DEPARTMENT OF THE ARMY
U.S. ARMY CHEMICAL MATERIALS ACTIVITY
PUEBLO CHEMICAL DEPOT, BUILDING 1
45825 HIGHWAY 96 EAST
PUEBLO, COLORADO 81006-9330

Chron20-00460

Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
Attention: Mr. Kevin Mackey
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

RE: PCAPP Class 2 Permit Modification Request No. 286, Incorporation of Recommendations and Lessons Learned from Pilot Testing

Dear Mr. Mackey:

The Permittees at Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) are submitting the enclosed Class 2 Permit Modification Request No. 286, titled Incorporation of Recommendations and Lessons Learned from Pilot Testing, to modify the PCAPP Resource Conservation and Recovery Act (RCRA) Research, Development and Demonstration (RD&D) Permit, No. CO-04-07-01-01.

The Permittees request approval to modify the following sections and plans in the PCAPP RD&D Permit in accordance with the details in the attached permit modification request: Introduction, Parts I through V, Attachment A – Part A, and Attachments D, E, and G through N.

In accordance with the CDPHE public notice of the draft PCAPP RD&D permit renewal issued on September 8, 2017, PCAPP requests that this permit modification amend the draft PCAPP RD&D permit renewal application submitted to CDPHE on June 7, 2017.

For all technical matters, please contact Mr. Michael Saupe, Bechtel Pueblo Team Environmental Manager, at (719) 549-5455. For all matters related to the request, please contact Mr. Patrick Sullivan with the Assembled Chemical Weapons Alternatives staff at (719) 549-4523.

Sincerely,

Michael W. Cobb 4 MAR 2020

Michael W. Cobb* Date
Colonel, U.S. Army
Commanding

K.E. Harrawood 3/4/2020

K.E. Harrawood * Date
Project Manager, Bechtel National, Inc.
Bechtel Pueblo Team Project Manager

Walton W. Levi 20200304

Walton W. Levi * Date
PCAPP Site Project Manager
Pueblo Chemical Agent-Destruction Pilot Plant

Enclosure

CC:
Ms. Gail Wallingford-Ingo, Pueblo County Planning/Development, 229 West 12th Street, Pueblo, CO 81003-2810
Mr. Jesse Newland, US EPA Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129
Mr. Walton W. Levi, PCAPP, 45825 Highway 96 East, Pueblo, CO 81006-9330
PCAPP Document Control Center, 45825 Highway 96 East, Pueblo, CO 81006-9330
Mr. Chris Pulskamp, Pueblo Chemical Depot, 45825 Highway 96 East, Pueblo, CO 81006-9330
Mr. Trevor Klotz, Sentinel 650 South Cherry Street, Ste 1140, Denver, CO 80246

*In accordance with 6 CCR 1007-3 Sections 100.12 and 100.42(k), I certify under penalty of law that, except as specifically noted, this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

PCAPP Permit Modification Request

Permit Number:	CO-04-07-01-01
Permit Modification Request Title:	Incorporation of Recommendations and Lessons Learned from Pilot Testing (Modification #286)
Classification:	Class 2 Permit Modification Request

Description of Changes:
The Permittees at PCAPP request approval of this Class 2 permit modification, titled Incorporation of Recommendations and Lessons Learned from Pilot Testing, to revise the following sections and plans in the PCAPP RD&D Permit: Introduction, Parts I through V, Attachment A – Part A, and Attachments D, E, and G through N.

This permit modification request proposes the following revisions to the PCAPP RD&D Permit to support continued munitions and hydrolysate processing until the Part B operating permit is issued by the Division:

- Add operational limits and monitoring requirements based on recommendations from pilot testing and the multiple pathway health risk assessment emissions modeling
- Incorporate design changes based on lessons-learned during pilot testing
- Increase the waste storage capacity in the Waste Laydown Yard, Dunnage Storage Area, and the Munitions Bodies Storage Area
- Revise the *Corrosion Monitoring Plan*, Attachment M, and the *Odor Monitoring Plan* (new Attachment N)
- Remove the *Pilot Test Demonstration Plan*, Attachment N, and associated references

These proposed revisions are based on the following:

- Results of pilot testing and lessons learned during pilot test operations
- Recommendations in the *Final Report for Pueblo Chemical Agent-Destruction Pilot Plant Pilot Testing* (Revision 001), accepted by the Division on February 21, 2020, and available at the PCAPP repositories at the Avondale Community Center, Boone Town Hall, and at the Pueblo Chemical Stockpile Outreach Office
- Operational conditions needed to comply with emissions limits identified in the *Screening Multiple Pathway Health Risk Assessment (MPHRA) Report for the PCAPP with Explosive Destruction System and (EDS) and Static Detonation Chambers (SDC)* (Revision 001), approved by the Division on January 16, 2020, and available at the PCAPP repositories at the Avondale Community Center, Boone Town Hall, and at the Pueblo Chemical Stockpile Outreach Office

Hereafter, references to the *Final Report for Pueblo Chemical Agent-Destruction Pilot Plant Pilot Testing* (Revision 001) will be identified as "Final Pilot Test Plan Report" and the *Screening Multiple Pathway Health Risk Assessment (MPHRA) Report for the PCAPP with Explosive Destruction System and (EDS) and Static Detonation Chambers (SDC)* (Revision 001) as the "Final MPHRA Report".

The table in Enclosure 1 presents a summary of the proposed modifications to the PCAPP RCRA RD&D Permit, which are also presented as "change pages" in Enclosures 3 through 8, and 10 through 19.

In addition, this permit modification request addresses a variety of recent design changes that require prior Colorado Department of Public Health and Environment (CDPHE) approval before implementation. These changes (i.e., Level III Design Change Notices (DCNs)) are described in the table in Enclosure 2.

Only proposed modifications that require a longer justification than can be included in the tables in Enclosures 1 and 2 are included in the Justification for Changes section of this permit modification request.

Justification for Changes:

<u>Final Pilot Test Plan Report and Final MPHRA Report Recommendations:</u>
(Introduction, Parts I through IV, and Attachments D, E, and G through N)
The Permittees completed the PCAPP pilot test demonstration testing on 2 July 2019. With approval from the Colorado Department of Public Health and Environment (CDPHE), PCAPP has continued processing munitions at a reduced interim processing rate. During this interim processing period, the Permittees and CDPHE representatives have reviewed the results of the Pilot Test Demonstration and the MPHRA modeling and calculations, and have agreed upon the on-going permit conditions for PCAPP operations. One of the purposes of this permit modification request is to incorporate these agreed upon permit conditions into the PCAPP RCRA RD&D Permit, to incorporate lessons-learned during pilot testing, and to update the permit to remove the pilot demonstration test permit conditions.

The Permittees propose the following operational limits for Agent Neutralization Reactor (ANR) batches:

- Monthly average not exceeding 6 ANR batches per day (30 consecutive days)
- $\leq$ 42 ANR batches per week
- Each batch < 8.6% agent

The constraint "monthly average not exceeding 6 ANR batches per day (30 consecutive days)" allows PCAPP to meet munition destruction demands while remaining within short- and long-term emissions estimates for Agent Process Building (APB) and Biotreatment Area (BTA) as applied in the MPHRA. As long as the total-project average of batch processing is $\leq$ 6 batches per day, emissions will remain within the assumptions of the MPHRA.

Monthly tracking and reporting of ANR batch counts provides operational flexibility to support munitions destruction while establishing a reporting schedule that will demonstrate that the basis for the MPHRA emissions is not being exceeded.

Deletion of Sections I.J.3.e. and I.J.3.f:
(Part I)

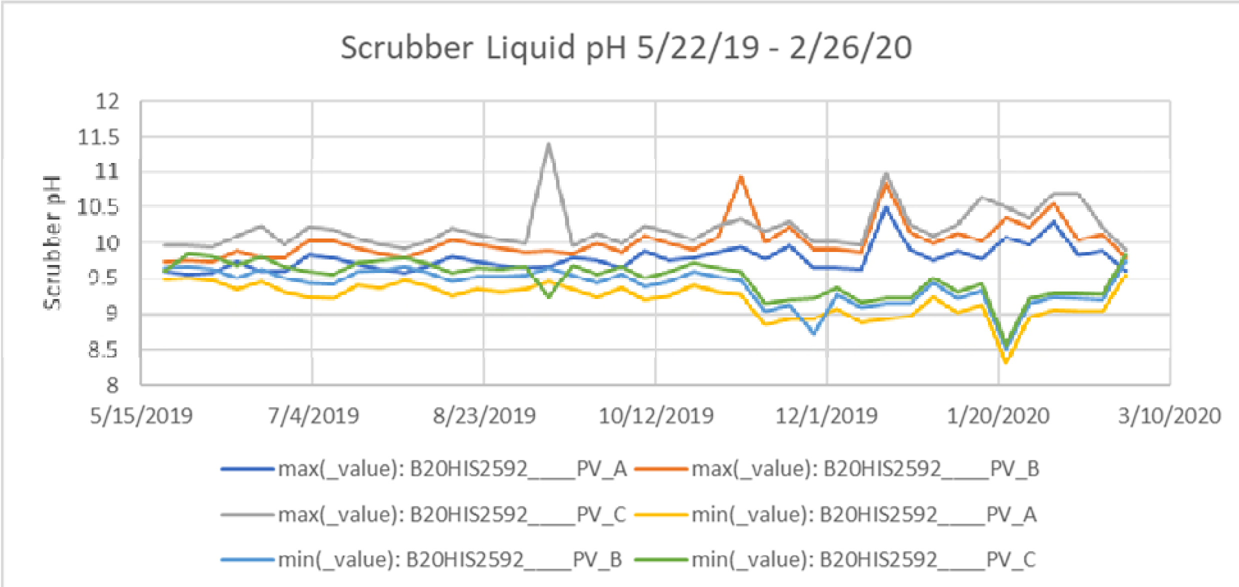
- I.J.3.e, B12 Feed Preheater replacement:
  The Permittees are requesting approval to delete the permit condition in Section I.J.3.e, which states "In the event another unit of the B12 Feed Preheater fails, the unit will be replaced to preserve design capacity and BRS throughput to avoid upstream impacts."

  This request is based on the Engineering calculation titled "titled "BC Feed Preheater Performance with Shells and Tubes Out of Service" (24852-RD-MEC-B12-M0001). The calculation concluded: "Sufficient capacity exists to operate with as low as 70% of the original heat transfer area, whether by tube plugging, shell bypassing, or other mechanism that reduces heat transfer area. This means up to three of the original ten preheaters bypassed or 216 (30%) tubes plugged. Tubes associated with a bypassed shell do not contribute heat transfer area, so this also means one of the original ten preheaters bypassed with 144 tubes plugged or two preheaters bypassed with 72 tubes plugged."

  A copy of this calculation is provided in the Supplemental Information folder on the CD provided with this PMR.

- I.J.3.f, B20 Off-Gas Treatment System (OTS) Scrubber replacement:
  The Permittees are requesting approval to delete the permit condition in Section I.J.3.f, which states "At the conclusion of the 155mm campaign and before the 105mm campaign begins, the Permittees will install the new OTS Scrubber AL-6XN alloy heat exchanger (recirculation cooler) in place of the existing unit and provide FCC Certification for the installation."

  This request is based on the following:
  - Technical Position Paper Inspection Report of B20 System Heat Exchanger (24852-RD-30H-B20-00002, Rev. 001), which concludes that "Should pH be maintained above 8.0, the design life of the recirculation cooler will exceed the operating life of the PCAPP."
  - PCAPP operations have demonstrated that the B20 OTS scrubber has been operated with a pH greater than 8.0 and will continue to operate at a pH greater than 8.0. The following graph identifies the minimum and maximum pH measurements collected by PDARs per week for a nine-month time period from the three pH probes in the scrubber. (The Excel spreadsheet used to create this graph is included in the Supplemental Information on the CD included with this PMR.)



- White Paper on Source of Propylene and Ethylene Glycol in (B20) Off-Gas Treatment System (24852-30H-B20-B0001, Rev. 000), which concluded that the B20 OTS scrubber recirculation cooler is not leaking coolant. This White Paper also concludes that the event that caused the detection of propylene and ethylene glycol in the OTS scrubber liquor has not repeated itself.

Response to TraceTek® Alarms:
(Part III, Attachment E)
The Permittees are requesting approval to change the analytical parameters and the responses to alarms initiated by the TraceTek® leak detection systems at the 30-day Hydrolysate Storage Tanks, the Brine Concentrator Feed Tanks, and at the Brine Reduction System (BRS) sump.

The TraceTek® leak detection systems are used as an initial indicator of a potential release from tanks in the Biotreatment Area (BTA). Because the TraceTek® systems do not differentiate between hydrolysate and precipitation or other liquid sources, samples are taken from the secondary containment to confirm or refute the potential tank release. Based on the analyses of hydrolysate in the 30-day Hydrolysate Storage Tanks and the BRS pre-filter (Enclosure 23), this permit modification request proposes to sample for thiodiglycol (TDG) in liquid samples taken from the 30-day Hydrolysate Storage Tank secondary containment, and to sample for oxathiane (OX) and dithiane (DT) taken from the Brine Concentrator Feed Tanks (BCFTs) and BRS sump. The permit modification request also proposes to use a multi-tiered response to detections of TDG, OX, or DT in these confirmatory samples.

The hydrolysate sample results presented in Enclosure 23 support the proposed TDG action levels in samples from the 30-day Hydrolysate Storage Tank secondary containment and the OX and DT action levels in samples from the BCFTs and BRS sump secondary containments. The following summarizes the analytical results presented in Enclosure 23 and the proposed action levels. The multi-tiered approach is presented using “track changes” in Section III.C.4, Part III, in Enclosure 6.

Analyte	Average Concentration (mg/L)	Proposed Action Level (mg/L)	Proposed Action Level (mg/L)	Proposed Action Level (mg/L)
30-day Hydrolysate Storage Tanks – Tank 101, 201, 203				
TDG	23634, 24623, 209502	<1 mg/L Leak is refuted	≥ 1 mg/L and < 10 mg/L Potential leak is confirmed	≥10 mg/L Leak is confirmed
BCFT tanks – using BRS pre-filter analytical results				
TDG	1.01	None	None	None
OX	7.03	< analytical reporting limit (RL) Leak is refuted	> analytical reporting limit (RL) and < 3 mg/L Potential leak is identified	≥3 mg/L Leak is confirmed
DT	5.44	< analytical reporting limit (RL) Leak is refuted	> analytical reporting limit (RL) and < 3 mg/L Potential leak is identified	≥3 mg/L Leak is confirmed

Details regarding the proposed revisions to TraceTek® alarm responses are identified using "track changes" in Enclosure 6 (Part III revisions) and in Enclosure 24 (*TraceTek and H_2Obvious Leak Detection Alarm Response*).

__Organic Air Emissions, 6 CCR 1006-7 Part 264 Subparts BB and CC:__
(Parts III, IV, Attachment L)

It is PCAPP's position that adherence to the monitoring and inspection protocols specified in Appendix K of this Permit makes the facility compliant with the monitoring and inspections requirements outlined in 6 CCR 1007-3 Part 264 Subpart BB and CC. A review of the regulations has identified potential areas of conflict between the assumptions in PCAPP's current Permit and specific requirements outlined in the Colorado Hazardous Waste Regulations.

To clarify these potential areas of conflict, the Permittees are requesting specific permit conditions, which state that the Inspection Plan, Attachment K, in the PCAPP RCRA RD&D Permit meets the inspection requirements and is equivalent to the monitoring and repair requirements in 6 CCR 1006-7 Part 264 Subparts BB and CC, as applicable to the PCAPP tank systems.

- Method 21 monitoring
  During development of the Inspection Plan, Attachment K, to the PCAPP RCRA RD&D, PCAPP personnel and Division permitting representatives walked down the tank systems that require inspections and monitoring in accordance with 6 CCR 1007-3 Subparts BB and CC. Based on these walkdowns, the regulations, and numerous discussions on implementation strategies, the Inspection Plan was developed and approved by CDPHE. The Inspection Plan includes equivalent inspection, monitoring, repair, reporting, and recordkeeping requirements as those required by 6 CCR 1007-3 §§264.1033, 264.1034, 264.1057, 264.1058, 264.1062,

264.1063, and 1064. Therefore, pursuant to IV.K.5 of the PCAPP RCRA RD&D Permit, the Inspection Plan, Attachment K of the Permit, provides an alternate system for leak detection at PCAPP. The Permittees request that this alternate system be more specifically referenced in the Permit by modifying the references to regulations that refer to monitoring in accordance with Method 21 (6 CCR 1007-3 §§264.1033, 264.1034, 264.1057, 264.1058, 264.1062, 264.1063, and 1064) as shown in the change pages for Parts III and IV, which are presented in Enclosures 6 and 7.

To clarify this equivalency for inspection protocols, the Permittees request that references to §264.1058 be replaced with the Inspection Plan, Attachment K of the Permit. This request is based on the position that the Inspection Plan, Attachment K, meets the requirements for inspections in accordance with 6 CCR 1007-3 §264.1056 and is equivalent to the monitoring and repair requirements in 6 CCR 1007-3 §264.1058.

- Vapor Pressure calculations:
  For consistency with current Permit Conditions III.M.1.b.i. and IV.L.3.b.i., and with 6 CCR 1007-3 Section 264.1084(c), the Permittees propose to remove the requirements to perform annual headspace organic vapor pressure calculations on tanks. Tank headspace calculations, as currently configured and performed, sufficiently bound future tank conditions; therefore, it is only necessary to perform calculations when processes change potentially causing an increase the organic vapor pressure in a tank's headspace.

  The munitions washout and treatment process in place at PCAPP uses more washout and process water than in the design basis used to generate tank/piping headspace calculations. Future process changes (transition from 155mm munition to 105mm munition processing) will result in additional dilution as the reduction in agent mass per munition with the different campaign will introduce less total organic components into permitted systems.

Agent Filtration Area (AFA) Agent-Monitoring and Agent-Driven Carbon Changeout Strategies (Part IV)

The Permittees request approval to change the AFA MINICAMS® agent action levels by changing the monitoring threshold from 0.2 VSL to 0.7 VSL. These revisions are presented in an extract from Table IV.D.6 at the end of this description and justification for change. The proposed changes are depicted using "track changes" in the table below and in Enclosure 7.

A 0.7 VSL action level is justified by the long-standing practice of measuring and evaluating equipment and material contamination based on exposure at or above 1 VSL (per DA-PAM 385-61). Mid-bed agent monitoring in the AFA is done for the purpose of process evaluation (carbon life) and material exposure, not direct evaluation of personnel exposure. Because personnel exposure is not a concern in this monitoring (mid-bank 1-2 or 2-3), the practice of minimizing exposure using the lowest feasible action level of 0.2 VSL is not necessary. If followed, this proposed approach does result in the exposure of filter bed 3 to agent vapor levels at or above 0.7 VSL for a period of at least 24 hours; because of this exposure, changeout of this bank is included in the proposed approach. Regardless of the monitoring level associated with inter-bank monitoring (0.2 vs 0.7 VSL), the potential for some low-level exposure of the 3rd bank of carbon exists; increasing the level from 0.2 to 0.7 VSL simply allows for greater operational confidence that carbon capacity is diminished, while still minimizing the exposure levels in the bank 2-3 interstitial space.

Changing the action level from 0.2 VSL to 0.7 VSL has a negligible risk of a discharge of agent from the stack because there are still 3 carbon beds between the location where the agent is detected and the environment. Additional requirements in Table IV.D.6 (listed conditions 2 through 5) include prescribed movement of monitoring downstream; and listed condition 5 includes a hard-stop to prevent the release of agent from the common stack.

The Permittees also request approval to revise the AFA carbon changeout strategy by changing out only beds 1 to 3 if agent monitoring detects ≥ 0.7 VSL between the 2nd and 3rd carbon beds. Changeout of carbon banks 1-3 only (and not 4-5) is justified by the additional carbon capacity evaluation criterion introduced through the 1,2. DCA monitoring protocol described in the next row of this table. It is presumed that the previous changeout requirements (for banks 1-5) was predicated on removing banks 1-3 due to exposure to agent, and banks 4-5 because of presumed reduction in capacity for non-agent organics that would be roughly correlated with agent vapor (more agent vapor = more processing = more non-agent organics generation). With the agent-independent evaluation of banks 4 and 5 assessed by monitoring for 1,2 DCA there is no need to prematurely remove and disposition banks 4 and 5 based on upstream agent concentration.

This proposed AFA monitoring and AFA carbon changeout strategies are described in the following proposed changes to Table IV.D.6. (Enclosure 7)

Location	Method	Constituent	Frequency	Requirement
AFA Stack	MINICAMS®	Mustard Agent	~~See right~~ Continuous	~~99.9999% DRE demonstrated during pilot-testing. During operations, stack concentrations monitored as described in the LAMP (Attachment D).~~ ~~*see notes A, B and C~~ (1) Monitor in accordance with LAMP, Appendix 1 to the Waste Analysis Plan, Attachment D, and the Operations Plan, Attachment L (2) Response to ≥ 0.7 VSL (approximately 1 VSL at the 95% confidence limit) in accordance with the LAMP, Appendix 1 to the Waste Analysis Plan, Attachment D, and the RCRA Contingency Plan, Attachment G, and the Operations Plan, Attachment L
Each of the operating AFA Filter Units ~~Between 2nd and 3rd carbon beds~~	MINICAMS®	Mustard Agent	Continuous and Event Driven	~~If concentration exceeds 0.7 VSL (i.e., 1 VSL at the 95% confidence limit), Filter unit must be taken off-line to replace carbon in beds 1 – 5.~~ (1) Agent breakthrough is defined as confirmed detection of agent vapor greater than or equal to 0.7 VSL in an operating filter, for a period of greater than 24hrs; a single DAAMS confirmation and average MINICAMS® measurements ≥ 0.7 VSL for the period are suitable to make this determination*. (2) Monitor for agent breakthrough continuously between the 1st and 2nd carbon-bed. If a reading of

Location	Method	Constituent	Frequency	Requirement
				0.7 VSL is confirmed for a period of >24hrs as indicated in number 1 above – monitor for agent breakthrough between 2nd and 3rd carbon-beds (3) Response to post-carbon bed 2 agent breakthrough (as defined above) is to take the filter unit off-line within 30 days of AFA online operations to replace 1st, 2nd, and 3rd carbon beds.
~~AFA Stack~~	~~Summa Canister, sorbent tubes, or equivalent~~	~~1,2-dichloroethane~~	~~Per Pilot Test Demonstration Plan (Attachment N)~~	~~Report data to Division in accordance with Pilot Test Demonstration Plan, Attachment N~~
Each of the operating AFA Filter Units	Summa Canister, sorbent tubes, or equivalent.	1,2-dichloroethane	Once per calendar week	~~(1) Upon completion of Pilot Testing:~~ ~~o Begin replacement of carbon beds 3, 4, and 5 in filter unit 16.~~ ~~o Within one calendar week after replacing carbon beds 3, 4, and 5 in filter unit 16, initiate a sampling/monitoring protocol to assess carbon life using 1,2-dichloroethane as an indicator of breakthrough~~ ~~o After carbon beds 3, 4, and 5 replacement in filter unit 16 is complete, continue replacement of carbon bed 5 in filter units 7-15, as equipment and resources (e.g., fresh carbon) are available.~~ ~~o Within one calendar week after the filter unit in which carbon bed 5 was replaced and is placed online, initiate the sampling/monitoring protocol to assess carbon life using 1,2-dichloroethane as an indicator of breakthrough.~~ (~~2~~1) Once per calendar week perform sampling after carbon bed 5 of each operating (on-line) filter unit. ~~Following initial replacement of carbon bed 5, or subsequent replacement of carbon beds 3, 4, and 5 for a given filter unit.~~ • Sample collection for approximately 5 hours and volatile organic analysis

Location	Method	Constituent	Frequency	Requirement
				(EPA Method TO-15) to determine 1,2-dichloroethane concentration levels. (2) Response to post-carbon-bed 5 analytical results for 1, 2-dichloroethane: • When post-carbon-bed 5 results of ≥ 15 µg/m^3 1,2-dichloroethane are detected for a given filter unit, carbon beds 3, 4, and 5 in that specific filter unit will be scheduled for carbon changeout with consideration of limiting conditions of operations and the availability of fresh carbon. • Changeout of carbon beds 3, 4, and 5 for a given filter unit will be changed within 10 days of reporting of post-carbon-bed 5 results of ≥ 15 µg/m^3 1,2-dichloroethane. If changeout cannot be implemented within the 10-day time frame, notification will be made to CDPHE documenting the basis for the delay and providing an alternative plan to address timely changeout of carbon. • Operations documentation of the analytical results and the decision to schedule or not schedule carbon changeout shall be documented in the Operating Record. • The AFA system shall be operated to provide engineering controls for agent processing areas by filtering air from the ERB and APB cascade ventilation systems. • Regardless of 1,2-dichloroethane results eight of the ten filter units will remain active (on-line), and of the two remaining filter units, one will be on standby and the other on standby or undergoing maintenance, in accordance with Section IV.A.5.a.7. of this Permit. (3) Carbon replacement will be staggered so that only one filter unit at a time is undergoing carbon changeout, at any

Location	Method	Constituent	Frequency	Requirement
				given point in time.

* Measurements below 0.7 VSL or in a non-operational filter will be addressed in accordance with other procedures (WAP/LAMP, etc.) but are not considered agent breakthrough for the purpose of evaluating carbon capacity.

~~Note A: DRE sample time must be established at PCAPP maximum throughput rate for munitions~~
~~Note B: DRE for mustard agent based on average munitions liquid agent waste concentrations identified in Munitions Assessment and Characterization Report (for agent purity). DRE shall be calculated in accordance with 6 CCR 1007-3, §264.342(b).~~
~~Note C: If stack DRE for mustard agent is not achieved, Permittee will make operational changes as described in the Pilot Test Demonstration Plan, Attachment N of the permit, including adjusting treatment process, air pollution controls, munitions feed rate or other, to achieve efficiency. If stack DRE cannot be achieved as a result of operational changes, Permittee must complete engineering design changes to air pollution control system, PCAPP treatment systems or other systems as may be necessary to achieve DRE~~

Increased Storage Capacity in the H-block Storage Igloos, Dunnage Storage Area, and the Waste Laydown Yard, and Addition of Liquid-Phase Waste Storage in the Munitions Bodies Storage Area and the Dunnage Storage Area:

(Part V, Attachment J, Attachment K)

The Permittees are requesting approval to increase the storage capacity in the H-block storage igloos, the Dunnage storage area, and the Waste Laydown Yard in order to provide flexibility for PCAPP to operate more efficiently during campaign changeover and during upset conditions, for example:

- Facilitating accumulation of K-listed waste and subsequent transfers from within the Chemical Limited Area to the H-block storage igloos and the Waste Laydown Yard
- Operating compliantly during weather events that could delay shipments of hazardous waste
- Continuing operations when the offsite treatment, storage, and disposal facilities are unable to receive wastes
- Providing the time to optimize loads and improved treatment, storage, and disposal facility selection
- Allowing time to recover after upset conditions occur

Storage of liquid hazardous waste, that is generated during maintenance and operations activities within the Chemical Limited Area, in the Munitions Bodies Storage Area and the Dunnage Storage Area will provide the operational flexibility needed to compliantly manage hazardous waste prior to transfer to the H-block storage igloos and the Waste Laydown Yard.

Addition of Inspection Criteria to Identify Containers with Accumulation Start Date Greater Than 260 days Prior to Inspection Date:

(Part V, Attachment K)

In the Permittee's response (dated 30 August 2018) to the *Colorado Department of Public Health and Environment (CDPHE) Compliance Advisory dated 07/26/2018 (amended 08/07/2018 and amended 08/13/2018)*, the Permittees identified a future revision to the Waste Laydown Yard inspection forms to allow early identification of containers with accumulation start dates greater than 260 days prior to the inspection date. This modification is addressed in Table K-22 of the Inspection Plan, Attachment K.

Part A, Attachment A

The revisions to the Part A included in this permit modification request are based on the Part A submitted on 1 May 2019 with Permit Modification Request No. 269, titled "*Additional G-Block Storage Igloos*".

Corrosion Monitoring Plan, Attachment M

Revisions within the *Corrosion Monitoring Plan* (draft Revision 009) include inspection requirements for non-metallic materials and components on tank systems, clarification of reporting requirements, and a proposal to remove non-destructive examination – ultrasonic testing (NDE-UT) scan locations that cannot be accessed by personnel in DPE suits. In addition, the proposed revisions include the reduction of NDE-UT scan and corrosion rate calculation requirements for titanium tanks and piping, and APB lined sumps.

Proposed revisions to the *Corrosion Monitoring Plan* and Appendix A and B are presented using "track changes" in Enclosure 21, and the justification for reducing or eliminating NDE-UT scans is presented in Enclosure 22

Odor Monitoring Plan, Attachment N

Based on the results of the Pilot Test Demonstration odor monitoring program, it was determined that a complete re-write of the plan was required.

- During the Pilot Test Demonstration, sampling for chemicals of potential concern (COPC) was performed to assist with the identification of odor sources. It was determined through the odor monitoring and sampling that the odors associated with hydrolysate storage and processing in the BTA are distinctive enough that a source can easily be identified. COPC sampling did not assist in source identification. Therefore, COPC sampling has not been included in the on-going odor monitoring program.
- Other changes made within the document implemented lessons learned from pilot testing and were summarized in the *Odor Monitoring Report for Pilot Test Phase Operations* (24852-30R-GBL-V0001). These changes include Odor Detection Team (ODT) monitoring at sunrise and sunset only, a better definition of hourly interval to provide leeway between odor monitoring runs, the implementation of an odor survey prior to convening the Joint Test Group (JTG) team to identify the source of the odor. New maps depicting a new yellow route within Pueblo Chemical Depot (PCD) property and property line identification have also been added.

Level III Design Change Notices (DCNs) and Engineering Change Proposals (ECPs): (Parts 3, 4, and Attachment L)

As required by RD&D Permit Condition I.E.10, the Permittees submit design changes to CDPHE following established guidelines (ref: CDPHE 26 July 2006 letter re: PCAPP Design Change Guidelines under Research, Development, and Demonstration Permit No. CO-04-07-01-01). Pursuant to these established guidelines, design changes that meet Level II, III, and IV criteria are incorporated into a periodic design change summary permit modification. Level III and IV design changes also require separate permit modification requests. This PMR 286 requests permit revisions proposed in the Level III DCNs and ECPs issued since 11 July 2019. The DCNs and ECPs that have been incorporated into this permit modification are described in Enclosure 2.

Miscellaneous Revisions:
Other miscellaneous changes are identified in Enclosure 1, which describes the proposed revisions and provides a rationale justifying the need for the revisions.

Justification for Classification:
In accordance with 6 CCR 1007-3 Section 100.63(d) and Part 100 Appendix I to Section 100.63, the following supports the determination that this permit modification request meets the criteria for classification as a Class 2 permit modification request.

Removing current Pilot Test Demonstration Plan requirements and incorporating new requirements based on the results of the pilot testing and MPHRA modeling and calculations:

- 6 CCR 1007-3 Section 100.63(d)(2)(i)): The proposed revisions to the PCAPP RCRA RD&D Permit achieve the same end result as the current permit conditions. Removing the pilot testing from the PCAPP RCRA RD&D Permit and adding operational permit conditions does not substantially alter the permit conditions and does not reduce the capacity of the facility to protect human health or the environment. (Class 1 modification)
- 6 CCR 1007-3 Section 100.63(d)(2)(ii)(B): The proposed revisions to the PCAPP RCRA RD&D Permit could be interpreted to be implementation of a technological advancement that does not substantially alter the permit conditions and does not reduce the capacity of the facility to protect human health or the environment. (Class 2 modification)
- 6 CCR 1007-3 Part 100, Appendix I, A.4.b. and B.1.d.: Changes in frequency of monitoring and sampling (Class 2 modification)

Closure Plan revisions:

- Section I-5i of the PCAPP RCRA RD&D Permit and 6 CCR 1007-3 Sections Part 100, Appendix I, D.1.a.: The increase in storage capacity by 634 cubic yards changes the estimate of the maximum inventory of waste onsite in the Closure Plan. (Class 1 modification with prior Division approval)
- Section I-5i of the PCAPP RCRA RD&D Permit and 6 CCR 1007-3 Sections 100, Appendix I, D.1.b.: Changes are proposed for the final closure schedule for the facility. (Class 1 modification with prior Division approval)

Increase in container storage capacity:

- 6 CCR 1007-3 Section 100.63(d)(2)(ii): The requested changes are necessary for the storage of currently generated hazardous waste prior to shipment offsite to a permitted Treatment, Storage, and Disposal Facility (TSDF). These modifications are not required to manage new waste streams. These modifications will accommodate variations in the generation rates for current waste streams and will allow PCAPP to be more flexible and efficient when scheduling shipments of waste to offsite TSDFs. (Class 2 modification)

- 6 CCR 1007-3 Part 100, Appendix I, F.1.b.: The modification results in a 634 cubic yard increase in storage capacity. This increase is less than 25% of PCAPP's currently permitted container storage capacity, which is 3590 cubic yards (approved with PMR 269). (Class 2 modification)
- 6 CCR 1007-3 Part 100, Appendix I, F.3.b.: Storage of liquid-phase wastes in the Munitions Bodies Storage Area and Dunnage Storage Area are different than the wastes currently stored in these areas, but this storage does not require additional or different management practices from those currently authorized in the permit. (Class 2 modification)

Corrosion Monitoring Plan revisions:

- 6 CCR 1007-3 Part 100, Appendix I, G.4.: Revisions to the Corrosion Monitoring Plan will modify tank management practices but will not reduce the capacity of the facility to protect human health or the environment. (Class 2 modification)

Deletion of compliance schedule permit conditions in Sections I.J.3.e. and I.J.3.f. of the PCAPP RD&D Permit regarding replacement of ancillary equipment:

- 6 CCR 1007-3 Section 100.63(d) and Part 100, Appendix I, G.2.: The referenced section describing the modification of tank systems is not directly applicable; however, it is analogous to the proposed modifications to Section I.J. of the PCAPP RCRA RD&D Permit. The proposed deletion of compliance schedule items defined in Sections I.J.3.e. and I.J.3.f. does not result in a change in the capacity or effectiveness of the treatment system, nor does the change reduce the capacity of the facility to protect human health or the environment.. (Class 2 modification)

Response to TraceTek® Alarms:

- 6 CCR 1007-3 Part 100, Appendix I, G.4.: Modifications to the responses to TraceTek® alarms is a modification to a tank management practice. (Class 2 modification)
- 6 CCR 1007-3 Part 100, Appendix I, A.4.b.: Changes to the analytes of concern and the associated responses to detections of these analytes in liquid samples taken from tank secondary containment to confirm or refute a tank leak is a change to a procedure for monitoring and sampling. (Class 2 modification)

Organic Air Emissions:

- 6 CCR 1007-3 Section 100.63(d)(2)(i): Clarification of the understanding that adherence to the inspection protocols specified in Appendix K of this Permit meets the requirements for inspections in accordance with 6 CCR 1007-3 §264.1056 and is equivalent to the monitoring and repair requirements in 6 CCR 1007-3 §264.1058. This proposed revision does not change waste management or tank management practices at PCAPP, and does not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. (Class 1 modification)

- 6 CCR 1007-3 Part 100, Appendix I, G.4 or Appendix I, B.1.a.: Revising the frequency for calculating the maximum organic vapor pressure in each hazardous waste tank subject to the Tank Level 1 organic air emissions controls in the Operations Plan to be consistent with the permit condition in Section IV.L.3.b.i. could be deemed to modify a tank management practice, or could be determined to be a change in waste analysis methods to conform with Section IV.L.3.b.i. in the PCAPP RCRA RD&D Permit and the regulations at 6 CCR 1007-3 § 264.1084(c)(1). (Class 2 or Class 1 modification)

Enclosures:

Enclosure 1:	Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit
Enclosure 2:	Summary of Level III Design Change Notices (DCNs)
Enclosure 3:	Proposed Revisions to the *Introduction* and the *List of Permit Modifications* with changes depicted using “track changes”
Enclosure 4:	Proposed Revisions to Part I with changes depicted using “track changes”
Enclosure 5:	Proposed Revisions to Part II with changes depicted using “track changes”
Enclosure 6:	Proposed Revisions to Part III with changes depicted using “track changes”
Enclosure 7:	Proposed Revisions to Part IV with changes depicted using “track changes”
Enclosure 8:	Proposed Revisions to Part V with changes depicted using “track changes”
Enclosure 9:	Rationale for Proposed Hazardous Waste Code Revisions to Part V and the *Contingency Plan*, Attachment G
Enclosure 10:	Revised Part A, Attachment A
Enclosure 11:	Proposed Revisions to the *Waste Analysis Plan*, Attachment D, with changes depicted using “track changes”
Enclosure 12:	Proposed Revisions to the *List of Monitoring Locations (LAMP Appendix A)*, Appendix 4 to Attachment D, with changes depicted using “track changes”
Enclosure 13:	Proposed Revisions to the *List of Drawings and List of Documents*, Attachment E, with changes depicted using “track changes”
Enclosure 14:	Proposed Revisions to the *Contingency Plan*, Attachment G, with changes depicted using “track changes”
Enclosure 15:	Proposed Revisions to the *Training Plan*, Attachment H, with changes depicted using “track changes”
Enclosure 16:	Proposed Revisions to the *Closure Plan*, Attachment I, with changes depicted using “track changes”
Enclosure 17:	Proposed Revisions to the *Hazard Preparedness and Prevention Plan*, Attachment J, with changes depicted using “track changes”
Enclosure 18:	Proposed Revisions to the *Inspection Plan*, Attachment K and Inspection Forms, Appendix K-4, with changes depicted using “track changes”
Enclosure 19:	Proposed Revisions to the *Operations Plan*, Attachment L, with changes depicted using “track changes”
Enclosure 20:	*Corrosion Monitoring Plan*, Attachment M
Enclosure 21:	Justification for Reducing Inspections Required by the Corrosion Monitoring Plan, Attachment M, During Campaign Changeover
Enclosure 22:	Revised *Odor Monitoring Plan*, new Attachment N

Enclosure 23: Thiodiglycol (TDG), Oxathiane (OX), and Dithiane (DT) Concentrations in Hydrolysate in 30-day Hydrolysate Storage Tanks, ICB™ Influent and Effluent Tanks, and at the BRS Pre-Filter

Enclosure 24: Proposed Revisions to *TraceTek and H_2Obvious Leak Detection Alarm Response* (24852-OPS-OAP-W0031), with changes depicted using “track changes”

Enclosed CD contains complete MS Word files for the revised parts and plans, and a PDF of Appendix 4 of the Waste Analysis Plan, Attachment D, in the PCAPP RCRA RD&D Permit.

Supplemental information, which is not part of this permit modification request, is also included on the CD (e.g., Design Change Notices, engineering calculations, engineering white papers, and certificates of analysis)

Enclosure 1

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
(Blue text denotes addition; ~~red strikeout text~~ denotes deletion)	
Global Revisions	
Proposed revisions in the following Permit Modification Request (PMR) without "track changes": • PMR 287, Design Change Summary • PMR 290, Repair of Manways on 30-day Hydrolysate Storage Tanks	PMRs have been submitted to CDPHE. The revisions in PMR 287 are included in PMR 286 without "track changes" because the Permittees assume that this previously submitted PMR will be approved as requested.
Proposed revisions in PMR 243, titled "Increase Storage Capacity for the Waste Laydown Yard, H-block Storage Igloos, and Dunnage Storage Area", will be incorporated in PMR 286 with "track changes"	PMR 243 was developed and discussed with CDPHE; however, it was not submitted due to CDPHE workload considerations in June 2019. Additional storage capacity is requested to operate more efficiently during campaign changeover and during upset conditions
Remove references to Pilot Test Demonstration and Pilot Test Demonstration Plan, Attachment N throughout the Permit, making applicable revisions to language for post-Pilot Test operations	Pilot Test Demonstration is complete
Replace references to 6 CCR 1007-3 §262 .34 with 6 CCR 1007-3 §262 and revise associated permit language in accordance with the Hazardous Waste Generator Improvement Rule	Provide consistency with the Hazardous Waste Generator Improvement Rule, effective 30 June 2018
Replace references to Explosive Destruction System (EDS) with Static Detonation Chambers (SDCs), and add igloos G101, G102, and G103 to H-block igloos H1102 storage references	The EDS has been removed. The SDCs will be included in the Pueblo Chemical Depot (PCD) permit; however, PCAPP will transfer leakers and rejects, agent-contaminated energetics, and agent-and explosive-contaminated wastes directly to the SDCs and associated igloos. In addition, PCAPP hazardous waste storage areas will receive hazardous waste generated at the SDCs for storage prior to disposition offsite.
Delete references to Section I.J. compliance schedule permit conditions that have been completed or are specifically referencing Facility Construction Certification (FCC) for construction activities, and update Parts I and II to address current FCC and Independent Certification of Facility Modifications (ICFM) protocols	Update permit conditions to reflect current FCC for new construction and ICFM protocols for repairs and modifications to current permitted hazardous waste systems
Level III DCNs (see Enclosure 1 for more detail): • 24852-RD-M6N-B09-M0063 (Abandon in Place DO Probes and Transmitters from ICB Modules) • 24852-RD-30N-B03-J0002 (MTU Inlet and Outlet Air Flow Rate FAL and FALL Set Points) • 24852-RD-M6N-B05-M0042 (Replace MP-B05-0044 Sump Pump with a Polypropylene Pump) • 24852-RD-M6N-B05-M0043 (Replace Remaining Metallic A/B Sump Pumps with Polypropylene Pumps) • 24852-RD-M6N-B05-M0044 (Replace Metallic Category C	Incorporate Level III design changes into the Permit

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
Sump Pumps with Polypropylene Pumps) • 24852-V1AN-AELE-0049s01c01 (Replace Glovebox Tubing with Stainless Steel) • 24852-RD-J0N-B03-J0001 (MTU 1 Zone 1 & 2 Hi-Hi Temperature Alarms) • 24852-RD-J0N-B09-J0001 (Add RCRA Alarms for B09/B11) • 24852-RD-M6N-B12-M0071 (Eliminate B12 Response L1/L2 Alarms) • 24852-RD-M6N-B12-M0087 (Remove B12-TAL/TALL-1987 and B12-TAL/TALL-1990) • 24852-RD-M6N-B04-M0109 (Bypass Hydrolysate Air Cooler ME-B04-00004) • 24852-RD-30N-B20-J0005 (Address NCR 352990 for B20 Off-Gas Loop Tuning) • 24852-RD-M6N-J02-J0019 (Add Low Volume Sampler in JA-J02-9438M) • 24852-RD-M6N-B04-M0115 (B04-Agent/Water Interface Level Instrumentation) • 24852-RD-M6N-J02-J0022 (Add Low Volume Sampler in JA-J02-3325M (24852-PCP-J02-00018) • 24852-RD-M5N-B24-B0003 (SDU Autoclave Waste Sort Guide Changes) • 24852-RD-M6N-B12-M0097 (Add spare BRS belt filter feed pump (24852-PCP-B12-00054)	
Part I *(change pages included in Enclosure 4)*	
I.G. All reports, notifications, or other submissions which are required by this Permit to be sent or given to the Director should be communicated by telephone, electronic or digital communications (e.g., e-mail, text, facsimile), hand-delivered, or be sent by certified mail, overnight mail (e.g., Federal Express)~~, hand delivered, or facsimile followed by certified mail~~ to:	This proposed language more closely describes current communications between the Permittees and CDPHE • Numerous notifications that are required by the Permit are currently communicated to the Division by telephone or text, and are followed with an e-mail. • Reports and permit modification requests are typically e-mailed to the Division, uploaded onto a SharePoint site, and are transmitted by overnight mail. These documents are not amenable to telephone or text transmittal; therefore, would not be transmitted using these methods.
I.I.5.a. A list of names, office addresses, and office~~home~~ telephone numbers of all current PCAPP Emergency Coordinators.	PCAPP is a 24-hour operation with alternate Emergency Coordinators onsite during all shifts. Therefore, it is more appropriate to identify office addresses and telephone numbers than the individual home telephone numbers.

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
I.I.6 As-built drawings submitted in accordance with Conditions I.E.16.a.~~and I.J.3.a~~., facility construction certification (FCC) and independent certification of facility modification (ICFM) information collected in accordance with Condition II.Q.2., and any other supporting records of construction. These "other supporting records of construction" need only be maintained at the facility until the certification of construction has been accepted by the Division.	Updated to distinguish between new construction certification in accordance with the FCC requirements, and certifications of future repairs and modifications in accordance with the current ICFM process
I.J.1. Per Section I-4c in the Closure Plan, Attachment I of this Permit, the Closure Sampling and Analysis Plan (CSAP) must be submitted to CDPHE at least one year before the scheduled start of closure. ~~Notwithstanding munition quantity estimates specified elsewhere in the permit, including in Attachment N documents, the Permittee shall not process more than 137,000 155-mm projectiles during pilot testing without Division concurrence.~~	Addition of a future submittal that is currently referenced in the Closure Plan Deletion: Pilot testing is complete. Munitions processing rates for Operations pursuant to the Final Pilot Test Plan Report will be addressed in Part IV of this permit application.
I.J.2. ~~The Permittees shall complete pilot testing described in Attachment N of the permit by May 31, 2019 unless the Division authorizes an extension beyond this date. Upon completion, the Permittees shall notify the Division that pilot testing is complete.~~ At least 60 days prior to the scheduled initiation of 105 mm projectile MWS washout activities, submit a Washout Performance Validation Plan describing the process to identify the MWS parameters for the 105 mm projectiles (e.g., washout pressure, rotation during washout, washout time, maximum processing rate, and weight to be used at the MTU drained munitions weigh stations). After implementation of the Washout Performance Validation Plan, submit a Class 1 permit modification request (requiring prior authorization) to incorporate the MWS parameters for the 105 mm projectiles into the Permit.	Deletion: Pilot testing is complete. Addition of a plan to determine key MWS operating parameters for the 105 mm projectiles, and a subsequent permit modification to incorporate the parameters into the Permit
~~I.J.3.e.~~ ~~In the event another unit of the B12 Feed Preheater fails, the unit will be replaced to preserve design capacity and BRS throughput to avoid upstream impacts.~~	Deletion of permit condition based on Engineering calculation titled "BC Feed Preheater Performance with Shells and Tubes Out of Service" (24852-RD-MEC-B12-M0001). The calculation concluded: "Sufficient capacity exists to operate with as low as 70% of the original heat transfer area, whether by tube plugging, shell bypassing, or other mechanism that reduces heat transfer area. This means up to three of the original ten preheaters bypassed or 216 (30%) tubes plugged. Tubes associated with a bypassed shell do not contribute heat transfer area, so this also means one of the original ten preheaters bypassed with 144 tubes plugged or two preheaters bypassed with

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
	72 tubes plugged."
~~I.J.3.f.~~ ~~At the conclusion of the 155mm campaign and before the 105mm campaign begins, the Permittees will install the new OTS Scrubber AL-6XN alloy heat exchanger (recirculation cooler) in place of the existing unit and provide FCC Certification for the installation.~~	Deletion of permit condition based on the following: • Technical Position Paper Inspection Report of B20 System Heat Exchanger (24852-RD-30H-B20-00002, Rev. 001) • White Paper on Source of Propylene and Ethylene Glycol in (B20) Off-Gas Treatment System (24852-30H-B20-B0001, Rev. 000) • pH controlled and maintained above pH 8.0 (description in Justification for Changes section of this PMR)
Global revisions: • Revise references to pilot testing: Section I.J. • Revise references to 6 CCR 1007-3 §262 .34: Section I.I.5.b. • Revise references to EDS and add references to SDCs and associated igloo storage: none • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: Sections I.I.6, and I.J.	
Part II *(change pages included in Enclosure 5)*	
II.B. The Permittees, as large quantity generators, can receive hazardous waste from a very small quantity generator under the control of the PCAPP to facilitate cost-effective management of hazardous wastes in accordance with 6 CCR 1007-3 Section 262.14(a)(5)(viii).	Proposed language to address implementation of this allowance for related Large Quantity Generators and Very Small Quantity Generators pursuant to promulgation of the hazardous waste generator improvement rule, effective 30 June 2018 (example: occasional hazardous waste generation in the warehousing area in the PCAPP 1 Jetway facility.)
II.E.2. The Permittees must record the date and time of the inspection and all inspection observations on the appropriate Inspection Checklist provided in Attachment K. The Permittees must require inspectors to sign or print their names on each hardcopy of the Inspection Checklist after indicating the status of the items inspected. The Permittees must require inspectors to electronically sign their names on each computer generated and maintained Inspection Checklist after indicating the status of the items inspected. ~~Items not inspected must be marked "NI" on the Inspection Checklist.~~ Inspectors will sign and clearly define sections of the inspection that they performed, if different inspectors complete sections of an inspection. Computer generated inspection checklists will clearly indicate units and areas within units inspected, as well as Inspection Checklist page numbers. Records of the inspections must be kept for at least three years from the date of inspection. [6 CCR 1007-3, §264.15(d)]	Minimum inspection requirements are identified in the Inspection Plan, Attachment K

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
II.E.3. ~~If a deficiency can be and is corrected within the shift in which it is detected, the deficiency and correction must be noted and documented on the Inspection Form. If the deficiency cannot be corrected within the shift in which it is detected, a written corrective action report shall be filed with the original Inspection Checklist on which an item was first noted as requiring correction. An example of a Corrective Action Report is included in Permit~~ Required actions and documentation for deficiencies corrected within and after the shift are defined in the Inspection Plan, Attachment K. [6 CCR 1007-3 §264.15(c)]	Section K-2b in the Inspection Plan addresses the response to deficiencies that are corrected during the same shift in which the deficiency was identified and for resolutions that extend into the next shift or later.
II.E.4. The Permittees shall remedy any deterioration or malfunction of equipment or structures identified during the inspection within the timeframes identified in Section K-2b of the Inspection Plan, Attachment K.~~fourteen (14) calendar days after the inspection in which the problem is first identified, except as provided in Conditions I.E.6 and 7 of this Permit.~~ [6 CCR 1007-3 §264.15(c)]	Section K-2b identifies the timeframes within which unsatisfactory conditions identified during inspections must be remedied
II.L.1 The Permittees must comply with the biennial reporting requirements of 6 CCR 1007-3, §264.75, except as described in Section I-5g(9) of the Closure Plan, Attachment I.	Exception noted to provide consistency with the currently approved closure plan in the PCAPP RD&D Permit.
~~II.N.1.b~~ ~~Leaking munitions or munitions that cannot be processed normally(rejects) at PCAPP must be treated in the EDS within one (1) yearfrom the date placed into storage. This includes the intact, non-leaking, palletized rounds.~~	The EDS has been removed. The SDCs will be included in the Pueblo Chemical Depot (PCD) permit. Unlike EDS operations, the plan is to operate the SDCs without temporary stand-by closeouts; therefore, a permit condition initiating remobilization of operations within a year is no longer required.
II.O.1.c Boone Town Hall~~Community Center~~ 421 East 1st Street Boone, CO 81025	Name correction
II.Q. Facility Construction Certification ~~During construction of PCAPP under this permit I~~ Permittees will maintain a facility construction certification (FCC) program to ensure that construction of the RCRA regulated portions of the facility meets or exceeds the design criteria and specifications. During operations of the PCAPP facility under this Permit, the Permittees will maintain an independent certification of facility modifications (ICFM) program to ensure that repairs and modifications to the RCRA-regulated portions of the facility meet or exceed the design criteria and specifications. For this condition, the regulated facilities include the RCRA structures and equipment depicted on the drawings listed in Attachment E (i.e., those drawings that require an as-built).~~(i.e. those drawings listed that require an as-built generated per Condition I.J.3.a).~~ II.Q.1. The scope of the FCC program shall include the	PCAPP Main Plan construction is complete. Therefore, references to construction and associated I.J. compliance schedule permit conditions are no longer applicable. Added reference to the ICFM program. The FCC program remains in the event that new construction of RCRA-regulated units occurs in the future at PCAPP. References to construction related I.J.

