O_2, CO_2, SO_2, NO_x, CO and THC (EPA Methods 3A, 6C, 7E, 10 and 25A).

Fleischmann's Yeast; Memphis Plant, TN
Performed around the clock hydrocarbon and hydrogen sulfide testing for two weeks in order to model entire batch cycle. This allowed us to calculate the total batch emissions so that an appropriate permit could be written as an industry standard. A continuous flow monitoring system was developed to provide real-time volumetric flow rate data.

Diamond Shamrock; McKee Facility, TX
Compliance work aimed at quantifying plant emissions form process heaters and sulfur recovery units. Performed EPA Methods 1-5, 6C, 7E, 8, 10 and 19. Also negotiated with state to allow deviation from standard methods.

Professional Certifications/Licenses and Affiliations
Professional Engineering Liscence No. 85383
Certified Visual Emissions Reader in the State of Texas
Member of the Society for Professional Engineers
40 Hour OSHA training

Education
Bachelor of Science in General Engineering, 1991
University of Illinois, Urbana, Illinois

David Bedikian
Field Technician

Professional Profile

Mr. Bedikian has just under six months of field testing experience involving Environmental Protection Agency (EPA) Methods 1 through 29. Mr. Bedikian's responsibilities include pre & post-test equipment calibration, packing, laboratory set up and analysis, shipping, maintenance, equipment setup and field testing.

Relevant Experience

Reliant Energy; Jewett, Texas
Performed RATA compliance testing on the Plant CEM systems for CO_2, SO_2, and NO_X constituents following EPA Methods 3A, 6, and 7E on one unit in the plant. RATA testing was also performed for the flow meter following EPA Method 2H.

Forney Corporation; Channelview Power Plant
Compliance testing was performed on two natural gas fired turbines with HRSG using Methods 1-4, 5/202, and Conditional Test Method (CTM) 27 for ammonia.

Education

Texas A&M University, College Station, Texas
Mechanical Engineering

Relevant Experience

Enviropace Ltd.
Project Location: Hong Kong Chemical Waste Treatment Facility, Tsing Yi, Hong Kong
A trial burn was performed to demonstrate the destruction removal efficiency of certain POHCs as well as the air emissions of a commercial hazardous waste incinerator. The following sampling was performed: SW846 Method 0030 & 0050 and EPA Methods 1-5, 8, 11, 23 and 29 under two different load conditions. The Hong Kong Productivity Council was also trained in stack emission sampling for their future air testing projects.

Vertac Site Contractors
Project Location: Dioxin Superfund Site, Jacksonville, Arkansas
A trial burn on a rotary kiln Thermal Destruction Unit (TDU) was performed as well as waste feed sampling and flue gas sampling. Aqueous and solid feeds were sampled at nine locations. The flue gas sampling took place at the stack and the following emissions were determined: particulate, hydrogen chloride, dioxin/furans, and hexachlorobenzene.

Continental Cement
Project Location: Hannibal, Missouri
A trial burn on a cement kiln burning hazardous waste was performed. Flue gas sampling, Principal Organic Hazardous Constituent (POHC) spiking of SF6, and certification of the Continuous Emission Monitoring (CEM) system was conducted. The constituents sampled in the flue gas were particulates, HCl, metals, hexavalent chromium, dioxin/furan, SF6, semi-volatile organics and volatile organics. In addition to the flue gas sampling, Clean Air Engineering also conducted the sulfur hexafluoride (SF6) spiking and CEM certification of their oxygen, carbon monoxide and total hydrocarbons monitoring system.

Ogden Martin Systems
Project Location: Kent County Resource Recovery Facility; Grand Rapids, Michigan
Compliance testing was performed on two units of the 625 ton-per-day Kent County Waste-to-Energy facility. The testing included particulate, sulfur dioxide, nitrogen oxides, opacity, carbon dioxide, hydrogen fluoride, total hydrocarbons, hydrogen chloride, sulfuric acid mist, metals, hexavalent chromium and dioxin/furan determinations.

Ogden Martin Systems
Project Location: Huntington Resource Recovery Facility
Compliance/start-up testing was conducted at the municipal solid waste-to-energy facility. The compliance testing was performed at the SDA inlet and the FF outlet.

Gossman Consulting, Inc.
for a Portland Cement Association facility
Performed compliance and diagnostic testing on a cement kiln. Particulate, PCDDs/PCDFs, metals, THC and methane testing was conducted. In addition, gaseous monitoring of HCl, NH_3 and VOC emissions from the stack was performed using FTIR HCl and VOC Methods for Cement Kilns. A gas sample was continuously extracted from the stack and delivered to an FTIR analyzer which measured the concentration of HCl, NH_3, acetaldehyde, benzene, chlorobenzene, ethylene, formaldehyde, hexane, methylene chloride, naphthalene, phenol, styrene, toluene, o-xylene, m-xylene and p-xylene in the gas on a wet volumetric basis.

US Army ACWA Project
Designed and maintained continuous emission monitoring system to detect products of decompostion from nerve agent/chemical weapons decommissioning phase I demonstration projects. Projects utilized remotely operated systems for gas dilution conditioning and online gas chromatography.

Douglas D. Rhoades
Senior Project Manager

Professional Profile
Mr. Rhoades has been with Clean Air Engineering since September 1983. In that time, he has been involved with hundreds of testing projects. Some examples of the types of projects include:

- Boiler Efficiency Testing
- Performance Improvement Projects Developed for Particulate Control Devices
- Scrubber Performance Guarantee Work
- Plume and Opacity Investigations
- Directional Gas Flow Traverse Work
- Hazardous Waste Trial Burn Test Projects

Recently, Mr. Rhoades was the Project Manager for a test program conducting boiler efficiency testing for Babcock & Wilcox at the Kincaid Energy LLC. Testing was performed to measure the levels of NOx, O_2, CO and CO_2 as well as the air heater leak rate. In addition, NOx and CO at 3% O_2 and at lb/10^6Btu as well as the air heater leak rate was generated realtime.

Mr. Rhoades also spent four years (beginning in 1990) working with Dr. Roy Bickelhaupt in Clean Air Engineering's particulate characterization laboratory. This work incorporated both laboratory investigations and field evaluations of problems encountered with electrostatic precipitators (ESPs) and other particulate collection devices. The laboratory portion of this work includes:

- Particle Size Distribution Determinations
- Computer Modeling and Consultations on Modifying Ash Chemistry and Resistivity for Enhancement of Particulate Collection Efficiency
- Computer Modeling and Consultations on Improving ESP Performance
- Consultations and Problem Solving

The field portion of this work included:

- In-Situ Determinations of Ash Resistivity and Particle Size Distribution
- Consultations on Improving Particulate Collection Performance

Prior to this position, Mr. Rhoades initialized the Clean Air Engineering Project Planning and Quality Assurance Department. This included the planning and scheduling of each Clean Air Engineering field test project and training personnel involved with testing. He also worked in the Research and Development Group initializing a VOC laboratory. During this time, the Clean Air Engineering Method 25 (Non-Methane Organics) analysis laboratory was developed.

Before joining Clean Air Engineering, Mr. Rhoades worked for the University of Missouri at their hazardous waste treatment, storage and disposal facility. He developed a program to sample all university-owned transformers for PCB contamination. He was also involved with a dioxin task force addressing various contaminated sites in the state of Missouri.