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
criteria identified in the inspection matrices developed and used by the Independent Colorado-Registered Professional Engineer ~~in satisfaction of permit Condition I.J.3.b.~~ The inspection matrices shall be approved by the Division and all changes and revisions will be coordinated with the Division for approval.	compliance schedule permit conditions are no longer applicable.
II.Q.2. At the conclusion of each FCC task, a completed FCC package shall be assembled. The FCC package shall include a summary and also a matrix and certifying letter ~~both~~ signed by an independent, qualified registered Colorado professional engineer. The FCC package shall be posted on the SharePoint® site for CDPHE review~~. The FCC packages shall also be formally submitted in accordance with I.J.3.c.~~	References to construction related I.J. compliance schedule permit conditions are no longer applicable.
II.Q.2.a. No later than 45 days after each of the postings described in Permit Condition II.Q.2, a certifying letter signed by the Permittees stating the subject portion of facility has been constructed, repaired, or modified in compliance with the Permit shall be submitted. The letter(s) shall also formally submit the facility construction certification (FCC) and independent certification of facility modification (ICFM) packages described in Permit Condition II.Q.3 and posted to the SharePoint® site. The Permittees may propose and use an alternative schedule for submittal of any letter(s) and FCC or ICFM packages addressed by this condition provided Division concurrence is obtained.	Modified to address FCC requirements for new construction and ICFM requirements for facility repairs and modifications. Language moved from Section I.J.
II.Q.2.b. For RCRA tanks and ~~BRS M~~miscellaneous ~~U~~units, the FCC package shall include a written assessment reviewed and certified by an independent, qualified registered Colorado professional engineer or by an independent qualified tank installation inspector attesting that each of the tanks or miscellaneous units has been installed in accordance with 6 CCR 1007-3, §264.192. If determined applicable via condition II.Q.1, the FCC task shall include, but not be limited to, the evaluation of the following: specifications and drawings (inclusive of references to codes, standards and applicable specifications); inspection records; photographs; testing records; audit and surveillance reports; supplier quality data and acceptance certificates; materials certifications; design changes; and non-conformance and corrective action documentation.	FCC for BRS is complete; therefore, specific reference to the BRS has been removed.
II.Q.3. The ICFM (third party independent certification) packages for repairs and modifications to the RCRA-regulated portions of the PCAPP facility shall include	Description of the ICFM packages for repairs and modifications during operations.

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
a written assessment reviewed and certified by an independent, qualified registered Colorado professional engineer, or for tanks and miscellaneous units, by an independent qualified registered Colorado professional engineer or by an independent qualified tank installation inspector attesting that each of the tanks or miscellaneous units has been repaired or modified in accordance with 6 CCR 1007-3, §264.192. Depending upon the nature of the repairs and modifications, the ICFM packages shall include an evaluation, which may include specifications and drawings (inclusive of references to codes, standards and applicable specifications); inspection records; photographs; testing records; audit and surveillance reports; supplier quality data and acceptance certificates; materials certifications; design changes; and non-conformance and corrective action documentation. ~~The Permittees shall provide an FCC Completion Schedule to the Division in September 2013. This schedule will identify FCC packages and the date each has been, or will be, posted on the SharePoint® site.~~	These actions have been completed
II.Q.4 ~~The Permittees shall provide the Division with weekly status updates of the FCC Completion Schedule. If milestone dates associated with posting to the SharePoint® site require adjustment, the proposed adjustments will be addressed in these updates. These updates will be done through informal written notification (e.g., e-mail). For PCAPP to move a posting milestone to a later date, Division concurrence will be necessary.~~ ~~II.Q.5~~ The FCC and ICFM information identified in Conditions II.Q.1 through~~and~~ II.Q.4~~2~~ will be maintained onsite and will be available for inspection by Division personnel until site closure is certified.	PCAPP is no longer under construction. Revisions to these permit conditions are required to address the current facility certification program requirements.
Global revisions: • Revise references to pilot testing: Sections II.E.1 and II.P. • Revise references to 6 CCR 1007-3 §262 .34: Section II.B. • Revise references to EDS and add references to SDCs and associated igloo storage: II.N.1.a. and II.N.1.b. • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Part III ***(change pages included in Enclosure 6)***	
III.A.3. … Two (2) centrifugal pumps will serve to move liquids as recirculation and from the brine concentrator feed tanks to the Brine Reduction System (BRS). ~~at 225 gpm~~ …	The B14 compliance tables in the Operations Plan, Attachment L, identify the normal operating ranges of the brine concentrator feed pumps, which discharge to the BRS.

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
III.B.4. The ~~ICB™ effluent carbon steel discharge~~ hydrolysate (K903) piping may be flushed with process water, citric acid, methane sulfonic acid (MSA) solution, or equivalent, when necessary. The flushed K903 waste may be stored in secondary containment until the flushing activity is complete. Upon completion of the flushing activity, the K903 waste shall be re-introduced into a permitted tank system, transferred to a permitted storage area, or direct-shipped offsite for disposition at a TSDF. ~~The ICB™ effluent carbon steel discharge piping shall be periodically flushed with process water to prevent accumulation of biological and other solids in the piping. The ICB™ effluent discharge piping for each module will be flushed through to the Brine Concentrator Feed Tanks. Flushing shall be for a minimum of 15 minutes through a 2.0-inch flange connection one ICB™ [four (4) tank] module at a time. Initial flushing frequency shall be monthly and remain monthly unless corrosion testing and the calculated Remaining Service Life [Section 5.5 of the Corrosion Monitoring Plan for RCRA Tank Systems (24852-RD-30G-000-V0001)] is greater than 10 years, then the flushing frequency may be extended, with Division concurrence, to a frequency that does not result in a calculated Remaining Service Life less than (<) 10 years.~~	Experience during pilot testing has shown that flushing of the ICB™ and hydrolysate (K903) piping may be necessary during routine maintenance and in response to reduced flow or blockages in the piping. A similar evolution was approved with Emergency Permit CO-19-09-26-01.
III.C.4 In the event of an alarm condition, , or a visible indication of a leak in the monitored area, the Permittee shall remove and reinstall the TraceTek® sensing cable as required to confirm the positive indication of alarm. If a tank system release is confirmed, air monitoring for odor shall be performed in accordance with the Odor Monitoring Plan, Attachment N. A liquid sample will be obtained and analyzed to identify the collected material (e.g.., determine if it is hydrolysate or water). Liquid samples obtained from the 30-Day Hydrolysate Storage Tank secondary containment will be analyzed for thiodiglycol (TDG) to identify the collected material (e.g., determine if it is hydrolysate or water). • If the concentration of TDG in the liquid collected from the 30-Day Hydrolysate Storage Tanks' secondary containment is <1 mg/l the leak is refuted, and normal operations may resume. If the leak is refuted and the alarm continues, a sample will be collected every four (4) hours, if liquid is available, for four days. If the leak has been refuted after two (2) consecutive sample results and the alarm remains active, the Permittees will consider design changes or other options to address the problem. • If the concentration of TDG in the liquid collected from the 30-Day Hydrolysate Storage Tanks' secondary containment is ≥ 1 mg/l and <10 mg/l a potential leak is confirmed. The tank system will be further investigated until the cause of the alarm is found.	Based on the analyses of hydrolysate in the 30-day Hydrolysate Storage Tanks, the ICB™ influent and effluent lines, and the BRS pre-filter (Enclosure 23 of this permit modification request), PCAPP is proposing a multi-tiered response to TraceTek® alarm confirmations. This response is also described in the procedure titled "*TraceTek and H_2Obvious Leak Detection Alarm Response*" (24852-OPS-OAP-W0031), presented in Enclosure 24.

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Proposed Revisions	**Rationale for Proposed Revision(s)**
• If the concentration of TDG in the liquid collected from the 30-Day Hydrolysate Storage Tanks is ≥10 mg/l the leak is confirmed. Transfer of the tank contents to an available tank will be initiated within 24 hours of the sample confirmation. The tank will then be removed from service while necessary investigations and maintenance are performed prior to returning the tank to service. Liquid samples from the BCFT or the BRS sump secondary containment will be analyzed for concentrations of OX and DT to identify the collected liquid. If the concentrations of OX and DT in liquid from the BCFT or the BRS sump secondary containment are below the analyte reporting limit the leak is refuted, and normal operations may resume. If the leak is refuted and the alarm continues, a sample will be collected every four (4) hours if liquid is available as long as the alarm stays on. If alarm is still on after four days, the tank system will be further investigated until the cause of the alarm is found for a path forward. • If the concentrations of OX and DT (from the BCFT or the BRS sump secondary containment) are greater than the analyte reporting limits but < 3 mg/l a potential leak is identified. The tank system will be further investigated until the cause of the alarm is found. • If the concentrations of OX and DT (from the BCFT or the BRS sump secondary containment) are ≥3 mg/l the leak is confirmed. Transfer of the tank contents to an available tank will be initiated within 24 hours of the sample confirmation. The tank will then be removed from service and further investigations and maintenance will be performed to return the tank to service. ~~Site personnel will follow the actions and procedures outlined in the TraceTek and H2Obvious leak Detection Alarm Response (24852-OPS-OAP-W0031"~~	Sampling for Oxathiane (OX) and Dithiane (DT) for systems downstream of the 30-Day Storage Tanks (i.e., BTS, BCFTs, BRS, and piping outside the secondary containment downstream of the ICB™ are better indicators for confirming potential leaks that are detected using TraceTek® or H_2Obvious™, or visual inspections for leak detection. Once treatment of waste has been performed in the ICB™, there are low levels of Thiodiglycol (TDG), thus making it difficult to confirm or refute leaks. In the past, further testing of OX and DT has been required for areas with low TDG analytical results. By sampling and analyzing for OX and DT instead of TDG these areas, the Permittees will be able to confirm or refute leaks more effectively.
III.F.2.h. In the event that either the LED or level float alarm condition is activated upstream of the ICB™ influent tanks, PCAPP personnel shall unthread the H_2Obvious™ encapsulated vial and test the liquid to identify the collected material (i.e., determine if it is hydrolysate or water). If the concentration of TDG in the liquid is ≥ 10 mg/l, then a leak is confirmed. The pipe will be taken out of service until the location of the leak is identified and the necessary repairs have been completed. If the concentration of TDG in the liquid is <1 mg/l the sensor will be replaced and normal operations may continue. If the concentration of TDG in the liquid is ≥ 1 mg/l and < 10 mg/l, the pipe will be left in service while further investigation is	Clarifies that TDG analysis will be used to confirm or refute potential leaks identified by H_2Obvioius™ upstream of the ICB™ influent tanks.

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conducted. In the event that the LED or level float alarm condition is activated downstream of the ICB Effluent Tanks, Permittees shall unthread the H_2Obvious™ encapsulated vial and analyze the liquid for OX and DT to identify the collected material (e.g., determine if it is hydrolysate or water). • If the concentrations of OX and DT in the liquid (downstream of the ICB Effluent Tanks) are ≥ 3 mg/l, then a leak is confirmed. The pipe will be taken out of service until the location of the leak is identified and the necessary repairs have been completed. • If the concentrations of OX and DT in the liquid (downstream of the ICB Effluent Tanks) are < detection limit the sensor will be replaced, and normal operations may continue. • If the concentrations of OX and DT in the liquid (downstream of the ICB Effluent Tanks) are >detection limit mg/l and <3 mg/l, the pipe will be left in service while further investigation is conducted.	Clarifies that OX and DT analysis will be used to confirm or refute potential leaks identified by H_2Obvioius™ downstream of the ICB™ effluent tanks.
III.F.3. ICB™ feed rate shall not exceed 1,481 pounds (lbs.) TDG/ module/day.	Addition per recommendation in the Final Pilot Test Plan Report
III.F.3.h. ~~In addition to testing for TDG as indicated in III.F.2.h, l~~Liquid samples taken from the H2Obvious device located upstream of the ICB™ will ~~also~~ be analyzed for TDG, and samples taken from H2Obvious devices downstream of the ICB™ effluent tank for Oxathiane (OX) and Dithiane (DT) to confirm or refute a leak.	Clarifies that when TDG analysis, and when OT and DT analysis will be used to confirm or refute potential leaks from tank systems
III.F.3.h. Intermittent streams (e.g., ~~such as the initial BRS distillate generated during pilot testing,~~ off-spec BRS distillate, and/or material from the BRS sumps) are transferred through insulated piping equipped with H_2Obvious™ devices back to the Brine Concentrator Feed Tanks. The TDG concentrations in these waste streams are expected to be too low to use as a means to confirm or refute a leak, therefore the Permittee will ~~also~~ sample for OX and DT in accordance with the corresponding requirements specified in Condition III.F.2.h. If a potential leak is identified for this piping (H_2Obvious™ LED or level float is activated), a leak will be assumed and the appropriate permit-required response actions implemented unless CDPHE approves an alternate means of confirming/refuting the leak.	Pilot testing is complete. Samples taken downstream of the ICB™ effluent tank will be analyzed for OX and DT, not TDG as the primary analyte followed by OX and DT analysis
III.F.7 … ~~During Pilot Testing I~~ Permittees will conduct sampling of the BRS distillate at locations that include between the lead and lag filters and after the lag filter at a frequency defined in the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3).	Pilot testing is complete. Corrected reference to Waste Analysis Plan, which is Attachment D

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… The sample collected from between the lead and the lag filters shall be analyzed for the constituents in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D, Appendix 3). ~~In the event that druing pilot testing or~~ If during normal operations, the concentration of~~for~~ any constituent exceeds the limit listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3), the following actions will be taken … 3. ~~During pilot testing, a~~After the filter switch, the distillate from the new lag filter will be sampled and analyzed to confirm that the distillate meets the limits in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3).	
III.F.8 The sample collected from downstream of the lag filter shall be analyzed for the constituents listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3~~). In the event that during pilot testing or normal operations,~~If the concentration of~~for~~ any constituent exceeds the limit listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3), the following actions will be taken: … 4. ~~During pilot testing, a~~After the filter switch, the distillate from the new lag filter will be sampled and analyzed to confirm that the distillate meets the limits in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3)	Pilot testing is complete. Corrected reference to Waste Analysis Plan, which is Attachment D
Table III.F.11. Replaced "BRS OTS carbon filters" with "BRS distillate carbon filters", and "MK-B12-0001 A-C" with "MK-B12-0002 A-C"	Corrected carbon filter reference
III.F.11 ~~The numbers shown in the acceptable range column are subject to change based on the results of the Pilot Test Demonstration. Any such changes will require a permit modification in accordance with the procedures of 6 CCR 1007-3, §100.63.~~ Some of the ranges presented above (e.g., range for instruments 1890 and 1962) represent the capabilities of the instruments~~and the appropriate operational range will not be established until pilot demonstration operational data is obtained.~~	Pilot testing is complete. A permit modification request would be required to revise the table, whether this permit condition is present or not. Pilot Testing is complete
III.F.12. … When an excessive pressure drop ~~(value to be determined during the Pilot Test Demonstration)~~ has been detected across a filter, it will be taken off-line and a water bump will be conducted at a flowrate necessary to remove solids without fluidizing the carbon bed and without disrupting the adsorption zone. Alternatively, the filter will be taken offline and remain offline until the water bump is performed	Pilot testing is complete.

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or carbon changeout completed. Following a water bump, a sample shall be collected from downstream of the lag filter and shall be analyzed for the constituents listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment 3, Appendix 3), to ensure that turnover of the carbon bed is not impacting the water quality objectives. If an acceptable pressure drop cannot be accomplished through a water bump, the filter will be taken off-line for carbon changeout. ~~The flowrate at which this water bump is conducted will be demonstrated during the Pilot Test Demonstration.~~ ~~The required frequency of carbon changeout of the BRS Distillate Filters will be established and/or confirmed during the Pilot Test Demonstration. This will be accomplished~~ BRS distillate carbon changeout frequency will be determined by~~through~~ sampling and analysis of: the influent to the lead adsorber; the effluent of the lead adsorber; and the effluent of the lag adsorber. Each sampling event will comprise collection of samples from these three (3) locations and analysis of contaminants comprising the standards for reuse of BRS recovered water. The frequency of the sampling events ~~during the pilot test~~ will be based on the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment 3, Appendix 3) and will be sufficient to: 1) establish the target contaminants expected to be routinely present in the influent to the BRS Distillate Filters; 2) detect the breakthrough of contaminants from the lead filter above their respective reuse standards; and 3) confirm compliance of the treated water (lag filter effluent) with the reuse standards.~~ Throughout the range of operating conditions demonstrated during the Pilot Test Demonstration.~~	
III.H.3.a Non-metallic components (e.g. Fiberglass Reinforced Plastic, Polyvinyl Chloride, Polytetrafluoroethylene (PTFE), Ethylene Propylene diene terpolymer (EPDM), Viton, Garlock etc.) provide corrosion resistance due to their inert properties. These non-metallic components shall be subject to visual inspections to check for corrosion, deterioration, or leaks.	Addition of Part III.H.3.a to address revisions proposed in the *Corrosion Monitoring Plan for Resource Conservation and Recovery Act (RCRA) Tank Systems*, Revision 009, Attachment M.
III.H.3.b Soft parts (e.g. gaskets, valve seals, and flexible connections) are not preemptively replaced unless they are known to be attacked by the process fluid, broken, show deterioration or leaking. Soft parts shall be formally assessed and visually inspected when under maintenance.	Addition of Part III.H.3.b to address revisions proposed in the *Corrosion Monitoring Plan for Resource Conservation and Recovery Act (RCRA) Tank Systems*, Revision 009, Attachment M.
III.N.3 The Permittees shall comply with the design, operational, ~~monitoring and~~ inspection and repair requirements of 6 CCR 1007-3, §264.1056 and the Inspection Plan, Attachment K of this Permit~~264.1058~~. The Permittees shall inspect all equipment subject to the requirements of 6 CCR 1007-3, Part 264, Subpart BB identified at the facility in accordance with the Inspection Plan, Attachment K of this Permit, and 6 CCR 1007-3, §§264.1056~~ and 264.1058~~.	The Permittees believe that adherence to the inspection protocols specified in Appendix K of this Permit meets the requirements for inspections identified in 6 CCR 1007-3 §264.1056 and is equivalent to the monitoring and repair requirements in 6 CCR 1007-3

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	§264.1058. To clarify this equivalency, the Permittees request that references to §264.1058 be replaced with the Inspection Plan, Attachment K of the Permit.
III.N.4 The Permittees shall comply with the ~~test methods and procedure~~ requirements of 6 CCR 1007-3, §264.1063(d) through 264.1063(h) and the Inspection Plan, Attachment K of this Permit.	Adherence to the permit conditions in Appendix K of this Permit equivalent to the monitoring requirements in 6 CCR 1007-3 §264.1063(a) through (c). To clarify this equivalency, the Permittees request that the regulatory reference be revised to exclude §264.1063(a) through (c) and include a reference to the Inspection Plan, Attachment K of the Permit.
Global revisions: • Revise references to pilot testing: Sections III.F.7., III.F.8., III.F.11., and III.F.12. • Revise references to 6 CCR 1007-3 §262 .34: none. • Revise references to EDS and add references to SDCs and associated igloo storage: none • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: Section III.J.	
Part IV ***(change pages included in Enclosure 7)***	
IV.A.4.c. The manufacturer and model number for the analyzer units will be Procal 2010 AU/AVU-V24 OHU. A Procal 1300 Analyzer Control Unit (MK5) will be used to transmit data to the PCAPP Facility Control System and the CO_2 data will be kept as part of the facility operating record~~. The testing plan evaluation for correlation of CO_2 levels/heel quantity will be as stipulated in the Pilot Test Demonstration Plan, Attachment N of this Permit.~~	The Final Test Plan Report recommendations identified the threshold of 0.28% CO_2. The recommended response to alarms for exceeding the threshold value has been added to Section IV.D.4.f..v.
IV.A.4.e. Each Agent Hydrolyzer Tank shall be equipped with an agitator designed ~~sized appropriately~~ to thoroughly mix the tank contents such that a homogenous mixture results. The Permittee is not required to operate the agitator for agent loadings ≤ 8.6 wt%.	Revision clarifies that agitator operation is not necessary (for agent loadings ≤ 8.6 wt%) per 24852-3TS-000-L0011, Letter Report on ANR Pilot Testing Pilot Testing Demonstration Plan, Appendix A3B
IV.A.5.a. … The primary purpose of the OTS is the thermal treatment of the process off-gas (mustard agent) in the bulk oxidizer through high-temperature residence, and further control of acid gases through contact gas absorption and neutralization in the venturi wet scrubber in association with the packed-bed tower and mist eliminator. ~~It is anticipated that approximately 97% of the mustard agent in the off-gas stream is treated by the OTS with the remainder to be controlled by the AFA.~~ The gaseous feed to the OTS consists of flow from the vent header system originating from the MWS Washed Agent and	Delete text because pilot testing is complete

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Water Surge Drum Tanks lines 1 and 2, MTUs 1 and 2, APB Agent Hydrolysate Hold Tanks, SDU, autoclave condensate drum, Agent Collection and Neutralization System tanks, and Spent Decon Holding Tanks. The vent gas from the SDU normally is vented to the scrubber tower. The SDU off gas system design allows venting the gas to the oxidizer preheater and bulk oxidizer prior to the scrubber tower~~, although this configuration is not anticipated to be used per the pilot test.~~ … ~~The piping for the OTS system includes three intermediate sampling ports, one prior to the oxidizer preheater, one prior to the venture, and one after the off-gas reheater, that is designed and installed by the Permittees to allow for continuous monitoring during pilot-testing and other times of APB process off-gas flow.~~	
IV.D.1.e. Leaking chemical munitions will be overpacked and stored in the igloos permitted for storing leaking munitions. Intact, non-leaking, palletized rounds may be transferred directly to the ~~Explosive Destruction System~~Static Detonation Chamber (~~EDS~~SDC) or transferred to H Block Igloo 1102 or G-block Igloos G101, G102, or G103 for storage pending treatment in the ~~EDS~~SDC.	EDS has been removed. Revised the reference from EDS to SDC and identified the G-block storage igloos associated with the SDC operations
~~IV.D.2.c.2.ii~~ ~~Maximum operating feed rates for the PMDs will be established as per the Pilot Test Demonstration Plan, Attachment N of this Permit.~~	Maximum PMD operating rates were assessed during pilot-testing (ref: 24852-RD-30R-000-L0006). Maximum permitted limits are unnecessary since PMD processing rates do not affect facility emissions. Facility throughput limitations are established via MWS/MTU processing rate limits.
IV.D.4.d.iii. Spent Decon Holding Tank System: The Spent Decon Holding Tanks may receive the waste streams identified in Section D-5d(5) in the Waste Analysis Plan, Attachment D of this Permit. ~~only the following waste streams: spent decontamination solutions and fire suppression discharges collected in sumps in Category A, B, and C areas within the ERB and APB, scrubber tower blowdown from the Off-gas Treatment System, rinse material (e.g., line flushing), and condensate from the Autoclave Condensate Drum Tank, air handling units and the hot water process tank.~~	For consistency between Part IV and the Waste Analysis Plan, the subset of approved waste streams has been deleted from Part IV and replaced with a reference to the list of approved waste streams in the Waste Analysis Plan.
IV.D.4.d.viii. Each munition that has been drained and rinsed with water in a CAM shall be weighed at the Munitions Treatment Unit (MTU). The weight criteria to be used for rejecting munitions is provided in the Operations Plan ~~Pilot-Test Demonstration Plan~~, Attachment ~~N~~ L of this Permit.	Pilot testing is complete. Criteria for rejecting munitions are in the Operations Plan.
IV.D.4.d.iv.(A) Operational limits for ANR batches shall be: • Monthly average not exceeding 6 ANR batches per day (30 consecutive days) • $\leq$ 42 ANR batches per week • Each batch $\leq$ 8.6% agent	The Final Pilot Test Report and subsequent discussions with CDPHE resulted in a recommendation to set a batch limitation of $\leq$ 6 batches per day, $\leq$ 8.6% agent. This provides for net-

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~~No more than ten (10) batches of hydrolysate may be produced per day by the Agent Hydrolyzer Tank System. No more than eight batches per day averaged over a rolling 90-day period may be produced by the Agent Hydrolyzer Tank System.~~	emissions within the MPHRA emissions basis but does not limit plant operations and has no impact on short-term, or acute emissions/exposure.
IV.D.4.d.iv.(E) The Permittee shall use ~~an initial 28~~a 48-batch changeout frequency for the PTFE-lined isolator. ~~Assuming acceptable results, the changeout frequency may be reduced to a 38-batch frequency, followed by a 48-batch frequency and then a 60-batch frequency. To progress from one frequency to the next, the Permittee shall collect the data specified in 24852-3TS-000-L0023 (i.e., pressure test results, wear data using a micrometer, still pictures and/or borescope examination results) for the isolator just used, provide the data to the Division, and obtain Division concurrence. The Permittee shall not employ a less frequent changeout than a 60-batch changeout frequency without prior Division approval.~~	Per the Final PTDP Report, this should be set at a 48 batch changeout for the PTFE-lined isolator.
IV.D.4.d.iv.(F) 1) The two pH probes must ~~be~~ have functioned properly during processing of the previous batch in the ANR; and … If both of the pH probes function properly during the batch process and the readings confirm that when treatment of the batch of agent (HD or HT) is complete, the resulting hydrolysate solution in the ANR is stable at a pH of at least 10 as indicated by B04-AI-7108A or B04-AI-7108B~~F~~ then the contents	Wording clarification
IV.D.4.f.iv. If one or both MTUs are operational in a given hour, the combined maximum processing rate for 155 mm projectiles shall not exceed ~~32~~65 rounds per hour, and for 105 mm projectiles, the processing rate shall not exceed 100 rounds per hour. This limitation shall not apply to any Division approved increases in munitions processing rates.	Section 5.0 of Final PTDP Report: PCAPP treatment systems met test requirements during the sampling periods, making the demonstrated conditions/rates appropriate for evaluation of performance against the MPHRA standards and for use in developing PCAPP's RCRA Part B operating permit application. The average munition processing rate demonstrated during 155 mm projectile testing was 65.2 munitions per hour; this represents the maximum rate the MWS can achieve over a limited duration and is suitable for use as a controlling rate for munitions processing.
IV.D.4.f.v. The MTU is to be operated with an alarm set point of 0.28% CO_2. In the event of measurements above this threshold the following steps should be taken; 1. Pause the MTU belt and MTU feed upon measurement of CO2 greater than 0.28 % CO2 will while the situation is	Section added based on conclusion made in Final Pilot Test Report (24852-3TS-000-L0030). Conclusion is supported in that document and is an expected setpoint/action based on Pilot Test discussions with CDPHE.

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investigated. Events with a detection of >0.50 % CO_2 will require division (CDPHE) notification before resuming MWS/MTU operations. 2. Resume the MTU belt after a minimum 15-minute pause to extend the "heat soak" period at permitted operating temperatures are maintained within permitted limit and clear the remaining munitions from the belt. Each additional >0.28 % CO_2 alarm while clearing the belt will trigger an additional 15-minute pause. 3. Resume processing on the affected line after washout data for the associated heel munition is collected and analyzed to provide assurance that any upset condition has been corrected.	
Table IV.D.6 BTA carbon changeout • BTS OTS: 180-day changeout frequency • WRS OTS: 365-day changeout frequency • BRS OTS: Once during 155 campaign, then 730-day changeout frequency • 30-day Hydrolysate Storage Tanks: 60-day changeout frequency	BTA carbon changeout permit conditions added per Response to Division Comments on Final Pilot Test Report recommendations; Table 2. Recommended Changeout Frequencies for Biotreatment Area Carbon Filtration Systems
Table IV.D.6 AFA Stack sampling by qualified third-party stack testing firm: • One event during 155 mm campaign • Quarterly during 105 mm campaign	The Final Pilot Test Report recommended the stack testing be performed in accordance with acceptable ranges addressed in the Multiple Pathway Health Risk Assessment (MPRHA) Report. Frequencies for the testing were also established in the Final Pilot Test Report.
Table IV.D.6 BTA stacks by qualified third-party stack testing firm: • Stack testing: particulates, acid gases, metals, and other hazardous waste constituents • Once during 155 campaign • Quarterly during 105 mm campaign	BTA stack testing frequencies established in the Final Pilot Test Report
Table IV.D.6 Proposed AFA MINICAMS® monitoring strategy and revised agent-driven AFA carbon strategies are presented in the "Justification for Changes" in the body of the permit modification request	
IV.K.3 The Permittee shall comply with the design, operational, monitoring and inspection requirements of 6 CCR 1007-3, §§264.1054, 264.1056 through §264.1059, and §264.1061 and §264.1062. The Permittee shall monitor and inspect all equipment subject to the requirements of 6 CCR 1007-3, Part 264, Subpart BB identified at the facility as described in the Inspection Plan, Attachment K of this Permit. Monitoring and inspections in accordance with the Inspection Plan, Attachment K, provides an alternate system for identifying and recording the status of a leak in accordance with 6 CCR 1007-3 §§264.1057, 264.1058, 264.1062, and 264.1063.	Leak detection using Method 21 is specifically required by or incorporated by reference in the following regulations: 6 CCR 1007-3 §§264.1033, 264.1034, 264.1057, 264.1058, 264.1062, 264.1063, and 264.1064. Pursuant to IV.K.5 of the PCAPP RCRA RD&D Permit, the Inspection Plan, Attachment K of the Permit, provides an alternate system for leak detection. The Permittees request that this alternate system be more

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IV.K.4 The Permittees shall comply with the test methods and procedure requirements of 6 CCR 1007-3, §264.1063(d) through (h). IV.K.7 The Permittees shall comply with the operating requirements of 6 CCR 1007-3, §264.1033 for all closed vent systems and control devices installed to meet the requirements of Subpart BB. Monitoring and inspections in accordance with the Inspection Plan, Attachment K, provides an alternate system for identifying and recording the status of a leak in accordance with 6 CCR 1007-3 §264.1033 and §264.1034 by reference.	specifically referenced in the Permit.
Global revisions: • Revise references to pilot testing: Sections IV.A.4.c., IV.A.5.a., IV.D.4.c.ii., IV.D.4.c.viii., and Table IV.D.6 • Revise references to 6 CCR 1007-3 §262 .34: Sections IV.B.2. and IV.D.4.b.vii. • Revise references to EDS and add references to SDCs and associated igloo storage: Sections IV.D.1.e. and IV.D.1.n. • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Part V *(change pages included in Enclosure 8)*	
Add Permit Modification Request No. 243 volume increases and liquid storage in Munitions Bodies Storage Area, Dunnage Storage Area, and Waste Laydown Yard Includes revisions to Part V, Sections V.A.3.b.i., V.A.3.b.iii., and V.A.6.c; Tables V-1, V-2, V-3, V-5, and V-5; and Figures V-2, V-3, V-4, and V-5.	Additional storage capacity is requested to operate more efficiently during campaign changeover and during upset conditions. Additional basis is presented in the Justification for Changes and in the PMR 243 file in the Supplemental Information folder on the CD that is accompanying this PMR 286.
Addition of hazardous waste codes to the Munitions Bodies Storage Area in Table V-1: K901, K902, K903, F001-F005, D001, D002, D003 (excludes prohibited waste), D004-D011, D018, D019, D022, D026, D028, D029, D033, D034, D035, D036, D037, D039, D040, D042, and D043	Rationale for addition of hazardous waste codes included in Enclosure 9
Addition of hazardous waste codes to the Dunnage Storage Area in Table V-5: K901, K902, K903, F001-F005, D001, D002, D003 (excludes prohibited waste), D004-D011, D018, D019, D022, D026, D028, D029, D033, D034, D035, D036, D037, D039, D040, D042, and D043	Rationale for addition of hazardous waste codes included in Enclosure 9
Addition of hazardous waste codes to the Waste Laydown Yard in Table V-6: K901, K902, K903, F001 – F005, D001, D002, D003 (excludes prohibited waste), D004 – D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030 (excludes prohibited waste), D032 – D040, D041, D042, D043, P-series, U-series	Rationale for addition of hazardous waste codes included in Enclosure 9

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Global revisions: • Revise references to pilot testing: none • Revise references to 6 CCR 1007-3 §262 .34: none • Revise references to EDS and add references to SDCs and associated igloo storage: none • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Attachment A – Part A *(Enclosure 10)*	
Add Permit Modification Request No. 243 volume increases to Part A	
Attachment D, Waste Analysis Plan *(change pages included in Enclosure 11)*	
D-1 This Waste Analysis Plan (WAP) is for ~~the Pilot Test Demonstration Operations and for~~operations and closure activities at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) during the time period between completion of the Pilot Test Demonstration and the issuance of the Resource Conservation and Recovery Act (RCRA) Permit.~~Part B Permit at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP). These operations will be performed in compliance with the State of Colorado RCRA Research Demonstration and Development Permit. During Pilot Test Demonstration Operations generator process knowledge, analytical testing results, and agent monitoring data will be collected and reviewed.~~ The Permittee will submit permit modification requests to update this WAP based on process knowledge and analytical results obtained during ~~Pilot Test Demonstration Operations~~operations and closure activities. Generator process knowledge and/or analytical results, including agent monitoring for all wastes, will be maintained in the Operating Record.	Pilot testing is complete.
D-2 The designation and disposition of waste is based on generator process knowledge and analytical results obtained for similar waste streams at other chemical agent disposal facilities and bench scale demonstrations and testing. During the completed Pilot Test Demonstration ~~O~~operations, the Permittee ~~will~~ characterized the treatment processes and waste streams to verify the accuracy of results from similar waste streams at other chemical agent treatment facilities and bench scale demonstrations and testing. Generator process knowledge must be documented in the Operating Record and the results of the analytical testing will be submitted to the Division for review upon request. The Permittee may submit permit modification requests to this WAP based on process knowledge and analytical results obtained during the ~~Pilot Test Demonstration Operations~~operations	Pilot testing is complete
Multiple sections – All change pages are included in Enclosure 11 Deletion of .EDS and addition of SDCs and associated G-block storage igloos Deletion of Pilot Test Demonstration Plan, pilot testing, and associated activities	EDS has been removed. Revised the reference from EDS to SDC and identified the G-block storage igloos associated with the SDC operations

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D-5d (1), Munitions Washout System (MWS) Revise the text discussing drained and washed munitions that are overweight as follows: **Verification** that drained and washed munitions can be transferred to the MTU from the MWS is completed at the weigh station prior to entering the MTU. The drained and washed munition must be within an acceptable weight range, as specified in the Operations Plan (Appendix L), prior to transfer to the MTU. Drained and washed munitions that are not within the acceptable weight range are returned to the MWS for further washing. ~~After multiple washings, drained and washed munitions above the acceptable weight will be managed as rejects at the MWS or returned in an SRC to PCD G-Block or H-Block 1102 storage.~~ After multiple washings, drained and washed munitions above the acceptable weight will be segregated and transferred to the reject table. Data on the overweight munitions will be provided to the Colorado Department of Public Health and Environment (CDPHE) for review and approval prior to introducing the overweight munitions into the MTU. Overweight munitions that do not receive CDPHE approval for MTU processing will be managed as rejects at the MWS, overpacked in a single round container or propelling charge container when necessary, and returned to PCD G-block igloos or H-block igloo H1102, or sent directly to the SDC for treatment.	 Revise for clarification based on agreed upon protocol for drained and washed munitions above the acceptable weight. Please see email communications between PCAPP and CDPHE in September and October 2019 (Chron19-03932 and Chron19-03386) as examples.
D-5d (5), Spent Decon Holding Tanks Tank systems cannot be drained or flushed into the decon system sumps without prior evaluation of engineering controls and material compatibility, and submittal of a summary of the engineering evaluation signed by a licensed Colorado professional engineer to CDPHE. Draining or flushing activities of ancillary equipment (e.g., piping) during routine maintenance activities that had previous engineering evaluations signed by a licensed Colorado professional engineer and approved by CDPHE will be performed without requiring additional, repeated evaluations and approvals. ~~Colorado Department of Public Health and Environment (CDPHE) approval of a permit modification submitted in accordance with 6 CCR 1007-03 § 100.63.~~	 Revised based on agreed upon protocol for flushing of the Agent Neutralization Reactor (ANR) agent feed line to the lined sump (MT-B05-0066) in November 2019. An example of a routine maintenance activity is the flushing of the ANR lines. CDPHE provided approval to flush ANR-1 line. Now the Permittees need to request approval again for the same maintenance activity on the ANR 1 line, and will be soon requesting approval for the same maintenance activity on the ANR 2 line. The current permit condition requires that each evolution be separately approved. The Permittees are requesting a modification to the permit condition to allow routine repeated maintenance activities to be approved only once.
D-5f, Biotreatment Area (BTA) The ~~Biotreatment Area (~~BTA~~)~~ processes the hydrolysate through biodegradation (aerobic microbiological action) in the ~~immobilized cell bioreactors (~~ICB™~~s)~~. The ICB™ feed tanks blend~~;~~ consists of hydrolysate from the 30-Day Hydrolysate Storage Tanks, process water ~~sulfuric acid (for pH adjustment),~~ and bioreactor nutrients. This	 The ICB™ feed tanks blend also includes process water. Sulfuric acid for pH adjustment is only used for very brief periods during start-ups with batch feeds. It is not used during normal continuous

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is the influent for the ICB™~~s~~. The ICB™ units degrade the organic constituents in the hydrolysate. The treated hydrolysate, or ICB™ effluent, is transferred to the ICB™ effluent tanks. When necessary to remove solid build-ups and blockages, flushing of the hydrolysate (K903) piping in the BTA will be performed using process water, citric acid, methane sulfonic acid solution, or equivalent. The flushing process will continue until the flow rate through the piping improves.	feed operation Added for removal of solid build-ups in the ICB™ and other hydrolysate (K903) piping. For more information, refer to the CDPHE letter titled "Emergency Permit CO-19-09-26-01 for B09 hydrolysate pipe flushing for PCAPP Immobilized Cell Bioreactor (ICB™) Modules 1 and 2" dated September 26, 2019.
D-5f (1), ICB Effluent Tanks **Biodegradation Performance Requirement~~Goal~~** The ICB™ module effluent TDG concentration must be less than 1,000 milligrams per liter (mg/L).~~The biodegradation process performance goal is > 86% percent removal of TDG and a target of > 95% percent removal of TDG.~~ When the performance requirement~~goal~~ is verified, the effluent is discharged to the ~~Brine Concentrator Feed Tanks (~~BCFTs~~)~~. If the performance requirement~~goal~~ is not met, the effluent will be recycled to the ICB™ feed tanks for additional treatment in the ICB™~~s~~.	The pilot test goal was >95% TDG removal with a minimum target value of 86% removal. The 86% TDG removal is based on the design feed TDG concentration of 7,000 mg/L and an effluent TDG concentration of 1,000 mg/L. The removal efficiencies were predicated on the design feed TDG concentration of 7,000 mg/L. However, the more relevant requirement is that the effluent TDG concentration must be less than 1,000 mg/L. This requirement is taken from 24852-SOP-B09-W0001, Biotreatment and Off-Gas Treatment.
Table D-5-1, Waste Designation, Sampling/Analysis Requirements, Disposition • Add new row for waste from flushing of the hydrolysate (K903) piping/BTA.	Experience during pilot testing has shown that flushing of the ICB™ and hydrolysate (K903) piping may be necessary during routine maintenance and in response to reduced flow or blockages in the piping. The new waste stream is required for flushing when citric acid, methane sulfonic acid (MSA) solution, or equivalent are used during flushing operations.
Table D-6-1, Materials and Processing Time for SDU and Autoclave • Adds waste types, clarifies waste types and treatment parameters, and/or adds requirements for treating waste in the SDU and Autoclave per DCN 24852-RD-M5N-B24-B0003	These revisions will provide options for decontaminating agent-contaminated waste to meet offsite shipping requirements and Treatment, Storage, and Disposal Facility (TSDF) waste acceptance criteria. (DCN 24852-RD-M5N-B24-B0003 is provided in the Supplemental Information folder on CD provided with this PMR)

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Table D-8-1, PCAPP Analytical Methods and Procedures • Replace “006” with “007 in Rev. No. column for Document No. 24852-SOP-B24-W0003. • This procedure update provides the basis for update of Table D-6-1	These revisions will provide options for decontaminating agent-contaminated waste to meet offsite shipping requirements and Treatment, Storage, and Disposal Facility (TSDF) waste acceptance criteria. (24852-SOP-B24-W0003, Secondary Waste Processing, is provided in the Supplemental Information folder on the CD provided with this PMR)
Global revisions: • Revise references to pilot testing: Sections D-5d(2), D-5f(3), D-6, D-8, and Table D-5-1 • Revise references to 6 CCR 1007-3 §262 .34: none • Revise references to EDS and add references to SDCs and associated igloo storage: Acronyms, Sections D-1, D-2, D-5a, D-5b, and Table D-5-1 • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Appendix 4, Monitoring Locations Table *(Enclosure 12)* • Update table to add change SDU monitoring from VSL to IDLH (DCN: 24852-RD-M6N-J02-J0019) • Update table to add change of TMA B monitoring from VSL to IDLH. (DCN: 27852-RD-M6N-J02-J0022).	Updates to the table incorporating changes to the DAAMS and MINICAMS monitoring per approved DCNs. Descriptions and rationales for design changes in these DCNs are included in Enclosure 2
Attachment E, List of Drawings and Documents ***(change pages included in Enclosure 13)***	
Update revision numbers to reflect the changes made in PMR 287	Global revision
Global revisions: • Revise references to pilot testing: none • Revise references to 6 CCR 1007-3 §262 .34: none • Revise references to EDS and add references to SDCs and associated igloo storage: none • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Attachment G, Contingency Plan ***(change pages included in Enclosure 14)***	
G-1a … The Contingency Plan must be implemented whenever there is an imminent, potential, or actual emergency situation, such as a fire, explosion, or release of hazardous waste or hazardous waste constituents, which could threaten human health or the environment.	Sentence clarification
Table G-1 Replace Jim Brewer’s previous telephone number (719) 549-5916 with current telephone number (719) 549-5616	Update of contact information in the Emergency Coordinator List
Figure G-4 Replace Figure G-4 with an updated figure that removes the EDS, and depicts the location of the SDCs	The EDS has been removed, and the installation of the SDCs is in-process

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Table G-7 Add hazardous waste codes to the Munitions Bodies Storage Area, Dunnage Storage Area, and Waste Laydown Yard	Rationale for addition of hazardous waste codes in included in Enclosure 9
Global revisions: • Revise references to pilot testing: none • Revise references to 6 CCR 1007-3 §262 .34: Table G-7, Sections G-3c(4), G-6g, G-6i, and G-6j • Revise references to EDS and add references to SDCs and associated igloo storage: none • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Attachment H, Training Plan ***(change pages included in Enclosure 15)***	
Only global revisions pertaining to the replacement of references to 6 CCR 1007-3 §262 .34 with 6 CCR 1007-3 §262	Provide consistency with the Hazardous Waste Generator Improvement Rule, effective 30 June 2018
Global revisions: • Revise references to pilot testing: none • Revise references to 6 CCR 1007-3 §262 .34: Section H-3 • Revise references to EDS and add references to SDCs and associated igloo storage: none • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Attachment I, Closure Plan ***(change pages included in Enclosure 16)***	
Table I-2 Storage capacities revised to incorporate PMR 243 proposed capacities.	Revised to incorporate PMR 243 proposed permit conditions.
Appendix I-2 (Closure Schedule) – new closure schedule provided	Per Section I-5i, PCAPP is providing a new closure schedule since the expected year of closure differs from that currently depicted in Appendix I-2.
Global revisions: • Revise references to pilot testing: Section I-4c • Revise references to 6 CCR 1007-3 §262 .34: none • Revise references to EDS and add references to SDCs and associated igloo storage: Acronyms, Section I-1 • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Attachment J, Hazard Preparedness Plan ***(change pages included in Enclosure 17)***	
J-4(a) Wastes containing free liquids may be stored in the Waste Laydown Yard Munitions Body Storage Area and the Dunnage Storage Area on spill containment pallets or pans.	Revised to incorporate PMR 243 proposed permit conditions.
J-4d ~~The FPS also will automatically shut down any AFA filter bank in the event of mustard agent detection (MINICAMS®) at 0.2 VSL following the fourth carbon filter. When a filter bank is shut down, the FCS will automatically start the standby filter bank~~.	The operation, shut-down and response actions for the Agent Filtration Area (AFA) have been updated and are addressed in Part IV -Table IV.D.6 of this permit

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J-4f Operating details of the AFA including sampling for 1,2-DCA and response to filter breakthrough are described in Part IV Table IV.D.6 of this Permit. ~~For each of the 10 filter units, a sampling probe that directs air to MINICAMS®s for monitoring is positioned between carbon filters 1 and 2 that will monitor the airstream to warn of mustard agent breaking-through filter 1. Filter 1 is also known as the primary filter. To warn of breakthrough in carbon filter 2, a second MINICAMS® sampling probe located between carbon filters 2 and 3 will monitor the air stream following indication that mustard agent has broken-through the primary carbon filter and during change-out of the primary carbon filter. A monitoring point is also positioned between carbon filters 4 and 5 to provide further evidence of filtering integrity. One near-real-time monitoring MINICAMS® will be used to monitor all three monitoring points in each filter unit.~~ Stack emissions shall be monitored for mustard agent using both MINICAMS® and Depot Area Air Monitoring System (DAAMS). A release from the stack of a concentration measured equal to or greater than the airborne exposure limit of 1.0 VSL (0.003 mg/m³) mustard agent as measured by MINICAMS® and then confirmed by the DAAMS requires implementation of the Contingency Plan, (Attachment G) of this permit	The operation, shut-down and response actions for the Agent Filtration Area (AFA) have been updated and are addressed in Part IV -Table IV.D.6 of this permit
Appendix J-1 for Toxic Maintenance Area – Category A Room Inventory limit will not exceed two (2) 4 ft x 6 ft bin containers plus twenty-four (24) 55-gallon drums of RCRA-regulated secondary waste. Combination of container types is allowed but the limit of the two (2) bins plus twenty-four (24) 55-gallon drum equivalents cannot be exceeded. ~~Inventory limit does not exceed 26 total waste containers of RCRA-regulated secondary waste. Two (2) 4 ft x 6 ft bin containers are allowed and no more than twenty-four (24) 55-gallon drums. Containers > 55 gallon (e.g. 85/95-gallon drum containers) shall count as two (2) 55-gallon drums. Containers ≤ 55-gallons shall count as One (1) 55-gallon drum. Combination of containers types is allowed but the limit of twenty-four (24) 55-gallon drum equivalents cannot be exceeded.~~	Clarification proposed to support compliance with permit conditions
Appendix J-1 for Munitions Bodies Storage Area, Dunnage Storage Area, H-block igloos, and Waste Laydown Yard: Global revisions to incorporate the proposed PMR 243 permit conditions	Increased capacity and storage of liquids in the CLA is needed during normal operations and changeover
Appendix J-1 footnote 2 2. Hazardous waste munitions may be stored in the VCRs, MTUs, ~~SDU, Autoclave,~~ PMEs, MMEs, MHR, Munition Weigh Station, Munition Loading conveyor or MWS Feed Conveyor for longer than 24 hours only in the event of an off-normal situation (e.g., equipment failure or malfunction, or mustard agent release resulting in response and decontamination activities that affect operations) with a notification to the Division within 24 hours of exceeding the 24 hour storage limit. The notification shall include a description of planned	Clarification of hazardous waste storage with the addition of the word "munitions" pursuant to approval of PMR 169, which allows for storage of hazardous waste items and drums in the Vapor Containment Rooms (VCRs) and the Explosion Containment Rooms (ECRs)

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corrective actions and associated schedule if the off-normal situation has not been resolved at the time of notification.	In addition, treatment in the SDU and Autoclave includes staging, in-process storage between treatment cycles, and storage prior to initiating treatment and after treatment. If the SDU and Autoclave malfunctions, the storage of waste items and containerized waste pose no increased threat to human health and the environment
Global revisions: • Revise references to pilot testing: none • Revise references to 6 CCR 1007-3 §262 .34: none • Revise references to EDS and add references to SDCs and associated igloo storage: Section J-4g(1) • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: Sections J-4c, J-4d, J-4g, and J-5	
Attachment K, Inspection Plan *(change pages included in Enclosure 18)*	
Table K-13: Addition of ICB™ Module 3 inspection criteria	ICB™ Module 3 inspection criteria are consistent with inspections performed at Modules 1 and 2
Tables K-19, K-20, K-21, K-22: Add Permit Modification Request No. 243 inspection criteria associated with inventory/capacity increases and liquid storage in Munitions Bodies Storage Area, Dunnage Storage Area, and Waste Laydown Yard	Increased capacity and storage of liquids in the CLA will increase the likelihood of compliance, and is needed during normal operations and changeover
Global revisions: • Revise references to pilot testing: Table K-15 • Revise references to 6 CCR 1007-3 §262 .34: Section K-5a • Revise references to EDS and add references to SDCs and associated igloo storage: none • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: Section K-7	
Attachment L, Operations Plan *(change pages included in Enclosure 18)*	
Level III DCN Changes (as listed above under “Global” Section)	Incorporate Level III design changes
Pilot Test Revisions • B03 Compliance Table: Throughput rates (65 munitions per hour (155 mm), Revise MTU CO2 alarm setpoint to 0.28% CO2 • B04 Compliance Table: No more than 180 batches of hydrolysate per month (30 consecutive days) • B09/B11 Compliance Table: ≤ 1,481 lb. TDG/module/day BTA hydrolysate feed), • Delete parameters that reference the PTDP. • Replace all filter changeout criteria with a reference to Table IV.D.6 • Replace all stack monitoring criteria with a reference to Table IV.D.6	Final Pilot Test Report recommendations

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B01 • Deleted Operations 1 and 2, which identify pilot testing requirements for determining PMD processing rates and counting rejects • Revised Operation 3, 4, and 5 to remove Pilot Test Demonstration Plan references	• Maximum PMD operating rates were assessed during pilot-testing (ref: 24852-RD-30R-000-L0006). Maximum permitted limits are unnecessary since PMD processing rates do not affect facility emissions. Facility throughput limitations are established via MWS/MTU processing rate limits. • Operations are performed in accordance with Projectile Mortar Disassembly Machine SOP 24852-SOP-B01-W0002
B02 • Global changes – replace EDS with SDC • Replace "Annual calculation" with "Permit Condition IV.L.3.b.i" in "Frequency of Monitoring" column for B02 – Organic vapor pressure of the contents of the washed agent and water surge drums	• For consistency with permit condition IV. L. 3.b.i. and 6 CCR 1007-3 Section 264.31084(c), remove the requirement to perform annual calculations. Tank headspace calculations, as currently configured and performed, sufficiently bound future tank conditions; therefore, it is only necessary to perform calculations when the process changes potentially causing an increase the organic vapor pressure in the tank headspace.
B03 • Replace "200-450 scfm" with "225-450 scfm" in the "Normal Operating Range" column for MTU offgas vent flowrate (B03-FIT-9308A/B) • Addition of high temperature limits for MTU Zones 1 and 2 (B03-TAHH-9310A-A, B03-TAHH-9310A-B) • Deletion of high temperature limits for MTU Zones 1, 2, 3, 4, and 6 (B03-TSHH-9310B-A, B03-TSHH-9310B-B, B03-TSHH-9310A-C, B03-TSHH-9310B-C, B03-TSHH-9310B-D, B03-TSHH-9310A-D, B03-TSHH-9310A-E, B03-TSHH-9310B-E, B03-TSHH-9310A-F, B03-TSHH-9310B-F) • Replace "B03-X1-0312A" with "B03-QAH-9312-A_A" in "Method for Monitoring" column and replace "See Notes e,f" with "See Note e" in the "Normal Operating Range" column for MTU unit 0103 maximum processing rate for 155 munition bodies • Replace "B03-X1-0312B" with "B03-QAH-9312-B_A" in "Method for Monitoring" column; replace "See Notes e,f" with "See Note e" in the "Normal Operating Range" column; and replace the referenced permit condition "IV.D.4.f." with "IV.D.4.f.iv." in the "Source of Requirements" column for MTU unit 0203 maximum processing rate for 155 munition bodies	• Revisions per DCN 24852-RD-M6N-B03-J0002 • Revisions per DCN 24852-RD-J0N-B03-J0002 • Revisions per DCN 24852-RD-J0N-B03-J0002 because belt failure does not pose a risk to the environment • Revisions per Final Test Plan Report • Revisions per Final Test Plan Report. Corrected referenced permit condition.

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• Insert "0.28% CO_2, See Note f" in "Normal Operating Range" column; replace "AIT-9319A/B" with "B03-AIT-9319A/B" in "Method for Monitoring" column; and replace "PLACEHOLDER" with "Final Pilot Test Report Recommendation" in "Source of Requirements" column • Replace Note e text with "If one or both MTUs are Operational in a given hour, the combined maximum processing rate for 155 mm projectiles will not exceed 65 rounds per hour, and for 105 mm projectiles, the processing rate shall not exceed 100 rounds per hour. The target range for the 105 mm processing rate shall be demonstrated by the Washout Performance Validation Plan. These limitations shall not apply to any division approved increases in munitions processing rates." • Add Note "f. Response to alarm setpoint of 0.28% CO_2 will be conducted in accordance with the conditions described in Part IV.D.4.f.v. steps 1-3	• Revisions per Final Test Plan Report • Revisions per Final Test Plan Report • Revisions per Final Test Plan Report
B04 • Global changes – replace PTDP tables with "Set Point Matrix" in the "Source of Operating Parameter or Permit Condition" column • Replace "Annual calculation" with "Permit Condition IV.L.3.b.i" in "Frequency of Monitoring" column for B04 – Organic vapor pressure for the B04 Tanks in the APB • Replace "Annual calculation" with "Permit Condition III.M.1.b.i." in "Frequency of Monitoring" column for B04 – Organic vapor pressure for the 30-day Hydrolysate Storage Tanks • Separate the requirements for agent levels in the agent separator tanks A and B into separate rows to identify that B04-LIT-0961A has a normal operating range of 3.2-96% and B04-LIT-0961B has a normal operating range of 8.0-96% • Replace "> .167 ft" with "> 0.42 ft (8.0%)" in the "Normal Operating Range" column, and replace "B04-LALL-0961" with "B04-LALL-0961B" in the "Method for Monitoring" column for Agent hydrolyzers – agent level in separator (B04-LALL-0961B) • Replace "> 0.33 ft" with "> 0.58 ft (11.2%)" in the "Normal Operating Range" column, and replace "B04-LAL-0961" with "B04-LAL-0961B" in the "Method for Monitoring" column for Agent hydrolyzers – agent level in separator (B04-LAL-0961B) • Add a new row for Agent hydrolyzers – agent level separator for agent separator tank A, identifying ">0.17 ft (3.2%)" in the "Normal Operating Range" column, "B04-LALL-0961A" in the "Method of Monitoring" column, "Continuous" in the	• The results of completed pilot testing have been incorporated into the Set Point Matrices. • For consistency with permit conditions III.M.1.b.i. and IV. L. 3.b.i., and with 6 CCR 1007-3 Section 264.1084(c), remove the requirements to perform annual calculations. Tank headspace calculations, as currently configured and performed, sufficiently bound future tank conditions; therefore, it is only necessary to perform calculations when the process changes potentially causing an increase the organic vapor pressure in the tank headspace. • Revisions per DCN 24852-RD-M6N-B04-M0115, described in Enclosure 2 and provided in Supplemental Information folder on enclosed CD • DCN 24852-RD-M6N-B04-M0115 • DCN 24852-RD-M6N-B04-M0115 • DCN 24852-RD-M6N-B04-M0115

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Proposed Revisions	**Rationale for Proposed Revision(s)**
"Frequency of Monitoring" column, "Set Point Matrix" in the Source column, and "1" in the "Response Level" column (B04-LALL-0961A) • Add a new row for Agent hydrolyzers – agent level separator for agent separator tank A, identifying ">0.33 ft (6.4%)" in the "Normal Operating Range" column, "B04-LAL-0961A" in the "Method of Monitoring" column, "Continuous" in the "Frequency of Monitoring" column, "Set Point Matrix" in the Source column, and "1" in the "Response Level" column (B04-LAL-0961A) • Replace "B04-TIT-5403" with "M16-TIT-5403" in the "Method for Monitoring" column for "MV-M16-0001 Hot Process Water Tank" in the "Equipment Number and Description" column for Neutralization Operations. • Replace "Daily batches per day" with "Maximum batches per week" in the Operating Parameters column; "10" with "42" in the "Normal Operating Range" column; and "Daily" with "Weekly" in the "Frequency of Monitoring" column for the Agent Hydrolyzers • Replace "Average maximum batches per day" with "Average maximum batches per day on a monthly basis (30 consecutive days)" and "8" with "6" in the "Normal Operating Range" column for the Agent Hydrolyzers • Addition of Note: "f. Per Final Pilot Test Report, agitator operation is not necessary (for agent loadings ≤ 8.6 wt%)."	• DCN 24852-RD-M6N-B04-M0115 • DCN 24852-RD-M6N-B04-M0115 • Revision per Final Pilot Test Report • Revision per Final Pilot Test Report • Revision per Final Pilot Test Report
B05 • Motive air pressure revised from "70-100 psig" to "10-110 psig" in the "Normal Operating Range" column for sump pumps: ▪ MP-B05-040 (B05-PIT-6703) ▪ MP-B05-044 (B05-PIT-6723) ▪ MP-B05-045 (B05-PIT-6728) ▪ MP-B05-046 (B05-PIT-6733) ▪ MP-B05-048 (B05-PIT-6743) ▪ MP-B05-047 (B05-PIT-6738) ▪ MP-B05-049 (B05-PIT-6748) ▪ MP-B05-050 (B05-PIT-6623) ▪ MP-B05-052 (B05-PIT-6630) ▪ MP-B05-065 (B05-PIT-6653) ▪ MP-B05-069 (B05-PIT-6753) ▪ MP-B05-051 (B05-PIT-6758) ▪ MP-B05-053 (B05-PIT-6758) ▪ MP-B05-054 (B05-PIT-6773) ▪ MP-B05-055 (B05-PIT-6778) ▪ MP-B05-056 (B05-PIT-6783) ▪ MP-B05-057 (B05-PIT-6788) ▪ MP-B05-058 (B05-PIT-6793) ▪ MP-B05-059 (B05-PIT-6798) ▪ MP-B05-061 (B05-PIT-7308) ▪ MP-B05-062 (B05-PIT-7313) ▪ MP-B05-063 (B05-PIT-7318) ▪ MP-B05-064 (B05-PIT-7323)	• Revision per DCNs 24852-RD-M6N-B05-M0042, M0043, and M0044

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▪ MP-B05-070 (B05-PIT-6763) ▪ MP-B05-075 (B05-PIT-7334) • Replace “Annual calculation” with “Permit Condition IV.L.3.b.i” in “Frequency of Monitoring” column for B05 – Organic vapor pressure for the Spent Decon Holding Tanks	• For consistency with permit condition IV. L. 3.b.i. and 6 CCR 1007-3 Section 264.31084(c), remove the requirement to perform annual calculations. Tank headspace calculations, as currently configured and performed, sufficiently bound future tank conditions; therefore, it is only necessary to perform calculations when the process changes potentially causing an increase in organic vapor pressure in the tank headspace.
B09/B11 • Delete multiple rows of proposed pilot test operating conditions that are no longer considered to be bounding conditions of operation or have been superseded by Final Pilot Test Report recommendations and have been incorporated into Part III. • Delete dissolved oxygen operating ranges in the ICB™ modules (B09-AIT-1386A, B09-AAL-1386A, B09-AIT-1416A, B09-AAL-1416A, B09-AIT-1446A, B09-AAL-1446A, B09-AIT-1476A, B09-AAL-1476A, B09-AIT-1392A, B09-AAL-1392A, B09-AIT-1396A, B09-AAL-1396A, B09-AIT-1386A, B09-AAL-1386A) • Add tank overfill high high levels for the Module 2 ICB™ feed tank 0201, bioreactor 0202 chamber 3, bioreactor 0203 chamber 3, bioreactor 0204 chamber 3, and the ICB™ effluent tank (B09-LAHH-1311B, B09-LAHH-1436B, B09-LAHH-1466B, B09-LAHH-1496B, B09-LAHH-1513B) • Add high high temperature for Module 2 ICB™ offgas heater and offgas filter 1 and 2 temperatures (B11-TAHH-1724B, B11-TAHH-1782B) • Revise General Note 1 to remove Pilot Test Demonstration Plan references • Delete General Note 2 to remove sampling that is no longer applicable to operations because a set sampling frequency for carbon changeout will be implemented	• Revision per Final Pilot Test Report • Revisions per DCN 24852-RD-M6N-B09-M0063 • Revisions per DCN 24852-RD-J0N-B09-J0001 • Revisions per DCN 24852-RD-J0N-B09-J0001 • Revisions per Final Pilot Test Report recommendations
B12 • Global changes – replace PTDP tables with “Set Point Matrix” in the “Source of Operating Parameter or Permit Condition” column • Replace “MP-B12-0008” with “MP-B12-0008A” in Equipment Number and Description column distinguish between current BRS Belt Filter Pump and the spare proposed in this PMR, and replace “75-100 psig” with “> 40 psig” in the “Normal Operating Range” column (B12-PAL-2174) • Delete B12-PAL-2173 seal water reservoir row for the BRS Belt Filter Pump MP-B12-0008A	• The results of completed pilot testing have been incorporated into the Set Point Matrices. • Corrected operating range to be consistent with the Set Point Matrix • DCN 24852-RD-M6N-B12-M0097: Pressure gauge B12-PAL-2173 is a local gauge that does not feed back

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
 • Add spare BRS Belt Filter Feed Pump (MP-B12-0008B). Add seal water pressure row with "> 40 psig" for "Normal Operating Range", "B12-PAL-2178" for "Method of Monitoring", "Continuous" for "Frequency of Monitoring", "Set Point Matrix" for Source, and "1" for "Response Level" • Add row for spare BRS Belt Filter Feed Pump (MP-B12-0008B), seal water reservoir level with "<Greater than contact" for "Normal Operating Range", "B12-LAL-2180" for "Method of Monitoring", "Continuous" for "Frequency of Monitoring", "SOP Operation 2" for Source, and "1" for "Response Level" • Replace "Annual calculation" with "Permit Condition III.M.1.b.i." in "Frequency of Monitoring" column for B12 – Organic vapor pressure for the BC Evaporator Feed Tank, and replace "IV.M.1.a.i" with "III.M.1.a.I" in the Source of Operating Parameter or Permit Condition" column • Delete multiple rows of proposed pilot test operating conditions that are no longer considered to be bounding conditions of operation or have been superseded by Final Pilot Test Report recommendations and have been incorporated into Part III. • Replace response level "2" with a "1" for the BC Feed Preheater, preheater outlet low low flow rate (B12-FALL-1814) • Delete low and low low temperature requirements for crystallizer surface condensers (B12-TALL-1087, B12-TAL-1087, B12-TALL-1990, B12-TAL-1990) • Delete low and low low fill levels for the BRS area sump (B12-LALL-2123, B12-LAL2123) • Delete low and low low fill levels for the BRS belt filter area sump (B12-LSLL-2120, B12-LSL2120) • Delete Notes d, f, i, and l to remove Pilot Test Demonstration Plan actions and references	to the PLC or alarm if pressure is exceeded. • DCN 24852-RD-M6N-B12-M0097: Add a spare pump to improve availability in the BRS. • DCN 24852-RD-M6N-B12-M0097 • For consistency with permit conditions III.M.1.b.i. and with 6 CCR 1007-3 Section 264.31084(c), remove the requirements to perform annual calculations. Tank headspace calculations, as currently configured and performed, sufficiently bound future tank conditions; therefore, it is only necessary to perform calculations when the process changes, potentially causing an increase the organic vapor pressure in the tank headspace. • Revision per Final Pilot Test Report • DCN 24852-RD-M6N-B12-M0071 suppresses FAL/FALL-1814 when wall wash spray/Chevron spray are active to eliminate the false positive alarm condition. The change from RCRA level 2 to RCRA level 1 is being made because the function of monitoring the flow is to calculate the BC Feed Preheater Heat Transfer Coefficient. Monitoring is not for process safety. • Revisions per DCN 24852-RD-M6N-B12-M0087 • Revisions per DCN 24852-RD-M6N-B12-M0071 • Revisions per DCN 24852-RD-M6N-B12-M0071 • Pilot Test Demonstration Plan activities are complete
B14 • Global changes – remove reference to pilot testing	

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
• Add “24852-GPP-GGL-00113”, the laboratory method document number, to BC feed tanks A, B, and C brine density (specific gravity) analysis permit condition • Replace “Annual calculation” with “Permit Condition III.M.1.b.i.” in “Frequency of Monitoring” column for B12 – Organic vapor pressure for the BC feed tanks A, B, and C	• Proposed for consistency and clarification • For consistency with permit conditions III.M.1.b.i. and with 6 CCR 1007-3 Section 264.31084(c), removes the requirement to perform annual calculations. Tank headspace calculations, as currently configured and performed, sufficiently bound future tank conditions; therefore, it is only necessary to perform calculations when the process changes, potentially causing an increase the organic vapor pressure in the tank headspace.
B20 • Global changes – replace PTDP tables with “Set Point Matrix” in the “Source of Operating Parameter or Permit Condition” column • Replace pH “6.5-TBD” with a “6.5-10.5” in the “Normal Operating Range” column and replace the footnote “h” with “g” for the OTS scrubber recirculation pump discharge (B20-AIC-2592A/B/C) • Delete the current high high pH “TBD” row for the OTS scrubber recirculation pump discharge (B20-AAHH-2592) • Add new row and populate the columns, Normal Operating Range “< 6.5”, Method for Monitoring “B20-KQAH-2592”, Frequency of Monitoring “continuous”, and Source of Operating Parameter or Permit Condition “Set Point Matrix, and Response Level “3” for the OTS scrubber recirculation pump discharge pH • Delete multiple rows of proposed pilot test operating conditions that are no longer considered to be bounding conditions of operation or have been superseded by Final Pilot Test Report recommendations and have been incorporated into Part III. • Delete General Note d and h to remove Pilot Test Demonstration Plan actions and references	• The results of completed pilot testing have been incorporated into the Set Point Matrices. • Revisions per DCN 24852-RD-30N-B20-J0005 • Revisions per DCN 24852-RD-30N-B20-J0005 • Revisions per DCN 24852-RD-30N-B20-J0005 • Revision per Final Pilot Test Report • Pilot Test Demonstration Plan activities are complete
J02 • Delete PTDP tables and LSAP references in the “Source of Operating Parameter or Permit Condition” column and replace with “WAP – Section D-5d(2)” in the row describing MTU bin sampling • Delete “Portable” in the “Equipment Number and/or Description” column in the row describing MTU bin sampling • Delete “DAAM-4018” in the “Method of Monitoring” column for the Perimeter Monitoring sampling platform description	• Pilot Test Demonstration Plan activities are complete • Delete “Portable” because PCAPP could also use an RTAP based MINICAMS® • The sample location for DAAMS-4018 is on the Laboratory roof. The DAAMS-4018 is physically located in the Laboratory.
M07 • Global changes – replace PTDP tables with “Table IV.D.6” in	• The results of the pilot testing and

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
the "Source of Operating Parameter or Permit Condition" column • M07 Global – propose to replace "< 0.2 VSL" with "<0.7 VSL" in the "Normal Operating Range" column	recommendations for M07 in the Final Pilot Test Report have been incorporated into Table IV.D.6. • The change from 0.2 VSL to 0.7 is justified by the long-standing practice of measuring and evaluating equipment and material contamination based on exposure at or above 1 VSL (per DA-PAM 385-61). Mid-bed agent monitoring in the AFA is done for the purpose of process evaluation (carbon life) and material exposure; not direct evaluation of personnel exposure. Because personnel exposure is not a concern in this monitoring (mid-bank 1-2 or 2-3), the practice of minimizing exposure using the lowest feasible action level of 0.2 VSL is not necessary. If followed, this proposed approach does result in the exposure of filter bed 3 to agent vapor levels at or above 0.7 VSL for a period of at least 24 hrs; because of this exposure, changeout of this bank is included in the guidance. Regardless of the monitoring level associated with inter-bank monitoring (0.2 vs 0.7), the potential for some low-level exposure of the 3rd bank of carbon exists; increasing the level from 0.2 to 0.7 simply allows for greater operational confidence that carbon capacity is diminished, while still minimizing the exposure levels in the bank 2-3 interstitial space. Changing the action level from 0.2 VSL to 0.7 VSL has a negligible risk of a discharge of agent from the stack because there are still 3 carbon beds between the location where the agent is detected and the environment. Additional requirements (2-5) all prescribe movement of monitoring downstream; condition 5 includes a hard-stop to prevent the release of agent from the common stack.
• Revise the row describing monitoring of process parameters for	• Revision per Final Pilot Test Report

Summary of Proposed Revisions to the PCAPP RCRA RD&D Permit	
Proposed Revisions	**Rationale for Proposed Revision(s)**
"MK-M07-0007, 0008, 0009, 0010, 0011, 0012, 0013, 0014, 0015, 0017, AFA Filters" as follows: ▪ Replace "Plant" with "Plant management/technical support review for process knowledge" in "Roles and Responsibilities of Ops Staff" ▪ Replace "MK-M07-0007, 0008, 0009, 0010, 0011, 0012, 0013, 0014, 0015, 0017, AFA Filters" with "MK-M07-0011, 0016, AFA Filters" in "Equipment Number and Description" column ▪ Replace "Concentration of total hydrocarbons" with "Concentration of vinyl chloride" in "Operating Parameter" column ▪ Add "0-10 ppm" in the "Normal Operating Range" column ▪ Add "Photoacoustic Spectrometry Analyzer" in the "Method for Monitoring" column ▪ Add "Continuous" in the "Frequency of Monitoring" column ▪ Replace "Placeholder" with "25852-3TS-000-L0030 Pilot Test Final Report" in "Source of Operating Parameter or Permit Condition" ▪ Add "1" in "Response Level" column ▪ Add "N/A – operations performed from control room" in the "Required PPE" column	recommendations and subsequent discussions with CDPHE
List of References • Revise "Rev No." and "Issue Date" for documents that have been revised since 10 December 2019	
• Revise references to pilot testing: All systems • Revise references to 6 CCR 1007-3 §262 .34: none • Revise references to EDS and add references to SDCs and associated igloo storage: B02 • Remove completed compliance schedule items and references to completed compliance schedule items in Section I.J: none	
Attachment M, Corrosion Monitoring Plan ***(change pages included in Enclosure 20)***	
Revision 009 to include monitoring requirements for non-metallic soft parts of tank systems, and to remove UT scan locations that cannot be accessed by personnel in DPE suits	Per CDPHE request and to address inaccessible UT scan locations. The justification for revisions to the scan locations are presented in Enclosure 21.
Attachment N, Pilot Test Demonstration Plan	
Deletion of Attachment N, including the current Odor Monitoring Plan (these deleted pages are not included in "change pages")	Pilot Test Demonstration has been completed
Addition of the revised Odor Monitoring Plan to add western and southern routes and to update per results of pilot test experience with odor monitoring program	Revisions based on Pilot Test Demonstration results and on CDPHE Compliance Advisory. Revised *Odor Monitoring Plan* included in Enclosure 22.

Enclosure 2

Summary of the Level III Design Change Notices (DCNs)

Summary of the Level III Design Change Notices (DCNs)				
DCN/ ECP No.	**Title**	**Proposed Changes**	**Impacted Permit Sections**	**Rationale**
24852-RD-M6N-B09-M0063	Abandon in Place Dissolved Oxygen (DO) Probes and Transmitters from ICB Modules	To abandon in-place the currently installed DO probes in the ICB™ modules. Replace automated DO probe measurements with routine DO measurements using a hand-held DO probe.	Attachment E Attachment L, B09 Compliance Table	The data received from the currently installed DO probes is not representative; therefore, not useable. Data. obtained using hand-held probes will meet processing objectives.
24852-RD-M6N-B03-M0064	Modify MTU OTS Filter Efficiency Size	Replace the 100-micron MTU OTS filters with 800-micron filters.	None	No revisions incorporated into PMR 286 because the DCN will not be implemented as this time.
24852-RD-30N-B03-J0002	MTU Inlet and Outlet Air Flow Rate FAL and FALL Set Points	MTU inlet air flow rate of 150 scfm remains the same; however, the exhaust air outflow rate changes to 225 scfm from 250 scfm Instrument: B03-FALL-9308	Attachment L, B03 Compliance Table No change required to Section IV.D.4.f.iii inflow rate	Temporary Modification (24852-RD-TPMD-B03-SW0020) was used to evaluate and update control setpoints for MTU inlet air and outlet exhaust air flow rates.
24852-RD-M6N-B05-M0042	Replace MP-B05-0044 Sump Pump with a Polypropylene Pump	Replacement of current B05 sump pump (MP-B05-0044) with a smaller, lighter model, that meets the flow and head rating required for B05 system operations.	Attachment E, 24852-RD-M6-B05-M0025; Attachment L, B05 Compliance Table	The current pump model is large, heavy, and difficult to maintain in the MWS Room, where DPE suits are required for entry. The new pump design is smaller, lighter, and easier to maintain and replace.
24852-RD-M6N-B05-M0043	Replace Remaining Metallic A/B Sump Pumps with Polypropylene Pumps	Replacement of current B05 sump pumps (MP-B05-0040, -0045 thru -0050, -0052, -0065 and -0069) with a smaller, lighter model, that meets the flow and head rating required for B05 system operations.	Attachment E, 24852-RD-M6-B05-M0001 thru -M0004, and -M0021 thru -M0028; Attachment L, B05 Compliance Table	The current pump model is large, heavy, and difficult to maintain in the MWS Room, where DPE suits are required for entry. The new pump design is smaller,

Summary of the Level III Design Change Notices (DCNs)				
DCN/ ECP No.	**Title**	**Proposed Changes**	**Impacted Permit Sections**	**Rationale**
				lighter, and easier to maintain and replace.
24852-RD-M6N-B05-M0044	Replace Metallic Category C Sump Pumps with Polypropylene Pumps	Replacement of current B05 sump pumps (MP-B05-0051, -0053 thru -0064, -0070, 0074, and -0075) with a smaller, lighter model, that meets the flow and head rating required for B05 system operations.	Attachment E, 24852-RD-M6-B05-M0029 thru -M0036; Attachment L, B05 Compliance Table	The current pump model is large, heavy, and difficult to maintain in the MWS Room, where DPE suits are required for entry. The new pump design is smaller, lighter, and easier to maintain and replace.
24852-V1AN-AELE-0049s01c01	Replace Glovebox Tubing with Stainless Steel	Replacement of all carbon steel tubing, valves, and fittings inside the glovebox with stainless steel.	Attachment E, 24852-RD-M6-B04-M0023 and -M0024	The carbon steel has experienced pinholes due to corrosion. The stainless steel will be more resistant to corrosion and will protect against future equipment failures.
24852-RD-J0N-B03-J0001	MTU 1 Zone 1 & 2 Hi-Hi Temperature Alarms	Addition of RCRA Level 2 alarms: B03-TAHH-9310A-A, B03-TAHH-9310A-B. Removal of RCRA Level 2 alarms: B03-TAHH-9310A-C, A-D, A-E, A-F and B03-TAHH-9310B-A, B-B, B-C, B-D, B-E, B-F.	Attachment L, B03 Compliance Table	Alarms are being added because they were excluded in error from the original B03 Compliance Table. Alarms are being deleted because a belt failure does not pose a risk to the environment or personnel.
24852-30E-B03-00047	Make TPMD-B03-SW0025 Permanent	Addition of RCRA Level 2 alarms: B03-TAHH-9310A-A and B03-TAHH-9310A-B	Attachment L, B03 Compliance Table	Alarms are being added because they were excluded in error from the original B03 Compliance Table.
24852-RD-J0N-B09-J0001 24852-30E-B09-00044	Add RCRA Alarms for B09/B11 (24852-PCP-B09-00026) Add RCRA Alarms for B09-B11	Addition of RCRA Level 2 alarms: B09-LAHH-1311B, B09-LAHH-1436B, B09-LAHH-1466B, B09-LAHH-1496B, B09-LAHH-1513B, B11-TAHH-1724B and B11-TAHH-1782B.	Attachment L, B09/B11 Compliance Table	Alarms are being added because Operations needs audible RCRA alarm horn, HMI screen indicators and CON screen indicators.

Summary of the Level III Design Change Notices (DCNs)				
DCN/ ECP No.	**Title**	**Proposed Changes**	**Impacted Permit Sections**	**Rationale**
24852-RD-M6N-B04-M0113 24852-30E-M07-00024	Abandon Deep-Bed Carbon Filter Samplers Remove M07 Carbon Samplers	The deep-bed carbon filter samplers are being abandoned in place and the inlet/outlet isolation valves will be closed.	Currently in Attachment N, but upon approval of PMR 286, these Carbon Filter Samplers will no longer be included in the permit since Attachment N will be limited to the Odor Monitoring Plan	The process conditions of the carbon samplers are not representative of the installed carbon adsorption filters in terms of flow, temperature, relative humidity, and pressure.
24852-RD-M6N-B12-M0071	Eliminate B12 Response L1/L2 Alarms	Removes the following RCRA Level 1 parameters: B12-LAL/LALL-2120 and B12-LAL/LALL-2123. Suppresses RCRA Level 2 parameter: B12-FALL-1814	Attachment L, B12 Compliance Table	B12-LAL/LALL-2120 and B12-LAL/LALL-2123 are activated each time the sumps are emptied. Emptying the sumps is a normal operation and low levels are an expected condition. B12-FAL/FALL-1814 alarm when the Chevron sprays are active, creating a false positive alarm condition.
24852-RD-M6N-B12-M0087	Remove B12-TAL-TALL-1987 and B12-TAL-TALL-1990	Removes the following RCRA Level 1 parameters: B12-TAL-TALL-1987 and B12-TAL/TALL-1990	Attachment L, B12 Compliance Table	The system performs better when B12-TV-1987 and B12-TV-1990 are placed in Manual and 100% open. With the valves in Auto, these alarms are constantly active. This temperature does not have an adverse effect on the system.
24852-RD-M6N-B12-M0088	Investigate and Resolve Discrepancies Between Documentation and Implementation of B12-HS-2025 and	Revises the Setpoint Matrix, P&ID and Logic to reflect current implementation of B12 Distillate Carbon Filter Feed pH alarms.	Attachment E, 24852-RD-M6-B12-M0014	No software changes are required and RCRA alarms will not be impacted. The Setpoint Matrix will be updated to reflect the B12

Summary of the Level III Design Change Notices (DCNs)				
DCN/ ECP No.	**Title**	**Proposed Changes**	**Impacted Permit Sections**	**Rationale**
	Associated pH Indicators			Compliance Table.
24852-RD-M6N-B04-M0109	Bypass Hydrolysate Air Cooler ME-B04-00004	Install a line to bypass the Hydrolysate Air Cooler (ME-B04-0004). Uninstall, remove, or set aside sections of heat tracing to allow for mechanical work.	Attachment E, 24852-RD-M6-B04-M0016	During recirculation of MT-B04-0101, it was discovered that the cooler had plugging issues and it was restricting the flow of the recirculation line. The bypass line will provide for continued operation and segregate the cooler for maintenance.
24852-RD-30N-B20-J0005	Address NCR 352990 for B20 Off-Gas Loop Tuning	Adds a RCRA Level 3 alarm (B20-KQAH-2592) and removes the following RCRA Level 2 alarm: B20-AAHH-2592.	Attachment L, B20 Compliance Table	Operating the scrubber liquid at a pH greater than 10.5 did not harm the scrubber or downstream processes and was only established for tuning purposes.
24852-RD-M6N-J02-J0019	Add Low Volume Sampler in JA-J02-9438M	Addition of a low volume sampler to MINICAM cabinet JA-J02-9438M and recalibrates MINICAMS J02-AIT-9438 from ECL/VSL to IDLH.	Attachment D; Waste Analysis Plan, Appendix 4	Current VSL level for J02-AIT-9438 does not provide Waste Management with the appropriate confidence level for transportation of waste with agent concentrations up to 117 VSL, resulting in multiple SDU treatment cycles. The low volume sampler will reduce the number of SDU treatment cycles for contaminated waste and will provide a greater confidence level due to the increased span of the IDLH monitor.

Summary of the Level III Design Change Notices (DCNs)				
DCN/ ECP No.	**Title**	**Proposed Changes**	**Impacted Permit Sections**	**Rationale**
24852-RD-M6N-B04-M0115	B04-Agent/Water Interface Level Instrumentation	Replaces the DP level transmitter (B04-LIT-0961BA) with a new gauge pressure transmitter. Also, changes the low and low-low agent level values for B04-LAL/LALL-0961 and revises the calibration range of the head pressure transmitter (B04-PIT-0962).	Attachment L, B04 Compliance Table.	Transmitter B04-LIT-0961BA is no longer providing a good measurement and the upper instrument tap is inaccessible for service.
24852-RD-M6N-J02-J0022	Add Low Volume Sampler in JA-J02-3325M (24852-PCP-J02-00018)	Adds a low volume sampler to MINICAMS® cabinet JA-J02-3325M and recalibrates the MINICAMS® from ECL/VSL to IDLH	Attachment D, Waste Analysis Plan, Appendix 4	The current VSL/ECL room monitoring in TMA B does not permit removal of waste from the SDU with agent levels up to the shipping limit of 117 VSL. IDLH room monitors in TMA B provide the personnel monitoring required for more efficient waste handling operations.
24852-RD-M5N-B24-B0003	SDU Autoclave Waste Sort Guide Changes	Adds waste types, clarifies waste types or parameters, and/or adds references pertaining to processing of the following waste streams in the SDU and/or Autoclave: • Glass materials • Duct tape • Ethylene propylene diene monomer (EPDM) items • High density polyethylene (HDPE) items • Polyvinyl chloride (PVC) items • Wood items • Polyethylene items • Polyethylene terephthalate (PET) items • Chlorinated polyethylene (CPE) items • Kynar items • Lexan items • Nitrile items • Polypropylene items • Safety harnesses	Attachment D, Waste Analysis Plan • Table D-6-1 • Table D-8-1	Implementation of these revisions to the SDU and Autoclave waste sorting guide will provide more options for decontaminating agent-contaminated waste to meet offsite shipping requirements and Treatment, Storage, and Disposal Facility (TSDF) waste acceptance criteria.

Summary of the Level III Design Change Notices (DCNs)				
DCN/ ECP No.	**Title**	**Proposed Changes**	**Impacted Permit Sections**	**Rationale**
		• Tyvek items • Fluor elastomer (FKM) Viton™		
24852-RD-M6N-B12-M0097	Add spare BRS belt filter feed pump (24852-PCP-B12-00054)	Adds a spare BRS Belt Filter Feed Pump near the existing pump to function as an operational spare. • Removes RCRA Level 1 alarm for B12-PAL-2173 • Revise operating range for B12-PAL-2174 to >40 psig Add RCRA Level 1 alarms for the new pump (MP-B12-0008B, B12-PAL-2178 and B12-LAL-2180	Attachment E[2], 24852-RD-M6-B12-M0013, 24852-V10A-M000-0137s01, Attachment L, B12 Compliance Table	The addition of a spare pump at the BRS belt filter will increase availability. The design change is based on an analysis of the failure modes, work order history, and operational data.

Note:

1. The DCNs referenced in Enclosure 2 are included in the Supplemental Information folder on the CD provided with this permit modification request.
2. The drawings impacted by these DCNs are included in Attachment E; however, the drawings have not yet been revised to reflect the design change. When the drawings impacted by these DCNs are updated, the revisions will be addressed by a design summary permit modification request.
3. A previous DCN 24852-RD-M6N-B05-M0033, also for the replacement of sump pumps, was approved through PMR 182. A second DCN 24852-RD-M6N-B05-M0036 for sump pump replacement was identified as a Level II DCN, not requiring submittal of a separate permit modification request. The three Level III DCNs 24852-RD-M6N-B05-M0042, 24852-RD-M6N-B05-M0043, and 24852-RD-M6N-B05-M0044 included in this permit modification request, also describe the replacement of Spent Decontamination System sump pumps with smaller lighter models. Three sump pumps have been replaced to date. The sump pumps identified in the three DCNs included in Enclosure 2 will be replaced on an as-needed basis pursuant to the approval of this permit modification request.

4 DCN 24852-RD-M6N-B12-M0088 will result in the update of the drawing, 24852-RD-M6-B12-M0014, which is in Attachment E of the Permit. No software code changes are required by the design change, the data for the associated high, high high, low, and low low alarms continues to be collected, and the alarms are operating in accordance with permit conditions. When the drawing is updated, the revision will be addressed by a design summary permit modification request.

Enclosure 3

Proposed Revisions to the Introduction and the List of Permit Modifications

with changes depicted using “track changes”

Modification #289 – Effective Date: February 13, 2020

Class 1 modification titled, "Relocate Drained Munitions Weigh Station (DMWS) Scale," relocates the Munitions Treatment Unit (MTU) Drained Munitions Weigh Station (DMWS) scale to the top of each MTU at the existing mortar baseplate chutes. The munition cradle for each MTU is reconfigured to support vertical munition orientation placement by the robot.

Modification #290 – Effective Date: [insert date]

Class 2 modification titled "Repair of Manways on 30-day Hydrolysate Storage Tanks." The request addresses the use of a multi-purpose epoxy-based seal manufactured by Belzona® (or a Division-approved alternative) for the repair of manways on these tanks.

Modification #286 – Effective Date: [insert date]

Class 2 modification titled "Incorporation of Recommendations and Lessons Learned from Pilot Testing" that includes the following:

- Adds operational limits and monitoring requirements based on recommendations from pilot testing and the multiple pathway health risk assessment emissions modeling
- Incorporates design changes based on lessons-learned during pilot testing
- Increases the waste storage capacity in the Waste Laydown Yard, Dunnage Storage Area, and the Munitions Bodies Storage Area
- Revises the *Corrosion Monitoring Plan*, Attachment M, and the *Odor Monitoring Plan* (new Attachment N)
- Removes the *Pilot Test Demonstration Plan*, current Attachment N, and associated references
- Updates the Part A to increase the waste container storage capacity

Enclosure 4

Proposed Revisions to Part I

with changes depicted using “track changes”

I.F. SIGNATORY REQUIREMENT

All applications, reports, or information submitted to or requested by the Director, his designee, or authorized representative, shall be signed and certified in accordance with 6 CCR 1007-3 §100.44(a) and §100.42(k).

I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DIRECTOR

All reports, notifications, or other submissions which are required by this Permit to be sent or given to the Director should be communicated by telephone, electronic or digital communications (e.g., e-mail, text, facsimile), hand-delivered, or be sent by certified mail~~,~~ or overnight mail (e.g., Federal Express)~~, hand delivered or facsimile followed by certified mail~~ to:

Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
HMWMD-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

I.H. CONFIDENTIAL INFORMATION

In accordance with 6 CCR 1007-3 Part 2, Subpart B, the Permittees may claim as confidential any information required to be submitted by this Permit.

I.I. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittees must maintain at the facility, the following documents and all amendments, revisions and modifications to these documents:

I.I.1. This Permit and all approved modifications.

I.I.2. Waste Analysis Plan, as required by 6 CCR 1007-3 §264.13, and this Permit.

I.I.3. Inspection Plan and schedules, as required by 6 CCR 1007-3, §264.15(b)(2) and this Permit.

I.I.4. Personnel Training Plan, documents, and records, as required by 6 CCR 1007-3, §264.16(d) and this Permit.

I.I.5. Contingency Plan and following information, as required by 6 CCR 1007-3, §264.53(a) and this Permit.

I.I.5.a. A list of names, office addresses, and office~~home~~ telephone numbers of all current PCAPP Emergency Coordinators. The list and revisions to the list shall be submitted to the PCD Fire Chief within 14 days from the date the list was compiled or revised.

I.I.5.b. A list of the location of hazardous waste accumulation areas as defined by 6 CCR 1007-3 §262~~.34~~. The list shall be revised when a new hazardous waste accumulation area is established or removed from service. The list and revisions to the list shall be submitted to the PCD Fire Chief within 14 calendar days from the date the list was compiled or revised.

I.I.6. Operating Record, as required by 6 CCR 1007-3 §264.73 and this Permit.

I.I.7. Closure Plan, as required by 6 CCR 1007-3, §264,112(a) and this Permit.

I.I.8. A map delineating the buffer area that will exist between PCAPP and other areas of PCD.

I.I.6. As-built drawings submitted in accordance with Conditions I.E.16.a.~~and I.J.3.a~~., facility construction certification (FCC) and independent certification of facility modification (ICFM) information collected in accordance with Condition II.Q.2., and any other supporting records of construction. These “other supporting records of construction” need only be maintained at the facility until the certification of construction has been accepted by the Division.

I.I.7. A copy of the “Background Soils and Water Investigation” that was completed for the PCAPP site.

I.I.8. A copy of the completed HAZOPS for PCAPP.

I.I.9. All other documents required by Permit Condition I.E.9.

I.J. COMPLIANCE SCHEDULE

The Permittees must submit the following to the Director as specified and in accordance with the schedule set forth below unless the Director approves an alternate schedule:

I.J.1. Per Section I-4c in the Closure Plan, Attachment I of this Permit, the Closure Sampling and Analysis Plan (CSAP) must be submitted to CDPHE at least one year before the scheduled start of closure.~~Notwithstanding munition quantity estimates specified elsewhere in the permit, including in Attachment N documents, the Permittee shall not process more than 137,000 155-mm projectiles during pilot testing without Division concurrence.~~

I.J.2. At least 60 days prior to the scheduled initiation of 105 mm projectile MWS washout activities, submit a Washout Performance Validation Plan describing the process to identify the MWS parameters for the 105 mm projectiles (e.g., washout pressure, rotation during washout, washout time, maximum processing rate, and weight to be used at the MTU drained munitions weigh stations). After implementation of the Washout Performance Validation Plan, submit a Class 1 permit modification request (requiring prior authorization) to incorporate the MWS parameters for the 105 mm projectiles into the Permit.~~The Permittees shall complete pilot testing described in Attachment N of the permit by May 31, 2019 unless the Division authorizes an extension beyond this date. Upon completion, the Permittees shall notify the Division that pilot testing is complete.~~

I.J.3. ~~Other~~

~~I.J.3.a. Except for the B14 system, as-built construction drawings of the Phase III construction activities in Attachment E to this Permit respectively, within thirty (30) days of completing final construction activities for each phase of construction, or in accordance with an alternate schedule approved by the Director in writing. For the B14 system, as-built construction drawings of the B14 system Phase III construction activities in Attachment E to this Permit, within thirty (30) days of completing final construction activities for the B14 system, or in accordance with an alternate schedule approved by the Director in writing.~~

~~I.J.3.b. Letter(s), no later than 15 days after each of the submittals described in Permit Condition I.J.3.a, signed by the Permittees and an Independent Colorado-Registered Professional Engineer stating the facility has been constructed in compliance with the Permit.~~

~~I.J.3.c. Letter(s), no later than 45 days after each of the postings described in Permit Condition II.Q.2, signed by the Permittees stating the subject portion of facility has been constructed in compliance with the Permit. The letter(s) shall also formally submit the FCC packages described in Permit Condition II.Q.2, and posted to the SharePoint® site. The Permittees may propose and use an alternative schedule for submittal of any letter(s) and FCC packages addressed by this condition provided Division concurrence is obtained. With the exception of the B14 system lining system FCC package, all FCC packages shall be submitted to the Division at least 90 days prior to pilot testing and within 30 days of receiving Division acceptance of all of these FCC packages, PCAPP will complete and submit the over-all facility certification required in Condition I.E.16. Within 30 days of receiving Division acceptance of the lining system FCC package, PCAPP will complete and submit the B14 system facility certification required in Condition I.E.17.~~

~~I.J.3.d. Reserved~~

~~I.J.3.e. In the event another unit of the B12 Feed Preheater fails, the unit will be replaced to preserve design capacity and BRS throughput to avoid upstream impacts.~~

~~I.J.3.f. At the conclusion of the 155mm campaign and before the 105mmcampaign begins, the Permittees will install the new OTS Scrubber AL-6XN alloy heat exchanger (recirculation cooler) in place of the existing unit and provide FCC Certification for the installation.~~

Enclosure 5

Proposed Revisions to Part II

with changes depicted using “track changes”

PART II: GENERAL FACILITY CONDITIONS

II.A. DESIGN AND OPERATION OF FACILITY

The Permittees must construct, maintain and operate the Research, Demonstration, and Development facility to minimize the possibility of a fire, explosion, or any unplanned, sudden or non-sudden release of hazardous waste constituents to air, soil, surface water, or ground water which could threaten human health or the environment, as required by 6 CCR 1007-3, §264.31.

II.B PROHIBITION OF RECEIPT OF HAZARDOUS WASTE FROM OFF-SITE

The Permittees are prohibited from receiving hazardous waste from off-site sources.

The Permittees, as large quantity generators, can receive hazardous waste from a very small quantity generator under the control of the PCAPP to facilitate cost-effective management of hazardous wastes in accordance with 6 CCR 1007-3 Section 262.14(a)(5)(viii).

II.C GENERAL WASTE ANALYSIS

During hazardous waste operations the Permittees must follow the waste analysis procedures required by 6 CCR 1007-3, § 264.13 and the PCAPP Waste Analysis Plan (WAP), Attachment D to this Permit. The WAP includes the PCAPP Laboratory Analytical Methods and Operating Procedures referenced in Table D-8-1 of the WAP and the following documents which are contained in the Appendices to Attachment D of this Permit:

- Appendix 1: Laboratory Analysis and Monitoring Plan
- Appendix 2: Laboratory Quality Control Plan
- Appendix 3: Brine Reduction System (BRS) Recovered Water Sampling and Analysis Plan.
- Appendix 4: Monitoring Locations Table (LAMP Appendix A)

II.C.1. The Permittees shall maintain a copy of the WAP at the facility (6 CCR 1007-3, §264.13(b)).

II.C.2. For changes to the WAP classified as self-implementing Class 1 modifications, an electronic copy of the Class 1 modification (including the revised plan, procedure, or method and identification of the changes) will be submitted to the Director within 7 days of implementation. Additionally, the Permittees must follow the public notification requirements of 6 CCR 1007-3, §100.63(a).

II.D.2. During hazardous waste operations, the Permittees shall control entry at all times through fences, gates, doors, or other entrances to the active portion of the PCAPP Facility. [6 CCR 1007-3 §264.14(b)]

II.D.3. The Permittees shall construct and maintain a fence, which consists of at least a six-foot chain link fence topped with barbed wire, surrounding the chemical limited area of the PCAPP Facility. [6 CCR 1007-3 §264.14(b)]

II.D.4. Prior to operating any permitted hazardous waste management units at PCAPP, the Permittees shall post and maintain warning signs at the PCAPP entry gates and at intervals along the northern, eastern, and southern portions of the PCAPP perimeter fence surrounding the chemical limited area (CLA) of the facility. For all hazardous waste management units, the Permittees shall post and maintain warning signs at locations and in sufficient numbers to be seen from any approach to the units. Unless different sign content is approved by the Director, the signs shall read "Danger – Unauthorized Personnel Keep Out," or "Warning! – Restricted Area – Use of Deadly Force Authorized", shall be legible from a distance of at least 25 feet and shall be in English and Spanish. [6 CCR 1007-3 §264.14(c)]

II.E. GENERAL INSPECTION REQUIREMENTS

II.E.1. During hazardous waste operations the Permittees must comply with inspection procedures required by 6 CCR 1007-3, §264.15, §264.174, §264.195, §264.601, §264.1101, and as described in the Corrosion Monitoring Plan (Attachment M), ~~the Pilot-Test Demonstration Plan (Attachment N),~~ and the PCAPP Inspection Plan (Attachment K) to this Permit.

II.E.2. The Permittees must record the date and time of the inspection and all inspection observations on the appropriate Inspection Checklist provided in Attachment K. The Permittees must require inspectors to sign or print their names on each hardcopy of the Inspection Checklist after indicating the status of the items inspected. The Permittees must require inspectors to electronically sign their names on each computer generated and maintained Inspection Checklist after indicating the status of the items inspected. ~~Items not inspected must be marked "NI" on the Inspection Checklist.~~ Inspectors will sign and clearly define sections of the inspection that they performed, if different inspectors complete sections of an inspection. Computer generated inspection checklists will clearly indicate units and areas within units inspected, as well as Inspection Checklist page numbers. Records of the inspections must be kept for at least three years from the date of inspection. [6 CCR 1007-3, §264.15(d)]

II.E.3. ~~If a deficiency can be and is corrected within the shift in which it is detected, the deficiency and correction must be noted and documented on the Inspection~~

~~Form. If the deficiency cannot be corrected within the shift in which it is detected, a written corrective action report shall be filed with the original Inspection Checklist on which an item was first noted as requiring correction. An example of a Corrective Action Report is included in Permit~~ Required actions and documentation for deficiencies corrected within and after the shift are defined in the Inspection Plan, Attachment K. [6 CCR 1007-3 §264.15(c)]

II.E.4. The Permittees shall remedy any deterioration or malfunction of equipment or structures identified during the inspection within the timeframes identified in Section K-2b of the Inspection Plan, Attachment K.~~fourteen (14) calendar days after the inspection in which the problem is first identified, except as provided in Conditions I.E.6 and 7 of this Permit.~~ [6 CCR 1007-3 §264.15(c)]

II.E.5. The Permittees shall immediately initiate remedial actions to remedy any health or safety hazards and actual or imminent releases from the Facility into the environment of solid or hazardous wastes, hazardous waste constituents, potentially contaminated runoff, or precipitation runoff which has contacted solid or hazardous waste. Remedial action must be completed within twenty-four (24) hours after the problem is identified. [6 CCR 1007-3 §264.15(c)]

II.E.6. During the time prior to completion of final remedial actions, the Permittees shall implement interim mitigation measures to prevent or minimize continuing deterioration of structures or equipment, safety hazards, or releases of wastes.

II.F. PERSONNEL TRAINING

II.F.1. During hazardous waste operations, the Permittees shall conduct personnel training as required by 6 CCR 1007-3, §264.16 and as described in the Personnel Training Plan, Attachment H. Original written copies of training records maintained in the off-site Training Department building will be furnished to CDPHE upon request within a reasonable time for inspection by CDPHE personnel. "Reasonable time" means before the CDPHE inspectors complete their inspection.

II.F.2. The Permittees shall maintain the ability to retrieve (electronically) within a reasonable time the following documents at the PCAPP facility:

II.F.2.a The job titles for positions related to hazardous waste management.
II.F.2.b Employee records that link the names of the employees filling the positions related to hazardous waste management to the job titles.

II.F.2.c The job descriptions for the job titles for positions listed in the Personnel Training Plan, Attachment H. The description may be consistent in its In addition to the recordkeeping and reporting requirements specified elsewhere in the Permit, the Permittees must comply with the following:

II.L.1. The Permittees must comply with the biennial reporting requirements of 6 CCR 1007-3, §264.75, except as described in Section I-5g(9) of the Closure Plan, Attachment I.

II.L.2. Waste Minimization

II.L.2.a. The Permittees must maintain a written program to reduce the volume or quantity and toxicity of hazardous waste generated by the Permittees to the maximum degree determined by the Permittees to be economically practicable, and use treatment, storage, or disposal methods currently available to the Permittees which minimize the present and future threat to human health and the environment. A copy of the waste minimization program will be maintained at the Facility as part of the Operating Record. [6 CCR 1007-3 §264.73(b)(9)]

II.L.2.b. The Permittees must certify annually in the Operating Record that the above described waste minimization practices are being implemented at the Facility. The certification shall be submitted to the Department by December 31 of each year.

II.L.3. The Permittees must also report to the Department:

II.L.3.a. Releases, fires, and explosions as specified in this Permit and 6 CCR 1007-3 §264.56(j).

II.L.3.b. Facility closures as specified in this Permit and 6 CCR 1007-3 §264.115.

II.L.3.c. All reports otherwise required by 6 CCR 1007-3 §264 Subparts AA, BB, and CC.

II.L.3.d. Annual report information for the purpose of assessing facility annual fees in accordance with 6 CCR 1007-3 §100.31. [6 CCR 1007-3, §264.77]

II.M. CLOSURE REQUIREMENTS

II.M.1. The Permittees must close the Facility, as required by 6 CCR 1007-3, Subpart G, and in accordance with the Closure Plan, Attachment I, and comply with the following:

II.M.2. The Permittees must amend the Closure Plan whenever necessary, in accordance with 6 CCR 1007-3 §264.112(c), following the modification procedures in 6 CCR 1007-3 §100.63.

II.M.3. The Permittees must notify the Director in writing at least 60 days prior to the date on which they expect to begin closure of the treatment containment buildings. The Permittees must notify the Director in writing at least 45 days prior to the date on which they expect to begin closure of a tank or container storage unit. The Permittees must notify the Director in writing at least 30 days prior to the date on which they expect to begin closure of any piece of equipment.

II.M.4. After receiving the final volume of hazardous waste, the Permittee must treat or remove from each unit or the Facility all hazardous waste, and must complete closure activities in accordance with 6 CCR 1007-3 §264.113 and the schedules specified in the Closure Plan, Attachment I. Partial closures must follow the time frames set forth in 6 CCR 1007-3 Subpart G and the Closure Plan, Attachment I.

II.M.5. The Permittees must decontaminate or dispose of all contaminated equipment, structures, and soils, as required by 6 CCR 1007-3 §264.114 and the Closure Plan, Attachment I.

II.M.6. The Permittees and an independent, qualified, Colorado Registered Professional Engineer must certify that the Facility has been closed in accordance with the specifications in the approved Closure Plan, Attachment I and as required by 6 CCR 1007-3 §264.115.

II.N. LAND DISPOSAL RESTRICTIONS

The Permittees must comply with all applicable requirements of 6 CCR 1007-3, Part 268. Compliance includes but is not limited to the following:

II.N.1. The hazardous waste storage prohibitions specified in 6 CCR 1007-3, Part 268, Subpart E.

II.N.1.a. Overpacked leaking munitions, or overpacked munitions that cannot be processed normally (rejects) at the PCAPP facility maybe sent directly to the Static Detonation Chambers (SDCs) ~~Explosive Destruction System (EDS)~~ for processing or stored at H Block Igloo 1102, igloos G101, G102, or G103, or stored at the Pueblo Chemical Depot permitted G Block Igloos prior to treatment in a~~the~~ SDC~~EDS~~. Intact, non-leaking, palletized rounds from PCAPP may be sent directly to the ~~EDS~~ SDCs or transferred to the H Block Igloo 1102, igloos G101, G102, or G103 prior to treatment. All intact, non-leaking, palletized rounds transferred to H Block Igloo 1102 or sent directly to the ~~EDS~~ SDCs will be on Overpacked Pallets (OPP) with attached covers.

II.N.1.b. ~~Leaking munitions or munitions that cannot be processed normally(rejects) at PCAPP must be treated in the EDS within one (1) year from the date placed into storage. This includes the intact, non-leaking, palletized rounds.~~

II.N.2. The marking requirements for owners and operators specified in 6 CCR 1007-3, § 268.50(a)(2).

The Permittees must not treat or ship off-site any land disposal restricted hazardous waste until the generator of the waste provides the Permittees with all applicable notification and certifications specified in 6 CCR 1007-3, § Section 268.7(a).

II.O. PUBLIC INVOLVEMENT REQUIREMENTS

The Permittees shall maintain a public involvement program to inform the public regarding regulatory and technical matters related to the permitted facility, to provide a mechanism for the public to obtain information about the permitted facility, and to accept and respond to comments or concerns voiced by the public regarding the permitted facility. The public involvement program shall provide for the following activities in accordance with the schedule set forth below;

II.O.1. Maintain information repositories at the locations specified under Permit Conditions II.O.1.a., II.O.1.b and II.O.1.c. The information repositories must contain all documents, reports, data, and information deemed necessary by the Director to inform the public about the permitted facility. The Permittees will make permitting documents available in the information repositories within 15 days of a written request made by the Director to include such document. The Permittees may change the location of any information repository with the approval of the Director and in accordance with the procedures for modification of permits 6 CCR 1007-3 §100.60. Modification of the location for an information repository shall be considered a Class I Modification with prior written approval from the Director.

II.O.1.a. Robert Hoag Rawlings Public Library
100 East Abriendo Avenue
Pueblo, CO 81004

II.O.1.b. McHarg Community Center
405 2nd Street
Avondale, CO 81022

II.O.1.c. Boone Town Hall~~Community Center~~
421 East 1st Street
Boone, CO 81025

II.O.2. Participate in meetings at least quarterly with the Director to assess the effectiveness of public involvement activities in achieving the objectives of the Colorado Department of Public Health and Environment Public Involvement Plan and to share information regarding any comments or concerns received from the public regarding the permitted facility.

II.O.3. Submit a report at least monthly, summarizing any public involvement activities related to the permitted facility. The report must be submitted to the Director either by mail or electronic mail and include the following:

II.O.3.a. Identification and description of any public involvement events or activities related to the permitted facility attended, provided, or participated on by the Permittees;

II.O.3.b. Identification and description of any upcoming public involvement events or activities related to the permitted facility that the Permittees plan on attending, providing, or participating on; and

II.O.3.c Any other information regarding the Permittees' public involvement events or activities related to the permitted facility deemed necessary by the Director.

II.O.4. Except in case of an emergency, or in matters regarding enforcement of this Permit, any Party issuing a press release or initiating media contact for the purpose of providing information to the media with reference to any permitted activities, including corrective actions, shall advise the other Party of such press release or media contact and the contents thereof, at least two (2) days prior to issuance. Other documents prepared by the Permittees for community involvement purposes related to this Permit, or documents prepared by the Director for community involvement purposes related to this Permit, shall be submitted to the other Party for review and comment at least two days in advance of issuance, unless otherwise agreed to.

The Director will review, evaluate, and comment upon informational material (such as fact sheets, information updates, and newsletters) pertaining to any permitted activities, including corrective actions, prepared to support community involvement activities. The Permittees shall submit the informational material in electronic format or hard copy to the Director for review and comment at least seven days in advance of issuance, unless otherwise agreed to. Technical assistance in the preparation of such materials will be available from the Director as resources permit.

II.O.5. When feasible, the Director shall receive notification seven days prior to any community meetings scheduled as part of the Permittees' community involvement efforts pertaining to any permitted activities, including corrective actions.

II.P RESERVED~~PILOT TEST PLAN~~

~~During hazardous waste operations, the Permittees shall comply with the requirements specified in the Pilot-Test Plan (Attachment N) of this Permit. [6 CCR 1007-3, §100.22]~~

II.Q FACILITY CONSTRUCTION CERTIFICATION

~~During construction of PCAPP under this permit t~~The Permittees will maintain a facility construction certification (FCC) program to ensure that construction of the RCRA regulated portions of the facility meets or exceeds the design criteria and specifications. During operations of the PCAPP facility under this Permit, the Permittees will maintain an independent certification of facility modifications (ICFM) program to ensure that repairs and modifications to the RCRA-regulated portions of the facility meet or exceed the design criteria and specifications. For this condition, the regulated facilities include the RCRA structures and equipment depicted on the drawings listed in Attachment E (i.e., those drawings that require an as-built).. ~~(i.e. those drawings listed that require an as-built generated per Condition I.J.3.a).~~

II.Q.1. The scope of the FCC program shall include the criteria identified in the inspection matrices developed and used by the Independent Colorado-Registered Professional Engineer ~~in satisfaction of permit Condition I.J.3.b~~. The inspection matrices shall be approved by the Division and all changes and revisions will be coordinated with the Division for approval.

II.Q.2. At the conclusion of each FCC task, a completed FCC package shall be assembled. The FCC package shall include a summary and also a matrix and certifying letter ~~both~~ signed by an independent, qualified registered Colorado professional engineer. The FCC package shall be posted on the SharePoint® site for CDPHE review. ~~The FCC packages shall also be formally submitted in accordance with I.J.3.c.~~

At the conclusion of each ICFM task, a completed ICFM package shall be assembled. The ICFM package shall include reference documents and a certifying letter signed by an independent, qualified registered Colorado professional engineer. A matrix may be provided for more complicated tasks. The ICFM package shall be submitted to CDPHE by the independent, registered Colorado professional engineer for review and acceptance.

II.Q.2.a. No later than 45 days after each of the postings described in Permit Condition II.Q.2, a certifying letter signed by the Permittees stating the subject portion of facility has been constructed, repaired, or modified in compliance with the Permit. The letter(s) shall also formally submit the facility construction certification (FCC) and independent certification of facility modification (ICFM) packages described in Permit Condition II.Q.2 and posted to the SharePoint® site. The Permittees may propose and use an alternative schedule for submittal of any letter(s) and FCC or ICFM packages addressed by this condition provided Division concurrence is obtained.

II.Q.2.b. For RCRA tanks and ~~BRS M~~miscellaneous ~~U~~units, the FCC package shall include a written assessment reviewed and certified by an independent, qualified registered Colorado professional engineer or by an independent qualified tank installation inspector attesting that each of the tanks or miscellaneous units has been installed in accordance with 6 CCR 1007-3, §264.192. If determined applicable via condition II.Q.1, the FCC task shall include, but not be limited to, the evaluation of the following: specifications and drawings (inclusive of references to codes, standards and applicable specifications); inspection records; photographs; testing records; audit and surveillance reports; supplier quality data and acceptance certificates; materials certifications; design changes; and non-conformance and corrective action documentation.

II.Q.3. ICFM (third party independent certification) packages for repairs and modifications to the RCRA-regulated portions of the PCAPP facility shall include a written assessment reviewed and certified by an independent, qualified registered Colorado professional engineer, or for tanks and miscellaneous units, by an independent qualified registered Colorado professional engineer or by an independent qualified tank installation inspector attesting that each of the tanks or miscellaneous units has been repaired or modified in accordance with 6 CCR 1007-3, §264.192. Depending upon the nature of the repairs and modifications, the ICFM packages shall include an evaluation, which may include specifications and drawings (inclusive of references to codes, standards and applicable specifications); inspection records; photographs; testing records; audit and surveillance reports; supplier quality data and acceptance certificates;

materials certifications; design changes; and non-conformance and corrective action documentation. ~~The Permittees shall provide an FCC Completion Schedule to the Division in September 2013. This schedule will identify FCC packages and the date each has been, or will be, posted on the SharePoint® site.~~

~~II.Q.4. The Permittees shall provide the Division with weekly status updates of the FCC Completion Schedule. If milestone dates associated with posting to the SharePoint® site require adjustment, the proposed adjustments will be addressed in these updates. These updates will be done through informal written notification (e.g., e-mail). For PCAPP to move a posting milestone to a later date, Division concurrence will be necessary.~~

II.Q.4~~5~~. The FCC and ICFM information identified in Conditions II.Q.1 through~~and~~ II.Q.4~~2~~ will be maintained onsite and will be available for inspection by Division personnel until site closure is certified.

Enclosure 6

Proposed Revisions to Part III,

with changes depicted using “track changes”

III.A.3. Brine Concentrator Feed Tanks - The Brine Concentrator Feed Tanks (BCF) are generally constructed as described below. The BCF Tanks consist of three (3) field-erected, welded-construction, above ground tanks that store effluent from the ICBs, blow down streams from the cooling tower, steam boiler, and reverse osmosis units, and brine recycle from the BRS. The tanks are made of epoxy coated carbon steel with a 1/8 inch corrosion allowance. The materials of construction of the six-inch and smaller nozzles on these tanks are either stainless steel or carbon steel and are lined with fiber reinforced plastic (FRP). Two (2) centrifugal pumps will serve to move liquids as recirculation and from the brine concentrator feed tanks to the Brine Reduction System (BRS). ~~at 225 gpm.~~ The BCF Tanks are supported by a 30 inch thick cast-concrete steel-reinforced slab on grade with supporting concrete tank pads designed to drain liquids from under the tanks. The BCF Tank supporting slab was designed considering dead, live, seismic, and wind and snow loads per applicable design codes and standards. Steel-reinforced concrete walls provide the required secondary containment with interior concrete surfaces to be coated per coating specifications. Liquids in the sumps shall be characterized in accordance with the Waste Analysis Plan, Attachment D, and the sumps shall be drained in accordance with PCAPP procedures, the Hazard Preparedness and Prevention Plan, Attachment J, and the Operations Plan, Attachment L. The requirements specified in the Corrosion Monitoring Plan for Resource Conservation and Recovery Act (RCRA) Tank Systems (24852-RD-30G-000-V0001) shall be followed for all regulated tanks. The BCF Tanks will be aerated to prevent septic conditions. In addition, each BCF Tank will have an internal coarse bubble air diffuser array.

The BCF Tanks are vented via a common manifold and routed to an off-gas heater to control humidity and then to a carbon filtration system before discharge to the atmosphere. The carbon filtration system includes two (2) activated carbon filters designed to be operated in series.

Ancillary piping transfers ICB™ effluent to the BCF Tanks and transfers brine from these tanks to the BRS. Ancillary piping not located within a secondary containment system is constructed in accordance with the same requirements applicable to the piping that is associated with the 30 Day Hydrolysate Storage Tanks and located outside secondary containment.

III.B.3.c. The Permittees shall not place ignitable or reactive wastes into the Brine Concentrator feed tanks or BTA.

III.B.3.d Reserved

III.B.4. The ~~ICB™ effluent carbon steel discharge~~ hydrolysate (K903) piping may be flushed with process water, citric acid, methane sulfonic acid (MSA) solution, or equivalent, when necessary. The flushed K903 waste may be stored in secondary containment until the flushing activity is complete. Upon completion of the flushing activity, the K903 waste shall be re-introduced into a permitted tank system, transferred to a permitted storage area, or direct-shipped offsite for disposition at a TSDF. ~~shall be periodically flushed with process water to prevent accumulation of biological and other solids in the piping. The ICB™ effluent discharge piping for each module will be flushed through to the Brine Concentrator Feed Tanks. Flushing shall be for a minimum of 15 minutes through a 2.0-inch flange connection one ICB™ [four (4) tank] module at a time. Initial flushing frequency shall be monthly and remain monthly unless corrosion testing and the calculated Remaining Service Life [Section 5.5 of the Corrosion Monitoring Plan for RCRA Tank Systems (24852-RD-30G-000-V0001)] is greater than 10 years, then the flushing frequency may be extended, with Division concurrence, to a frequency that does not result in a calculated Remaining Service Life less than (<) 10 years.~~

III.B.5. Brine Reduction System

III.B.5.a. The following wastes are approved for management in the Brine Reduction System:

Table III.B.5.a.		
System	**Waste Feed to BRS**	**Applicable Waste Codes for the BRS**
Brine Reduction System	Waste from Brine Concentrator Feed Tanks	K903, D002, D004-D011, D022, D028, D029, D034, D039, D040, D043

III.C. SECONDARY CONTAINMENT

III.C.1. The Permittees shall operate the secondary containment system for each tank and/or tank system in accordance with 6 CCR 1007-3 §264.193 and the terms and conditions of this Permit.

III.C.2. The concrete containment systems underlying the 30-day Hydrolysate Storage Tanks, the BTA Tanks, the Brine Concentrator Feed Tanks, and the BRS tanks and miscellaneous treatment units shall be maintained to allow sufficient capacity to contain at least the volume of the largest tank plus the 25-year, 24-hour storm event. In order to meet this requirement, the secondary containment for the 30-day Hydrolysate Storage Tanks shall be a minimum of 374,688 gallons. In order to meet this requirement, the secondary containment for each BTA area shall be a minimum of 86,085 gallons. In order to meet this requirement, the secondary containment for the Brine Concentrator Feed Tanks shall be a minimum of 612,803 gallons. In order to meet this requirement, the secondary containment for the BRS shall be a minimum of 31,775 gallons.

III.C.4. The Permittees shall comply with the requirements of 6 CCR 1007-3 §264.193 for ancillary equipment of all tank systems, including requirement §264.193(c)(3). The leak detection system used in the lined sump in the BRS filter building is an Echotel® Model 961 Ultrasonic Single Point Liquid Level Switch (Level Switch Model No. 961-7DA0-030, Level Transducer Model No. 9A1-R11A-066, and Remote Electronics Cable Model #037-3316-006) manufactured by Magnetrol®. Replacement equipment shall be equivalent equipment to that installed and described in Permit Modification #60.

The leak detection system for the 30-day Hydrolysate Storage Tank and the Brine Concentrator Feed Tanks will be the TraceTek® TT3000 system or equivalent leak-detection system as approved by the Director, with the sensing cables installed under each of the aforementioned tanks. The TT3000 sensing cables will be installed as depicted in permit drawing 24852-RD-J8-J00-J0309. Specifically, ten cables will be installed per tank including two installed spares, with no less than one spare available at all times. The ten cables will be evenly spaced around each tank pad to the maximum extent possible." The cable in each selected groove will run the entire length of the selected groove. The location and length of each installed cable under each tank will be recorded and used in the configuration of the TraceTek® monitoring system. Each cable's output will be wired to the Facility Control System (FCS) and provide near real-time, continuous monitoring of leaks that may occur from under the tanks. Alarm events and subsequent response actions (including laboratory analytical results) will be documented and maintained in the facility operating record.

In the event of an alarm condition, or a visible indication of a leak in the monitored area, the Permittee shall remove and reinstall the TraceTek® sensing cable as required to confirm the positive indication of alarm. If a tank system release is confirmed, air monitoring for odor shall be performed in accordance with the Odor Monitoring Plan, Attachment N. A liquid sample will be obtained and analyzed to identify the collected material (e.g.., determine if it is hydrolysate or water).

Liquid samples obtained from the 30-day Hydrolysate Storage Tank secondary containment will be analyzed for thiodiglycol (TDG) to identify the collected material (e.g., determine if it is hydrolysate or water).

- If the concentration of TDG in the liquid collected from the 30-day Hydrolysate Storage Tanks' secondary containment is <1 mg/l the leak is refuted, and normal operations may resume. If the leak is refuted and the alarm continues, a sample will be collected every four (4) hours, if liquid is available, for four days. If the leak has been refuted after two (2) consecutive sample results and the alarm remains active, the Permittees will consider design changes or other options to address the problem.

- If the concentration of TDG in the liquid collected from the 30-day Hydrolysate Storage Tanks' secondary containment is ≥ 1 mg/l and <10 mg/l a potential leak is confirmed. The tank system will be further investigated until the cause of the alarm is found.

- If the concentration of TDG in the liquid collected from the 30-day Hydrolysate Storage Tanks is ≥10 mg/l the leak is confirmed. Transfer of the tank contents to an available tank will be initiated within 24 hours of the sample confirmation. The tank will then be removed from service while necessary investigations and maintenance are performed prior to returning the tank to service.

Liquid samples from the BCFT or the BRS sump secondary containment will be analyzed for concentrations of OX and DT to identify the collected liquid. If the concentrations of OX and DT in liquid from the BCFT or the BRS sump secondary containment are below the analyte reporting limit the leak is refuted, and normal operations may resume. If the leak is refuted and the alarm continues, a sample will be collected every four (4) hours if liquid is available as long as the alarm stays on. If alarm is still on after four days, the tank system will be further investigated until the cause of the alarm is found for a path forward.

- If the concentrations of OX and DT (from the BCFT or the BRS sump secondary containment) are greater than the analyte reporting limits but < 3 mg/l a potential leak is identified. The tank system will be further investigated until the cause of the alarm is found.

- If the concentrations of OX and DT (from the BCFT or the BRS sump secondary containment) are ≥3 mg/l the leak is confirmed. Transfer of the tank contents to an available tank will be initiated within 24 hours of the sample confirmation. The tank will then be removed from service and further investigations and maintenance will be performed to return the tank to service.

~~site personnel will follow the actions and procedures outlined in the TraceTek and H2Obvious Leak Detection Alarm Response (24852-OPS-OAP-W0031).~~

The leak detection system for the main BRS sump will be the TraceTek® TT3000 with the sensing cable extending around the circumference of the tank, or equivalent leak-detection system as approved by the Director. A loose layer of geo-composite material will be placed between the baseplate of the BRS Sump Tank and the coated sump surface to enable migration of any leaks that may occur from the bottom of the tank.

III.C.5. All spills or leaks at the permitted tank storage units must be cleaned up within 24 hours of detecting. Any removed material from the collection systems must be characterized, and if hazardous waste, managed appropriately (i.e. recycled, stored, treated or disposed of according to this Permit, or shipped off-site to a designated hazardous waste facility).

III.C.6. The main BRS sump will be equipped with a steel cover plate to prevent the accumulation of precipitation. The sump cover shall be equipped with at least three hatches that can be opened so that the sides of the BRS Sump Tank and the areas of the sump around the BRS Sump Tank, including the southwest and southeast sump corners, can be observed during inspections including those conducted in accordance with the Inspection Plan, Attachment K of this Permit. The main BRS sump shall also be accessible for the removal of any liquids that may accumulate in the sump. Liquids in the sump shall be removed within 24 hours of detection.

III.D. DESIGN AND CONSTRUCTION STANDARDS

The Permittees shall ensure that the foundation, structural support, seams, connections, and pressure controls shall be adequately designed. The Permittees shall also ensure that the tank system has sufficient structural strength, waste compatibility, and corrosion protection that it will not collapse, rupture or fail. [6 CCR 1007-3 §264.192]

III.D.1. Design Standard for Tanks and Ancillary Equipment

The Permittees shall obtain a written assessment, reviewed and certified by an independent, qualified professional engineer registered in Colorado, pursuant to 6 CCR 1007-3 §264.192, attesting that the tank system has sufficient structural integrity and is acceptable for the storing of the hazardous waste to be placed in the tank system.

III.D.2. Pursuant to 6 CCR 1007-3 §264.192, the Permittees shall ensure that the written assessment includes at a minimum, the results of the inspections of the following information:

III.D.2.a. All design standards for the construction of the tanks;

nstances when conditions prevent observation and recording of the level float indicator results. In accordance with the Inspection Plan, Attachment K of this Permit, the inspection records of the H_2Obvious™ leak detection devices shall be maintained as part of the Operating Record.

Starting in April 2016, a minimum of 40% of the 229 installed H_2Obvious™ encapsulated vials shall be replaced and a minimum of 20% of the vials shall be replaced annually thereafter until which time the piping no longer transfers hazardous waste. The removed H_2Obvious™ encapsulated vials will be tested for functionality (i.e., confirm that LED lamp lights and float rises when water is introduced into the vial). If 10% or greater of the removed H_2Obvious™ encapsulated vials do not function when tested then another 20% of the installed H_2Obvious™ encapsulated vials shall be removed and tested. If 10% or greater of these vials do not function when tested then all remaining H_2Obvious™ encapsulated vials shall be replaced unless an alternative to replacement is approved by the Director. Under no circumstance shall any vial remain in service for more than 5 years. The replacement and testing of the H_2Obvious™ encapsulated vials shall be performed in accordance with a Job Plan PMM-A-000-015.

In the event that either the LED or level float alarm condition is activated upstream of the ICB™ influent tanks, PCAPP personnel shall unthread the H_2Obvious™ encapsulated vial and test the liquid to identify the collected material (i.e., determine if it is hydrolysate or water). If the concentration of TDG in the liquid is $\geq$ 10 mg/l, then a leak is confirmed. The pipe will be taken out of service until the location of the leak is identified and the necessary repairs have been completed.

If the concentration of TDG in the liquid is $<$1 mg/l the sensor will be replaced and normal operations may continue.

If the concentration of TDG in the liquid is $\geq$ 1 mg/l and $<$ 10 mg/l, the pipe will be left in service while further investigation is conducted.

In the event that the LED or level float alarm condition is activated downstream of the ICB™ effluent tanks, Permittees shall unthread the H_2Obvious™ encapsulated vial and analyze the liquid for OX and DT to identify the collected material (e.g., determine if it is hydrolysate or water).

- If the concentrations of OX and DT in the liquid (downstream of the ICB™ effluent tanks) are ≥ 3 mg/l, then a leak is confirmed. The pipe will be taken out of service until the location of the leak is identified and the necessary repairs have been completed.

- If the concentrations of OX and DT in the liquid (downstream of the ICB™ effluent tanks) are < detection limit the sensor will be replaced, and normal operations may continue.

- If the concentrations of OX and DT in the liquid (downstream of the ICB™ effluent tanks) are >detection limit mg/l and <3 mg/l, the pipe will be left in service while further investigation is conducted.

The investigation will consist of removing the insulation from the pipe and performing a visual inspection to determine whether a leak is present. The amount of insulation to be removed will be based on the moisture content of the insulation. The moisture content of the insulation will be measured with a moisture meter (Thermo-Hygrometer IR Meter, Model MR77 or equivalent). Insulation with a moisture content greater than or equal to 10% will be removed to allow inspection of the pipe. The locations of the moisture content measurements and responses to the readings will be as described below:

1. Initial moisture readings will be taken at an approximate 1 foot interval on either side of the active sensor.
   a. If the moisture reading is less than 10%, no insulation will be stripped and normal operations may continue.
   b. If the moisture reading is greater than or equal to 10%, the insulation will be stripped between the location of the reading in excess of 10% and the sensor to allow the pipe to be inspected for leaks.
      - If a leak is visually confirmed, the pipe will be taken out of service until necessary repairs are completed. Once the repairs are completed, the pipe will be reinsulated and normal operations may continue.
      - If no leak is detected, then testing of additional insulation for moisture content will be performed as described below.

downstream of the 30-day Hydrolysate Storage Tanks transfer pump and within the 30-day Hydrolysate Storage Tanks secondary containment. This valve will allow the feed to the ICB feed tanks to be partially or fully diverted to the tank truck loading station.

The hydrolysate piping will consist of single-wall welded steel piping that ties-in to a valve located downstream of the 30-day Hydrolysate Storage Tank pumps in the hydrolysate piping used to transfer hydrolysate to the ICB feed tanks. The valve will divert flow from the ICB feed tanks to the truck loading station. The single-wall piping will connect to double wall Schedule 80 pipe that extends from the tie-in point inside the 30-day Hydrolysate Storage Tank secondary containment out to the connection over the center of the truck loading containment pad. The trucks will be top loaded through piping and a flexible hose attached to a loading arm that extends over and onto the tanker's top hatch. The hose will connect to the tanker using quick connect fittings.

The hydrolysate loading arm will be fitted with a vapor return manifold that connects to the vent line from the 30-day Hydrolysate Storage Tanks at a location upstream of the vent carbon filters (24852-RD-M6-B04-M0025).

Freeze protection will be provided by heat trace for the carbon steel piping extending from the tie-in downstream of the tank pumps to the connection with the double-walled piping inside the tank system containment wall.

Monitoring of the hydrolysate flow from the 30-day Hydrolysate Storage Tanks to the tank truck by personnel using a totalizing flow meter will provide a means to prevent overfilling of the tanker. Personnel will be stationed at the shut off valve near the truck hatch, and at the valve near the totalizing flow meter within the 30-day Hydrolysate Storage Tanks secondary containment. Personnel will monitor the transfer and stop the transfer by closing isolation valves when the transfer to the tanker is complete or in the event of an upset condition.

Shutoff valves are located in two locations on the hydrolysate transfer line, at the elevated hose and inside the 30-day Hydrolysate Storage Tank secondary containment.

III.F.3 Biotreatment Area and Brine Concentrator Feed Tanks

ICB feed rate shall not exceed 1,481 pounds (lbs.) TDG per module per day.

Attachment M, the tank shall be considered unfit for use, and removed from service immediately, in accordance with Condition III.E of this Permit.

III.F.3.g. If a tank system or component is found to be unfit for use as a result of the integrity assessment or any inspection, the Permittees shall comply with Condition III.G of this Permit and notify the Department, in accordance with Condition III.I of this Permit.

III.F.3.h. The Permittees shall replace, test, inspect, and operate the H_2Obvious™ devices installed on the Brine Concentrator Feed Tank ancillary piping in accordance with the corresponding requirements specified in Condition III.F.2.h, including the actions that must be taken in response to an alarm in order to confirm or refute a leak. ~~In addition to testing for TDG as indicated in III.F.2.h, l~~Liquid samples taken from the H2Obvious devices located upstream of the ICB™ will ~~also~~ be analyzed for TDG, and samples taken from H2Obvious devices downstream of the ICB™ effluent tank for Oxathiane (OX) and Dithiane (DT) to confirm or refute a leak. These devices shall also be inspected as described in Attachment K. In accordance with the Inspection Plan, Attachment K of this Permit, the inspection records of the H_2Obvious™ leak detection devices shall be maintained as part of the Operation Record.

Intermittent streams (e.g., ~~such as the initial BRS distillate generated during pilot testing,~~ off-spec BRS distillate, and/or material from the BRS sumps) are transferred through insulated piping equipped with H_2Obvious™ devices back to the Brine Concentrator Feed Tanks. The TDG concentrations in these waste streams are expected to be too low to use as a means to confirm or refute a leak, therefore the Permittee will ~~also~~ sample for OX and DT in accordance with the corresponding requirements specified in Condition III.F.2.h. If a potential leak is identified for this piping (H_2Obvious™ LED or level float is activated), a leak will be assumed and the appropriate permit-required response actions implemented unless CDPHE approves an alternate means of confirming/refuting the leak.

III.F.4 Brine Reduction System

III.F.4.a. The BC Evaporator Feed Tank, Crystallizer Feed Tank, and BRS Distillate Carbon Filter Feed Tank are equipped and maintained with level indication that will notify operators when the tank level is high. These tanks are equipped with overflows as depicted on the P&IDs in Attachment E. Level indicators that can be visually read in the field will indicate the depth of waste in each tank and will also have a remote readout in the control room. The

Permittees will record the liquid level and the volume of hazardous waste contained in each of these tanks in accordance with the Inspection Plan, Attachment K of this Permit.

III.F.4.b. Potential deterioration of the tanks shall be monitored in accordance with the corrosion surveillance program described in the Corrosion Monitoring Plan for Resource Conservation and Recovery Act (RCRA) Tank Systems, Attachment M of this Permit.

III.F.4.c. If any tank's thickness is below the required tank safe design value (a value to be established for each tank per the Corrosion Monitoring Plan for Resource Conservation and Recovery Act (RCRA) Tank Systems (24852-RD-30G-000-V0001)), the operations of the tank system shall be adjusted to ensure a safe design or the tank shall be considered unfit for use, and removed from service immediately, in accordance with Condition III.E of this Permit.

III.F.4.d. If a tank system or component is found to be unfit for use as a result of the integrity assessment or any inspection, the Permittees shall comply with Condition III.G of this Permit and notify the Department, in accordance with Condition III.I of this Permit.

III.F.5 The Permittees shall use appropriate controls and practices to prevent spills and overflows from any tank or containment system.

III.F.6 The Permittees must sample and analyze the BRS distillate collected downstream of the lag BRS Distillate Carbon Filter in accordance with the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment 3, Appendix 3) for the purpose of determining if the BRS effluent is of sufficient quality to enable it to be recycled to other portions of PCAPP and be used as an acceptable substitute for well water or other commercially-available water. The distillate is an acceptable substitute for well water (or other commercially-available water) and is excluded from regulation as a solid and hazardous waste if all of the concentrations of all the constituents in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment 3, Appendix 3) are less than or equal to the limits in the same tables.

III.F.7 The BRS Distillate Carbon Filter System will be operated with two of the three filters on-line in sequence with the third filter in stand-by. ~~During pilot testing, t~~The Permittees will conduct sampling of the BRS distillate at locations that include between the lead and lag filters and after the lag filter at a frequency defined in the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3).

The sample collected from between the lead and the lag filters shall be analyzed for the constituents in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3). ~~In the event that during pilot testing or~~ If during normal operations, the concentration of~~for~~ any constituent exceeds the limit listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3), the following actions will be taken:

1. Within 48 hours after identifying that breakthrough of the lead filter has occurred, and in a timeframe that ensures compliance of the treated water (lag filter effluent) with the BRS Recovered Water reuse standards (BRS Sample and Analysis Plan – Permit Attachment 3, Appendix 3), the lead filter will be taken off-line, the lag filter will become the lead filter and the stand-by filter will become the lag filter.

2. BRS distillate shall be diverted to the B14 brine concentrator feed tanks (BCFTs), if the actions in III.F.7.1 cannot be completed within 48 hours after breakthrough of the lead filter is identified.

3. ~~During pilot testing, a~~After the filter switch, the distillate from the new lag filter will be sampled and analyzed to confirm that the distillate meets the limits in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3).

III.F.8 The sample collected from downstream of the lag filter shall be analyzed for the constituents listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3). ~~In the event that during pilot testing or normal operations,~~If the concentration of~~for~~ any constituent exceeds the limit listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3), the following actions will be taken:

1. BRS distillate will be immediately diverted to the brine concentrator feed tanks (BCFTs) and

2. The lead filter will be taken off-line, the lag filter will become the lead filter and the stand-by filter will become the lag filter.

3. If there is inadequate capacity in the BCFTs for the diverted BRS distillate, flow to the BRS will be stopped.

4. ~~During pilot testing, a~~After the filter switch, the distillate from the new lag filter will be sampled and analyzed to confirm that the distillate meets the limits in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment D~~3~~, Appendix 3).

Table III.F.11 – PCAPP BRS Operating Conditions				
Brine Reduction System				
(MK-B12-0002 A-C)				
BRS OTS carbon filters (MK-B12-0001 A-C)	PDIT-2053A/B/C	BRS OTS carbon filter differential pressure	< 1 psid	Alarm
BRS OTS Heater Relative Humidity Control (ME-B12-0007)	MIT-2046C	BRS OTS heater relative humidity	35-55%	Alarm
BRS belt filter area sump (MT-12-0018)	LT-2120	BRS belt filter area sump level	1.18-3.65 ft	Alarm
BRS area sump (MT-12-0019)	LIT-2123	BRS area sump level	0.96-6.35 ft	alarm
BRS distillate~~OTS~~ carbon filters (MK-B12-0002~~1~~ A-C)	FIC-2038	Water bump flowrate	Setpoint 385 gpm	monitor
BRS distillate cooler (ME-B12-0003)	TIC-1871	BRS distillate cooler outlet temperature	80-120ºF	monitor

~~The numbers shown in the acceptable range column are subject to change based on the results of the Pilot Test Demonstration. Any such changes will require a permit modification in accordance with the procedures of 6 CCR 1007-3, §100.63.~~

Some of the ranges presented above (e.g., range for instruments 1890 and 1962) represent the capabilities of the instruments. ~~and the appropriate operational range will not be established until pilot demonstration operational data is obtained.~~

III.F.12 The BRS Distillate Carbon Filters will be operated with two (2) filters in a lead-lag configuration with the third filter on stand-by. Pressure drop across the individual operating filters will be monitored. When an excessive pressure drop ~~(value to be determined during the Pilot Test Demonstration)~~ has been detected across a filter, it will be taken off-line and a water bump will be conducted at a flowrate necessary to remove solids without fluidizing the carbon bed and without disrupting the adsorption zone. Alternatively, the filter will be taken offline and remain offline until the water bump is performed or carbon changeout completed. Following a water bump, a sample shall be collected from downstream of the lag filter and shall be analyzed for the constituents listed in Tables 1 and 2 of the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment 3, Appendix 3), to ensure that turnover of the carbon bed is not impacting the water quality objectives. If an acceptable pressure drop cannot be accomplished through a water bump, the filter will be taken off-line for carbon changeout. ~~The flowrate at which this water bump is conducted will be demonstrated during the Pilot Test Demonstration.~~

~~The required frequency of carbon changeout of the BRS Distillate Filters will be established and/or confirmed during the Pilot Test Demonstration. This will be accomplished~~ BRS distillate carbon changeout frequency will be determined by~~through~~ sampling and analysis of: the influent to the lead adsorber; the effluent of the lead adsorber; and the effluent of the lag adsorber. Each sampling event will comprise collection of samples from these three (3) locations and analysis of contaminants comprising the standards for reuse of BRS recovered water. The frequency of the sampling events ~~during the pilot test~~ will be based on the BRS Recovered Water Sampling and Analysis Plan (Permit Attachment 3, Appendix 3) and will be sufficient to: 1) establish the target contaminants expected to be routinely present in the influent to the BRS Distillate Filters; 2) detect the breakthrough of contaminants from the lead filter above their respective reuse standards; and 3) confirm compliance of the treated water (lag filter effluent) with the reuse standards. ~~throughout the range of operating conditions demonstrated during the Pilot Test Demonstration.~~

The required frequency of carbon changeout will be based on the breakthrough of contaminants from the lead filter above their respective reuse standard and will be used as the basis for carbon changeout during full-scale operations. At the time of carbon changeout, the lead filter will be taken off-line and replaced with the lag filter as the lead filter, and the stand-by filter will be placed on-line as the lag filter. Sampling frequency at the three (3) locations will continue, at a minimum, on a weekly basis during full-scale operations until sufficient data has been collected to demonstrate and provide justification to CDPHE of a reduced sampling program with respect to either sampling frequency or location. However,

samples of the lag filter effluent collected for compliance verification with reuse standards will be collected at least on a monthly basis.

III.F.13 Liquids found in the BRS area sump liner tank and the BRS belt filter area sump will be considered hazardous waste process fluids carrying the K903 waste code and potentially other codes listed in Condition III.B.5.

The liquids found in the BRS area sump liner tank and the BRS belt filter area sump will be pumped to the BCF tanks. The discharges from the pumps in these sumps are hard piped to the BCF tanks and the liquid transfers are automatic based on level control in the sumps.

III.F.14 Liquids found in the secondary containment of the 30-Day Hydrolysate Storage Tanks, BTA, and BCF Tanks could contain hazardous waste process water, precipitation contaminated with hazardous waste constituents, or precipitation determined to be non-hazardous and of sufficient quality to enable it to be reused at PCAPP. The liquids in these secondary containment structures must be characterized and a hazardous waste determination must be made in accordance with the PCAPP Waste

§100.12(d), that the repaired system is capable of handling hazardous wastes without release for the intended life of the system. This certification must be submitted to the Department within seven days after returning the tank system to use. [6 CCR 1007-3 §264.196(f)]

III.H. INSPECTION SCHEDULES AND PROCEDURES

III.H.1. The Permittees shall inspect the tank systems, in accordance with the Inspection Plan, Attachment K of this Permit [6 CCR 1007-3 §264.195(a)]

III.H.2. The Permittees shall inspect and perform preventative maintenance on the overfill controls (e.g. level indicators, high level alarms), as described in the Inspection Plan, Attachment K to this Permit.

III.H.3. The Permittees shall conduct a corrosion surveillance program in accordance with the requirements specified in the Corrosion Monitoring Plan for Resource Conservation and Recovery Act (RCRA) Tank Systems (24852-RD-30G-000-V0001)

III.H.3.a Non-metallic components (e.g. Fiberglass Reinforced Plastic, Polyvinyl Chloride, Polytetrafluoroethylene (PTFE), Ethylene Propylene diene terpolymer (EPDM), Viton, Garlock etc.) provide corrosion resistance due to their inert properties. These non-metallic components shall be subject to visual inspections to check for corrosion, deterioration, or leaks.

III.H.3.b. Soft parts (e.g. gaskets, valve seals, and flexible connections) are not preemptively replaced unless they are known to be attacked by the process fluid, broken, show deterioration or leaking. Soft parts shall be formally assessed and visually inspected when under maintenance.

III.H.4. The Permittees shall document and maintain the results of inspections conducted in accordance with the Inspection Plan, Attachment K of this Permit, including deficiencies noted during an inspection and any corrective action taken to resolve these deficiencies as part of the Operating Record. [6 CCR 1007-3 §264.195(d)]

III.I. RECORD KEEPING AND REPORTING

III.I.1. The Permittees shall report to the Director, within 24 hours of detection, when any release from a tank system, ancillary equipment, piping, or secondary containment system occurs as written in the Contingency Plan. If the Permittees have reported a release pursuant to 40 CFR Part 302, that report will satisfy the requirements of Permit Condition III.I.1. [6 CCR 1007-3 §264.196(d)]

III.J. CLOSURE

At closure of the tank systems identified in Permit Condition III.A, the Permittees shall comply with 6 CCR 1007-3 §264.197 and follow the procedures as described in the Closure Plan, Attachment I. ~~that will be submitted in accordance with Condition I.J of this Permit~~.

III.K. SPECIAL PROVISIONS FOR IGNITABLE OR REACTIVE WASTES

The Permittees shall not place ignitable or reactive waste in the tank systems described under this Part of the Permit.

III.L. SPECIAL TANK PROVISIONS FOR INCOMPATIBLE WASTES

The Permittees shall not place incompatible wastes, or incompatible wastes and materials, in the same tank system or same secondary containment system.

III.M. AIR EMISSION STANDARDS

The Permittees shall control air pollutant emissions from each tank under this Part of the Permit in accordance with standards specified in 6 CCR 1007-3 §264.1084.

III.M.1. The Permittees shall control air emissions from each of the tanks in accordance with the applicable provisions of 6 CCR 1007-3 §264.1082 and §264.1084.

III.M.1.a. The Permittees shall control air emissions in accordance with the Level I controls and shall maintain the following management activities:

III.M.1.a.i. The maximum organic vapor pressure limit for each tank is as specified in 6 CCR 1007-3 Part 264.1084(b)(1)(i).

III.M.1.a.ii. The hazardous waste in the tank is not heated by the Permittees to a temperature that is greater than the temperature at which the maximum organic vapor pressure of hazardous waste is determined for the purpose of complying with Permit Condition III.M.1.a.i).

III.M.1.a.iii. The hazardous waste in the tank is not treated by the Permittees using a waste stabilization process, as defined by 6 CCR 1007-3 §265.1081.

III.M.1.b. The Permittees, using Tank Level 1 controls, shall meet the following requirements:

Crystallizer recirculation lines	Drawing 24852-RD-M6-B12-M0011; Subpart BB equipment located on lines B12-REC-2101-24"-ASME-HC3.0", B12- REC-2102-22"-ASME-HC3.0", and B12- REC-2103-22"-ASME-HC3.0"
Transfer (and return) of slurry from crystallizer to belt filter	Drawings 24852-RD-M6-B12-M0011 and 24852-RD-M6-B12-M0013; Subpart BB equipment located on lines B12-SL-2105-3"-VP5-HC2.0"E and B12-SL-2303-3"-VP5-HC2.0"E

III.N.2 Each piece of equipment to which 6 CCR 1007-3, Part 264, Subpart BB applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

III.N.3 The Permittees shall comply with the design, operational, ~~monitoring and~~ inspection and repair requirements of 6 CCR 1007-3, §~~§~~264.1056 and the Inspection Plan, Attachment K of this Permit~~264.1058~~. The Permittees shall inspect all equipment subject to the requirements of 6 CCR 1007-3, Part 264, Subpart BB identified at the facility in accordance with the Inspection Plan, Attachment K of this Permit, and 6 CCR 1007-3, §§264.1056~~ and 264.1058~~.

III.N.4 The Permittees shall comply with the ~~test methods and procedure~~ requirements of 6 CCR 1007-3, §264.1063(d) through 264.1063(h) and the Inspection Plan, Attachment K of this Permit.

III.N.5 The Permittees shall comply with the record keeping requirements of 6 CCR 1007-3, §264.1064.

III.N.6. The Permittees shall comply with the reporting requirements of 6 CCR 1007-3, §264.1065.

Enclosure 7

Proposed Revisions to Part IV

with changes depicted using “track changes”

IV.A.4.c. Munitions Treatment Unit (MTU): There are two MTUs of the same design in the APB identified as MTU 1 (MH-B03-0103) and MTU 2 (MH-B03-0203). The MTUs are insulated electric muffle-type ovens equipped with a conveyor that transports the munition bodies and base plates through the MTU chamber. Both MTU 1 and MTU 2 are located within the MTU Room (room number APB-133) with the feed ends (including the drained munition weigh stations) located in the MWS Room. Each MTU has a footprint of approximately 90 feet long by eight (8) feet wide and an overall height of twelve (12) feet. When operating, the MTU heating chamber is maintained at a negative pressure relative to the MTU Room. Exhaust gases from the MTU are vented to the Off-gas Treatment System (OTS) after passing through an OTS filter located on top of the MTU. Each MTU exhaust vent will have an in-situ Carbon Dioxide (CO_2) analyzer installed to enable CO_2 levels in the MTU exhaust to be measured and associated data captured. Such measurement and data collection shall occur when munition bodies or base plates are being fed to the MTU (except when the analyzer units are being calibrated).

The manufacturer and model number for the analyzer units will be Procal 2010 AU/AVU-V24 OHU. A Procal 1300 Analyzer Control Unit (MK5) will be used to transmit data to the PCAPP Facility Control System and the CO_2 data will be kept as part of the facility operating record. ~~The testing plan evaluation for correlation of CO_2 levels/heel quantity will be as stipulated in the Pilot Test Demonstration Plan, Attachment N of this Permit.~~

The OTS filter is fitted with a filter cleaning system as well as a filter bypass line that can be used when maintaining or cleaning the filters. Treated munitions and base plates continue on a conveyor through a water-jacketed cooling chamber and into a rotary valve that empties the munition bodies and base plates onto a discharge conveyor that transfers them to the Treated Munitions Discharge Chute. The Treated Munitions Discharge Chute discharges the munitions bodies and base plates out of the APB and into a waste bin.

There will be a Munition Weigh Station before each MTU that will serve to weigh the munitions as an independent verification that the munition cavity has been breached. If the weight measurement indicates that the agent cavity has not been breached, the munition must be rejected and not be sent through the MTU. Munitions may not be staged for longer than 24 hours at each of the weigh stations. Extensions to the 24 hour time limit would be granted

IV.A.4.e. Agent Neutralization System: Both of the Agent Hydrolyzer Tanks are located in the Toxic Room (room APB-120). Hazardous waste treatment of mustard agent (HD and HT) occurs in these reactor tanks. The Agent Hydrolyzer Tanks are insulated with one and a half (1.50) inches of cellular glass insulation. Each Agent Hydrolyzer Tank shall be equipped with an agitator ~~sized appropriately~~designed to thoroughly mix the tank contents such that a homogenous mixture results. The Permittee is not required to operate the agitator for agent loadings ≤ 8.6 wt%. The in-line static mixers shall be designed to ensure that the agent processed in the hydrolyzers is in droplet form to facilitate the hydrolysis reaction. The Agent Hydrolyzer Tanks shall be supplied with compressed air to maintain pressure in the reactor when the neutralized hydrolysate is pumped to the Agent Hydrolysate Hold Tanks. Details regarding the Agent Hydrolyzer Tanks are provided in the following table:

Autoclave Unit shall be, designed in accordance with ASME B 31.3 Category M. The vent associated with the Autoclave Unit shall have a minimum 1/8-inch corrosion allowance.

IV.A.3. APB and ERB Process Air Pollution Control System

IV.A.5.a. Process off-gas and vapors from the APB will be vented through an air pollution control system referred to as the Off-gas Treatment System (OTS). The OTS treatment train consists of the MWS vent blowers, an oxidizer preheater, a bulk oxidizer, a venturi quencher/packed column tower, off-gas reheater, and OTS blower. Follow-on filtering of the OTS treated flow then occurs at the agent filter area. The primary purpose of the OTS is the thermal treatment of the process off-gas (mustard agent) in the bulk oxidizer through high-temperature residence, and further control of acid gases through contact gas absorption and neutralization in the venturi wet scrubber in association with the packed-bed tower and mist eliminator. ~~It is anticipated that approximately 97% of the mustard agent in the off-gas stream is treated by the OTS with the remainder to be controlled by the AFA~~. The gaseous feed to the OTS consists of flow from the vent header system originating from the MWS Washed Agent and Water Surge Drum Tanks lines 1 and 2, MTUs 1 and 2, APB Agent Hydrolysate Hold Tanks, SDU, autoclave condensate drum, Agent Collection and Neutralization System tanks, and Spent Decon Holding Tanks. The vent gas from the SDU normally is vented to the scrubber tower. The SDU off gas system design allows venting the gas to the oxidizer preheater and bulk oxidizer prior to the scrubber tower~~, although this configuration is not anticipated to be used per the pilot test.~~ The design of the OTS also quenches (provides temperature reduction), neutralizes acid gases, and removes particulates. Further separation capacity to adsorb residual mustard agent from the OTS is provided by the agent filtration area (AFA) as a follow-on step in the air pollution control equipment train. The OTS is constructed of materials compatible with the intended use to prevent leaks and releases through corrosion or other means. The APB Cascade Ventilation System joins the OTS flow downstream of the OTS blower and the ERB Cascade Ventilation component joins the combined flow at the common manifold leading to the AFA. The Cascade Ventilation System is described in part IV.A.6 of this section. Locations of the OTS and AFA are depicted on drawing 24852-RD-P1-000-P0030 - Plot Plan.

~~The piping for the OTS system includes three intermediate sampling ports, one prior to the oxidizer preheater, one prior to the~~

~~venture, and one after the off-gas reheater, that is designed and installed by the Permittees to allow for continuous monitoring during pilot-testing and other times of APB process off-gas flow.~~

IV.A.5.a.1. MWS Vent Blowers

A blower with spare in the toxic room will provide motive force for venting process-related vapors and off-gas from the Washed Agent and Water Surge Drum Tanks and is constructed as detailed on Drawing 24852-RD-M6-B20-M0006.

IV.A.5.a.2. Oxidizer Preheater

The oxidizer preheater, serves to supply heating to boost temperature of the gaseous flowstream to >1050^{o} F when no gaseous flow stream from the SDU is entering the bulk oxidizer or >750^{o}F when the SDU gaseous flow stream and the gaseous flow stream from the MTU, Autoclave, MWS, and ANS Tanks are combined prior to entering the bulk oxidizer. The oxidizer preheater is constructed as detailed on Drawing 24852-RD-M6-B20-M0005.

IV.A.5.a.3. Bulk Oxidizer

The bulk oxidizer will provide the majority of the high temperature treatment residence time and maintain temperature following preheating of the process off-gas. The bulk oxidizer is constructed as detailed on Process Flow Diagram Off-gas Treatment System, number 24852-RD-M5-B20-B0001.

IV.A.5.a.4. Venturi/Scrubber Tower

Following the bulk oxidizer, the flow will pass to the venturi/ scrubber tower, the first stage consisting of a variable throat venturi to provide gas quenching to $\leq 200^{0}$ F and differential pressure control prior to the scrubber. The packed-column scrubber is of countercurrent flow design with the gas input from the venturi entering below the packed bed and rising upward through the packed bed. ~~Process water will be sprayed onto a mist eliminator above the packed portion of the vessel to remove large mist droplets from the pad.~~ A ~~second~~ spray consisting of scrubber recirculation liquid will be sprayed downward on top of the packed bed to remove SO_2, HCl, and Cl_2 from the gas. The liquid collected in the scrubber sump will be supplemented with process water to control the liquid level. The sump liquid is run through a strainer filter at the suction of a recirculation pump, cooled, ~~and injected~~

~~with 25 % by weight caustic (NaOH) solution to control the pH,~~ and is recirculated back to the scrubber tower. Liquid blowdown will be pumped by the recirculation pump to the Spent Decon Holding Tanks. The gas flow exiting the top of the scrubber will be reduced in temperature and is piped to the off-gas reheater. The venturi quencher/packed-column air scrubber tower inputs, outputs, and associated equipment are detailed on Drawing 24852-RD-M6-B20-M0001.

The existing OTS B20 Heat Exchanger (scrubber recirculation cooler) for the cooling of scrubber liquids consists of carbon steel endcaps with stainless steel body and will be replaced with new, on site, more corrosion-resistant replacement unit after the conclusion of the 155mm campaign.

IV.A.5.a.5. Off-gas Reheater

The OTS off-gas reheater will heat the gas prior to it being pulled by the OTS blower (equipped with a spare blower), to the agent filtration area. The reheater serves to reduce relative humidity to prevent condensation upstream of the OTS blowers and is constructed as detailed on Drawing 24852-RD-M6-B20-M0003.

IV.A.5.a.6. OTS Blower w/spare

The OTS Blower will assist the downstream AFA blowers in maintaining negative pressure upstream of the OTS Blower to assist in pulling gases through the OTS towards the AFA.

IV.A.5.a.7. Agent Filtration Area

The agent filtration area (AFA) serves as a pollution control device by filtering agent, VOCs, and particulates from the APB CVS (includes OTS off-gas) and the ERB CVS. The agent filtration area consists of 10 (8 in operation during processing) filter units linked in parallel, each of which is made up of 9 banks. The elements of each filter unit are described below (an agent-sensitive sensor to monitor for breakthrough is located in between the first two carbon units). A minimum of one sulfur-impregnated activated carbon filter will replace one of the carbon filters in each unit to ensure capture of any gas-partitioned mercury that may have been incorporated during agent production as vented through the MTU and SDU vent systems. As an alternative, another equally-effective mercury capture technology may be substituted for the sulfur-impregnated carbon with Division approval. When processing in the APB and ERB, eight of the filter units are active while of the

IV.B.2. The Permittees may manage waste as newly generated waste in generator accumulation areas in accordance with 6 CCR 1007-3 Section 262~~.34~~, as recyclable materials in accordance with 6CCR 1007-3 Part 267, as universal waste in accordance with 6 CCR 1007-3 Part 273, and/or as used oil in accordance with 6 CCR 1007-3 Part 279. Otherwise, the Permittees are prohibited from staging, treating or storing any hazardous wastes identified by wastes codes which are not included above at the facility. The use of bleach (sodium hypochlorite) at PCAPP as a decontaminant for mustard agent, or any other decontaminant that is known to generate a false positive/negative with the Agent Monitoring System, shall not be employed where MINICAMS® monitoring is used unless the proper precautions (e.g., appropriate level of PPE for workers in the area, a baseline to account for a false positive of the decontaminant, etc.) are put in place. The Permittee must re-challenge the monitoring instruments in any area bleach has been used for decontamination. PCAPP areas requiring these types of decontaminants are most likely to occur in areas where liquid agent is expected (Toxic Areas – CAT A or A/B). Entries to these areas by PCAPP staff will necessitate Level A, B or C entries commensurate with the monitoring readings and/or limitations.

IV.B.1. The Permittees may manage the waste identified below, in accordance with the regulations identified in Condition IV.B.2. Otherwise, except for small amounts (i.e., ≤1 gallon), the Permittees are also prohibited from treating or storing the following other types of wastes in the Containment buildings.:

IV.B.3.a. Waste hydraulic fluid,

IV.B.3.b. Waste oil,

IV.B.3.c Waste halogenated liquids not otherwise specified,

IV.B.3.d Waste organic liquids not included in IV.B.1.

IV.B.4 Treatment or storage of hazardous waste that satisfies the criteria established in 6 CCR 1007-3 Part 261.23(a)(7) or (8) is prohibited in the APB, the 30-day Hydrolysate Storage Tanks and BTA/BRS units.

Plan in this permit.

If either the monitoring is unsuccessful (≥ 0.2 VSL) or visual inspection indicates a potential leak, the dunnage will be considered potentially agent-contaminated and will be managed in accordance with the Waste Analysis Plan, including potential treatment in the SDU.

IV.D.1.b. The MSM Corridor will not be used to store hazardous waste. Hazardous wastes may be staged in the MSM Corridor in accordance with Condition IV.D.1.f.

IV.D.1.c. Storage requirements in MSMs: Each MSM can store up to a maximum of 2496 munitions or 52 OPPs. One OPP can hold 32-155mm munitions, 48-105mm munitions, 30-105's boxed, or 48- 4.2 inch munitions boxed. Hazardous waste munitions, including those in SRCs or propelling charge containers, will be stored and staged on pallets in over-pack pallet containers. There shall be no more than three pallets containing SRCs or propelling charge containers per MSM. Up to three pallets containing SRCs or propelling charge containers may occupy up to three of the existing floor-level OPP storage slots. Typical storage arrangements are shown on Enhanced Reconfiguration Bldg, Equipment Location Plan – MSM 1, 2 & 3, 24852-RD-P1-ERB-P0034 located in Attachment E.

IV.D.1.d. Air monitoring requirements in the MSM will be done in accordance with the Laboratory Analysis and Monitoring Plan (24852-GGP-GGL-00001.

IV.D.1.e. Leaking chemical munitions will be overpacked and stored in the igloos permitted for storing leaking munitions. Intact, non-leaking, palletized rounds may be transferred directly to the ~~Explosive Destruction System~~Static Detonation Chamber (~~EDS~~SDC) or transferred to H Block Igloo 1102 or G-block Igloos G101, G102, or G103 for storage pending treatment in the ~~EDS~~SDC.

IV.D.1.f. The MSMs and ERB are connected by way of the MSM Corridor. Except for forklift breakdowns, waste munitions will not be allowed to be staged in the MSM Corridor Munitions will be in OPPs or overpacks while in the MSM corridor. If a forklift breaks down while transferring munitions, the Permittees shall take immediate action to transfer the munitions to an MSM or the RTA. During transfer of loads between forklifts, or for adjustment of load, in the MSM Corridor or in the MAV unloading/loading areas; the Permittee may temporarily place the item (e.g., OPP, SRC, propelling charge for magazines managing waste that have not been under continuous agent monitoring when a potential agent hazard is present. In addition, first entry monitoring will be provided for an MSM managing waste if the associated filtration unit becomes inoperable.

IV.D.1.m. Leaker management (Leaker Operations) will be conducted as outlined in Attachment J Hazard Preparedness and Prevention Plan, the Waste Analysis Plan, and the Operations Plan of the Permit.

IV.D.1.n. A leaking munition, known as a "leaker," is a munition that has released either mustard agent liquid or agent vapor as determined by observation or monitoring equipment such as MINICAMS® or DAAMS. Leakers and the associated agent-contaminated waste streams fall into one of two categories that influence how the waste is characterized and where it can be accumulated and stored:

- $\geq$ 0.2 VSL and < 0.7 VSL
- $\geq$ 0.7 VSL

Leakers and agent-contaminated energetics that are monitored at $\geq$ 0.2 VSL and/or with visually observed liquid agent present must be placed into SRCs and may be temporarily stored in the MSMs prior to transfer to PCD for storage in G-block until treatment in the ~~EDS~~SDC.

Both categories of agent-contaminated dunnage and other agent-contaminated wastes will be characterized and managed in accordance with the WAP and Parts IV and V of the Permit, and with applicable PCAPP procedures for waste accumulation, permitted onsite treatment and storage, and offsite treatment and disposal.

Only < 0.2 VSL energetics with no visually observed liquid agent present are transferred through the ESM corridor for storage in the ESM.

IV.D.1.o. The MAV is monitored with MINICAMS® at the MAV dock. If the readings are $\geq$ 0.2 VSL, then personnel at the MAV dock mask and the MAV is driven to the truck vestibule on the south side of the ERB. The MAV is backed into the vestibule and parked and operators ensure vestibule exhaust is directed to the Agent Filtration Area exhaust header. The DAAMS tube for the MAV MINICAMS® is analyzed. If the MINICAMS® alarm is not confirmed, the MAV is moved back to the MAV dock for normal processing. If it is confirmed, a toxic entry will be made. Plastic sheeting will be placed /taped down on the floor in certain areas (i.e. designated VCR, south corridor). OPPs will be removed from the MAV and placed on the plastic in the south corridor. The top will be inspected for damage or improper installation

~~IV.D.2.c.2.ii. Maximum operating feed rates for the PMDs will be established as per the Pilot Test Demonstration Plan, Attachment N of this Permit.~~

IV.D.2.c.2.ii~~i~~. The Permittee shall cease feed to the disassembly line when a mechanical malfunction with the MMEs or PMEs, or PMD equipment or the controls which would compromise the integrity of the PMD or MME/PME systems occurs.

IV.D.2.d. Liquids will be removed from sumps within 24 hours.

IV.D.2.e. The ERB has a cascading ventilation system that provides for negative atmosphere control during hazardous waste treatment or storage operations. The cascade ventilation system for the ERB is constructed and shall be operated in accordance with the drawings in Attachment E and the operating conditions in Section IV.D.5. During normal operations in the ERB the rooms will be operated at the pressures listed in the Operations Plan Buildings and Corridors Compliance Table. At a minimum, the ERB will be maintained at negative pressure during hazardous treatment operations, transient conditions excluded (e.g., personnel entry and egress).

IV.D.2.f. Munitions that have undergone reconfiguration in the ECRs will be monitored in a Munitions Monitoring Enclosure (MME) before release to the Monitoring Areas (rooms adjacent to and east of the ECRs). The following limitations will apply:

IV.D.2.f.1. Each MME is limited to a maximum of ten (10) munitions at any one time.

IV.D.2.f.2. During MME operations, the enclosed conveyor connecting the ECRs with the MMEs shall be at a more negative pressure than the Monitoring Areas.

IV.D.2.f.3. During MME monitoring, a minimum of one full MINICAMS® cycle will be completed before the munitions are discharged to the Monitoring Area.

IV.D.2.f.4. Reserved

IV.D.2.g. Energetic components and miscellaneous parts removed from munitions in the ECRs will be monitored in a Parts Monitoring human health and the environment, if the Permittees can demonstrate to the Division that removal of the released waste cannot be accomplished within 24 hours. Any removed material from the collection systems must be characterized, and if hazardous waste, managed appropriately (i.e., stored and treated according to this Permit, or managed according to the generator requirements of 6 CCR 1007-3, §262~~.34~~ if applicable).

IV.D.4.c. Munitions Washout Area:

IV.D.4.c.i. All Cavity Access Machines (CAMs) in the Munitions Washout System (MWS) shall be operated at a minimum washout pressure of 6,850 psig. The minimum flow rates of high pressure wash water shall be ≥ 3 gpm and minimum wash times for each munition shall be ≥ 106 seconds. The MWS shall be operated to achieve cleanliness of munition bodies to the extent reasonably possible. The minimum washout pressure and minimum washout flow rate must be achieved at the CAM valve station for a duration greater than or equal to106 seconds. Munitions wash timer is active only if all of the wash parameters (i.e., wash water temperature, wash water flow, wash water pressure) are greater than or equal to the normal operating ranges specified in Table L-4-Munitions Washout System Compliance Table (B02) of the Operations Plan.

IV.D.4.c.ii. The MWS shall be operated in accordance with the ~~Pilot Test Demonstration Plan, Attachment N, and the~~ Operations Plan, Attachment L of this Permit.

IV.D.4.c.iii. Waste munitions may not be stored in the MWS Room or in any component of the MWS for longer than 24 hours except for waste munitions stored in the Munitions Reject Tables, munitions stored on conveyors, CAMS or the robots, and base plates cut off of 4.2-inch mortars which may be stored in the Base-Plate Collection Buckets. Since the Munitions Reject Tables do not provide primary liquid containment, only intact munitions (i.e., the agent cavity of each munition has not been breached), drained munitions being sampled for treaty purposes, and munitions that are not leaking liquid shall be stored on them. The maximum number of waste munitions and base plates that may be stored in the MWS Room at any time are as follows: a maximum of four (4) 155-mm projectiles or a maximum of six (6) 105-mm projectiles or a maximum of six (6) 4.2-

IV.D.4.c.vi. The design air flow through a CAM drain header and the associated Washed Agent and Water Surge Drum Tank System shall be at least 70 scfm and the MWS vent blower shall be operating while a munition is being accessed, drained, or washed within the respective MWS.

IV.D.4.c.vii. Reserved

IV.D.4.c.viii. Each munition that has been drained and rinsed with water in a CAM shall be weighed at the Munitions Treatment Unit (MTU). The weight criteria to be used for rejecting munitions is provided in the Operations Plan ~~Pilot Test Demonstration Plan~~, Attachment ~~N~~ L of this Permit.

IV.D.4.d. Agent Treatment Area (Toxic Room)

IV.D.4.d.i. Agent Water Separator Tank System: The Agent Water Separator Tanks may receive only the mustard agent/wash water mixture from the Washed Agent and Water Surge Drum Tanks and rinse material (e.g., line flushing).

IV.D.4.d.ii. MWS Wash Water Collection Tank System: The MWS Wash Water Collection Tanks may receive only the wash water portion from the Agent Water Separator Tanks and rinse material (e.g., line flushing).

IV.D.4.d.iii. Spent Decon Holding Tank System: The Spent Decon Holding Tanks may receive the waste streams identified in Section D-5d(5) in the Waste Analysis Plan, Attachment D of this Permit.~~only the following waste streams: spent decontamination solutions and fire suppression discharges collected in sumps in Category A, B, and C areas within the ERB and APB, scrubber tower blowdown from the Off-gas Treatment System, rinse material (e.g., line flushing), and condensate from the Autoclave Condensate Drum Tank, air handling units and the hot water process tank.~~

IV.D.4.d.iv. Agent Hydrolyzer Tank System: The Agent Hydrolyzer Tanks may receive only the following waste streams/materials: hot process water, steam, MWS wash water from the MWS Wash Water Collection Tank System, spent decontamination solution from the Spent Decon Holding Tank System, agent concentrate (HD or HT) from the Agent Water Separator Tank System, failed hydrolysate, rinse material (e.g., line flushing), and sodium hydroxide solution (25% NaOH). Agent shall be treated in the Agent Hydrolyzer Tank System in accordance with the following requirements:

IV.D.4.d.iv.(A) Operational limits for ANR batches shall be:

- Monthly average not exceeding 6 ANR batches per day (30 consecutive days)
- ≤ 42 ANR batches per week
- Each batch ≤ 8.6% agent

~~No more than ten (10) batches of hydrolysate may be produced per day by the Agent Hydrolyzer Tank System. No more than eight batches per day averaged over a rolling 90-day period may be produced by the Agent Hydrolyzer Tank System~~.

IV.D.4.d.iv.(B) Treatment of mustard agent (HD or HT) shall not occur within an Agent Hydrolyzer Tank unless storage capacity equal to the volume of hydrolysate to be produced from the Agent Hydrolyzer Tank is available in at least one Agent Hydrolysate Hold Tank.

IV.D.4.d.iv.(C) The amount of mustard agent (HD and HT) concentrate from the Agent Water Separator Tank System treated per batch shall not exceed what is specified in the agent batch treatment recipe provided in the Operations Plan (see Agent Collection and Neutralization System compliance table).

IV.D.4.d.iv.(D) For agent batches, hot process water shall be used and the temperature shall be 175ºF (+/- 5ºF) prior to adding any agent (HD or HT) concentrate. For other batch types (i.e., spent decon, wash water, failed hydrolysate batch), the acceptable temperature range is ambient to 195 ºF. For all batch types, the contents shall be thoroughly mixed using the recirculation pump.

IV.D.4.d.iv.(E) Only Pureflex UltraflexTM 2” convoluted PTFE-lined steel-braided flexible hose isolators, or Division-approved equal, shall be used on the discharge side of the ANR recirculation pumps. The Permittee shall use ~~an initial 28~~a 48-batch changeout frequency for the PTFE-lined isolator. ~~Assuming~~

~~acceptable results, the changeout frequency may be reduced to a 38-batch frequency, followed by a 48-batch frequency and then a 60-batch frequency. To progress from one frequency to the next, the Permittee shall collect the data specified in 24852-3TS-000-L0023 (i.e., pressure test results, wear data using a micrometer, still pictures and/or borescope examination results) for the isolator just used, provide the data to the Division, and obtain Division concurrence. The Permittee shall not employ a less frequent changeout than a 60-batch changeout frequency without prior Division approval.~~

IV.D.4.d.iv.(F) When treatment of a batch of agent (HD or HT) is complete, the resulting hydrolysate solution in the Agent Hydrolyzer Tank must be stable at a pH greater than 10 for a minimum of 30 minutes prior to transfer to the Agent Hydrolysate Hold Tank System.

Prior to initiating batch treatment in an ANR, readings are to be collected from the pH probes for the ANR to be used to process the batch (B04-AIT-7108A-A and B04-AIT-7108A-B for ANR MV-B04-0102 or B04-AIT-7108B-A and B04-AIT-7108B-B for ANR MV-B04-0202) will be confirmed functional by:

2) Being cleaned and calibrated at least once in the previous 14 calendar days per procedure; and
3) The two pH probes must ~~be~~ have functioned properly during processing of the previous batch in the ANR; and
4) Indicate via pH reading that the probes are currently operating correctly.

If both of the pH probes function properly during the batch process and the readings confirm that when treatment of the batch of agent (HD or HT) is complete, the resulting hydrolysate solution in the ANR is stable at a pH of at least 10 as indicated by B04-AI-7108A or B04-AI-7108B~~F~~ then the contents air flow drops below 150 scfm, PCAPP shall not be allowed to treat additional munitions (beyond those already loaded in the alarmed MTU) until the air curtain (or any other cause of air flow excursion) is repaired, replaced, or operating conditions are altered, so as to achieve a constant minimum airflow of 150 scfm.

IV.D.4.f.iv The MTU is to be operated with the zone temperatures and belt speed within the ranges indicated in the Operations Plan compliance tables.

If one or both MTUs are operational in a given hour, the combined maximum processing rate for 155 mm projectiles shall not exceed ~~32~~ 65 rounds per hour, and for 105 mm projectiles the processing rate shall not exceed 100 rounds per hour. This limitation shall not apply to any Division approved increases in munitions processing rates.

IV.D.4.f.v The MTU is to be operated with an alarm set point of 0.28% CO_2. In the event of measurements above this threshold the following steps should be taken:

4. Pause the MTU belt and MTU feed upon measurement of CO2 greater than 0.28 % CO2 will while the situation is investigated. Events with a detection of >0.50 % CO_2 will require division (CDPHE) notification before resuming MWS/MTU operations.
5. Resume the MTU belt after a minimum 15-minute pause to extend the “heat soak” period at permitted operating temperatures are maintained within permitted limit and clear the remaining munitions from the belt. Each additional >0.28 % CO_2 alarm while clearing the belt will trigger an additional 15-minute pause.
6. Resume processing on the affected line after washout data for the associated heel munition is collected and analyzed to provide assurance that any upset condition has been corrected.

Table IV.D.6. - PCAPP Pollution Control Operating Conditions

OTS General		DRE	OTS shall perform at minimum of 97% DRE (agent) ~~as determined by monitoring feed upstream of the Oxidizer Preheater and downstream of the off-gas reheater. See intermediate Treatment Train Monitoring.~~	
BTA Carbon Changeout				
BTS OTS		180-day changeout frequency		
WRS OTS		365-day changeout frequency		
BRS OTS		Once during 155 campaign, then 730-day changeout frequency		
30-Day Hydrolysate Storage Tank OTS		60-day changeout frequency		
Air Filtration System				
Component (Equipment Number)	**Control Loop Number**	**Operating Parameter**	**Range or Number or Condition**	**Monitor, Inspect, Record**
AFA Filter Units MK-M07-0007 through MK-M07-0016 inclusive		Operation	8 Filter Units are to be in use whenever the AFA is in normal operation.	
AFA Filter Units MK-M07-0007 through MK-M07-0016 inclusive		Operation	One unit beyond the 8 in operation will be available for immediate switch-out, e.g. on standby. The other off-line unit may be in standby, undergoing maintenance, or down for carbon changeout.	
Filter Units	Same	Operation	During offsite power loss, three filter units will be	

Table IV.D.6. - PCAPP Pollution Control Operating Conditions

			restored and must remain fully functional during power loss duration	
Filter Units	Same	Mercury	Some form of mercury entrainment of which the default will be at least one carbon filter in each filter unit to be sulfur-impregnated. or an equally-effective method to be provided	
~~AFA Stack~~	~~4748~~	~~Mustard Agent~~	~~Monitoring of process parameters in accordance with the Pilot Test Demonstration Plan, Attachment N, and Operations Plan, Attachment L.~~	~~M A~~
AFA Stack		Stack testing: Particulates, acid gases, metals, and other hazardous waste constituents	< 0.7 VSL Emissions < MPRHA estimates	Qualified third-party stack testing firm • Once during 155 mm campaign • Quarterly during 105 mm campaign
~~AFA General~~		~~Operation~~	~~In general, if waste is present within buildings or areas serviced by the CVS and/or the OTS, the AFA will be operating.~~	
~~**Intermediate Treatment Train Testing**~~				
~~**Location**~~	~~**Sample Type**~~	~~**Constituents**~~	~~**Frequency**~~	~~**Comment**~~
~~Common manifold for APB process off-gas before Oxidizer~~	~~Sorbent tube~~	~~Mustard Agent~~	Per ~~Pilot Test Demonstration Plan (Attachment~~	~~It will be determined, based on pilot testing if permanent monitoring~~

Table IV.D.6. - PCAPP Pollution Control Operating Conditions				
~~Off Gas Treatment System~~				
~~Prior to venturi~~	~~Sorbent tube~~	~~Mustard Agent~~	~~Per Pilot Test Demonstration Plan (Attachment N), and Laboratory Analysis and Monitoring Plan (LAMP, Attachment D)~~	~~It will be determined, based on pilot testing, if permanent monitoring instrumentation is to be installed~~.
~~Downstream of OTS off-gas reheater but before OTS blowers~~	~~Sorbent tube or SUMMA~~	~~Mustard Agent~~	~~Per Pilot Test Demonstration Plan (Attachment N), and Laboratory Analysis and Monitoring Plan (LAMP, Attachment D)~~	~~It will be determined, based on pilot testing, if permanent monitoring instrumentation is to be installed~~
Cascade Ventilation System				
Component (Equipment Number)	**Control Loop Number**	**Operating Parameter**	**Range or Number or Condition**	**Monitor, Inspect, Record**
APB and ERB Airlocks		One of two doors closed	Interlocks to prevent both doors on an airlock being opened simultaneously	
Category A, B, and C areas served in ERB, APB,		Δ Pressure (ΔP)	Permittee must maintain negative pressure gradient and be able to demonstrate at all times	M (sensor), R, A
AGV Corridor		Δ Pressure (ΔP)	See Building and Corridor Compliance Table	Differential pressure sensor and remote monitoring
Ventilation Category		**Pressure Differential**	**Minimum ΔP in w.c.**	**Comment**
A (Process) A (Air Lock)		ΔP	See Buildings and	Differential pressure sensor and remote

Table IV.D.6. - PCAPP Pollution Control Operating Conditions

~~Off Gas Treatment System~~

B (Process) B (Air Lock) C (Process) C (Air Lock)			Corridors Compliance Table	monitoring w/alarms
30-day Hydrolysate Storage Tanks' Head Space Filtration System				
Permittee will monitor and control odors from the system in accordance with the ~~Pilot Test Demonstration Plan (Attachment N) which includes the~~ Odor Monitoring Plan~~, the Carbon Sampling Strategy, and the Summary Plan for Evaluating Pilot Test Data Against the MPHRA~~.				
Immobilized Cell Bioreactor Off-gas Treatment Filtration System				
Carbon filter X 2	MK-B11-0015 and Mk-B11-0016	Odor ~~and organic vapor~~ control	Permittee will control odors by maintaining units and changing medium ~~when Compounds of Concern exceed a predetermined concentration as approved by the Division~~.	Conditions ~~to be~~ are provided in Odor Monitoring Plan. Attachment N ~~that is an attachment to the Pilot Test Demonstration Plan~~

Brine Reduction System Off-gas Treatment Filtration System				
Carbon Filter X3	MK-B12-0001A/B/C	Odor ~~and Organic Vapor~~ Control	Permittee will control odors by maintaining units and changing medium ~~when Compounds of Concern exceed a predetermined concentration and/or by making operational changes to reduce ammonia emissions as approved by the Division.~~	Conditions are provided in Odor Monitoring Plan, Attachment N ~~attached to the Pilot Test Demonstration Plan~~
BTA Stack		Stack testing: Particulates, acid gases, metals, and other hazardous waste constituents	Emissions < MPRHA estimates	Qualified third-party stack testing firm • Once during 155 mm campaign • Quarterly during 105 mm campaign
Munitions Service Magazines and Energetics Service Magazine				

AFA

Location	Method	Constituent	Frequency	Requirement
AFA Stack	MINICAMS®	Mustard Agent	~~See right~~Continuous	~~99.9999% DRE demonstrated during pilot-testing. During operations, stack concentrations monitored as described in the LAMP (Attachment D).~~ ~~*see notes A, B and C~~ (1) Monitor in accordance with LAMP, Appendix 1 to the Waste Analysis Plan, Attachment D, and the Operations Plan, Attachment L (2) Response to ≥ 0.7 VSL (approximately 1 VSL at the 95% confidence limit) in accordance with the LAMP, Appendix 1 to the Waste Analysis Plan, Attachment D, and the RCRA Contingency Plan, Attachment G, and the Operations Plan, Attachment L
Each of the operating AFA Filter Units ~~Between 2nd and 3rd carbon beds~~	MINICAMS®	Mustard Agent	Continuous and Event Driven	~~If concentration exceeds 0.7 VSL (i.e., 1 VSL at the 95% confidence limit), Filter unit must be taken off-line to replace carbon in beds 1 – 5.~~ (1) Agent breakthrough is defined as confirmed detection of agent vapor greater than or equal to 0.7 VSL in an operating filter, for a period of greater than 24hrs; a single DAAMS confirmation and average MINICAMS® measurements ≥ 0.7 VSL for the period are suitable to make this determination*. (2) Monitor for agent breakthrough continuously between the 1st and 2nd carbon-bed. If a reading of 0.7 VSL is confirmed for a period of >24hrs as indicated in number 1 above - monitor for agent breakthrough between 2nd and 3rd carbon-beds (3) Response to post-carbon bed 2 agent breakthrough (as defined above) is to take the filter unit off-line within 30 days of AFA online operations to replace 1st, 2nd, and 3rd carbon beds.
~~AFA Stack~~	~~Summa Canister, sorbent tubes, or equivalent~~	~~1,2-dichloroethane~~	~~Per Pilot Test Demonstration Plan (Attachment N)~~	~~Report data to Division in accordance with Pilot Test Demonstration Plan, Attachment N~~
Each of the operating AFA Filter Units	Summa Canister, sorbent tubes, or equivalent.	1,2-dichloroethane	Once per calendar week	~~(1) Upon completion of Pilot Testing:~~ • ~~Begin replacement of carbon beds 3, 4, and 5 in filter unit 16.~~ • ~~Within one calendar week after replacing carbon beds 3, 4, and 5 in filter unit 16, initiate a sampling/monitoring protocol to assess~~

Location	Method	Constituent	Frequency	Requirement
				~~carbon life using 1,2-dichloroethane as an indicator of breakthrough~~ ~~• After carbon beds 3, 4, and 5 replacement in filter unit 16 is complete, continue replacement of carbon bed 5 in filter units 7-15, as equipment and resources (e.g., fresh carbon) are available.~~ ~~• Within one calendar week after the filter unit in which carbon bed 5 was replaced and is placed online, initiate the sampling/monitoring protocol to assess carbon life using 1,2 dichloroethane as an indicator of breakthrough.~~ ~~-~~(~~2~~1) Once per calendar week perform sampling after carbon bed 5 of each operating (on-line) filter unit. ~~following initial replacement of carbon bed 5, or subsequent replacement of carbon beds 3, 4, and 5 for a given filter unit~~. • Sample collection for approximately 5 hours and volatile organic analysis (EPA Method TO-15) to determine 1,2-dichloroethane concentration levels. (2) Response to post-carbon-bed 5 analytical results for 1, 2-dichloroethane: • When post-carbon-bed 5 results of ≥ 15 µg/m3 1,2-dichloroethane are detected for a given filter unit, carbon beds 3, 4, and 5 in that specific filter unit will be scheduled for carbon changeout with consideration of limiting conditions of operations and the availability of fresh carbon. • Changeout of carbon beds 3, 4, and 5 for a given filter unit will be changed within 10 days of reporting of post-carbon-bed 5 results of ≥ 15 µg/m3 1,2-dichloroethane. If changeout cannot be implemented within the 10-day time frame, notification will be made to CDPHE documenting the basis for the delay and providing an alternative plan to address timely changeout of carbon. • Operations documentation of the analytical results and the decision to schedule or not schedule carbon changeout shall be documented in the Operating Record. • The AFA system shall be operated to provide engineering controls for agent processing areas by filtering air from

Location	Method	Constituent	Frequency	Requirement
				the ERB and APB cascade ventilation systems. • Regardless of 1,2-dichloroethane results eight of the ten filter units will remain active (on-line), and of the two remaining filter units, one will be on standby and the other on standby or undergoing maintenance, in accordance with Section IV.A.5.a.7. of this Permit. (3) Carbon replacement will be staggered so that only one filter unit at a time is undergoing carbon changeout, at any given point in time.

* Measurements below 0.7 VSL or in a non-operational filter will be addressed in accordance with other procedures (WAP/LAMP, etc.) but are not considered agent breakthrough for the purpose of evaluating carbon capacity.

~~Note A: DRE sample time must be established at PCAPP maximum throughput rate for munitions~~
~~Note B: DRE for mustard agent based on average munitions liquid agent waste concentrations identified in Munitions Assessment and Characterization Report (for agent purity). DRE shall be calculated in accordance with 6 CCR 1007-3, §264.342(b).~~
~~Note C: If stack DRE for mustard agent is not achieved, Permittee will make operational changes as described in the Pilot Test Demonstration Plan, Attachment N of the permit, including adjusting treatment process, air pollution controls, munitions feed rate or other, to achieve efficiency. If stack DRE cannot be achieved as a result of operational changes, Permittee must complete engineering design changes to air pollution control system, PCAPP treatment systems or other systems as may be necessary to achieve DRE.~~

Table IV.K.1	
Location in APB of Equipment Subject to 6 CCR 1007-3, Part 264, Subpart BB	**Identification of Equipment Subject to 6 CCR 1007-3, Part 264, Subpart BB on Drawings**
MWS Room: downstream of CAMs; upstream of Washed Agent and Water Surge Drum Tanks.	MWS Line 1: Equipment located on AG1 lines on drawings 24852-RD-M6-B02-R0064 and 24852-RD-M6-B02-R0011. MWS Line 2: Equipment located on AG1 lines on drawings 24852-RD-M6-B02-R0071 and 24852-RD-M6-B02-R0023.
MWS Room and Toxic Room: downstream of Washed Agent and Water Surge Drum Tank; upstream of Agent Water Separator Tanks.	Equipment located on AG1 lines on drawings 24852-RD-M6-B02-R0011, 24852-RD-M6-B02-R0023, and 24852-RD-M6-B04-M0009 (does not include vent lines).
Toxic Room: downstream of Agent Water Separator Tanks; upstream of Agent Hydrolyzer Tanks (i.e., upstream of the in-line static mixers).	Equipment located on AG1 lines on drawings 24852-RD-M6-B04-M0009, 24852-RD-M6-B04-M0022, 24852-RD-M6-B04-M0019, 24852-RD-M6-B04-M0011, 24852-RD-M6-B04-M0012. [Note: On drawings 24852-RD-M6-B04-M0011 and M0012, only the lines transferring agent concentrate are subject to Subpart BB].
Vent from the Agent Hydrolyzer Tanks	Equipment located on VT lines on drawings 24852-RD-M6-B04-M0007 and 24852-RD-M6-B04-M0005.

IV.K.2 Each piece of equipment to which 6 CCR 1007-3, Part 264, Subpart BB applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

IV.K.3 The Permittee shall comply with the design, operational, monitoring and inspection requirements of 6 CCR 1007-3, §§264.1054, 264.1056 through §264.1059, and §264.1061 and §264.1062. The Permittee shall monitor and inspect all equipment subject to the requirements of 6 CCR 1007-3, Part 264, Subpart BB identified at the facility as described in the Inspection Plan, Attachment K of this Permit. Monitoring and inspections in accordance with the Inspection Plan, Attachment K, provides an alternate system for identifying and recording the status of a leak in accordance with 6 CCR 1007-3 §§264.1057, 264.1058, 264.1062, and 264.1063.

IV.K.4 The Permittees shall comply with the test methods and procedure requirements of 6 CCR 1007-3, §264.1063(d) through (h).

IV.K.5 The Permittees shall comply with the record keeping requirements of 6 CCR 1007-3, §264.1064. If the Permittees determine that compliance with the identification requirements for leaks in 6 CCR 1007-3, § 264.1064(c) presents unacceptable safety risks for workers, the Permittees may propose and request that the Division allow an alternative system for identifying and recording the status of the leak.

IV.K.6. The Permittees shall comply with the reporting requirements of 6 CCR 1007-3, §264.1065.

IV.K.7. The Permittees shall comply with the operating requirements of 6 CCR 1007-3, §264.1033 for all closed vent systems and control devices installed to meet the requirements of Subpart BB. Monitoring and inspections in accordance with the Inspection Plan, Attachment K, provides an alternate system for identifying and recording the status of a leak in accordance with 6 CCR 1007-3 §264.1033 and §264.1034 by reference.

IV.K.8. The standpipes that enable purging of the CAM drain headers and the Washed Agent and Water Surge Drum Tanks are not subject to the requirements of 6 CCR 1007-3, §264.1056 as long as the following conditions are satisfied:

IV.K.8.a. Each of these two standpipes is located in the MWS Room upstream of the CAMs, and the MWS shall be operated in a manner such that these standpipes will not come into contact with hazardous waste with organic concentrations of 10 percent by weight or greater.

IV.K.8.b. Each of these two standpipes shall be operated under negative pressure (i.e., less than ambient atmospheric pressure) when there is waste in one or more of the respective CAMs, or in a respective CAM drain line, CAM drain header, or Washed Agent and Water Surge Drum Tanks.

IV.C. AIR EMISSION STANDARDS FOR TANKS

The Permittees shall control air pollutant emissions from each hazardous waste tank in the APB in accordance with the Subpart CC compliance portions of the Inspection Plan, Attachment K of this Permit, and the standards specified in 6 CCR 1007-3, §264.1084.

IV.C.1. A tank is exempt from the standards specified in Permit Condition IV.L.3. and 6 CCR 1007-3, §264.1084 and §264.1087 provided that the tank is one of the following:

A tank for which all hazardous waste entering the tank has an average volatile organic (VO) concentration at the point of waste origination of less than 500 parts per million by weight (ppmw).

Enclosure 8

Proposed Revisions to Part V,

with changes depicted using “track changes”

PART V: STORAGE AND TREATMENT IN CONTAINERS

PCAPP is permitted for the following 6 CCR 1007-3 Part 264, Subpart I container treatment and storage areas.

1. The Munitions Bodies Storage Area is an outdoor container storage area which is located on the south side of the PCAPP Chemical Limited Area (CLA). The primary waste stream to be stored in the Munitions Bodies Storage Area consists of containerized munitions bodies from which energetics and agent have been removed. The munitions bodies are thermally hot after treatment in the Munitions Treatment Unit; therefore, the storage area also serves as a cool-down area for the munitions bodies bins. Containerized solid and liquid-phase hazardous waste may also be stored in the Munitions Bodies Storage Area.

2. H-block Igloo Storage Area consists of six concrete earth-covered magazines, which are located to the southwest of the PSB. The primary hazardous waste to be stored in the H-block Igloo Storage area are energetics, which have been removed from the munitions during baseline and enhanced reconfiguration. Loading of trucks for offsite shipment of energetics and other hazardous wastes will occur at the concrete apron at the entry to each igloo.

3. Dunnage Storage Area consists of a concrete pad, which is located near the southwest corner of ERB. This storage area will be used primarily for accumulation and storage of the dunnage generated during unpacking operations in the ERB. Additional hazardous and non-hazardous waste streams may also be stored in this area (e.g., non-hazardous dunnage, drums containing carbon, non-hazardous miscellaneous parts removed from munitions, packaging materials, discarded equipment, and general maintenance wastes).

4. Waste Laydown Yard, located on the east side of the PCAPP facility, consists of four concrete pads, an asphalt pad, a truck scale, and a detention pond for control of surface runoff. An asphalt road circles the Waste Laydown Yard to facilitate transfer of waste, loading of waste containers for offsite shipment, and access to the truck scale. Liquid and solid hazardous waste will be stored in the Waste Laydown Yard.

5. Treatment of solid and liquid phase agent-related waste is conducted in agent approved fume hoods in the Laboratory by adding a decontamination solution (bleach) to reduce the concentration of agent to an acceptable level for lab worker safety, offsite TSDF acceptance criteria, to make more amenable for transport and/or as required by Army regulations.

6. Absorbents compatible with the waste and container may be added to containers of solid phase hazardous waste that contain liquid or could generate condensation.

7. The G-block Igloo Storage Area consists of four (4) concrete earth-covered magazines, igloos G201, G202, G203, and G204, which are located to the west of the PCAPP facility. The igloos will store solid and liquid-phase mustard-agent-contaminated hazardous wastes, including agent-contaminated and explosive-contaminated hazardous wastes (excluding energetic components). Loading of trucks for offsite shipment of

must be stored in containers, which are in good condition and appropriate for the type of material. Containers stored outdoors shall be weather-resistant. Container requirements for individual units are as follows:

V.A.3.b.i. Munitions Body Storage Area

Approved containers include Munitions Body Bins and drums, crates/boxes, and other DOT approved containers that are elevated above the concrete pad with pallets or other means (Figure V-1). Waste containing free liquids will be stored in DOT approved containers on or in portable spill containment pallets/pans. Up to five munitions bodies bins may be loaded on each flat bed trailer that is between 48 and 53 feet long and approximately 8.5 to 12 feet wide, and is stored on the storage pad prior to transfer out of the CLA.

V.A.3.b.ii. H-block Igloos

Energetics will be packaged in boxes and palletized for offsite shipment in accordance with Department of Transportation (DOT) packaging requirements for transport of explosives prior to storage in the H-block igloos.

Hazardous waste (other than energetics) that contain no free liquids will be stored in DOT approved containers on pallets. Waste containing free liquids will be stored in DOT approved containers on or in portable spill containment pallets/pans. Absorbent material compatible with the waste may be added to containers that have or are expected to generate condensation or contain liquid.

V.A.3.b.iii. Dunnage Storage Area

DOT approved containers will contain solid and liquid-phase waste ~~containing no free liquids~~ for storage (e.g., 40 cubic yard roll-off containers, supersacks, and/or drums). Waste containing free liquids will be stored in DOT approved containers on or in portable spill containment pallets/pans. If containers have or are expected to generate condensation or contain liquid, absorbent material compatible with the waste may be added to the container.

V.A.3.b.iv. Waste Laydown Yard

Solid- and liquid- phase hazardous waste will be stored in DOT approved containers in the Waste Laydown Yard prior to offsite shipment. Absorbent material compatible with the waste may be added to the containers. The containers will vary in size based on the activity that generated the waste and will be elevated above the concrete pads and asphalt by pallets or by other means. Waste containing free liquids will be stored in DOT approved containers on or in portable spill containment pallets/pans.

V.A.3.b.v. G-Block Igloo Storage Area

Solid-phase waste that contain no free liquids will be stored on pallets and in DOT approved containers that meet TSDF waste acceptance criteria. Waste containing free liquids will be stored in DOT approved containers on or in portable spill containment pallets/pans.

V.A.3.c. The Permittees shall maintain adequate aisle space within the container storage unit to allow inspection of containers and access for emergency responders in accordance with the Unit Specific Storage Conditions, found in section V.C.

V.A.3.d. Hazardous waste containers, with the exception of munitions bodies storage bins within the Munitions Bodies Storage Area, shall be individually marked with the following information. Signs containing the following information must be posted in the immediate vicinity of the Munitions Bodies Storage Area:

- "Hazardous Waste"
- At least one hazardous waste code, UN code or DOT shipping label that denotes the primary hazardous characteristic of the waste and/or the compatibility group for the waste
- Site specific tracking number for the waste container that can be correlated with the manifest or shipping papers for the waste, with the date the waste was placed into storage, with sampling or monitoring, and with the operating record.
- Labels shall be legible and oriented on the container so that they are visible for inspection.

V.A.3.e. Loading and unloading operations shall be performed in accordance with applicable requirements in Section J-4a, Attachment J, Hazard Preparedness and Prevention Plan and 6 CCR 1007-3 §§264.30 – 264.34.

V.A.4. Container Inspection Requirements

Container storage areas must be inspected in accordance with Attachment K, PCAPP RCRA Inspection Plan and as described in Attachment J, Hazard Preparedness and Prevention Plan. This includes containers that have been treated to absorb liquid or condensation by adding absorbent materials. [6 CCR 1007-3 § 264.174. [6 CCR 1007-3 § 264.174]

Containers in <90 Day or Satellite Accumulation Areas that have been treated by adding absorbent materials will be managed in accordance with 6 CCR 1007-3 Parts 262 and 265 (specific to this part – 265.174). At the completion of greater.

V.A.6.b.iii. The rated weight capacity of the secondary containment pallets shall not be exceeded.

V.A.6.b.iv. Liquids in secondary containment pallets will be characterized by process knowledge or sampling and analysis if necessary), and will be removed within 24 hours of detection.

V.A.6.b.iv. Secondary containment pallets/pans used in the G-block igloos shall be sufficiently impermeable to mustard agent, associated contaminants, and breakdown products, as well as the composition of the free liquids, to contain a release from a leaking container during storage.

V.A.6.c. Containerized solid and liquid-phase hazardous waste shall be stored on pallets or shall be elevated above the floor (e.g., on wooden pallets). Absorbents compatible with the waste may be added to those containers that contain liquid or could potentially generate condensation.

V.A.7. Ignitable and Reactive Waste Requirements

V.A.7.a. Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) inside the facilities' property line. [6 CCR 1007-3 § 264.176]

V.A.7.b. Precautions must be taken to prevent accidental ignition or reaction of ignitable or reactive waste, follow the procedures specified in the Section J-5 of Attachment J, Hazard Preparedness and Prevention Plan, and comply with requirements of 6 CCR 1007-3, §264.17

V.A.7.c. Wastes that are ignitable and/or reactive are protected from sources of ignition or reaction by administrative controls that prohibit open flames, smoking, welding, and sparks in the hazardous waste management areas where ignitable and reactive wastes are stored.

V.A.7.d. Container storage areas that will store ignitable (D001) characteristic hazardous waste (e.g., M6 propellant from the 4.2 inch mortars, M67 propellant (M1) with M28A2 primer from the 105 mm cartridges, and explosive-contaminated inert materials from housekeeping activities) will have "No Smoking" signs conspicuously placed outside of the storage areas.

V.A.7.e. The Integral Type Lightning Protection Systems (LPS) on the H-block igloos and igloo G-block igloos will be maintained in accordance with Section J-5a of Attachment J, Hazard Preparedness and Prevention Plan.

V.C. UNIT SPECIFIC STORAGE AND TREATMENT CONDITIONS

V.C.1 Munitions Bodies Storage Area

Table V-1 Storage Specific Conditions Munitions Bodies Storage Area

Storage Area:	Munitions Bodies Storage Area (Figure V-1)
Storage Unit Type	Subpart I – Storage in Containers
Approved Waste Codes:	K901, K902, K903, F001-F005, D001, D002, D003 (excludes prohibited waste), D004-D011, D018, D019, D022, D026, D028, D029, D033, D034, D035, D036, D037, D039, D040, D042, and D043
Waste Description:	Solid and liquid phase waste, consisting of • Munitions bodies after treatment in the Munitions Treatment Units (MTUs) • <1.0 VSL at the 95% confidence limit (typically 0.7 VSL) hazardous waste
Prohibited Waste	~~Waste containing free liquids~~ ≥ 1.0 VSL at the 95% confidence limit (typically 0.7 VSL) hazardous waste Pyrophoric, shock sensitive, or explosive hazardous wastes
Capacity:	840 cubic yards, typically consisting of the following: • 175 munitions body storage bins • 224 drums or 28 boxes/crates (elevated or on pallets) • 15 munitions body storage bins on trailers • Or any combination of DOT containers that does not exceed the identified cubic yard capacity
Storage Configuration:	Multiple double rows of munitions body bins (rows two bins wide), and palletized drums or boxes/crates (rows that are one pallet or crate/box wide) Aisles between double rows of munitions body bins, and single rows of pallets with drums or boxes/crates shall be a minimum of 28 inches wide Aisles between flatbed trailers shall be a minimum of 28 inches wide. Aisle around exterior of storage pad shall be a minimum of 28 inches wide

Storage Area:	**Munitions Bodies Storage Area (Figure V-1)**
	Like containers shall be stored or grouped together in the storage area. Figure V-1, Example Storage Configuration for the Munitions Bodies Storage Area
Storage Area Dimensions:	Approximately 270 feet long and 45 feet wide
Storage Area Description:	Approximately 1.5 ft. thick steel-reinforced concrete pad, sloped to facilitate drainage of precipitation off of the pad Figure V-1, Example Storage Configuration for the Munitions Bodies Storage Area
Containment	Concrete pad is sloped to drain liquid that may accumulate on the concrete pad Secondary containment is not required for wastes that do not contain free liquids per 6 CCR 1007-3 § 264.175 Containers of waste with free liquids will be stored on spill containment pallets or secondary containment pans. Secondary containment pans/pallets will have sufficient capacity to contain 10% of the total container volume or the volume of the largest container (whichever is larger)
Runon/Runoff Controls:	Munitions Bodies Bins are designed with forklift slots that elevate the waste-containing portion of the container above the concrete pad, protecting the containers from accumulated liquids. Drums and boxes/crates containing solid-phase hazardous waste will be stored on pallets, elevating the containers above any accumulated precipitation/liquids.
Inspection Method:	Weekly visual inspection Inspection criteria included in Attachment K, Inspection Plan, Table K-19
Operating Procedure(s):	24852-SOP-B00-W0038, Waste Management
Equipment	Forklift Fire extinguisher on forklift, fire extinguisher on east side and west side of storage area
Operating Conditions	"Scrap Metal" signs or signs communicating the same information as hazardous waste labels (as applicable) will be used as an alternative to marking munitions bodies bins due to the high temperature of the bins when transferred into the

V.C.2 H-Block Igloo Storage Area

Table V-1 Storage Area Specific Conditions H-Block Igloo Storage Area

Storage Area:	H-block Igloos – H1104, H1105, H1106, H1107, H1108, and H1109 (Figure V-2)
Storage Unit Type	Subpart I – Storage in Containers
Approved Waste Codes:	K901, K902, K903, P081, U105, D001, D002, D003, D004 through D011 inclusive, D022, D028, D029, D030, D034, D039, D040, D043
Waste Description:	Primarily solid-phase waste, and waste containing free liquids Energetics, explosive-contaminated inert materials, hazardous debris and non-debris, lab packs, MTU cleanout residues, spill residues, used oils or lubricants mixed with hazardous waste, sludges, process liquids, biosolids, carbon, filtercake <1.0 VSL at the 95% confidence limit (typically 0.7 VSL) hazardous waste
Prohibited Waste:	≥ 1.0 VSL at the 95% confidence limit (typically 0.7 VSL) hazardous waste Pyrophoric or shock sensitive hazardous wastes Compressed gases
Per Igloo Capacity:	Except for 105 mm M67 propellant with M28A2 primer pallets, up to ~~44~~60 pallets of energetics in igloos H1105, H1106, H1107, H1108 ~~per igloo~~ (single stacked) (Table V-3), which is limited by the maximum allowable Net Explosive Weight (NEW) for each H-block storage igloo (Table V-4) Except for 105mm M67 propellant with M28A2 primer pallets, up to 44 pallets of energetics in igloos H1104 and H1109 (single stacked) (Table V-3), which is limited by the maximum allowable Net Explosive Weight (NEW) for each H-block storage igloo (Table V-4) 105 mm M67 propellant with M28A2 primer pallets, up to 88 pallets of energetics per igloo (double stacked) (Table V-3), which is limited by the maximum allowable NEW for each

Storage Area:	**H-block Igloos – H1104, H1105, H1106, H1107, H1108, and H1109 (Figure V-2)**
	H-block storage igloo (Table V-4) OR 60~~44~~ pallets each with 4 drums (240~~176~~ drums) per igloo AND Igloos storing energetics and explosive-contaminated inert materials shall not store any other waste type at the same time. For example: only one type of energetic component in each igloo at the same time, and no storage of energetics and waste at the same time in the same igloo.
Storage Configuration:	Two single longitudinal rows of pallets, each row located along each wall, and one central row of pallets as shown in Figure V-2, H-Block Igloos Storage Configuration Minimum horizontal distance of 3 feet at floor level between RCRA-regulated waste containers and the igloo's structural walls Incompatible wastes shall be appropriately segregated in accordance with V.A.8.c, and shall be grouped according to waste types, e.g., solids vs. liquids. Minimum 3~~10~~ ft wide travel path for the material handling equipment (e.g., ~~forklift,~~ pallet jack) to allow for safe movement
Storage Area Dimensions:	Approximately 81 feet long and 29 feet 9 inches wide
Storage Area Description:	Six earth-covered reinforced-concrete magazines, which consist of concrete floor with two concrete end walls and an arched concrete roof. Steel door is located in one of the end walls. Single door entry with dimensions of approximately 48 inches wide and 90 inches high Aprons in front of the door entries to allow for loading and unloading, slope away from the door for drainage. Drainage systems are built into the magazine design to channel water away from the magazine structure. Louvered openings in the door, and ventilator stacks at the rear walls provide ventilation within the magazines

Storage Area:	**H-block Igloos – H1104, H1105, H1106, H1107, H1108, and H1109 (Figure V-2)**
	personnel present in the igloos but shall not be stored in magazines when energetics are present and personnel are not present.
Communications	Radios
Methods for preventing unauthorized access	Door with security hasp is locked when operators are not present Warning signs "Danger--Unauthorized Personnel Keep Out"

Table V-2 Storage Area Specific Conditions – H-Block Igloo Energetic Storage

Energetics Generating Activity or Campaign	Munitions	Energetic Type	Hazard Division (HD) & Storage Compatibility Group (SCG)*	Igloo Capacity Per Energetic Type (No. Pallets)	Net Explosive Weight (NEW) for specified No. of Pallets (lbs.)
Baseline Reconfiguration	105 mm cartridge	M67 propellant with M28A2 primer	1.3C	88	7572
Baseline Reconfiguration concurrent with Enhanced Reconfiguration	105 mm cartridge	M67 propellant with M28A2 primer	1.3C	88	7572
	155 mm projectile	M6 bursters	1.1D	60~~44~~	~~6558~~8943
Baseline Reconfiguration concurrent with Enhanced Reconfiguration	4.2 inch mortar	M2 ignition cartridges	1.4G	~~44~~60	1651**
		M6 propellants	1.1C	~~44~~60	~~9082~~12385
	155 mm projectile	M6 bursters	1.1D	~~44~~60	~~6558~~8943
Baseline Reconfiguration	4.2 inch mortar	M2 ignition cartridges	1.4G	~~44~~60	1651**
		M6 propellants	1.1C	~~44~~60	~~9082~~12385

Energetics Generating Activity or Campaign	Munitions	Energetic Type	Hazard Division (HD) & Storage Compatibility Group (SCG)*	Igloo Capacity Per Energetic Type (No. Pallets)	Net Explosive Weight (NEW) for specified No. of Pallets (lbs.)
concurrent with Enhanced Reconfiguration	105 mm projectile	M5 bursters	1.1D	~~44~~60	~~5428~~ 7402
Baseline Reconfiguration concurrent with Enhanced Reconfiguration	4.2 inch mortar	M2 ignition cartridges	1.4G	~~44~~ 60	1651**
		M6 propellants	1.1C	~~44~~60	~~9082~~ 12385
	105 mm projectile (fuzed)	M57 and M51A5 fuzes	1.1B	~~44~~60	~~367~~ 501
		M5 bursters	1.1D	~~44~~60	~~5428~~ 7402
Enhanced Reconfiguration	105 mm projectile (fuzed)	M57 and M51A5 fuzes	1.1B	~~44~~60	~~367~~ 501
		M5 burster	1.1D	~~44~~60	~~5428~~ 7402
Enhanced Reconfiguration	4.2 inch mortar	M8 fuze with M14 burster	1.1D	~~44~~60	~~1014~~ 1383

* Sources: Interim Hazard Classification issued in accordance with Technical Bulletin 700-2, DoD Ammunition and Explosives Hazard Classification procedures as authorized by 49 CFR § 173.56(b)(2)(i), Department of the Army, US Army Technical Center for Explosives Safety, dated 25 January 2013.
Definitions for the Class 1 explosives hazard divisions are located in 49 CFR § 173.50.
Compatibility Storage Groups (SCGs) are defined in Department of Army Pamphlet (DA PAM) 385-64.

** 1651 lbs. NEW represents the entire 4.2 inch mortar M2 ignition cartridge waste stream, which could be packaged and palletized in as few as 30 pallets. However, for inspection and maximum capacity purposes, and in consideration that some boxes containing M2 ignition cartridges may be partially empty, up to ~~44~~60 pallets of M2 ignition cartridges may be stored in the igloo.

Table V-3 Storage Area Specific Conditions – Maximum Allowable Net Explosive Weight (NEW) for Each H-Block Storage Igloo

H-Block Storage Igloos	HD 1.1 (lbs.)	HD 1.2 (lbs.)		HD 1.3 (lbs.)	HD 1.4 (lbs.)
1104	450	250,000		250,000	MEQ
1105	45,436	250,000		250,000	MEQ
1106	45,436	250,000		250,000	MEQ

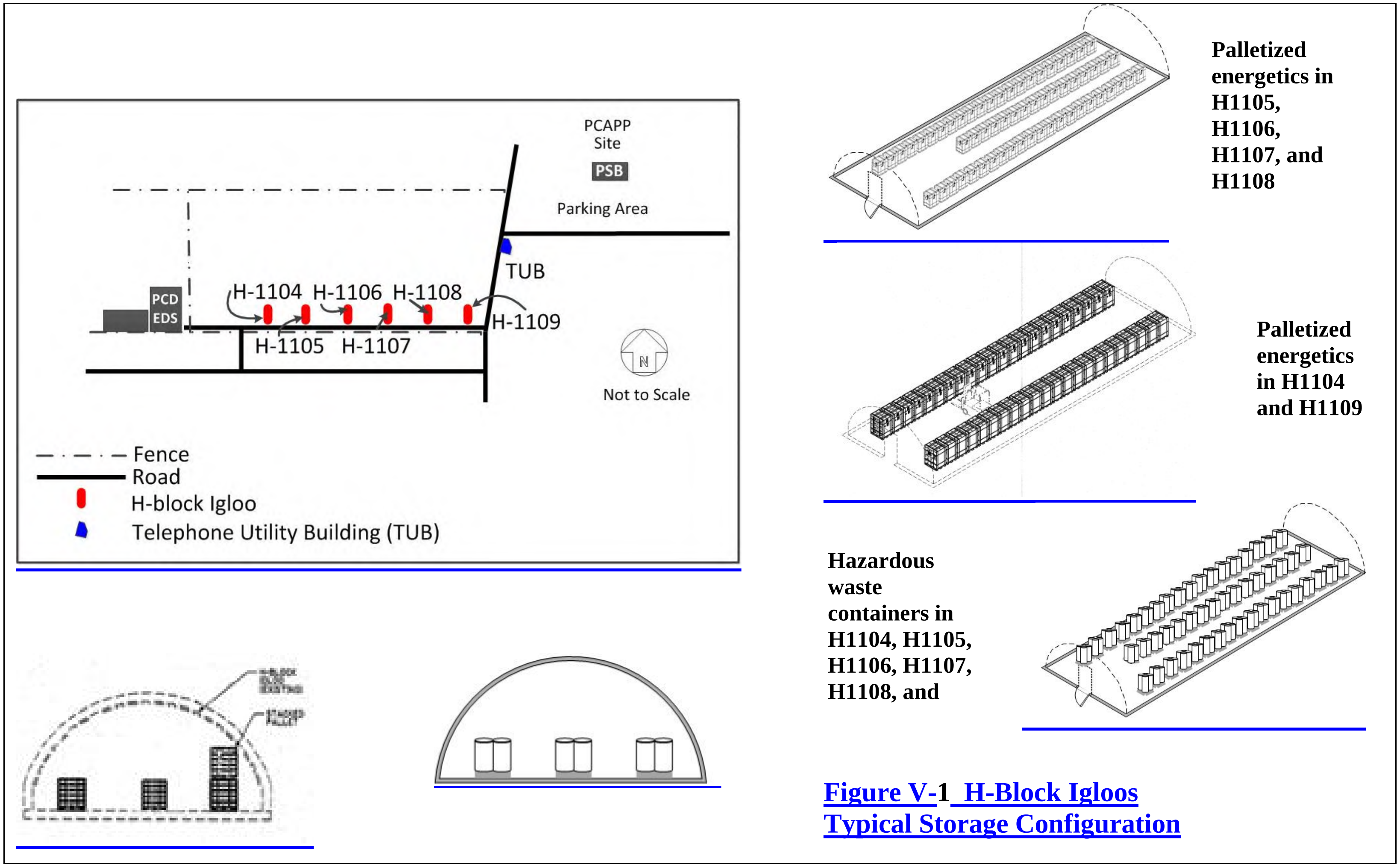


Figure V-1 H-Block Igloos Typical Storage Configuration

V.C.3 Dunnage Storage Area

Table V-4 Storage Area Specific Conditions Dunnage Storage Area

Storage Area:	Dunnage Storage Area (Figure V-3)
Storage Unit Type	Subpart I – Storage in Containers
Approved Waste Codes:	K901, K902, K903, F001-F005, D001, D002, D003 (excludes prohibited waste), D004-D011, D018, D019, D022, D026, D028, D029, D033, D034, D035, D036, D037, D039, D040, D042, and D043
Waste Description:	Solid and liquid phase waste, consisting of • < 0.7 VSL dunnage (wooden boxes, wooden pallets, miscellaneous wood from munitions boxes) • < 0.7 VSL hazardous waste generated in the CLA, for example, carbon, miscellaneous parts removed from munitions, packaging materials, discarded equipment, general maintenance waste
Prohibited Waste	≥ 1.0 VSL at the 95% confidence limit (typically 0.7 VSL) hazardous waste Pyrophoric, shock sensitive, or explosive hazardous wastes Compressed gases
Capacity:	560~~240~~ cubic yards, typically consisting of the following: • 14~~6~~ x 40 cubic yard roll-offs • Or < 14~~6~~ x 40 cubic yard roll-offs and other DOT containers (e.g., supersacks or drums, elevated or on pallets) that together total less than or equal to ~~240~~560 cubic yards • Or ≤ 14~~9~~ x 25 cubic yard roll-offs and other DOT containers (e.g., supersacks or drums, elevated or on pallets) that together total less than or equal to ~~240~~560 cubic yards • Or any combination of DOT approved and weather-resistant containers that does not exceed the identified cubic yard capacity and remains at or below the maximum capacity of ~~240~~560 cubic yards
Storage Configuration:	Aisles between rows of containers (e.g., roll-offs, palletized drums, and/or supersacks) will be a minimum of 28 inches

Storage Area:	**Dunnage Storage Area (Figure V-3)**
	wide Aisles between containers or rows of containers and stationary equipment will be a minimum of 28 inches wide Acceptable container types may include 55 or 85 gallon drums, weather-resistant boxes (e.g., 4x8x4 metal boxes), cubic yard supersacks, cubic yard containers, rolloffs, and other DOT approved and weather-resistant containers. To the extent practical, like containers shall be stored or grouped together in the storage area.
Storage Area Dimensions:	Approximately 90 feet long and 55 feet wide
Storage Area Description:	Approximately 1.5 ft. thick steel-reinforced concrete pad, sloped to facilitate drainage of precipitation off of the pad Figure V-3, Dunnage Storage Area Typical Storage Configurations
Containment	Concrete pad is sloped to drain liquid that may accumulate on the concrete pad Waste containers are elevated and otherwise protected from contact with accumulated liquid (e.g., precipitation) Secondary containment is not required for wastes without free liquids per 6 CCR 1007-3 § 264.175 Containers of waste with free liquids will be stored on spill containment pallets or secondary containment pans. Secondary containment pans/pallets will have sufficient capacity to contain 10% of the total container volume or the volume of the largest container (whichever is larger)
Runon/Runoff Controls:	Roll-offs are designed such that the waste-containing portion of the container is elevated above the surface of the concrete pad, protecting the containers from accumulated liquids. DOT approved containers (e.g., drums, supersacks) containing solid-phase hazardous waste will be stored on pallets, elevating the containers above any accumulated precipitation/liquids. Absorbents compatible with the waste may be added to containers of solid-phase hazardous waste that contain liquid or could generate condensation.
Inspection Method:	Weekly visual inspection

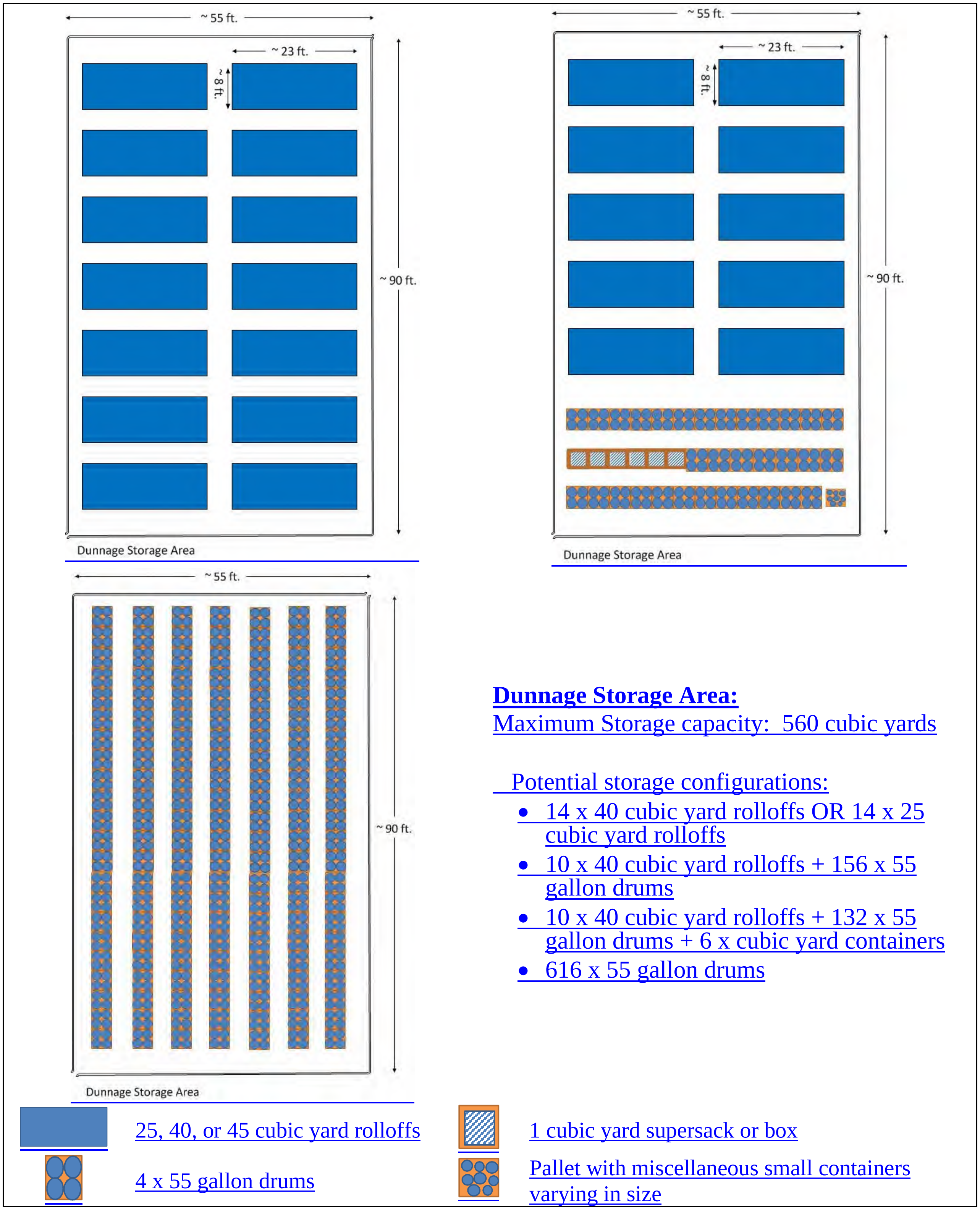


Figure V-2 Dunnage Storage Area Typical Storage Configurations

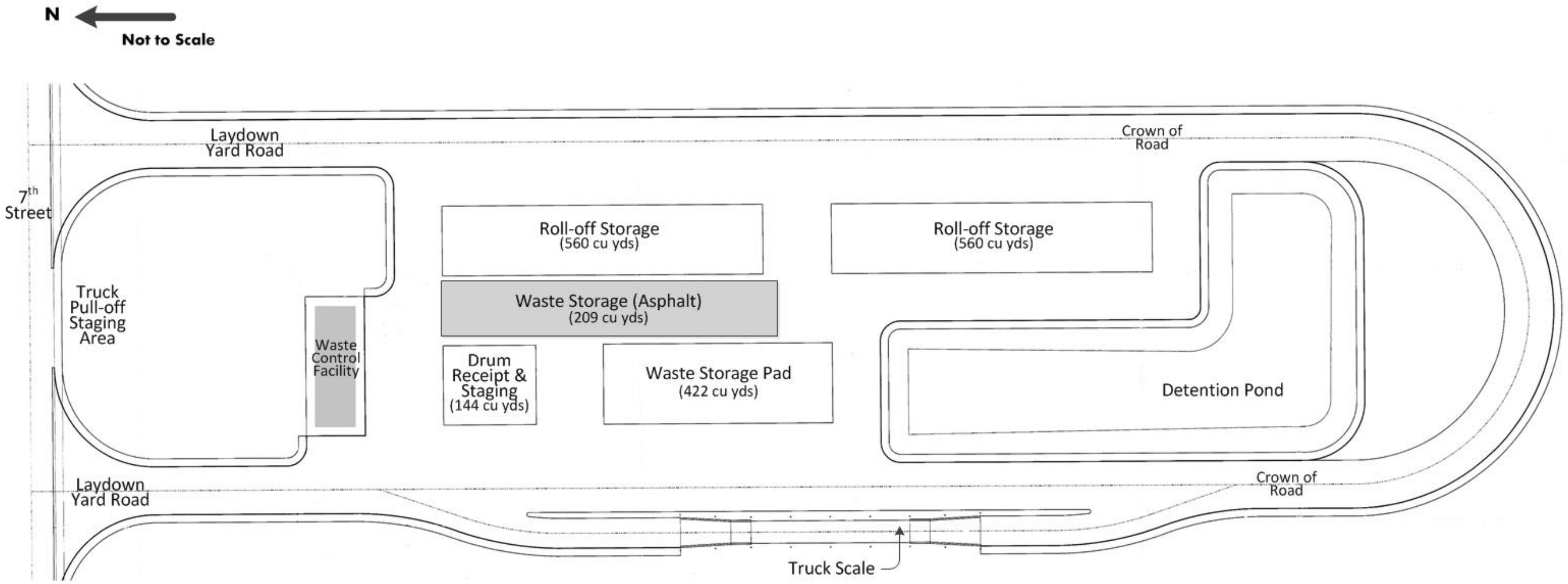
V.C.4 Waste Laydown Yard

Table V-5 Storage Area Specific Conditions Waste Laydown Yard

Storage Area:	**Waste Laydown Yard (Figure V-4)**
Storage Unit Type	Subpart I – Storage in Containers
Approved Waste Codes:	K901, K902, K903, F001 – F005, D001, D002, D003 (excludes prohibited waste), D004 - D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030 (excludes prohibited waste), D032 - D040, D041, D042, D043, P-series, U-series
Waste Description:	Solid-phase and liquid-phase waste, potentially including any hazardous waste stream generated at PCAPP. For example, • < 0.7 VSL dunnage • < 0.7 VSL hazardous waste • Filtercake/brine salts in roll-offs
Prohibited Waste	≥ 0.7 VSL hazardous waste containers Pyrophoric, shock sensitive, or explosive hazardous wastes [Note: Energetics will not be stored in the Waste Laydown Yard; however, offsite transport vehicles containing packaged energetics will be weighed on the truck scale, which is located in the Waste Laydown Yard.]
Capacity:	~~1686~~ 1896 cubic yards, Any combination of DOT containers that does not exceed the 1896~~1686~~ cubic yard capacity (Figures V-4 and V-5)
Storage Configuration:	Aisles between rows of roll-offs or rows of palletized containers (e.g., palletized drums, and/or supersacks) will be a minimum of 28 inches wide Aisles between containers or rows of containers and stationary equipment will be a minimum of 28 inches wide Like containers shall be stored or grouped together in the storage area and containers of non-hazardous waste shall be grouped and separated from containers of hazardous waste. Figure V-5, Example Storage Configurations in the Waste Laydown Yard
Storage Area Dimensions:	Four concrete pads and one asphalt pad measuring approximately :

Storage Area:	**Waste Laydown Yard (Figure V-4)**
	• Two roll-off storage pads: 160 ft long x 35 ft wide • Waste storage pad: 114.5 ft long x 40.5 ft wide • Receipt and staging: 46 ft long x 40 ft wide • Waste storage (asphalt): 170 ft long and 35 ft wide Figure V-4, Waste Laydown Yard Typical Storage Configuration
Storage Area Description:	Approximately 1.5 ft. thick steel-reinforced concrete pads, sloped to facilitate drainage of precipitation off of the pads Figure V-4, Waste Laydown Yard Typical Storage Configuration
Containment	Concrete pads and asphalt are sloped to drain liquid that may accumulate on the ~~concrete~~ pads Waste containers are elevated and otherwise protected from contact with accumulated liquid (e.g., precipitation) Absorbents made of material compatible with the waste and container may be added to containers of solid-phase hazardous waste that contain liquid or could generate condensation Concrete pads: • Containers of waste with free liquids will be stored on spill containment pallets or secondary containment pans. Secondary containment pans/pallets will have sufficient capacity to contain 10% of the total container volume or the volume of the largest container (whichever is larger) Asphalt pad: • Containers of both solid and liquid-phase wastes shall be stored on spill containment pallets or secondary containment pans, or in enclosures that provide secondary containment. • Secondary containment pans/pallets and enclosures shall have sufficient capacity to contain 10% of the total container volume or the volume of the largest container (whichever is larger)
Runon/Runoff Controls:	Concrete pads: • Roll-offs are designed such that waste-containing portion

Storage Area:	**Waste Laydown Yard (Figure V-4)**
	of the container is elevated above the concrete pad, protecting the containers from accumulated liquids. • Other DOT approved containers (e.g., drums, supersacks) containing solid-phase hazardous waste will be stored on pallets, elevating the containers above any accumulated precipitation/liquids. Asphalt pad: • DOT approved containers (e.g., drums, supersacks), excluding roll-offs, containing solid-and liquid phase hazardous waste shall be stored on spill containment pallets or secondary containment pans, elevating the containers above any accumulated precipitation/liquids on the asphalt pads.
Inspection Method:	Weekly visual inspection Inspection criteria included in Attachment K, Inspection Plan, Table K-22
Operating Procedure(s):	24852-SOP-B00-W0038, Waste Management
Equipment	Forklift, pallet jacks, other material handling equipment Fire extinguisher on forklift
Operating Conditions	Hazardous waste labels will be used to mark containers of hazardous waste.
Communications	PA&PS, radios, PCAPP audible alarms, and/or cell phones
Methods for preventing unauthorized access	Fence surrounding the Waste Laydown Yard and gates at each road entrance Warning signs “Danger--Unauthorized Personnel Keep Out” PCD site access control and security guard patrols

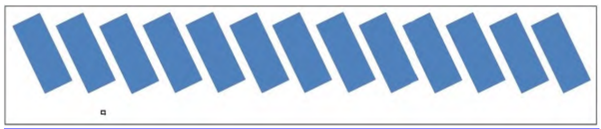


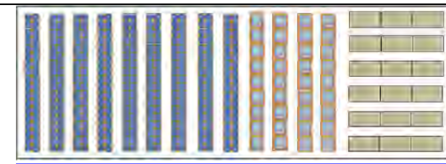
NOTES:

1. Concrete pads: solid-phase waste in containers elevated during storage (e.g., pallets, rolloffs)
2. Concrete pads: waste with free liquids stored on spill containment pans/pallets
3. Asphalt pad: solid-phase waste and waste with free liquids stored on spill containment pans/pallets

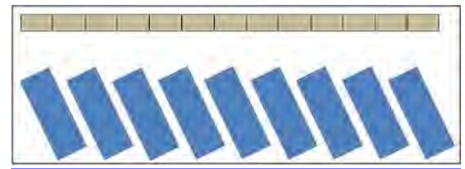
Figure V-3 Waste Laydown Yard Typical Storage Configuration

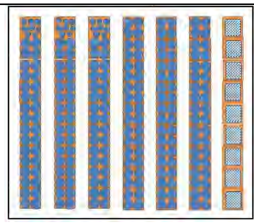
Example Storage Configurations for the Concrete Roll-off Storage Areas



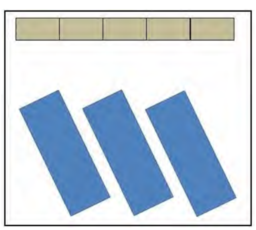


Example Storage Configurations for Concrete Waste Storage Pad

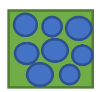


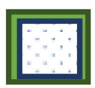


Example Storage Configurations for Concrete Receipt and Staging Area



 4 x 55-gallon drums on a pallet

 Multiple small containers on a pallet

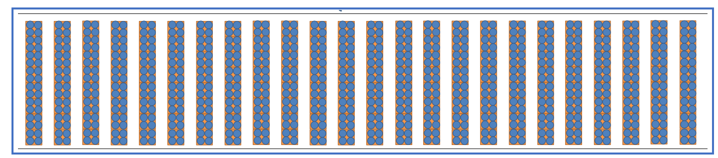
 Supersack, cubic yard container, or tote on a pallet

 Crate, box, or IBC (elevated or on a pallet)

 25, 40, or 45 cubic yard roll-off

28 inch aisle space

Not to Scale



Example Storage Configurations for Asphalt Waste Storage

Figure V-4 Example Storage Configurations in the Waste Laydown Yard

Total Capacity: 1896 cubic yards

Enclosure 9

Rationale for Hazardous Waste Code Revisions to Part V
and the Contingency Plan, Attachment G

Rationale for Revisions to Hazardous Waste Codes in Part V and in the Contingency Plan, Attachment G

The Permittees request the addition of the following characteristic hazardous waste codes in the Subpart I container storage areas, Munitions Bodies Storage Area, Dunnage Storage Area, and the Waste Laydown Yard.

These additional hazardous waste codes will allow storage of waste previously, currently, and potentially generated by maintenance, operations, and the laboratory, and wastes that have been treated to reduce agent-contamination levels in the SDU, Autoclave, or by other decontamination methods per Table V-10 in Part V of the PCAPP RCRA RD&D Permit in the permitted Subpart I container storage areas (e.g., filters and pre-filters; equipment; personnel protective equipment; unused and solidified paints, sealants, and adhesives; fuel and lubricant contaminated soils and absorbents; and treated wood).

These proposed hazardous waste streams will be managed in accordance with Section V.A, Standard Container Conditions. Incompatible waste and materials, and ignitable wastes will be segregated and managed in accordance with Section V.A.7 and V.A.8 of the Permit.

The following identifies examples of specific wastes that would be characterized with the proposed hazardous waste codes.

Hazardous waste code authorization request for the Munitions Bodies Storage Area:

- **F001–F005** (organic solvents) – waste generated during maintenance and sampling activities
- **D001 (ignitable)** – waste adhesives, primers and cleaners for polyvinyl chloride (PVC) pipe, paint thinners, epoxy primers and hardeners, Polyurea (Part A), Phenicon epoxy (Part A)
- **D002 (corrosive)** – maintenance and housekeeping cleaning solutions, unused decontamination solutions, epoxy hardeners, batteries that will not be regenerated or recycled
- **D003 (reactive)** – Polyurea (Part A), maintenance products with ≥ diiosocyanates
- **D018** (benzene) – waste generated from fuel tank maintenance, fueling operations, and spill cleanup
- **D019** (carbon tetrachloride) – waste solvent (e.g., adhesive removers) potentially generated during maintenance activities, constituent in epoxy adhesives and bonding compounds, Hypalon synthetic rubber

- **D022** (chloroform), **D028** (1,2- dichloroethane), **D029** (1,2-dichloroethylene), **D034** (hexachloroethane), **D039** (tetrachloroethylene), **D040** (trichloroethylene), **D043** (vinyl chloride) – waste that has been treated to remove agent contamination (e.g., in Supplemental Decontamination Unit (SDU) or Autoclave), but not analyzed to document that the waste no longer exceeds the concentration threshold for characteristic hazardous waste constituents
- **D026** (cresol) – wastes containing treated wood
- **D033** (hexachlorobutadiene) – waste solvents, lubricants, hydraulic fluids, and in protective coatings
- **D035 -** waste generated from maintenance activities using paint, adhesives, coatings, and solvents
- **D036 (nitrobenzene) –** waste lubricating oils for motors and machinery, and in adhesives
- **D037** (pentachlorophenol) – wastes containing treated wood, dunnage
- **D042 (2,4,6-trichlorophenol) –** waste glues and antiseptics

Hazardous waste code authorization request for the Dunnage Storage Area:

- **K903** (hydrolysate-contaminated waste) – waste generated during maintenance, operations, and spill cleanup activities; and spent carbon
- **F001–F005 (organic solvents) –** waste generated during maintenance and sampling activities
- **D001 (ignitable)** – waste adhesives, primers and cleaners for polyvinyl chloride (PVC) pipe, paint thinners, epoxy primers and hardeners, Polyurea (Part A), Phenicon epoxy (Part A)
- **D002 (corrosive)** – maintenance and housekeeping cleaning solutions, unused decontamination solutions, epoxy hardeners, batteries that will not be regenerated or recycled
- **D003 (reactive)** – Polyurea (Part A), maintenance products with ≥ diiosocyanates
- **D018 (benzene) –** waste generated from fuel tank maintenance, fueling operations, and spill cleanup
- **D019 (carbon tetrachloride) –** waste solvent (e.g., adhesive removers) potentially generated during maintenance activities, constituent in epoxy adhesives and bonding compounds, Hypalon synthetic rubber
- **D026 (cresol) –** wastes containing treated wood
- **D033 (hexachlorobutadiene) –** a constituent in waste solvents, lubricants, hydraulic fluids, and in protective coatings used in maintenance activities
- **D035 -** waste generated from maintenance activities using paint, adhesives, coatings, and solvents

- **D036 (nitrobenzene) –** waste lubricating oils for motors and machinery, and in adhesives
- **D037 (pentachlorophenol) –** wastes containing treated wood, dunnage
- **D042 (2,4,6-trichlorophenol) –** waste glues and antiseptics

Hazardous waste code authorization request for the Waste Laydown Yard:

- **D023** (o-cresol) – unused/excess laboratory standards, example 8270 Calibration Mix #1 (reference Lab01 in Table 2, and the electronic file with the prefix "Lab01" in the Supplemental Information folder on the enclosed CD)
- **D024** (m-cresol) – unused/excess laboratory standards, example 8270 Calibration Mix #1 (CD Supplemental Information folder)
- **D025** (p-cresol) – unused/excess laboratory standards, example 8270 Calibration Mix #1 (CD Supplemental Information folder)
- **D030 excluding prohibited waste (2,4-dinitrotoluene) –** unused/excess laboratory standards, example 8270 Calibration Mix #4, 8270 Calibration Mix #4 revised, and B/N Matrix Spike Mix (CD Supplemental Information folder)
- **D041 (2,4,5-trichlorophenol) –** unused/excess laboratory standards, example 8270 Calibration Mix #1 (CD Supplemental Information folder)

Enclosure 10

Revised Part A, Attachment A

United States Environmental Protection Agency
RCRA SUBTITLE C SITE IDENTIFICATION FORM

1. Reason for Submittal (Select only one.)

☐	Obtaining or updating an EPA ID number for an on-going regulated activity that will continue for a period of time. (Includes HSM activity)
☐	Submitting as a component of the Hazardous Waste Report for ________ (Reporting Year)
	☐ Site was a TSD facility and/or generator of > 1,000 kg of hazardous waste, > 1 kg of acute hazardous waste, or > 100 kg of acute hazardous waste spill cleanup in **one or more months of the reporting year** (or State equivalent LQG regulations)
☐	Notifying that regulated activity is no longer occurring at this Site
☐	Obtaining or updating an EPA ID number for conducting Electronic Manifest Broker activities
☑	Submitting a new or revised Part A Form

2. Site EPA ID Number

C	O	8	2	1	3	8	2	0	7	2	5

3. Site Name

Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP)

4. Site Location Address

Street Address **45825 Highway 96 East**		
City, Town, or Village **Pueblo**		County **Pueblo**
State **Colorado**	Country **USA**	Zip Code **81006-9330**

5. Site Mailing Address ☑ Same as Location Address

Street Address **45825 Highway 96 East**		
City, Town, or Village **Pueblo**		
State **Colorado**	Country **USA**	Zip Code **81006-9330**

6. Site Land Type

☐ Private ☐ County ☐ District ☑ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

7. North American Industry Classification System (NAICS) Code(s) for the Site (at least 5-digit codes)

A. (Primary) **562211**	C.
B.	D.

8. Site Contact Information

☑ Same as Location Address

First Name Walton	MI W	Last Name Levi
Title PCAPP Site Project Manager		
Street Address 45825 Highway 96 East		
City, Town, or Village Pueblo		
State Colorado	Country USA	Zip Code 81006-9330
Email walton.w.levi.civ@mail.mil		
Phone 719-549-4842	Ext	Fax

9. Legal Owner and Operator of the Site

A. Name of Site's Legal Owner

☑ Same as Location Address

Full Name Pueblo Chemical Depot		Date Became Owner (mm/dd/yyyy) 9/30/1942
Owner Type ☐ Private ☐ County ☐ District ☑ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other		
Street Address 45825 Highway 96 East		
City, Town, or Village Pueblo		
State Colorado	Country USA	Zip Code 81006-9330
Email		
Phone	Ext	Fax
Comments		

B. Name of Site's Legal Operator

☑ Same as Location Address

Full Name Bechtel National, Inc		Date Became Operator (mm/dd/yyyy) 11/1/2005
Operator Type ☐ Private ☐ County ☐ District ☑ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other		
Street Address 45825 Highway 96 East		
City, Town, or Village Pueblo		
State Colorado	Country USA	Zip Code 81006-9330
Email		
Phone	Ext	Fax
Comments		

10. Type of Regulated Waste Activity (at your site)
Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities

☑ Y ☐ N	1. Generator of Hazardous Waste—If "Yes", mark only one of the following—a, b, c		
	☑	a. LQG	-Generates, in any calendar month (includes quantities imported by importer site) 1,000 kg/mo (2,200 lb/mo) or more of non-acute hazardous waste; or - Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lb/mo) of acute hazardous waste; or - Generates, in any calendar month or accumulates at any time, more than 100 kg/mo (220 lb/mo) of acute hazardous spill cleanup material.
	☐	b. SQG	100 to 1,000 kg/mo (220-2,200 lb/mo) of non-acute hazardous waste and no more than 1 kg (2.2 lb) of acute hazardous waste and no more than 100 kg (220 lb) of any acute hazardous spill cleanup material.
	☐	c. VSQG	Less than or equal to 100 kg/mo (220 lb/mo) of non-acute hazardous waste.
If "Yes" above, indicate other generator activities in 2 and 3, as applicable			
☐ Y ☑ N	2. Short-Term Generator (generates from a short-term or one-time event and not from on-going processes). If "Yes", provide an explanation in the Comments section.		
☐ Y ☑ N	3. Mixed Waste (hazardous and radioactive) Generator		
☑ Y ☐ N	4. Treater, Storer or Disposer of Hazardous Waste—Note: A hazardous waste Part B permit is required for these activities.		
☐ Y ☑ N	5. Receives Hazardous Waste from Off-site		
☐ Y ☑ N	6. Recycler of Hazardous Waste		
	☐	a. Recycler who stores prior to recycling	
	☐	b. Recycler who does not store prior to recycling	
☐ Y ☑ N	7. Exempt Boiler and/or Industrial Furnace—If "Yes", mark all that apply		
	☐	a. Small Quantity On-site Burner Exemption	
	☐	b. Smelting, Melting, and Refining Furnace Exemption	

B. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g. D001, D003, F007, U112). Use an additional page if more spaces are needed.

D001	D002	D003	D004	D005	D006	D007
D008	D009	D010	D011	D012	D013	D018
D019	D020	D021	D022	D023	D024	D025
D026	D027	D028	D029	D030	D031	D032
D033	D034	D035	D036	D037	D038	D039

C. Waste Codes for State Regulated (non-Federal) Hazardous Wastes. Please list the waste codes of the State hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

K901	K902	K903	P909	P910		

10.B. Waste Codes for Federally Regulated Hazardous Wastes *(Continued from previous page)*

D040	D041	D042	D043	F001	F002	F003
F004	F005	P-Series	U-Series			

11. Additional Regulated Waste Activities (NOTE: Refer to your State regulations to determine if a separate permit is required.)

A. Other Waste Activities

☐ Y ☑ N	1. Transporter of Hazardous Waste—If "Yes", mark all that apply.	
	☐	a. Transporter
	☐	b. Transfer Facility (at your site)
☐ Y ☑ N	2. Underground Injection Control	
☐ Y ☑ N	3. United States Importer of Hazardous Waste	
☐ Y ☑ N	4. Recognized Trader—If "Yes", mark all that apply	
	☐	a. Importer
	☐	b. Exporter
☐ Y ☑ N	5. Importer/Exporter of Spent Lead-Acid Batteries (SLABs) under 40 CFR 266 Subpart G—If "Yes", mark all that apply.	
	☐	a. Importer
	☐	b. Exporter

B. Universal Waste Activities

☑ Y ☐ N	1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) - If "Yes" mark all that apply. Note: Refer to your State regulations to determine what is regulated.	
	☑	a. Batteries
	☐	b. Pesticides
	☑	c. Mercury containing equipment
	☑	d. Lamps
	☑	e. Other (specify) Electronic Devices/Components
	☑	f. Other (specify) Aerosols
	☐	g. Other (specify)
☐ Y ☑ N	2. Destination Facility for Universal Waste Note: A hazardous waste permit may be required for this activity.	

C. Used Oil Activities

☐ Y ☑ N	1. Used Oil Transporter—If "Yes", mark all that apply	
	☐	a. Transporter
	☐	b. Transfer Facility (at your site)
☐ Y ☑ N	2. Used Oil Processor and/or Re-refiner—If "Yes", mark all that apply	
	☐	a. Processor
	☐	b. Re-refiner
☐ Y ☑ N	3. Off-Specification Used Oil Burner	
☐ Y ☑ N	4. Used Oil Fuel Marketer—If "Yes", mark all that apply	
	☐	a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
	☐	b. Marketer Who First Claims the Used Oil Meets the Specifications

12. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR 262 Subpart K.

☐ Y ☑ N	A. Opting into or currently operating under 40 CFR 262 Subpart K for the management of hazardous wastes in laboratories—If "Yes", mark all that apply. Note: See the item-by-item instructions for definitions of types of eligible academic entities.	
	☐	1. College or University
	☐	2. Teaching Hospital that is owned by or has a formal written affiliation with a college or university
	☐	3. Non-profit Institute that is owned by or has a formal written affiliation with a college or univer-
☐ Y ☑ N	B. Withdrawing from 40 CFR 262 Subpart K for the management of hazardous wastes in laboratories.	

13. Episodic Generation

☐ Y ☑ N	Are you an SQG or VSQG generating hazardous waste from a planned or unplanned episodic event, lasting no more than 60 days, that moves you to a higher generator category. If "Yes", you must fill out the Addendum for Episodic Generator.

14. LQG Consolidation of VSQG Hazardous Waste

☐ Y ☑ N	Are you an LQG notifying of consolidating VSQG Hazardous Waste Under the Control of the Same Person pursuant to 40 CFR 262.17(f)? If "Yes", you must fill out the Addendum for LQG Consolidation of VSQGs hazardous waste.

15. Notification of LQG Site Closure for a Central Accumulation Area (CAA) (optional) OR Entire Facility (required)

☐ Y ☑ N	LQG Site Closure of a Central Accumulation Area (CAA) or Entire Facility
	A. ☐ Central Accumulation Area (CAA) ☐ Entire Facility
	B. Expected closure date: ____________ mm/dd/yyyy
	C. Requesting new closure date ____________ mm/dd/yyyy
	D. Date closed ____________ mm/dd/yyyy ☐ 1. In compliance with the closure performance standards 40 CFR 262.17(a)(8) ☐ 2. Not in compliance with the closure performance standards 40 CFR 262.17(a)(8)

16. Notification of Hazardous Secondary Material (HSM) Activity

☐ Y ☑ N	A. Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 260.30, 40 CFR 261.4(a)(23), (24), or (27)? If "Yes", you must fill out the Addendum to the Site Identification Form for Managing Hazardous Secondary Material.
☐ Y ☑ N	B. Are you notifying under 40 CFR 260.43(a)(4)(iii) that the product of your recycling process has levels of hazardous constituents that are not comparable to or unable to be compared to a legitimate product or intermediate but that the recycling is still legitimate? If "Yes", you may provide explanation in Comments section. You must also document that your recycling is still legitimate and maintain that documentation on site.

17. Electronic Manifest Broker

☐ Y ☑ N	Are you notifying as a person, as defined in 40 CFR 260.10, electing to use the EPA electronic manifest system to obtain, complete, and transmit an electronic manifest under a contractual relationship with a hazardous waste generator?

18. Comments (include item number for each comment)

19. Certification I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. **Note: For the RCRA Hazardous Waste Part A permit Application, all owners and operators must sign (see 40 CFR 270.10(b) and 270.11).**

Signature of legal owner, operator or authorized representative	Date (mm/dd/yyyy)
Walton W Levi	03/04/2020
Printed Name (First, Middle Initial Last) Walton, W Levi	Title PCAPP Site Project Manager
Email walton.w.levi.civ@mail.mil	

Signature of legal owner, operator or authorized representative	Date (mm/dd/yyyy)
Michael W. Cobb	03/05/2020
Printed Name (First, Middle Initial Last) Michael W. Cobb	Title U.S. Army PCD Commander
Email michael.w.cobb8.mil@mail.mil	

19. Certification (*Continued from previous page)*

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. **Note: For the RCRA Hazardous Waste Part A permit Application, all owners and operators must sign (see 40 CFR 270.10(b) and 270.11).**

Signature of legal owner, operator or authorized representative	Date (mm/dd/yyyy)
[signature]	03/03/2020
Printed Name (First, Middle Initial Last)	**Title**
KENNETH E. HARRAWOOD	PROJECT MANAGER
Email	
KEHARRAW@BECHTEL.COM	

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT PART A FORM

1. Facility Permit Contact

First Name **Walton**	MI **W**	Last Name **Levi**
Title **PCAPP Site Project Manager**		
Email **walton.w.levi.civ@mail.mil**		
Phone **719-542-4842**	Ext	Fax

2. Facility Permit Contact Mailing Address

Street Address **45825 Highway 96 East**		
City, Town, or Village **Pueblo**		
State **Colorado**	Country USA	Zip Code 81006-9330

3. Facility Existence Date (mm/dd/yyyy)

9/30/1942

4. Other Environmental Permits

A. Permit Type	B. Permit Number													C. Description
R	C	O	1	3	1	2	2	3	0	1				PCD RCRA Permit
R	C	O	0	4	0	7	0	1	0	1				PCAPP RCRA RD&D Permit
E	E	S	-	1	0	.	4	1	8	3	1			PCAPP Wastewater Treatment Facility
E	0	4	P	B	0	8	2	2						PCAPP Air Construction Permit
E	2	0	0	8	0	0	1							PCAPP Pueblo County Certificate of Designation (3)
E	2	0	0	4	0	0	1	&	0	0	2			PCAPP Pueblo County Certificate of Designation (1&2))
N	C	O	R	1	2	A	9	9	F					PCAPP NPDES General Permit (Stormwater)

5. Nature of Business

Chemical Munitions Destruction Facility

4. Other Environmental Permits (Continued)

A. Permit Type	B. Permit Number	C. Description
N	C O N O E 0 0 5 8	PCAPP NPDES No Exposure Certification

6. Process Codes and Design Capacities

Line Number		A. Process Code			B. Process Design Capacity (1) Amount	B. Process Design Capacity (2) Unit of Measure	C. Process Total Number of Units	D. Unit Name
0	1	S	0	6	215	Y	003	MSM
0	2	S	0	6	877	Y	001	ERB et al
0	3	T	9	4	4352	J	003	PMD
0	4	S	0	6	220	Y	001	ESM
								(Continued on page 12)

7. Description of Hazardous Wastes (Enter codes for Items 7.A, 7.C and 7.D(1))

Line No.		A. EPA Hazardous Waste No.				B. Estimated Annual Qty of Waste	C. Unit of Measure	D. Processes (1) Process Codes									D. Processes (2) Process Description (if code is not entered in 7.D1))
0	1	K	9	0	1	3,504,782	P	S	0	6	T	9	4				Comments Section 11
0	2	K	9	0	1	118,228	P	T	0	1	S	0	2				Comments Section 11
0	3	K	9	0	1	571,068,874	P	S	0	6	T	9	4	S	0	2	Comments Section 11
0	3							X	0	2	T	0	1	X	9	9	(Line 03 continued)
0	4	K	9	0	2												Included with above
0	5	K	9	0	3												Included with above
0	6	D	0	0	0												** Included with above - Comments Section 11
0	7	K	9	0	1	181,368	P	S	0	6	T	9	4	S	0	1	Comments Section 11
0	8	D	0	0	0												** Included with above - Comments Section 11
																	(Continued on page 13)

8. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

9. Facility Drawing

All existing facilities must include a scale drawing of the facility. See instructions for more detail.

10. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas. See instructions for more detail.

11. Comments

Section 7, Line 01: Represents the liquid weight of HD. Process waste codes associated with the K901 waste code follow the same process and waste codes identified in Line 03.
Section 7, Line 02: Represents the liquid weight of HT. Process waste codes associated with the K901 waste code follow the same process and waste codes identified in Line 03.

Section 7, Line 03: Represents the total liquid waste that will be annually processed carrying the K901, K902, or K903 waste codes. Begins with the liquid weight of the agent in Lines 1 and 2 increasing in weight as agent is drained, processed through the hydrolyzers, biotreatment system, and brine reduction system. Characteristic codes in Line 3 apply to Lines 1 and 2

Section 7, Lines 06 and 08: "D000" may represent the following hazardous waste codes: D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D042, D043. Characteristic waste codes apply to Lines 01 through 05 and 07.

Section 7, Line 07: Represents the total explosive weight of the 105 mm projectile campaign (Continued on page 14)

6. Process Codes and Design Capacities (Continued)

Line Number		A. Process Code			B. Process Design Capacity (1) Amount	B. Process Design Capacity (2) Unit Of Measure	C. Process Total Number of Units	D. Unit Name
0	5	X	0	2	2943	Y	002	MWS
0	6	X	0	3	3233	Y	002	MTU
0	7	S	0	2	140	G	002	Surge Drum
0	8	T	0	1	20,120	U	002	Agent/H2O Separator
0	9	T	0	1	30,515	U	001	Hydrolyzers - two hydrolyzers work in parallel Process rate provided for both hydrolyzers
1	0	S	0	2	9,123	G	002	Wash-Water Collection
1	1	S	0	2	10,363	G	002	Hydrolysate Hold Tank
1	2	S	0	2	2062	G	002	Spent Decon
1	3	X	9	9	565	Y	001	Toxic Maintenance Area
1	4	X	0	3	6	N	001	SDU
1	5	X	0	3	1	N	001	Autoclave
1	6	S	0	2	337,800	G	003	30-Day Tanks
1	7	T	0	1	36,576	U	004	ICB Feed Tanks
1	8	T	0	1	9,548	U	004	ICB Bioreactors - 4 modules each with 4 ICBs for a total of 16 ICBs
1	9	S	0	2	2,844	G	004	ICB Effluent
2	0	S	0	2	578,006	G	003	BC Feed Tanks
2	1	X	9	9	178,272	U	001	BRS - Evaporator, Evaporator Distillate Tank, Vapor Washer, and Crystallizer
2	2	T	0	1	178,272	U	001	BC Evaporator Feed Tank
2	3	T	0	1	26,928	U	001	Crystallizer Feed Tank
2	4	S	0	2	2,919	G	001	Carbon Filter Feed Tank
2	5	T	0	1	188,352	U	003	Carbon Filter
2	6	S	0	2	1,480	G	001	BRS Area Sump Liner Tank
2	7	S	0	1	125.5	Y	006	H-Block Igloo Storage Area - consists of 6 igloos, two with 100 cubic yard capacity and four with 125 5 cubic yards capacity, totaling 704 cubic yard capacity
2	8	S	0	1	840	Y	001	Munitions Bodies Storage Area
2	9	S	0	1	560	Y	001	Dunnage Storage Area
3	0	S	0	1	1896	Y	001	Waste Laydown Yard
3	1	S	0	1	56	Y	004	G-block Igloos - four (4) igloos capable of storing 204 drums each (56 cu yds); total 224 cubic yards
3	2	T	0	4	1 3	U	004	Agent-related Waste at Lab
3	3	T	0	4	5	S	001	Absorbents added to waste
3	4	T	0	4	4560	U	001	Agent-contaminated waste

7. Description of Hazardous Wastes (Enter codes for items 7.A., 7.C and 7 D(1))

Line Number	A. EPA Hazardous Waste No.	B. Estimated Annual Qty of Waste	C. Unit of Measure	D. PROCESSES (1) Process Codes			D. PROCESSES (2) Process Description (If code is not entered in 7.D(1))
09	K901	24,039,209	P	S06	X02	X03	Comments Section 11
10	D000						Included with above - Comments Section 11
11	K902	5,110,000	P	S06	X03	S01	Comments Section 11
12	K903	23,450	Y	S01			Comments Section 11
13	F001						Included with above
14	F002						Included with above
15	F003						Included with above
16	F004						Included with above
17	F005						Included with above
18	D000						Included with above - Comments Section 11
19	P000						Included with above - Comments Section 11
20	U000						Included with above - Comments Section 11
21	K901						Included with above
22	K902						Included with above
23	K901	15,600	P	T04			Comments Section 11
24	K902						Included with above
25	D000						Included with above
26	P000						Included with above
27	U000						Included with above
28	0000	4,314,447	P	T04	T94		Comments Section 11
29	0000	2,801,600	P	T04	T94		Comments Section 11
30							
31							
32							
33							
34							
35							
36							
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42							
43							

11. Comments (Continued)

Section 7, Line 9: Represents the total weight of the munitions bodies in the 155 mm projectiles campaign
Section 7, Line 11: Represents the maximum weight of agent-contaminated secondary waste treatment
Section 7, Line 12 through 18: Represent PCAPP secondary wastes, laboratory wastes, and treatment residues Wastes within this category may include any or all identified hazardous waste codes
Section 7, Lines 10, 18 and 25: "D000" may represent the following hazardous waste codes: D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D020, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043 Characteristic waste codes apply to Lines 9, 12, and 23
Section 7, Lines 19 and 26: "P000" represents all applicable P-series listed hazardous waste codes, including P909 and P910
Section 7, Lines 20 and 27: "U000" represents all applicable U-series listed hazardous waste codes
Section 7, Line 23: Represents an annual quantity of agent-related hazardous waste treated with bleach under agent fume hoods at the Lab
Section 7, Lines 28 and 29: "0000" represents waste codes that may be applicable to the waste items or containers of hazardous waste that are treated by the addition of absorbants and treated by decontamination (agent-contaminated waste) The applicable codes include any or all of the identified hazardous waate codes listed in this Hazardous Waste Permit Part A Form
Section 8, Map: Topographic map has been submitted to CDPHE in the past and is incorporated in the current PCAPP RCRA Permit Therefore, no map is provided with this form
Section 9, Facility Drawing: Drawings of existing facilities have been submitted to CDPHE with the RCRA permit application and associated modification requests Therefore, no drawings are provided with this form
Section 10, Photographs: Photographs of existing facilities are subject to OPSEC requirements Photographs are available upon request and contingent upon current OPSEC procedures

Enclosure 11

Proposed Revisions to the Waste Analysis Plan, Attachment D,

with changes depicted using “track changes”

Waste Analysis Plan

Attachment D

~~Revised December 12, 2019 (Mod #282)~~

ACRONYMS, ABBREVIATIONS, and DEFINITIONS

AEL	airborne exposure limit
AFA	agent filter area
AGV	automated guided vehicle
APB	agent processing building
Ba	Barium
BCFT	Brine Concentrator Feed Tank
BDS	burster detection station
BRS	brine reduction system
BTA	biotreatment area
Ca	calcium
$CaCO_3$	calcium carbonate
CAM	cavity access machine
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CET CDS	Clean Earth Technologies – Chemical Decontamination Solution
Cl	chlorine
Cl^-	chloride,
COD	chemical oxygen demand
CMA	U.S. Army Chemical Materiel Agency
CWM	chemical warfare materiel
DAAMS	depot area air monitoring system
DCN	document change notice
DPE	demilitarization protective ensemble
dunnage	munition wooden boxes, pallets, blocking, and bracing.
ECR	explosion containment room
~~EDS~~	~~explosive destruction system~~
EPA	Environmental Protection Agency
ERB	enhanced reconfiguration building
ESM	energetics service magazine
g/cc	gram per cubic centimeter
GC	gas chromatograph
GC/FID	gas chromatograph/flame ionization detector
GC/FPD	gas chromatograph/flame photometric detector
GC/MSD	gas chromatograph/mass selective detector
HCl	hydrochloric acid
HD/HT	distilled mustard, bis(2-chloroethyl)sulfide]/distilled mustard and T, bis[2(2-chloroethylthio)ethyl]ether, mixture

ACRONYMS, ABBREVIATIONS, and DEFINITIONS

Sb	antimony
SB	supply bulletin
SDC	Static Detonation Chamber
SDU	supplemental decontamination unit
SVOC	semi-volatile organic compound
TAP	toxicological agent protective
TC	toxicity characteristic
TCLP	toxicity characteristic leaching procedure
TDG	thiodiglycol
TDS	total dissolved solids
TSS	total suspended solids
TNT	2,4,6-trinitrotoluene
TOC	total organic carbon
TSDF	treatment, storage, and disposal facility
U.S.	United States
VOC	volatile organic compound
VSL	vapor screening level
VSS	volatile suspended solids
wooden dunnage	wood munitions boxes, wooden pallets, wood munition holders
wt%	weight percent

D-1 Purpose

This Waste Analysis Plan (WAP) is for ~~the Pilot Test Demonstration Operations and for~~ operations and closure activities at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) ~~Part B Permit at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP). These operations will be performed in compliance with the State of Colorado RCRA Research Demonstration and Development Permit. During Pilot Test Demonstration Operations generator process knowledge, analytical testing results, and agent monitoring data will be collected and reviewed.~~ The Permittee will submit permit modification requests to update this WAP based on process knowledge and analytical results obtained during ~~Pilot Test Demonstration Operations~~operations and closure activities. Generator process knowledge and/or analytical results, including agent monitoring for all wastes, will be maintained in the Operating Record.

The Permittee is permitted to store and treat non-leaking stockpile hazardous waste munitions containing mustard agent (HD/ HT) currently stored at the Pueblo Chemical Depot. This includes storage and treatment of wastes generated during; baseline and/or enhanced reconfiguration, removed and/or separated parts and energetics; removal of the HD/HT from the munitions; neutralization by hydrolysis of the removed mustard agent (HD/ HT); biodegradation treatment of the hydrolysate, and waste produced from treatment of the hydrolysate. The Permittee can stage, treat or store the waste codes in Table III.B.2.a, Table III.B.3.a, Table III.B.5.a, Table IV.B.1, and Tables V-1 through V-2, V-5 through V-10, and Table G-7 in Attachment G of this Permit.

Leaking and rejected munitions are considered off normal conditions and will be managed in accordance with Attachment J, Hazard Preparedness and Prevention Plan of this Permit.

As a large quantity generator of hazardous waste, the Permittee must manage any waste that is not permitted for treatment and storage in accordance with generator standards in 6 CCR 1007-3 § 262 and 268.

D-2 Waste Designation and Rationale

The designation and disposition of waste is based on generator process knowledge and analytical results obtained for similar waste streams at other chemical agent disposal facilities and bench scale demonstrations and testing. During the completed Pilot Test Demonstration ~~O~~operations, the Permittee ~~will~~ characterized the treatment processes and waste streams to verify the accuracy of results from similar waste streams at other chemical agent treatment facilities and bench scale demonstrations and testing. Generator process knowledge must be documented in the Operating Record and the results of the analytical testing will be submitted to the Division for review upon request. The Permittee may submit permit modification requests to this WAP based on process knowledge and analytical results obtained during the ~~Pilot Test Demonstration Operations~~operations.

D-4 Waste Pre-Acceptance Review and Approval Process

D-4a Review Prior to Receipt and Storage in the Munition Storage Magazines (MSMs)

The munitions transferred to storage in MSMs have been previously stored at the Pueblo Chemical Depot (PCD) Interim Status Storage Units (igloos). Munition type and propellant sampling and stability have been documented in the PCD Operating Record. The Permittee will review and verify munition type and its stability prior to transfer. The transfer is pre-approved based on munition type, tracked in accordance with U.S. Army and PCAPP protocols, and documented in the PCAPP operating record. This identification, approval, and tracking process allow the operator to verify that the stored munitions meet the waste acceptance criteria of munition type for the containment buildings.

D-5 Storage, Treatment Processes, Waste Stream Description/Disposition, Verification, Sampling and Analysis

This portion of the PCAPP Waste Analysis Plan describes the permitted treatment processes and waste streams generated from the treatment of the waste munitions and mustard agent (HD/HT). The sampling and analysis points to demonstrate treatment verification are included in the process description.

D-5a Munitions Service Magazines (MSMs)

The munitions stored at PCD are placed in overpack pallets (OPPs) for transfer to MSMs. The Modified Ammunition Vehicle (MAV) transfers the OPP's to the receiving dock at the MSM's. The MAV is monitored using MINICAMS®. For monitoring levels;

- mustard agent (HD/HT) < 0.2 VSL the OPPs are unloaded and transferred to the MSMs for storage.
- mustard agent (HD/HT) is detected $\geq$ 0.2 VSL the OPPS remain in the MAV and are transferred to the MAV vestibule for leaker determination in accordance with; Attachment J Hazard Preparedness and Prevention Plan, J-4h Process for Managing Leaking Munitions.

The operator designates which MSM receives the transferred munitions for storage based on munition type and storage capacity. Any leaking munitions~~(s)~~ are overpacked and returned to PCD for storage. Leaking munitions~~(s)~~ may be stored in ~~a permitted G-block igloo or~~ H-block igloo 1102 or G-block igloos G101, G102, and G103 for storage prior to treatment in the ~~EDS,~~ Static Detonation Chamber (SDC) or sent directly to the ~~EDS~~SDC. Intact non-leaking, palletized rounds are sent to H-block igloo 1102 or G-block igloos G101, G102, and G103 for storage prior to treatment in the ~~EDS~~ SDC or sent directly to the ~~EDS~~SDC.

D-5b Enhanced Reconfiguration Building (ERB)

OPPs are transferred from the MSM(s) to the Receiving and Traveling Area (RTA) where each OPP is monitored by MINICAMS®. For monitoring levels of:

- mustard agent (HD/HT) < 0.2 VSL, the OPP is opened and the munitions are staged for baseline and/or enhanced reconfiguration.
- mustard agent (HD/HT) ≥ 0.2 VSL, the OPP will be transferred to a VCR for leaker determination. The leaking munitions are overpacked and returned to PCD for storage in a permitted G-block igloo, ~~or~~ H-block Igloo 1102, or G-block igloos G101, G102, and G103.

Baseline reconfiguration at PCAPP separates from configured 105 cartridges (boxed) and the 4.2 mortars the following energetics; cartridge casing with primer and propellant, ignition cartridges, and propellant wafers. The removed energetics, non-agent-contaminated (< 0.2 VSL mustard agent (HD/HT)) and reactive hazardous waste, are packaged and transferred for permitted storage in the Energetics Service Magazine. Separated parts determined to be non-agent-contaminated (< 0.2 VSL mustard agent (HD/HT) and no visual agent contamination) are non-hazardous waste.

Baseline reconfigured munitions are palletized and placed in OPP bases for storage in an MSM prior to transfer back to PCD for storage. The PCAPP baseline reconfigured munitions remain in storage at PCD until they are returned to PCAPP for enhanced reconfiguration. Alternatively, the PCAPP baseline reconfigured munitions will be transferred to the Explosion Containment Rooms (ECR) for enhanced reconfiguration at the Projectile/Mortar Disassembly (PMD) machine. Intact, non-leaking, palletized rounds identified as "problematic" for processing at the PCAPP facility may be transferred from PCAPP in OPPs with covers attached to H-block igloo 1102, or G-block igloos G101, G102, and G103 for storage prior to treatment in the ~~EDS~~ SDC or sent directly to the ~~EDS~~SDC.

Enhanced reconfiguration removes; bursters, fuze with booster, fuze with burster assembly, and metal parts from the munitions.

Automated verification that the bursters have been removed occurs at the Burster Detection Station (BDS) in the ECR. Munitions failing the verification are overpacked and returned to PCD permitted storage in G-block, or H-block storage igloo 1102, or G-block igloos G101, G102, and G103 for storage prior to treatment in the ~~EDS~~ SDC or sent directly to the ~~EDS~~SDC.

The munitions without energetics are monitored in the Munitions Monitoring Enclosure (MME) in the Monitoring Area. The energetics and parts removed from the munition are monitored in the Parts Monitoring Enclosure (PME) by MINICAMS®.

- Munitions (without energetics) with mustard agent (HD/HT) ≥ 0.2 VSL are managed as leakers and transferred to permitted storage in G-block.
- Parts with mustard agent (HD/HT) ≥ 0.2 VSL are agent-contaminated waste, K901, and are sent to the TMA for further treatment in the SDU or Autoclave or are shipped offsite for treatment and/or disposal.
- Parts with mustard agent (HD/HT) < 0.2 VSL and there is no visible evidence of agent-contamination are non-agent-contaminated waste.

- Energetics with mustard agent (HD/HT) ≥ 0.7 VSL are agent-contaminated/characteristic waste, K901 and D003, and are transferred to permitted storage in G-block.
- Energetics with mustard agent (HD/HT) < 0.7 and ≥ 0.2 VSL are agent-contaminated waste, K901, and are transferred to permitted storage in G-block.
- Energetics with mustard agent (HD/HT) < 0.2 VSL and there is no visible evidence of agent-contamination are non-agent-contaminated waste.

The munitions with mustard agent (HD/HT) < 0.2 VSL are transferred through the automated guided vehicle (AGV) corridor to the APB.

D-5c Energetics Service Magazine (ESM)

The < 0.2 VSL (non-agent-contaminated) packaged energetics and explosive-contaminated inert materials are transferred from the ERB through the ESM corridor to the ESM for storage prior to transfer to permitted storage or directly to an offsite treatment facility.

D-5d Agent Processing Building (APB)

The munitions are received in the Munition Receiving Room (MRR) and transferred to the Munitions Washout System (MWS).

The processes in the APB are; removal and washout of mustard agent (HD/HT) from the munition, thermal treatment of munition bodies; collection of the removed mustard agent (HD/HT) and wash water; transfer of mustard agent (HD/HT) and wash water to Agent Water Separator; transfer of separated wash water to MWS Wash Water Collection Tanks; transfer of mustard agent (HD/HT) to Agent Hydrolyzers, treatment of the mustard agent (HD/HT) by hydrolysis, thermal treatment of secondary wastes, and storage in tanks and containers.

D-5d (1) Munitions Washout System (MWS)

The MWS equipment includes the Cavity Access Machines (CAM) that drains and washes mustard agent (HD/HT) from the agent cavity of the munitions. The removed mustard agent (HD/HT) and washwater is one waste stream. The drained and washed munitions and 4.2-inch mortar baseplates are a second waste stream. The drained and washed chemical agent (HD/HT) and wash water is collected and transferred to the Agent Water Separator.

The drained and washed munitions and 4.2-inch mortar baseplates are transferred to the Munitions Treatment Unit (MTU).

Verification that drained and washed munitions can be transferred to the MTU from the MWS is completed at the weigh station prior to entering the MTU. The drained and washed munition must be within an acceptable weight range, as specified in the Operations Plan (Appendix L), prior to transfer to the MTU. Drained and washed munitions that are not within the acceptable weight range are returned to the MWS for further washing.~~ After multiple washings, drained and washed munitions above the acceptable weight will be managed as rejects at the MWS or returned in an SRC to PCD G-Block or H-Block 1102 storage.~~ After multiple washings, drained and washed munitions above the acceptable weight will be segregated and transferred to the reject table. Data on the overweight munitions will be provided to the Colorado Department of Public Health and Environment (CDPHE) for review and approval prior to introducing the overweight munitions into the MTU. Overweight munitions that did not receive CDPHE approval for MTU processing will be managed as rejects at the MWS, overpacked in a single round container or propelling charge container when necessary, and returned to PCD G-block igloos or H-block igloo 1102, or sent directly to the SDC for treatment.

D-5d (2) Munitions Treatment Unit (MTU)

Drained and washed munitions and the 4.2-inch mortar baseplates (in open-top containers) are transferred to the MTU. Thermal treatment of the drained and washed munitions and 4.2-inch mortar baseplates occurs in the MTU. The munitions bodies and 4.2-inch mortar baseplates are discharged into bins and transferred to a storage area for cooling. Waste streams generated by the MTU include thermally treated munition bodies and baseplates, and residues from the munitions bodies (e.g., paint chips and dust).

Mustard Agent (HD/HT) monitoring of the munition bodies and 4.2-inch mortar baseplates also occurs at the exit lines of the MTU's. A monitoring level by MINICAMS®:

- mustard agent (HD/HT) < 0.2 VSL verifies treatment and allows munitions bodies to be released to Munitions Bodies Storage Area.
- mustard agent (HD/HT) ≥ 0.2 and < 0.7 VSL does not verify treatment. This is an off normal condition. The MTU line will shut down and the munitions bodies will not be released to the exterior of the building.
- mustard agent (HD/HT) ≥ 0.7 VSL doesn't verify treatment. This is an off normal condition. The MTU line will shut down and the Contingency Plan will be implemented.

Demonstration to release Munitions Bodies as scrap metal

Post MTU bin monitoring data of treated munitions bodies demonstrated bin headspace concentration of mustard agent (HD/HT) < 0.00002 mg/m^3, General Population Limit (GPL), for the established operating parameters within normal operating ranges (see Operations Plan, Table L-4 Table L-5). This sampling and analytical testing was done in accordance with the ~~Pilot Test Demonstration Plan, Attachment N, of this permit and~~ laboratory method, *DAAMS by GC-MSD* (24852-GPP-GGL-00302). Munitions bodies processed in accordance with Table L-4 and L-5 of the Operations Plan are amenable for recycling as scrap metal. Therefore the K901 waste code listing is not applicable.

For the Munitions Wash-Out System (Table L-4) the applicable normal operating ranges are:

- RAM Extension,
- ~~Muniton~~Munition Rotation Speed,
- CAM Valve Wash Water Pressure,
- CAM Valve Washout Flow Rate,
- Wash Time,
- High Pressure Wash Water Temperature, and
- Weight of Drained Munition

Tank systems cannot be drained or flushed into the decon system sumps without prior evaluation of engineering controls and material compatibility, and submittal of a summary of the engineering evaluation signed by a licensed Colorado professional engineer to CDPHE. Draining or flushing activities of ancillary equipment (e.g., piping) during routine maintenance activities that had previous engineering evaluations signed by a licensed Colorado professional engineer and approved by CDPHE will be performed without requiring additional, repeated evaluations and approvals.~~Colorado Department of Public Health and Environment (CDPHE) approval of a permit modification submitted in accordance with 6 CCR 1007-03§100.63.~~

The Permittee will use water as a primary decontamination solution, with other decontamination products as needed to facilitate the decontamination process. Spent decontamination solutions include water and steam, soaps and surfactants, commercially available agent decontamination solutions, and other Permittee-approved decontamination solutions that does not interfere with the hydrolysis process. If a decontaminant/treatment solution is used that is known to generate a false positive/negative with the Agent Monitoring System, the Permittee shall perform a post monitoring system challenge after use of the decontamination solution to demonstrate that the interferent is not causing a continued impact to the MINICAMS® and DAAMS prior to placing the monitoring system back online. The Permittee will maintain all information necessary to demonstrate decontamination solutions will not interfere with MINICAMS required for personnel monitoring in the Operating Record for the facility.

The contents of the Spent Decon Holding Tanks are a permitted waste and must be stored and managed in accordance with Part IV of this Permit.

D-5d (6) Agent Hydrolyzers

The agent hydrolyzers receive feed streams from: hot process water, MWS Wash Water Collection Tanks, Spent Decon Holding Tanks, mustard agent (HD/HT) from the Agent Water Separator Tanks, and sodium hydroxide (NaOH). Mustard agent (HD/HT) is neutralized by a hydrolysis reaction producing agent hydrolysate. The agent hydrolysate is a permitted waste and has the K903 hazardous waste code.

Verification that the mustard agent has been neutralized is an automated measurement of a specified time within the target pH > 10. The hydrolysate is transferred to the Agent Hydrolysate Hold Tanks. The verification of mustard agent (HD/HT) concentration is discussed below.

D-5d (7) Agent Hydrolysate Hold Tanks

The Agent Hydrolysate Hold Tanks receive hydrolysate and rinsate from the agent hydrolyzer tanks, and store the hydrolysate for verification that the mustard agent has been treated. The closed-loop sampling system withdraws and combines aliquots from three different heights above the bottom tangent of each agent hydrolysate hold tank into a sample. The sample is withdrawn at the glove box and the excess returned to the agent hydrolysate hold tank.

Treatment Verification occurs when the analytical results demonstrate the hydrolysate does not contain agent at a concentration above the performance based method detection limit not to exceed 20 parts per billion (ppb) for HD and $\leq$ 200 ppb for T. The hydrolysate now cleared for mustard is transferred to the 30-Day Hydrolysate Storage Tanks. Hydrolysate that does not meet the clearance criteria is pumped back to the Agent Hydrolyzers for re-processing.

The hydrolysate is a permitted waste stream with the K903 code.

D-5e 30-Day Hydrolysate Storage Tanks

The 30-Day Hydrolysate Storage Tanks perform a dual function. The 30-Day Hydrolysate Storage tanks store hydrolysate prior to processing in the Biotreatment Area (BTA) as well as providing storage prior to transfer for offsite treatment and disposal.

The permittee will sample and analyze the hydrolysate in the 30-Day Hydrolysate Storage Tanks in accordance with 6 CCR 1007-3 § 262.11. The Permittee will submit the analytical data for review by the Division upon request and maintain this information in the Operating Record.

D-5f Biotreatment Area (BTA)

The ~~Biotreatment Area (~~BTA~~)~~ processes the hydrolysate through biodegradation (aerobic microbiological action) in the ~~immobilized cell bioreactors (~~ICB™~~s)~~. The ICB™ feed tanks blend~~;~~ consists of hydrolysate from the 30-Day Hydrolysate Storage Tanks, process water ~~sulfuric acid (for pH adjustment),~~ and bioreactor nutrients. This is the influent for the ICB™~~s~~. The ICB™ units degrade the organic constituents in the hydrolysate. The treated hydrolysate, or ICB™ effluent, is transferred to the ICB™ effluent tanks.

When necessary to remove solid build-ups and blockages, flushing of the hydrolysate (K903) piping in the BTA will be performed using process water, citric acid, methane sulfonic acid solution, or equivalent. The flushing process will continue until the flow rate through the piping improves.

D-5f (1) ICB Effluent Tanks

The degraded hydrolysate is sampled and analyzed for thiodiglycol (TDG) to verify the biodegradation process was effective.

Biodegradation Performance Requirement~~Goal~~ The ICB™ module effluent TDG concentration must be less than 1,000 milligrams per liter (mg/l).~~The biodegradation process performance goal is > 86% percent removal of TDG and a target of > 95% percent removal of TDG.~~

When the performance requirement~~goal~~ is verified, the effluent is discharged to the ~~Brine Concentrator Feed Tanks (~~BCFTs~~)~~. If the performance requirement~~goal~~ is not met, the effluent will be recycled to the ICB™ feed tanks for additional treatment in the ICB™~~s~~.

The Permittee will sample and analyze the ICB effluent tanks twice a week in accordance with 6 CCR 1007-3 § 262.11. An alternate frequency, based on a statistical analysis and consideration of the hazardous constituents and other constituents determined in the effluent, may be submitted as a Permit Modification Request for review by the Division in accordance with 6 CCR 1007-3§100.63.

D-5f (2) Brine Concentrator Feed Tanks (BCFTs)

The BCFTs blend the following waste water streams: ICB effluent (hydrolysate), cooling tower blowdown, boiler blowdown, reverse osmosis (RO) reject water, recovered water, and liquids from sumps and secondary containment. This blended waste stream is transferred to the Brine Reduction System. The blended waste stream is a listed hazardous waste, K903 code.

D-5f (3) Brine Reduction System (BRS)

The BRS process removes the dissolved solids and residual organics from the blended waste stream. This process produces a filter cake and recovered water from the blended waste stream.

The BRS filtercake is a K903 hazardous waste and must be stored and managed in a permitted storage area. The Permittee will characterize the BRS filter cake in accordance with 6 CCR 1007-3 § 262.11, and sampling and analysis of filtercake shall be performed in accordance with 264.13(a)(3)(i) and Table D-5-1.

The recovered water produced by the BRS is transferred to the process water tank to be reused as a substitute for commercially available water in PCAPP processes.

- Sampling and analysis of the BRS recovered water will be conducted ~~during the Pilot Test Demonstration Operations,~~ as described in the Brine Reduction System (BRS) Recovered Water Sampling and Analysis Plan (hereinafter referred to as the BRS SAP) (24852-GPP-GGL-00011) and Section III.F.6 of this permit.
- ~~The~~ This WAP will be modified based on ~~the analytical results from testing during the Pilot Test Demonstration Operations and as defined by~~ the decision process for determining analytes and frequency described in the ~~BRS Recovered Water SAP~~ BRS SAP (24852-GPP-GGL-00011), Appendix ~~1~~ 3 of this WAP.

Table D-5-1 summarizes; waste/location generated, analyte(s), analytical method, sampling methods, frequency, and disposition of the waste streams identified in Section D-5 and D-6. This table is located at the end of the WAP.

D-6 Other Treatment Units

~~During Pilot Test Demonstration Operations the Permittee will generate agent-contaminated wastes. These agent-contaminated wastes are generated from but not limited to: the processes to treat munitions, mustard agent (HD/HT), and agent hydrolysate; decontamination processes; maintenance and repair activities; spills and releases; and sampling and testing events. These~~

~~agent-contaminated wastes must be managed in accordance with 6 CCR 1007-3 § 261, 262 and 268 and/or this permit if stored in permitted units.~~

The Supplemental Decontamination Unit (SDU) and the Autoclave systems are permitted Miscellaneous Treatment Units for these agent-contaminated wastes. The SDU and the autoclave systems are designed to reduce the level of mustard agent (HD/ HT) in/on the agent-contaminated wastes. Table D-6-1 identifies the approved material and processing time for the SDU and Autoclave.

D-6a SDU and Autoclave Description and Process

The SDU is a large convection-type oven used to treat agent-contaminated waste via a low temperature process over a period of time sufficient to volatilize the agent, decompose the agent, or accomplish a combination of these reactions to achieve the desired level of decontamination.

The autoclave is a system designed to decontaminate agent-contaminated waste with steam over a period of time sufficient to volatilize the agent, decompose the agent, or to achieve a combination of these reactions to the desired level of decontamination. The steam facilitates the hydrolysis of agent from the surface of the waste.

The SDU and autoclave are designed and operated to accommodate loads of a single agent-contaminated material or mixed loads of various agent-contaminated materials. The loading capacity of these units is based on volume. The operator receives, loads, and tracks the waste placed in the SDU and Autoclave in accordance with PCAPP protocols. The SDU and Autoclave are loaded from the Category B Room side. When the SDU or Autoclave cycle is completed a closed-loop monitoring system draws an air sample from the SDU or Autoclave for MINICAMS® monitoring to determine the level of mustard agent (HD/HT) contamination. The agent-contaminated wastes must be characterized in accordance with 6CCR 1007-3, section 262.11 for proper storage and disposal.

D-6a(1) Designation of Hazardous Waste Codes

The SDU and Autoclave processes decrease the level of mustard agent (HD/HT) in/on agent-contaminated waste. The waste is monitored by MINICAMS® at the completion of the SDU and Autoclave treatment cycles. The Characteristic for Reactivity code D003 may be removed from agent-contaminated/characteristic waste, if the headspace monitoring level of mustard agent (HD/HT) is < 0.7 VSL after decontamination in the SDU or Autoclave. All other hazardous waste codes applicable to the agent-contaminated waste prior to decontamination in the SDU or Autoclave will remain with the waste after decontamination cycle is completed. MINICAMS® monitoring levels for;

- Mustard agent (HD/HT) < 0.2 VSL. The SDU and Autoclave are unloaded into the TMA Category C Room. The decontaminated waste will carry the hazardous waste codes K901 or K902.
- Mustard agent (HD/HT) ≥ 0.2 and < 0.7 VSL. The SDU and Autoclave are unloaded into the TMA Category B Room. The decontaminated waste will carry the K901 or K902 codes.

waste stream will be shipped off-site for treatment and/or disposal. This waste stream will be analyzed for TC metals and TC organics, as required to verify generator knowledge.

D-8 Sampling and Analysis Methods

Table D-8-1 PCAPP Laboratory Analytical Methods and Procedures; is a list of Methods and Procedures used by the PCAPP Laboratory (at the end of the WAP). These analytical methods and procedures, used for sampling and testing of waste are from or are based on: *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846, current edition; *Annual Book of ASTM Standards,* American Society for Testing and Materials; *Standard Methods for the Examination of Water and Wastewater*, Standard Methods Committee; or other EPA recognized methods as referenced in the Colorado Hazardous Waste Regulations, 6 CCR 1007-3,

- When determining if a waste exhibits any of the characteristics of hazardous waste in accordance with 6 CCR 1007-3 §261.20 the referenced methods in Colorado Hazardous Waste Regulations, 6 CCR 1007-3 §260.11(c)(3) must be used; different revisions or alternative methods cannot be used.

The MINICAMS® and DAAMS monitoring methods have the sampling protocol in the method.

The following documents address sampling and analysis and monitoring completed by the PCAPP Laboratory.

- *Laboratory Analysis and Monitoring Plan, CDRL D007,* 24852-GPP-GGL-00002, Revision 007, September 2019
- ~~*Laboratory Sampling and Analysis Plan (LSAP) for Pilot Test Phase Operations,* 24852-GPP-GGL-00013, Revision 005, May 2016~~
- *Brine Reduction System (BRS) Recovered Water Sampling and Analysis Plan (SAP),* 24852-GPP-GGL-00011, Revision 005, December 2016

Waste streams that rely on laboratory analysis for characterization are sampled at least annually to demonstrate the characterization is current and accurate. Waste streams will be sampled and analyzed when changes are made to the process that generated the waste. This frequency applies to characterization using process knowledge.

The Monitoring Locations Table (LAMP Appendix A), Appendix 4 of the Waste Analysis Plan, identifies the minimum configuration of the PCAPP agent monitoring system. To provide operational flexibility and to meet processing needs, additional monitoring may be performed using portable MINICAMS or Depot Area Air Monitoring Systems (DAAMS), by extending the monitoring range at a sampling location, or by installing sample lines from a currently operating MINICAMS or DAAMS to the area requiring monitoring. This additional monitoring will be performed in accordance with the Laboratory Analysis and Monitoring Plan (LAMP, Appendix 1 of the Waste Analysis Plan), the Laboratory Quality Control Plan (LQCP, Appendix 2 of this Waste Analysis Plan), and the applicable methods, plans, and procedures identified in Table D-8-1. If the additional monitoring becomes permanent, an update to the Monitoring Locations Table (LAMP Appendix A) will be submitted as a permit modification request to the Division.

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	Parameter	Analytical Method	Sampling Method	Frequency	Waste Code(s)	Disposition
Munitions/PCD Igloos	HD/HT	N/A	N/A	N/A	K901, P081, U105, D001, D002, D003, D004-D011, D022, D028, D029, D030 D034, D039, D040, D043	MSM and treatment in the PCAPP facility, ERB-APB-MTU
Intact, non-leaking, palletized rounds	HD/HT	N/A	N/A	N/A	K901, P081, U069, U105, D001, D002, D003, D004-D011, D022, D028, D029, D030 D034, D039, D040, D043	Treated in ~~EDS~~SDC – may be stored in ~~H Block Igloo~~H-block igloo 1102 or G-block igloos G101, G102, and G103 prior to treatment.
Non-agent contaminated Munition Parts/ERB baseline and enhanced reconfiguration	HD/HT	24852-GPP-GGL-00301 (MINICAMS®)	Air/Headspace	Each OPP (baseline and enhanced), each opened fiber tube at MMT (baseline), each PME Tray (enhanced)		Non-hazardous solid waste, <0.2VSL
Munition Parts, Agent-Contaminated/ERB baseline and enhanced reconfiguration	HD/HT	24852-GPP-GGL-00301 (MINICAMS®)	Air/Headspace	Each OPP (baseline and enhanced), each PME Tray (enhanced)	K901, other characteristic codes will be based on generator characterization IAW 262.11	Decontamination in SDU or Autoclave and/or Permitted Waste Storage prior to ship offsite for treatment &/or disposal

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	Parameter	Analytical Method	Sampling Method	Frequency	Waste Code(s)	Disposition
Energetics[2], non-agent-contaminated/ERB baseline & enhanced reconfiguration	HD/HT	24852-GPP-GGL-00301 (MINICAMS®)	Air/Headspace	Each OPP, each PME tray, each opened fiber tube at an MMT	See applicable codes below for specific energetic	ESM and H-block igloo for storage prior to ~~on site transfer to EDS~~SDC treatment or ship off site for treatment and/or disposal
Energetics[2], agent-contaminated/ERB baseline and enhanced reconfiguration, leaker determination	HD/HT	24852-GPP-GGL-00301 or GGL-00302 (MINICAMS®) or (DAAMS)	Air/Headspace	RTA-Each OPP, VCR-Opened Fiber Tubes at MMT, PME-Each tray	K901, D003[1], D022, D028, D029, D034, D039, D040, D043, (see applicable codes below for specific energetics)	≥ 0.7 VSL; PCD permitted G-block ~~storage~~ igloos for storage prior to SDC treatment or sent directly to the SDC for treatment; ≥ 0.2 and < 0.7 VSL, permitted H-block or permitted G-block ~~storage~~ igloos for storage prior to SDC treatment, sent directly to the SDC for treatment, ~~onsite~~ or ship off site for treatment and disposal

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	Parameter	Analytical Method	Sampling Method	Frequency	Waste Code(s)	Disposition
M6 Burster in 155mm	tetrytol	Generator Knowledge	N/A	N/A	D001, D003	Non-agent-contaminated: ESM storage prior to transfer to permitted H-block ~~storage~~ igloos or ship off site for treatment ~~&~~and/or disposal Agent-contaminated: $\geq$ 0.7 VSL, PCD permitted G-block ~~storage~~ igloos for storage prior to SDC treatment or sent directly to the SDC for treatment $\geq$ 0.2 and $<$ 0.7 VSL; permitted H-block or permitted G-block ~~storage~~ igloos for
M5 Burster in 105mm	tetrytol	Generator Knowledge	N/A	N/A	D001, D003	
Propelling Charges M67, propellant (M1) packed with Primer (M28A2)	nitrocellulose 2,4-dinitrotoluene* Pb carbonate Pb thiocyanate K chlorate trinitrotoluene (TNT)	Generator Knowledge	N/A	N/A	D001, D003, D008, D030 *U105/D030	
M57 Fuze in 105mm	K chlorate carborundum Pb azide	Generator Knowledge	N/A	N/A	D001, D003, D006, D007, D008	
M51A5 Fuze in 105mm	K chlorate carborundum Pb azide K nitrate Ba stearate tetryl	Generator Knowledge	N/A	N/A	D001, D003, D005, D006, D007, D008	
M8 Fuze with M14 Burster in 4.2in mortar	K chlorate carborundum Pb azide tetryl	Generator Knowledge	N/A	N/A	D001, D003, D006, D007, D008	
M6 Propellant in 4.2in mortar	nitrocellulose nitroglycerin K nitrate	Generator Knowledge	N/A	N/A	D001, D003, P081	

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	Parameter	Analytical Method	Sampling Method	Frequency	Waste Code(s)	Disposition
M2 Ignition Cartridge in 4.2in mortar	Ba nitrate Pb styphnate nitrocellulose tetracene nitroglycerin K nitrate	Generator Knowledge	N/A	N/A	D001, D003, D005, D008, P081	storage prior to SDC treatment, sent directly to the SDC for treatment, ~~on site~~ or ship off site for treatment ~~&~~ and disposal
Munitions without Energetics/MME	HD/HT	24852-GPP-GGL-00301 or -00302 (MINICAMS®) or (DAAMS)	Air/Headspace	Each tray	K901, D002, D003[3], D004-D011, D022, D028, D029, D034, D039, D040, D043	≥ 0.2 VSL, permitted storage prior to transfer to PCD permitted G-block ~~storage~~ igloos for storage prior to ~~followed by on site~~ SDC treatment or sent directly to the SDC for treatment

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	**Parameter**	**Analytical Method**	**Sampling Method**	**Frequency**	**Waste Code(s)**	**Disposition**
Drained and Washed Munition/MWS	Outside Weight Range (after multiple attempts)	N/A	N/A	Each munition	K901, D002-D011, D022, D028, D029, D034, D039, D040, D043	Manage as reject at MWS; transfer to PCD permitted G-block igloos or H- block igloo 1102 for storage prior to ~~EDS~~SDC treatment or directly to the ~~EDS~~SDC for treatment.
Munition Bodies/MTU: Verified for release to munition bins	HD/HT < 0.2 VSL	24852-GPP-GGL-00301 (MINICAMS®)	Air/Headspace	Each MTU exit line	K901	Munition Bins Exterior to the MTU Area of the APB − See Munitions Bodies/Munition Bins 2 rows below for further instructions.
Munition Bodies/MTU: agent-contaminated[4]					K901, D002, D004-D011, D022, D028, D029, D034, D039, D040, D043	Appropriate packaging and storage until; retreatment in MTU or permitted waste storage prior to ship offsite for treatment &/or disposal

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	Parameter	Analytical Method	Sampling Method	Frequency	Waste Code(s)	Disposition
Munition Bodies/MTU: agent-contaminated and characteristic[4]					D003 in addition to agent-contaminated codes	Contingency Plan Implemented if exited the APB on MTU exit conveyor
Munition Bodies/Munition Bins − processed within normal operating ranges (D-5d(2))	HD/HT < GPL ~~Demonstrated during Pilot Test Plan~~	24852-GPP-GGL-00302 (DAAMS)	Air/Headspace	None	None, amenable for Recycling as scrap metal	Amenable for recycle/reclaim IAW 6 CCR 1007-3 §261.2 and §261 Table 1
Munition Bodies/Munition Bins − processed outside normal operating ranges (D-5d(2))	HD/HT < GPL	24852-GPP-GGL-00302 (DAAMS)	Air/Headspace	Each Munition Bin	None, amenable for Recycling as scrap metal	Amenable for recycle/reclaim IAW 6 CCR 1007-3 §261.2 and §261 Table 1
	HD/HT ≥ GPL				K901	Disposition as hazardous waste at TSDF
Dust and paint residue from the MTUs	HD/HT	24852-GPP-GGL-00301 (MINICAMS®)	Air/Headspace	Each container	K901, D005, D006, D007, D008	Permitted Waste Storage prior to offsite treatment &/or disposal
	TCLP Metals	24852-GPP-GGL-00103	Grab	1 sample/container		
Hydrolysate/Agent hydrolysate hold tank(s)	HD/HT	24852-GPP-GGL-00204	Composite	Each hydrolysate hold tank batch	K903, other characteristic codes will be based on generator characterization IAW 262.11	30-day hydrolysate Storage Tanks

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	Parameter	Analytical Method	Sampling Method	Frequency	Waste Code(s)	Disposition
Recovered water/BRS	TDG 1,4-dithiane & 1,4-oxathiane VOCs SVOCs Metals, total, including mercury (Hg) Inorganic anions and cations	24852-GPP-GGL-00114, 24852-GPP-GGL-00205, 24852-GPP-GGL-00115, 24852-GPP-GGL-00116, 24852-GPP-GGL-00103, 24852-GPP-GGL-00104	Grab Grab Grab Grab Grab Grab Grab	~~During Pilot Test Demonstration~~ ~~d~~Defined by BRS Sampling and Analysis Plan	K903, other characteristic codes will be based on generator characterization IAW 262.11, unless it meets the requirements of Permit Condition III.F.6 and the BRS SAP (Appendix 3 to this Plan) to be recycled by PCAPP as an acceptable substitute for well water (i.e., as product).	To be determined based on analytical results: 1) Plant Process Water System 2) Brine Concentrator Feed Tank 3) Off-site treatment and/or disposal
Carbon, agent-contaminated/MSM, G-block igloos, mobile agent filtration unit, Medical facility (decon room) ventilation system, Laboratory hood filtration	HD/HT TC Metals TC Organics	24852-GPP-GGL-00301 or -00302 (MINICAMS®) or (DAAMS) Generator knowledge	Air/Headspace N/A	Each Container N/A	K902, other characteristic codes will be based on generator characterization IAW 262.11	Permitted Storage or Generator Accumulation, or both, prior to shipping offsite for treatment &/or disposal
Carbon, agent-contaminated and hydrolysate contaminated/AFA -all banks, Laboratory Ventilation System,	HD/HT TC Metals	24852-GPP-GGL-00301 or -00302 (MINICAMS®) or (DAAMS) for agent-	Air/Headspace N/A	Each Container N/A	K902 and K903, other characteristic codes will be based on generator characterization IAW 262.11	Permitted Storage or Generator Accumulation, or both, prior to shipping offsite

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	**Parameter**	**Analytical Method**	**Sampling Method**	**Frequency**	**Waste Code(s)**	**Disposition**
Laboratory hood filtration	TC Organics	contamination Generator knowledge				for treatment &/or disposal
Carbon, non-agent-contaminated, hydrolysate contaminated/off-gas treatment systems associated with 30-day hydrolysate storage tanks, biotreatment units, brine concentrator feed tanks, brine reduction system, Laboratory and sample management hood filtration	TC Metals TC Organics	Generator knowledge	N/A	N/A	K903, other characteristic codes will be based on generator characterization IAW 262.11	Permitted Storage or Generator Accumulation, or both, prior to shipping offsite for treatment &/or disposal
Carbon, non-agent-contaminated, hydrolysate-contaminated/ Distillate polishing carbon from BRS system	TC Metals TC Organics~~TBD during Pilot Test Demonstration~~	Generator knowledge~~TBD during Pilot Test Demonstration~~	N/A~~TBD during Pilot Test Demonstration~~	N/A~~TBD during Pilot Test Demonstration~~	K903, other characteristic codes will be based on generator characterization IAW 262.11	Permitted Storage or Generator Accumulation, or both, prior to shipping offsite for treatment &/or disposal

Table D-5-1 Waste Designation, Sampling/Analysis Requirements, Disposition

Waste Description/ Location	Parameter	Analytical Method	Sampling Method	Frequency	Waste Code(s)	Disposition
Sludges, agent-contaminated/APB Tanks, Sumps, Strainers	HD/HT	Generator knowledge	N/A	N/A	K901 or K902, D003[1], D004-D011, D022, D028, D029, D034, D039, D040, D043, applicability of K903 will be based on generator characterization IAW 262.11	Permitted Waste Storage prior to ship offsite for treatment and/or disposal
Sludges, non-agent-contaminated/30-day Tank, BTA, BRS Feed Tank	TC Metals TC Organics ~~TBD during Pilot Test Demonstration~~	Generator knowledge ~~TBD during Pilot Test Demonstration~~	N/A ~~TBD during Pilot Test Demonstration~~	N/A ~~TBD during Pilot Test Demonstration~~	K903, Characteristic codes will be based on generator characterization IAW 262.11	Permitted Waste Storage prior to ship offsite for treatment and/or disposal
Waste from flushing of hydrolysate piping with liquids other than water (e.g., ICB™ piping with citric acid or methane sulfonic acid solution)	TC Metals TC Organics Corrosivity (pH)	Generator knowledge, 24852-GPP-GGL-00101	Grab	Each container	K903, other characteristic codes will be based on results of analysis	Permitted Waste Storage

2. Energetics must be placed into permitted storage. Non-agent-contaminated energetics are stored in the ESM and in the PCAPP H-block igloos H1104 through H1109.
Agent-contaminated energetics are transferred to PCD for storage in PCD-permitted G-block igloos. The PCD-permitted G-block ~~storage~~ igloos are: G1009, G1107, G1109, and G1110.
Agent-contaminated energetics are not stored in PCAPP-permitted G-block igloos. PCAPP-permitted G-block igloos G201, G202, G203 and G204 will store ≥ 0.7 VSL secondary waste and ≥ 0.2 VSL agent-contaminated explosive-contaminated wastes.

3. Munitions exiting the MME contain mustard agent, the headspace monitoring is done to determine if the exterior of the munition is agent contaminated. The D003 code is applicable to these munitions and is not removed based on the headspace monitoring levels, VSL, for mustard agent (HD/HT).

4. A monitoring level ≥ 0.2 VSL at the MTU exit lines is an off normal condition. The MTU line will shut down and the munitions bodies will not be released to the munitions bodies storage exterior to the building.

5. If material is added to the 30-Day Hydrolysate Storage Tank prior to completion of transfer of the tank contents for offsite treatment and/or disposal, PCAPP will coordinate with CDPHE to determine the need for collection and analysis of a new sample prior to transferring any additional hydrolysate for offsite treatment and/or disposal.

Table D-6-1 Materials and Processing Time for SDU and Autoclave

GROUP	ITEM #	MATERIAL TO BE PROCESSED	Autoclave	Supplemental Decontamination Unit		
			250°F (Baskets)	195°F (Baskets)	275°F (Baskets)	420°F (Baskets or Drums)
A	1	BREATHING AIR HOSES (E.G., CUT ENDS REMOVED)	YES	NO	NO	NO
B	2	GLASS MATERIALS (E.G., PH PROBES, ETC.)	~~NO~~**YES[21]	~~NO~~**YES[21]	NO	NO
	3~~2~~	PRE-FILTER, HEPA MATERIAL, AND FILTER FRAME (POLYSTYRENE) AND FILTER GASKET (POLYURETHANE)	NO	YES	NO	NO
	4~~3~~	ABSORBENT ITEMS (E.G., PILLOWS, SOCKS, AND PADS – NO FREE LIQUIDS)	NO	YES	NO	NO
	5~~4~~	CARDBOARD/PAPER	NO	YES	NO	NO
	6~~5~~	COTTON ITEMS (E.G., COVERALLS, T SHIRTS, SOCKS, UNDERWEAR, RAGS/DIAPERS)	NO	YES	NO	NO
	~~6~~	~~CHLORINATED POLYETHYENE ITEMS (E.G., DPE SUITS)~~	~~NO~~	~~YES~~	~~NO~~	~~NO~~
	7	DUCT TAPE	~~NO~~YES	YES	NO	NO
	8	EPDM ITEMS (E.G., RUBBER SEALS, O-RINGS, TUBING, HOSES, GASKETS)	~~NO~~YES	YES	NO	NO
	9	HDPE ITEMS (E.G., PLASTICS CONTAINERS WITH #2 RECYCLING STAMP, GASKETS)	~~NO~~YES	YES	NO	NO
	10	INSULATION	NO	YES	NO	NO
	11	TYCHEM RESPONDER LEVEL A SUITS	~~NO~~**YES[19]	YES	NO	NO
	12	LEATHER ITEMS	NO	YES	NO	NO
	13	PVC ITEMS (E.G., DPE VISOR, PLUMBING PIPING, INSULATED WIRE, PLASTIC CONTAINERS WITH #3 RECYCLING STAMP	~~NO~~**YES[19]	YES	NO	NO
	14	WOOD ITEMS	~~NO~~YES	YES	NO	NO
	15	POLYETHYLENE ITEMS (E.G.,VISQUEEN, MIL BAGS, PLATICS CONTAINERS WITH #4 RECYCLING STAMP	~~NO~~YES	YES	NO	NO
	16	PENS AND MARKERS	NO	YES	NO	NO
	17	PET PLASTIC ITEMS (E.G., PLASTICS CONTAINERS WITH #1 RECYCLING STAMP)	~~NO~~**YES[20]	YES	NO	NO
C	18	CHLORINATED POLYETHYLENE ITEMS (DPE SUITS)	**YES[17]	NO	**YES[18]	NO
	19~~8~~	BUTYL ITEMS (E.G., TAP CLOVES AND BOOTS)	YES	YES	YES	NO
	20~~19~~	KYNAR ITEMS	~~NO~~YES	YES	YES	NO
	21~~0~~	LEXAN ITEMS (E.G., PME AND MME ENCLOSURES)	~~NO~~YES	YES	YES	NO
	22~~1~~	NITRILE ITEMS (E.G., GLOVES, ERGOKNEEL MATS)	~~NO~~YES	YES	YES	NO
	23~~2~~	NYLON ITEMS (E.G., BRUSHES, MESH BAGS)	~~NO~~YES	YES	YES	NO
	24~~3~~	POLYPROPLYLENE ITEMS (E.G.,MIL BAGS, PLASTICS CONTAINERS WITH #5 RECYCLING STAMP)	~~NO~~YES	YES	YES	NO

GROUP	ITEM #	MATERIAL TO BE PROCESSED	Autoclave	Supplemental Decontamination Unit		
			250°F (Baskets)	195°F (Baskets)	275°F (Baskets)	420°F (Baskets or Drums)
	25~~4~~	SAFETY HARNESSES	~~NO~~YES	YES	YES	NO
	26~~5~~	~~R~~TEFLON (PTFE) ITEMS (E.G., TUBING, GASKETS)	YES	YES	YES	NO
	27~~6~~	TYVEK ITEMS (E.G., APRONS AND SUITS)	NO	YES	YES	NO
	28	FLUOR ELASTOMER (FMK) VITON (E.G., SEALS, O-RINGS, TUBING, GASKETS, ETC.)	YES	YES	**YES[22]	NO
D	29~~6~~	METAL ITEMS	YES	YES	YES	YES
F	30~~27~~	FREE LIQUIDS	NO	NO	NO	NO
	31~~28~~	AEROSOL CANS	NO	NO	NO	NO
	32~~29~~	BATTERIES	NO	NO	NO	NO
	~~30~~	~~GLASS~~	~~NO~~	~~NO~~	~~NO~~	~~NO~~
	33~~1~~	LIGHT BULBS	NO	NO	NO	NO
	34~~2~~	ITEMS THAT CAN BE PRESSURIZED DUE TO HEAT	NO	NO	NO	NO
	35~~3~~	ITEMS THAT CONTAIN MERCURY	NO	NO	NO	NO
	36~~4~~	EQUIPMENT AND PIPING SLUDGES	NO	NO	NO	NO

Notes:

1. AUTOCLAVE OPERATING ROGRAMS/ PROFILES: 250°F (MINIMUM 4 HOURS)
2. SDU OPERATING PROGRAMS/ PROFILES: LOW TEMPERATURE – 195°F (MINIMUM 12 HOURS), MEDIUM TEMPERATURE– 275°F(MINIMUM 12 HOURS), HIGH TEMPERATURE– 420°F (MINIMUM 12 HOURS)
3. ITEMS NOT LISTED AND EXCEPTIONALLY LARGE ITEMS REQUIRE MATERIAL EVALUATION BY ENGINEERING PRIOR TO PROCESSING. TESTING MAY BE REQUIRED.
4. ITEMS PROCESSED BELOW 420°F SHALL BE PLACED IN BASKET WITH CONTAMINATED SURFACES EXPOSED. THESE ITEMS SHALL NOT BE FOLDED TO CAUSE OCCLUDED SPACES AND MUST FIT WITHIN THE BASKET. ITEMS MAY NEED TO BE DISASSEMBLED OR CUT PRIOR TO LOADING INTO BASKETS.
5. SMALL PARTICLE ITEMS THAT MAY FALL THROUGH BASKET OPENINGS SHALL BE PLACED IN MESH BAG PRIOR TO PROCESSING.
6. ITEMS MAY BE PROCESSED IN MIXED BATCHES. THE ITEM WITH THE LOWEST APPROVED PROCESSING TEMPERATURE SHALL BE USED TO DETERMINE THE MIXED BATCH.
7. PPE PREFERENTIALLY SHOULD BE PROCESSED IN THE SDU.
8. ALL ABSORBENTS SHALL BE VISUALLY INSPECTED TO VERIFY THAT THEY ARE DRIP FREE ABSORBENTS.
9. ABSORBENTS AND OTHER MATERIALS THAT CONTAIN LIQUIDS THAT POTENTIALLY HAVE HIGH AGENT CONTENT SHALL BE DECONTAMINATED WITH AN APPROVED DECON SOLUTION IN AN APPROVED MANNER PRIOR TO PROCESSING IN THE SDU OR AUTOCLAVE.
10. TORN ABSORBENT PADS, PILLOWS OR SOCKS SHALL BE PLACED INTO A MESH BAG PRIOR TO PROCESSING.
11. METALLIC PARTS PREFERENTIALLY TO BE PROCESSED IN SDU.
12. LSS AND HYDRAULIC HOSES ENDS SHALL BE CUT OUT.
13. FREE LIQUIDS INCLUDING BUT NOT LIMITED TO OILY WASTE, HYDRAULIC FLUID AND MINERAL OIL MATERIALS SHALL NOT BE PROCESSED IN THE SDU OR AUTOCLAVE.
14. ITEMS IN PARENTHESES ARE EXAMPLES ARE COMMON ITEMS TO HELP OPERATORS TO IDENTIFY COMMONLY USED MATERIALS.
15. LARGE METALLIC PARTS SUCH AS PUMPS SHALL BE DISASSEMBLED INTO COMPONENTS PRIOR TO DECONNING.

GROUP	ITEM #	MATERIAL TO BE PROCESSED	Autoclave	Supplemental Decontamination Unit		
			250°F (Baskets)	195°F (Baskets)	275°F (Baskets)	420°F (Baskets or Drums)
16. MISCELLANEOUS STORAGE OF WASTE IN BASKETS CANNOT EXCEED 12 FT HIGH AND STORAGE ARRAY CANNOT EXCEED 1000 SQ. FT PER NFPA 13.						
17. FOR AUTOCLAVE PROCESSING, CPE DPE SUITS COMPONENTS SHOULD BE EITHER HUNG OR PLACED IN BASKETS IN A MANNER THAT PREVENTS PONDING. IT MAY BE NECESSARY TO REMOVE ARMS AND LEGS IN ORDER TO FACILITATE PROCESSING.						
18. CPE MATERIALS OR MATERIALS WITH CPE COMPONENTS REQUIRE ENGINEERING ASSESSMENT (TESTING) PRIOR TO DECONNING IN THE SDU AT 275 DEG F.						
19. PVC MATERIALS OR MATERIALS WITH PVC COMPONENTS REQUIRE ENGINEERING ASSESSMENT (TESTING) PRIOR TO DECONNING IN THE AUTOCLAVE.						
20. BOTTLES MUST HAVE HOLES PUNCHED OR CUT PRIOR TO AUTOCLAVE PROCESSING.						
21. GLASS MATERIALS OR MATERIALS WITH GLASS COMPONENTS REQUIRE ENGINEERING ASSESSMENT (TESTING) PRIOR TO DECONNING IN THE AUTOCLAVE OR SDU.						
22. FKM MATERIALS OR MATERIALS WITH FKM COMPONENTS REQUIRE ENGINEERING ASSESSMENT (TESTING) PRIOR TO DECONNING IN THE SDU AT 275 DEG F.						

Table D-8-1 PCAPP Laboratory Analytical Methods and Procedures

Document No.	Rev. No.	Document Title	Method Based On
24852-GPP-GGL- 00301	010	Mustard Agent (HD) in Air by MINICAMS®	USEPA SW846 Methods 8260 and 8270
24852-GPP-GGL- 00302	007	DAAMS by GC-MSD	USEPA SW846 Methods 8260 and 8270
24852-GPP-GGL- 00303	003	DAAMS by GC-FPD	Project Developed
Procedures			
24852-GPP-GGL-DP021	000	Sample Collection Techniques	USEPA 600/2-80-018, Standard Methods, USEPA SW-846, New Jersey Department of Environmental Protection – Field Sampling Procedures
24852-GPP-GGL-LP003	005	Receipt, Storage, Transfer, Disposal, and Accountability of RDT&E Solutions	Project Developed
24852-GPP-GGL-LP004	005	Preparation of Laboratory Agent Standards	Project Developed
24852-GPP-GGL-LP005	008	Receipt, Storage, Transfer, and Disposal of Analytical and Environmental Samples	Project Developed
24852-GPP-GGL-LP012	001	Data Review and Qualification	Project Developed
24852-GPP-GGL-LP014	007	Receipt, Acceptance, and Conditioning of DAAMS Tubes, PCT's, Cold Traps, and NOx Filters	Project Developed
24852-GPP-GGL-LP015	007 (LDCR-00088)	DAAMS Tube Spiking Procedure	Project Developed
24852-GPP-GGL-MP002	002	Perimeter Monitoring Trailer Operation	Project Developed
24852-GPP-GGL-MP003	008	DAAMS Station Operation and PM	Project Developed
24852-GPP-GGL-MP005	006	Heated Sample Transfer Line Spiking and Cleaning	Project Developed
24852-GPP-GGL-MP007	004	MINICAMS® and DAAMS Alarm Response	Project Developed
24852-GPP-GGL-MP008	002	Monitoring Solid Waste and Protective Equipment	Project Developed
24852-GPP-GGL-MP014	005	Real-Time Analytical Platform (RTAP) Operations and Maintenance	Project Developed
24852-GPP-GGL-NP001	003	Environmental and Hazardous Waste Sampling	USEPA SW846, Standard Methods
24852-SOP-B04-W0002	002	Glovebox Sampling	Project Developed
24852-SOP-B24-W0003	007~~6~~	Secondary Waste Processing	Project Developed

Enclosure 12

Proposed Revisions to the List of Monitoring Locations (LAMP Appendix A), Appendix 4 to Attachment D, with changes depicted using “track changes”

MINICAMS										DAAMS								
STATION INFORMATION					HSTL INFORMATION					STATION INFORMATION				HSTL INFORMATION				
Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
APB Monitoring Locations																		
3305M	North-West Vestibule (D)	APB-103	VSL	Once	AE-3305A	West Corrdior (North)	APB-124	20	60	**3305AD**	West Corrdior (North)	APB-124	VSL/WPL	AX-3305A	West Corrdior (North)	APB-124	48	60
					AE-3305B	West Airlock C	APB-112	34	60	**3305BD**	West Corrdior (North)	APB-124	VSL/WPL	AX-3305B	West Airlock C	APB-112	66	60
3306M	North-West Vestibule (D)	APB-103	VSL	Once	AE-3306A	Munition Receiving Room (west)	APB-114	79	60	**3306AD**	North-West Vestibule (D)	APB-103	VSL/WPL	AX-3306A	Munition Receiving Room (west)	APB-114	112	60
3306BM	Munitions Receiving Room	APB-114	VSL	Once	AE-3306B	Munitions Body Storage Building (west)	APB-101	95	60	**3306BD**	North-West Vestibule (D)	APB-103	VSL/WPL	AX-3306B	Munitions Body Storage Building (west)	APB-101	121	60
3307M	North-West Vestibule (D)	APB-103	VSL	Once	AE-3307A	Munitions Receiving Room (east)	APB-114	148	60	**3307AD**	North-West Vestibule (D)	APB-103	VSL/WPL	AX-3307A	Munitions Receiving Room (east)	APB-114	146	60
3307BM	Munitions Receiving Room	APB-114	VSL	Once	AE-3307B	Munitions Body Storage Building (east)	APB-101	118	60	**3307BD**	North-West Vestibule (D)	APB-103	VSL/WPL	AX-3307B	Munitions Body Storage Building (east)	APB-101	138	60
3309M	West C Corridor (south)	APB-124	VSL	Once	AE-3309A	West Corridor (south)	APB-124	48	60	**3309AD**	West C Corridor (south)	APB-124	VSL/WPL	AX-3309A	West Corridor (south)	APB-124	46	60
					AE-3309B	MTU Room (north)	APB-133	131	60	**3309BD**	West C Corridor (south)	APB-124	VSL/WPL	AX-3309B	MTU Room (north)	APB-133	133	60
3311M	West C Corridor (south)	APB-124	ECL/VSL	Once	AE-3311	West Airlock B	APB-113	104	Once	---	---	---	---	---	---	---	---	---
3312M	West C Corridor (north)	APB-124	ECL/VSL	Once	AE-3312	West Airlock A (wand)	APB-113	111	Once	---	---	---	---	---	---	---	---	---
3314M	West C Corridor (south)	APB-124	ECL/VSL	Once	AE-3314	West Decon Airlock A	APB-118	92	Once	---	---	---	---	---	---	---	---	---
3315M	West C Corridor (south)	APB-124	IDLH	Once	AE-3315	MWS Room (west)	APB-125	169	Once	---	---	---	---	---	---	---	---	---
3316M	Decon Monitoring Station (E)	APB-135	IDLH	Once	AE-3316A	MWS Room (east)	APB-125	97	Once	---	---	---	---	---	---	---	---	---
3316BM	Entry Support Area (E)	APB-119	ECL/VSL	Once	AE-3316B	Toxic Area Maintenance A	APB-126	61	Once	---	---	---	---	---	---	---	---	---
3316PM	Entry Support Area (E)	APB-119	ECL/VSL	Once	AE-3316P	Toxic Area Maintenance A (probe)	APB-126	140	60	---	---	---	---	---	---	---	---	---
3318M	West C Corridor (south)	APB-124	VSL	Once	AE-3318A	MWS Water Storage Room	APB-132	96	60	**3318AD**	West C Corridor (south)	APB-124	VSL/WPL	AX-3318A	MWS Water Storage Room	APB-132	88	60
					AE-3318B	MTU Room (south)	APB-133	147	60	**3318BD**	West C Corridor (south)	APB-124	VSL/WPL	AX-3318B	MTU Room (south)	APB-133	149	60
3319M	Decon Monitoring Station (E)	APB-135	ECL/VSL	Once	AE-3319A	Southwest Airlock B (wand)	APB-143	69	Once	---	---	---	---	---	---	---	---	---
3319BM	Cotton Goods Storage Room	APB-139	ECL/VSL	Once	AE-3319B	Southeast Airlock B (wand)	APB-145	66	Once	---	---	---	---	---	---	---	---	---
3320M	Decon Monitoring Station (E)	APB-135	ECL/VSL	Once	AE-3320A	Southwest Airlock B	APB-143	57	Once	---	---	---	---	---	---	---	---	---
3320BM	Cotton Goods Storage Room	APB-139	ECL/VSL	Once	AE-3320B	Southeast Airlock B	APB-145	66	Once	---	---	---	---	---	---	---	---	---
3321M	Decon Monitoring Station (E)	APB-135	ECL/VSL	Once	AE-3321A	Southwest Airlock A (wand)	APB-134	65	Once	---	---	---	---	---	---	---	---	---
3321BM	Cotton Goods Storage Room	APB-139	ECL/VSL	Once	AE-3321B	Southeast Airlock A (wand)	APB-136	80	Once	---	---	---	---	---	---	---	---	---
3322M	Decon Monitoring Station (E)	APB-135	ECL/VSL	Once	AE-3322A	Southwest Airlock A	APB-134	44	Once	---	---	---	---	---	---	---	---	---
3322BM	Cotton Goods Storage Room	APB-139	ECL/VSL	Once	AE-3322B	Southeast Decon Airlock A	APB-136	68	Once	---	---	---	---	---	---	---	---	---
3325AM	Cotton Goods Storage Room	APB-139	ECL/VSL	Once	AE-3325A	Maintenance Airlock B	APB-137	74	Once	---	---	---	---	---	---	---	---	---
3325M	East C Corridor (south)	APB-121	~~ECL/VSL~~ IDLH	Once	AE-3325B	Toxic Maintenance Area B	APB-127	109	Once	---	---	---	---	---	---	---	---	---
3325PM	Cotton Goods Storage Room	APB-139	IDLH	Once	AE-3325P	Maintenance Airlock B (probe)	APB-137	140	60	---	---	---	---	---	---	---	---	---
3327M	East C Corridor (south)	APB-121	IDLH	Once	AE-3327	Toxic Room A (east)	APB-120	47	Once	---	---	---	---	---	---	---	---	---

MINICAMS										DAAMS								
STATION INFORMATION					HSTL INFORMATION					STATION INFORMATION				HSTL INFORMATION				
Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
3328M	Entry Support Area (E)	APB-119	VSL	Once	AE-3328	Southwest Airlock C	APB-144	91	60	**3328D**	Entry Support Area (E)	APB-119	VSL/WPL	AX-3328	Southwest Airlock C	APB-144	92	60
3332M	Entry Support Area (E)	APB-119	VSL	Once	AE-3332	Southeast Airlock C	APB-147	52	60	**3332D**	Entry Support Area (E)	APB-119	VSL/WPL	AX-3332	Southeast Airlock C	APB-147	70	60
3333M	AGV MINICAM Room (D)	AGV-105	VSL	Once	AE-3333	AGV Corridor (north)	AGV-100	119	60	**3333D**	AGV MINICAM Room (D)	AGV-105	VSL/WPL	AX-3333	AGV Corridor (north)	AGV-100	142	60
3334M	AGV MINICAM Room (D)	AGV-105	VSL	Once	AE-3334	AGV Corridor	AGV-100	135	60	**3334D**	AGV MINICAM Room (D)	AGV-105	VSL/WPL	AX-3334	AGV Corridor	AGV-100	140	60
3335M	AGV MINICAM Room (D)	AGV-106	VSL	Once	AE-3335A	AGV Corridor (south)	AGV-100	106	60	**3335AD**	AGV MINICAM Room (D)	AGV-106	VSL/WPL	AX-3335A	AGV Corridor (south)	AGV-100	110	60
					AE-3335B	AGV Vestibule (south)	AGV-104	78	60	**3335BD**	AGV MINICAM Room (D)	AGV-106	VSL/WPL	AX-3335B	AGV Vestibule (south)	AGV-104	85	60
3336M	East C Corridor (south)	APB-121	VSL	Once	AE-3336A	Toxic Maintenance Area C	APB-128	41	60	**3336AD**	East C Corridor (south)	APB-121	VSL/WPL	AX-3336A	Toxic Maintenance Area C	APB-128	55	60
					AE-3336B	East Corridor (south)	APB-121	23	60	**3336BD**	East C Corridor (south)	APB-121	VSL/WPL	AX-3336B	East Corridor (south)	APB-121	32	60
3337M	East C Corridor (north)	APB-121	VSL	Once	AE-3337A	North Observation Corridor (west)	APB-115	28	60	**3337AD**	East C Corridor (north)	APB-121	VSL/WPL	AX-3337A	North Observation Corridor (west)	APB-115	127	60
					AE-3337B	East Corridor (north)	APB-121	123	60	**3337BD**	East C Corridor (north)	APB-121	VSL/WPL	AX-3337B	East Corridor (north)	APB-121	42	60
3340M	East C Corridor (south)	APB-121	VSL	Once	AE-3340A	Glovebox Vestibule	APB-129	54	60	**3340AD**	East C Corridor (south)	APB-121	VSL/WPL	AX-3340A	Glovebox Vestibule	APB-129	73	60
					AE-3340B	South Corridor (east)	APB-130	73	60	**3340BD**	East C Corridor (north)	APB-121	VSL/WPL	AX-3340B	South Corridor (east)	APB-130	126	60
3341AM	East C Corridor (south)	APB-121	VSL	Once	AE-3341A	South Corridor (west)	APB-130	42	60	**3341AD**	East C Corridor (south)	APB-121	VSL/WPL	AX-3341A	South Corridor (west)	APB-130	60	60
3341M	East C Corridor (south)	APB-121	VSL	Once	AE-3341B	Hydrolysate Tank Room	APB-122	72	60	**3341BD**	East C Corridor (south)	APB-121	VSL/WPL	AX-3341B	Hydrolysate Tank Room	APB-122	99	60
3342M	East C Corridor (north)	APB-121	VSL	Once	AE-3342A	North Observation Corridor (east)	APB-115	80	60	**3342AD**	East C Corridor (north)	APB-121	VSL/WPL	AX-3342A	North Observation Corridor (east)	APB-115	69	60
3342BM	East C Corridor (south)	APB-121	VSL	Once	AE-3342B	Off-Gas Treatment Room (west)	APB-116	82	60	**3342BD**	East C Corridor (south)	APB-121	VSL/WPL	AX-3342B	Off-Gas Treatment Room (west)	APB-116	91	60
3343M	East C Corridor (north)	APB-121	VSL	Once	AE-3343	Off-Gas Treatment Room (east)	APB-116	83	60	**3343D**	East C Corridor (north)	APB-121	VSL/WPL	AX-3343	Off-Gas Treatment Room (east)	APB-116	99	60
3345M	East C Corridor (north)	APB-121	IDLH	Once	AE-3345	Toxic Room A (northwest)	APB-120	100	Once	---	---	---	---	---	---	---	---	---
3346M	West C Corridor (south)	APB-124	ECL/VSL	Once	AE-3346	West Airlock B (wand)	APB-113	135	Once	---	---	---	---	---	---	---	---	---
3376M	South Corridor (west)	APB-130	VSL	Once	AE-3376	Glovebox Vestibule (wand)	APB-129	15	60	---	---	---	---	---	---	---	---	---
3377AM	West C Corridor (center)	APB-124	VSL	Once	AE-3377A	MTU #1 Discharge	APB-133	132	60	---	---	---	---	---	---	---	---	---
3377BM	West C Corridor (center)	APB-124	VSL	Once	AE-3377B	MTU #2 Discharge	APB-133	146	60	---	---	---	---	---	---	---	---	---
3389M	East C Corridor (center)	APB-121	IDLH	Once	AE-3389	Toxic Room (duct)	APB-120	140	Once	---	---	---	---	---	---	---	---	---
9438M	East C Corridor (south)	APB-121	~~ECL/VSL~~ IDLH	Once	AE-9438	SDU	APB-128	62	60	---	---	---	---	---	---	---	---	---
	Comment: The Monitoring stream is determined by a stream selector. For SDU sampling, Stream 1 must be selected and verified prior to use. Typically Normal MINICAMS operation will be to sample from Stream 2 (cabinet ambient air) unless monitoring is needed for the SDU.									---	---	---	---	---	---	---	---	---
9439M	East C Corridor (south)	APB-121	ECL/VSL	Once	AE-9439	Autoclave	APB-128	85	60	---	---	---	---	---	---	---	---	---
	Comment: The Monitoring stream is determined by heated sample transfer line distal end placement. For Autoclave Sampling, the sample line must be inserted manually into the designated Autolcave port. Typically Normal MINICAMS configuration is for distal end to be left outside of the Autoclave until ready for use.									---	---	---	---	---	---	---	---	---

MINICAMS										DAAMS								
STATION INFORMATION					HSTL INFORMATION					STATION INFORMATION				HSTL INFORMATION				
Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
Breathing Air Locations																		
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MINICAMS										DAAMS								
STATION INFORMATION					HSTL INFORMATION					STATION INFORMATION				HSTL INFORMATION				
Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
ERB Monitoring Locations																		
3202M	ERB Mezzanine (west)	MSM-206	ECL/VSL	Once	AE-3202	VCR #1 Process Line	ERB-104	126	60	---	---	---	---	---	---	---	---	---
3203M	ERB Mezzanine (west)	MSM-206	ECL/VSL	Once	AE-3203	VCR #2 Process Line	ERB-102	127	60	---	---	---	---	---	---	---	---	---
3204M	ERB Mezzanine (west)	MSM-206	ECL/VSL	Once	AE-3204A	Vapor Containment Room #1	ERB-104	86	60	**3204AD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3204A	Vapor Containment Room #1	ERB-104	100	60
3204BM	North Mun Body Xfer Area (west)	ERB-119A	VSL	Once	AE-3204B	Reconfiguration Room #1 (west)	ERB-105	132	60	**3204BD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3204B	Reconfiguration Room #1 (west)	ERB-105	145	60
3205M	ERB Mezzanine (west)	MSM-206	ECL/VSL	Once	AE-3205A	Vapor Containment Room #2	ERB-102	115	60	**3205AD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3205A	Vapor Containment Room #2	ERB-102	120	60
3205BM	South Mun Body Xfer Area (west)	ERB-119B	VSL	Once	AE-3205B	Reconfiguration Room #2 (west)	ERB-103	114	60	**3205BD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3205B	Reconfiguration Room #2 (west)	ERB-103	130	60
3206AM	ERB Mezzanine (west))	MSM-206	VSL	Once	AE-3206A	Reconfiguration Room #1 (east)	ERB-105	145	60	**3206AD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3206A	Reconfiguration Room #1 (east)	ERB-105	145	60
3207AM	South Mun Body Xfer Area (west)	ERB-119B	VSL	Once	AE-3207A	Reconfiguration Room #2 (east)	ERB-103	135	60	**3207AD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3207A	Reconfiguration Room #2 (east)	ERB-103	135	60
3207M	ERB Mezzanine (west)	MSM-206	VSL	Once	AE-3207B	Receiving and Traveling Area (west)	ERB-106	134	60	**3207BD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3207B	Receiving and Traveling Area (west)	ERB-106	85	60
3208M	ERB Mezzanine (west)	MSM-206	VSL	Once	AE-3208	Receiving and Traveling Area (wand)	ERB-106	97	60	---	---	---	---	---	---	---	---	---
3209M	MINICAM & DAAM Rm (north)	ERB-122	ECL/VSL	Once	AE-3209A	ECR #1 West B Airlock (wand)	ERB-107	57	Once	**---**	---	---	---	---	---	---	---	---
3210M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3210A	North Munitions Body Transfer Area (west)	ERB-119A	142	60	**3210AD**	MINICAM & DAAM Rm (north)	ERB-122	VSL/WPL	AX-3210A	North Munitions Body Transfer Area (west)	ERB-119A	140	60
					AE-3210B	Munitions Body Palletizing Area (north)	ERB-119	136	60	**3210BD**	MINICAM & DAAM Rm (north)	ERB-122	VSL/WPL	AX-3210B	Munitions Body Palletizing Area (north)	ERB-119	55	60
3212M	Munition Parts Repack Area #1	ERB-113	ECL/VSL	Once	AE-3212	ECR #1 West B Airlock	ERB-107	148	Once	**3212D**	N. Mun Body Xfer Area	ERB-119A	VSL/WPL	AX-3212	ECR #1 West B Airlock	ERB-107	57	Once
3213M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3213A	ECR #1 Monitoring Area	ERB-113	130	60	**3213AD**	MINICAM & DAAM Rm (north)	ERB-122	VSL/WPL	AX-3213A	ECR #1 Monitoring Area	ERB-113	100	60
3214M	Munition Parts Repack Area #1	ERB-113	VSL	Once	AE-3214	MPRA #1	ERB-113	32	60	**---**	---	---	---	---	---	---	---	---
3215M	MINICAM & DAAM Rm (south)	ERB-134	ECL/VSL	Once	AE-3215A	ECR #2 West B Airlock (wand)	ERB-108	143	Once	**---**	---	---	---	---	---	---	---	---
3217M	N. Mun Body Xfer Area (west)	ERB-119A	VSL	Once	3217A	Receiving and Traveling Area (northeast)	ERB-106	135	60	**3217AD**	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3217A	Receiving and Traveling Area (northeast)	ERB-106	130	60
					3217B	Receiving and Traveling Area (southeast)	ERB-106	110	60	**3217BD**	N. Mun Body Xfer Area (west)	ERB-119A	VSL/WPL	AX-3217B	Receiving and Traveling Area (southeast)	ERB-106	115	60
3218M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3218	ECR #1	ERB-110	140	Once	**3218D**	N. Mun Body Xfer Area	ERB-119A	VSL/WPL	AX-3218	ECR #1	ERB-110	50	Once
3219M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3219A	ECR #2 Monitoring Area	ERB-114	145	60	**3219AD**	MINICAM & DAAM Rm (south)	ERB-134	VSL/WPL	AX-3219A	ECR #2 Monitoring Area	ERB-114	100	60
3220M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3220	ECR #2	ERB-111	140	Once	**3220D**	N. Mun Body Xfer Area	ERB-119A	VSL/WPL	AX-3220	ECR #2	ERB-111	70	Once
3221M	ERB Monitoring House #1	ERB MH #1	ECL/VSL	Once	AE-3221A	ECR #3 West B Airlock (wand)	ERB-109	123	Once	**---**	---	---	---	---	---	---	---	---
3224M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3224	ECR #3	ERB-112	141	Once	**3224D**	N. Mun Body Xfer Area	ERB-119A	VSL/WPL	AX-3224	ECR #3	ERB-112	100	Once
3225M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3225A	ECR #3 Monitoring Area	ERB-115	125	60	**3225AD**	MINICAM & DAAM Rm (south)	ERB-134	VSL/WPL	AX-3225A	ECR #3 Monitoring Area	ERB-115	100	60
3226M	MINICAM & DAAM Rm (south)	ERB-134	ECL/VSL	Once	AE-3226	ECR #2 B Airlock (east)	ERB-114A	135	Once	---	---	---	---	---	---	---	---	---
3227M	MINICAM & DAAM Rm (south)	ERB-134	ECL/VSL	Once	AE-3227	ECR #3 B Airlock (east)	ERB-115A	135	Once	---	---	---	---	---	---	---	---	---
3228M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3228A	South Munitions Body Transfer Area (west)	ERB-119B	145	60	**3228AD**	MINICAM & DAAM Rm (south)	ERB-134	VSL/WPL	AX-3228A	South Munitions Body Transfer Area (west)	ERB-119B	83	60
					AE-3228B	Munitions Body Palletizing Area (south)	ERB-119	95	60	**3228BD**	MINICAM & DAAM Rm (south)	ERB-134	VSL/WPL	AX-3228B	Munitions Body Palletizing Area (south)	ERB-119	90	60
3230M	MINICAM & DAAM Rm (north)	ERB-122	ECL/VSL	Once	AE-3230A	ECR #1 B Airlock (east)	ERB-113A	180	Once	---	---	---	---	---	---	---	---	---
3231M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3231	South Munitions Body Transfer Area (east)	ERB-119B	138	60	**3231D**	MINICAM & DAAM Rm (south)	ERB-134	VSL/WPL	AX-3231	South Munitions Body Transfer Area (east)	ERB-119B	115	60
3232M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3232	North Munitions Body Transfer Area (east)	ERB-119A	108	60	**3232D**	MINICAM & DAAM Rm (north)	ERB-122	VSL/WPL	AX-3232	North Munitions Body Transfer Area (east)	ERB-119A	62	60
3262M	MINICAM & DAAM Rm (south)	ERB-134	PCL	Once	AE-3262	ECR #2 PMD #2 BRS Process Indicator	ERB-111	145	Once	---	---	---	---	---	---	---	---	---

MINICAMS										DAAMS								
STATION INFORMATION					HSTL INFORMATION					STATION INFORMATION				HSTL INFORMATION				
Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
	Comment: This station will be configured with a 2.5 minute VSL Method identified as Process Control Limit (PCL) and will be used for process monitoring to provide downstream equipment protection from gross leakers within the ECR #2																	
3263M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3263	MPRA #2 MME #2	ERB-114	140	60	---	---	---	---	---	---	---	---	---
3264M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3264	MPRA #2 MME #3	ERB-114	125	60	---	---	---	---	---	---	---	---	---
3265M	MINICAM & DAAM Rm (south)	ERB-134	PCL	Once	AE-3265	ECR #2 PMD #2 MPRS Process Indicator	ERB-111	145	Once	---	---	---	---	---	---	---	---	---
	Comment: This station will be configured with a 2.5 minute VSL Method identified as Process Control Limit (PCL) and will be used for process monitoring to provide downstream equipment protection from gross leakers within the ECR #2																	
3266M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3266	MPRA #2 PME #2	ERB-114	107	60	---	---	---	---	---	---	---	---	---
3267M	MINICAM & DAAM Rm (south)	ERB-134	VSL	Once	AE-3267	MPRA #2 PME #3	ERB-114	100	60	---	---	---	---	---	---	---	---	---
3268M	Munition Parts Repack Area #2	ERB-114	ECL/VSL	Once	AE-3268	ECR #2 West B Airlock	ERB-108	142	Once	3268D	N. Mun Body Xfer Area	ERB-119A	VSL/WPL	AX-3268	ECR #2 West B Airlock	ERB-108	143	Once
3269M	Munition Parts Repack Area #2	ERB-114	VSL	Once	AE-3269	MPRA #2	ERB-114	33	60	---	---	---	---	---	---	---	---	---
3274M	ERB Monitoring House #1	ERB MH #1	PCL	Once	AE-3274	ECR #3 PMD #3 BRS Process Indicator	ERB-112	145	Once	---	---	---	---	---	---	---	---	---
	Comment: This station will be configured with a 2.5 minute VSL Method identified as Process Control Limit (PCL) and will be used for process monitoring to provide downstream equipment protection from gross leakers within the ECR #3																	
3275M	ERB Monitoring House #1	ERB MH #1	VSL	Once	AE-3275	MPRA #3 MME #2	ERB-115	130	60	---	---	---	---	---	---	---	---	---
3276M	ERB Monitoring House #1	ERB MH #1	VSL	Once	AE-3276	MPRA #3 MME #3	ERB-115	147	60	---	---	---	---	---	---	---	---	---
3277M	ERB Monitoring House #1	ERB MH #1	PCL	Once	AE-3277	ECR #3 PMD #3 MPRS Process Indicator	ERB-112	145	Once	---	---	---	---	---	---	---	---	---
	Comment: This station will be configured with a 2.5 minute VSL Method identified as Process Control Limit (PCL) and will be used for process monitoring to provide downstream equipment protection from gross leakers within the ECR #3																	
3278M	ERB Monitoring House #1	ERB MH #1	VSL	Once	AE-3278	MPRA #3 PME #2	ERB-115	117	60	---	---	---	---	---	---	---	---	---
3279M	ERB Monitoring House #1	ERB MH #1	VSL	Once	AE-3279	MPRA #3 PME #3	ERB-115	127	60	---	---	---	---	---	---	---	---	---
3280M	Munition Parts Repack Area #3	ERB-115	ECL/VSL	Once	AE-3280	ECR #3 West B Airlock	ERB-109	148	Once	3280D	N. Mun Body Xfer Area	ERB-119A	VSL/WPL	AX-3280	ECR #3 West B Airlock	ERB-109	123	Once
3281M	Munition Parts Repack Area #3	ERB-115	VSL	Once	AE-3281	MPRA #3	ERB-115	30	60	---	---	---	---	---	---	---	---	---
3282M	MINICAM & DAAM Rm (north)	ERB-122	PCL	Once	AE-3282	ECR #1 PMD #1 BRS Process Indicator	ERB-110	145	Once	---	---	---	---	---	---	---	---	---
	Comment: This station will be configured with a 2.5 minute VSL Method identified as Process Control Limit (PCL) and will be used for process monitoring to provide downstream equipment protection from gross leakers within the ECR #1																	
3283M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3283	MPRA #1 MME #2	ERB-113	125	60	---	---	---	---	---	---	---	---	---
3284M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3284	MPRA #1 MME #3	ERB-113	125	60	---	---	---	---	---	---	---	---	---
3285M	MINICAM & DAAM Rm (north)	ERB-122	PCL	Once	AE-3285	ECR #1 PMD #1 MPRS Process Indicator	ERB-110	145	Once	---	---	---	---	---	---	---	---	---
	Comment: This station will be configured with a 2.5 minute VSL Method identified as Process Control Limit (PCL) and will be used for process monitoring to provide downstream equipment protection from gross leakers within the ECR #1																	
3286M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3286	MPRA #1 PME #2	ERB-113	115	60	---	---	---	---	---	---	---	---	---
3287M	MINICAM & DAAM Rm (north)	ERB-122	VSL	Once	AE-3287	MPRA #1 PME #3	ERB-113	110	60	---	---	---	---	---	---	---	---	---
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3293M	South Mun Body Xfer Area (west)	ERB-119A	IDLH	Once	AE-3293A	ECR #1	ERB-110	50	Once	---	---	---	---	---	---	---	---	---
					AE-3293B	ECR #2	ERB-111	68	Once	---	---	---	---	---	---	---	---	---
					AE-3393C	ECR #3	ERB-112	100	Once	---	---	---	---	---	---	---	---	---

MINICAMS – STATION INFORMATION: Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	MINICAMS – HSTL INFORMATION: HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	DAAMS – STATION INFORMATION: Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	DAAMS – HSTL INFORMATION: HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
AFA Monitoring Locations																		
4748AM	AFA Monitoring House #7	MH-701	VSL	Twice	AE-4748A	AFA Stack	MA-M07-0033	80	60	**4748-ABD**	AFA Monitoring House #7	MH-701	VSL	AX-4748-AB	AFA Stack	MA-M07-0033	83	60
4748BM	AFA Monitoring House #7	MH-701	VSL	Twice	AE-4748B	AFA Stack (redundant)	MA-M07-0033	96	60	**4748-BBD**	AFA Monitoring House #7	MH-701	VSL	AX-4748-BB	AFA Stack (redundant)	MA-M07-0033	97	60
4728GM	AFA Monitoring House #5	MH-501	VSL	Once	AE-4728G-A	MK-M07-0007 Bank 1 & 2	MK-M07-0007	101	60	**4728G-AD**	AFA Monitoring House #5	MH-501	VSL	AX-4728G-A	MK-M07-0007 Bank 1 & 2	MK-M07-0007	105	60
					AE-4728G-B	MK-M07-0007 Bank 2 & 3	MK-M07-0007	111	60	**4728G-BD**	AFA Monitoring House #5	MH-501	VSL	AX-4728G-B	MK-M07-0007 Bank 2 & 3	MK-M07-0007	115	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728G-C	MK-M07-0007 Bank 4 & 5	MK-M07-0007	132	60	**4728G-CD**	AFA Monitoring House #5	MH-501	VSL	AX-4728G-C	MK-M07-0007 Bank 4 & 5	MK-M07-0007	135	60
					AE-4728G-D	MK-M07-0036 Vestibule	MK-M07-0036	86	60	**4728G-DD**	AFA Monitoring House #5	MH-501	VSL/WPL	AX-4728G-D	MK-M07-0036 Vestibule	MK-M07-0036	112	60
4728HM	AFA Monitoring House #5	MH-501	VSL	Once	AE-4728H-A	MK-M07-0008 Bank 1 & 2	MK-M07-0008	79	60	**4728H-AD**	AFA Monitoring House #5	MH-501	VSL	AX-4728H-A	MK-M07-0008 Bank 1 & 2	MK-M07-0008	91	60
					AE-4728H-B	MK-M07-0008 Bank 2 & 3	MK-M07-0008	89	60	**4728H-BD**	AFA Monitoring House #5	MH-501	VSL	AX-4728H-B	MK-M07-0008 Bank 2 & 3	MK-M07-0008	97	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728H-C	MK-M07-0008 Bank 4 & 5	MK-M07-0008	108	60	**4728H-CD**	AFA Monitoring House #5	MH-501	VSL	AX-4728H-C	MK-M07-0008 Bank 4 & 5	MK-M07-0008	114	60
					AE-4728H-D	MK-M07-0038 Vestibule	MK-M07-0038	60	60	**4728H-DD**	AFA Monitoring House #5	MH-501	VSL/WPL	AX-4728H-D	MK-M07-0038 Vestibule	MK-M07-0038	88	60
4728JM	AFA Monitoring House #5	MH-501	VSL	Once	AE-4728J-A	MK-M07-0009 Bank 1 & 2	MK-M07-0009	58	60	**4728J-AD**	AFA Monitoring House #5	MH-501	VSL	AX-4728J-A	MK-M07-0009 Bank 1 & 2	MK-M07-0009	74	60
					AE-4728J-B	MK-M07-0009 Bank 2 & 3	MK-M07-0009	69	60	**4728J-BD**	AFA Monitoring House #5	MH-501	VSL	AX-4728J-B	MK-M07-0009 Bank 2 & 3	MK-M07-0009	85	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728J-C	MK-M07-0009 Bank 4 & 5	MK-M07-0009	85	60	**4728J-CD**	AFA Monitoring House #5	MH-501	VSL	AX-4728J-C	MK-M07-0009 Bank 4 & 5	MK-M07-0009	96	60
					AE-4728J-D	MK-M07-0040 Vestibule	MK-M07-0040	44	60	**4728J-DD**	AFA Monitoring House #5	MH-501	VSL/WPL	AX-4728J-D	MK-M07-0040 Vestibule	MK-M07-0040	71	60
4728KM	AFA Monitoring House #5	MH-501	VSL	Once	AE-4728K-A	MK-M07-0010 Bank 1 & 2	MK-M07-0010	60	60	**4728K-AD**	AFA Monitoring House #5	MH-501	VSL	AX-4728K-A	MK-M07-0010 Bank 1 & 2	MK-M07-0010	70	60
					AE-4728K-B	MK-M07-0010 Bank 2 & 3	MK-M07-0010	68	60	**4728K-BD**	AFA Monitoring House #5	MH-501	VSL	AX-4728K-B	MK-M07-0010 Bank 2 & 3	MK-M07-0010	76	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728K-C	MK-M07-0010 Bank 4 & 5	MK-M07-0010	87	60	**4728K-CD**	AFA Monitoring House #5	MH-501	VSL	AX-4728K-C	MK-M07-0010 Bank 4 & 5	MK-M07-0010	99	60
					AE-4728K-D	MK-M07-0042 Vestibule	MK-M07-0042	42	60	**4728K-DD**	AFA Monitoring House #5	MH-501	VSL/WPL	AX-4728K-D	MK-M07-0042 Vestibule	MK-M07-0042	68	60
4728LM	AFA Monitoring House #12	MH-1201	VSL	Once	AE-4728L-A	MK-M07-0011 Bank 1 & 2	MK-M07-0011	103	60	**4728L-AD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728L-A	MK-M07-0011 Bank 1 & 2	MK-M07-0011	106	60
					AE-4728L-B	MK-M07-0011 Bank 2 & 3	MK-M07-0011	114	60	**4728L-BD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728L-B	MK-M07-0011 Bank 2 & 3	MK-M07-0011	117	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728L-C	MK-M07-0011 Bank 4 & 5	MK-M07-0011	132	60	**4728L-CD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728L-C	MK-M07-0011 Bank 4 & 5	MK-M07-0011	130	60
					AE-4728L-D	MK-M07-0044 Vestibule	MK-M07-0044	91	60	**4728L-DD**	AFA Monitoring House #12	MH-1201	VSL/WPL	AX-4728L-D	MK-M07-0044 Vestibule	MK-M07-0044	108	60
4728MM	AFA Monitoring House #12	MH-1201	VSL	Once	AE-4728M-A	MK-M07-0012 Bank 1 & 2	MK-M07-0012	83	60	**4728M-AD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728M-A	MK-M07-0012 Bank 1 & 2	MK-M07-0012	86	60
					AE-4728M-B	MK-M07-0012 Bank 2 & 3	MK-M07-0012	92	60	**4728M-BD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728M-B	MK-M07-0012 Bank 2 & 3	MK-M07-0012	96	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728M-C	MK-M07-0012 Bank 4 & 5	MK-M07-0012	112	60	**4728M-CD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728M-C	MK-M07-0012 Bank 4 & 5	MK-M07-0012	122	60
					AE-4728M-D	MK-M07-0046 Vestibule	MK-M07-0046	63	60	**4728M-DD**	AFA Monitoring House #12	MH-1201	VSL/WPL	AX-4728M-D	MK-M07-0046 Vestibule	MK-M07-0046	95	60
4728NM	AFA Monitoring House #12	MH-1201	VSL	Once	AE-4728N-A	MK-M07-0013 Bank 1 & 2	MK-M07-0013	64	60	**4728N-AD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728N-A	MK-M07-0013 Bank 1 & 2	MK-M07-0013	71	60
					AE-4728N-B	MK-M07-0013 Bank 2 & 3	MK-M07-0013	71	60	**4728N-BD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728N-B	MK-M07-0013 Bank 2 & 3	MK-M07-0013	80	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728N-C	MK-M07-0013 Bank 4 & 5	MK-M07-0013	90	60	**4728N-CD**	AFA Monitoring House #12	MH-1201	VSL	AX-4728N-C	MK-M07-0013 Bank 4 & 5	MK-M07-0013	99	60
					AE-4728N-D	MK-M07-0048 Vestibule	MK-M07-0048	48	60	**4728N-DD**	AFA Monitoring House #12	MH-1201	VSL/WPL	AX-4728N-D	MK-M07-0048 Vestibule	MK-M07-0048	76	60
4728PM	AFA Monitoring House #8	MH-801	VSL	Once	AE-4728P-A	MK-M07-0014 Bank 1 & 2	MK-M07-0014	79	60	**4728P-AD**	AFA Monitoring House #8	MH-801	VSL	AX-4728P-A	MK-M07-0014 Bank 1 & 2	MK-M07-0014	85	60
					AE-4728P-B	MK-M07-0014 Bank 2 & 3	MK-M07-0014	90	60	**4728P-BD**	AFA Monitoring House #8	MH-801	VSL	AX-4728P-B	MK-M07-0014 Bank 2 & 3	MK-M07-0014	95	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728P-C	MK-M07-0014 Bank 4 & 5	MK-M07-0014	103	60	**4728P-CD**	AFA Monitoring House #8	MH-801	VSL	AX-4728P-C	MK-M07-0014 Bank 4 & 5	MK-M07-0014	115	60
					AE-4728P-D	MK-M07-0050 Vestibule	MK-M07-0050	60	60	**4728P-DD**	AFA Monitoring House #8	MH-801	VSL/WPL	AX-4728P-D	MK-M07-0050 Vestibule	MK-M07-0050	81	60

MINICAMS

Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
STATION INFORMATION					**HSTL INFORMATION**				
4728QM	AFA Monitoring House #8	MH-801	VSL	Once	AE-4728Q-A	MK-M07-0015 Bank 1 & 2	MK-M07-0015	58	60
					AE-4728Q-B	MK-M07-0015 Bank 2 & 3	MK-M07-0015	68	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728Q-C	MK-M07-0015 Bank 4 & 5	MK-M07-0015	87	60
					AE-4728Q-D	MK-M07-0052 Vestibule	MK-M07-0052	45	60
4728RM	AFA Monitoring House #8	MH-801	VSL	Once	AE-4728R-A	MK-M07-0016 Bank 1 & 2	MK-M07-0016	63	60
					AE-4728R-B	MK-M07-0016 Bank 2 & 3	MK-M07-0016	71	60
	Comment: Normal MINICAMS operation will sample from the vestibule and between banks 1 & 2. In the event agent is detected above the alarm set point between filter banks, the stream selector will be programmed to sample between the next downstream location in the filter banks and the vestibule.				AE-4728R-C	MK-M07-0016 Bank 4 & 5	MK-M07-0016	89	60
					AE-4728R-D	MK-M07-0054 Vestibule	MK-M07-0054	49	60
4728SM	AFA Monitoring House #12	MH-1201	IDLH	Mobile Criteria	AE-4728S	---	---	Adjust as Needed	Mobile Criteria
MSM Monitoring Locations									
3233AM	MSM Monitoring House #2	MSM-108	VSL	Once	AE-3233A	MSM North-South Transfer Corridor (center)	MSM-101	210	60
3233M	MSM Monitoring House #1	MSM-107	VSL	Once	AE-3233B	Munitions Service Magazine #3	MSM #3	178	60
3234AM	MSM Monitoring House #1	MSM-107	VSL	Once	AE-3234A	MSM North-South Transfer Corridor (north)	MSM-101	57	60
3234M	MSM Monitoring House #2	MSM-108	VSL	Once	AE-3234B	Munitions Service Magazine #2	MSM #2	140	60
3235AM	MSM Monitoring House #3	MSM-109	VSL	Once	AE-3235A	MSM East-West Transfer Corridor (west)	MSM-103	212	60
3235M	MSM Monitoring House #3	MSM-109	VSL	Once	AE-3235B	Munitions Service Magazine #1	MSM #1	210	60
3236M	MSM Monitoring House #3	MSM-109	VSL	Once	AE-3236	MSM North-South Transfer Corridor (south)	MSM-100	87	60
3237M	ERB Mezzanine (west)	MSM-206	VSL	Once	AE-3237	MSM East-West Transfer Corridor (east)	MSM-103	116	60
3240M	MAV Dock Monitoring House	MSM-110	VSL	Once	AE-3240	MAV Unloading Dock	MAV Unloading Dock	143	60
3241M	MAV Dock Monitoring House	MSM-110	VSL	Once	AE-3241	MAV Unloading Dock	MAV Unloading Dock	143	60
Laboratory/Treaty/Medical Monitoring Locations									
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3344M	Telecom Room	MED-104	VSL	Once	AE-3344A	Personnel Decon Room	MED-127	65	60
	Comment: Typically normal MINICAMS operation will sample the Decon Vestibule. In the event of a Medical Contingency the MINICAMS will be programmed to sample where needed.				AE-3344B	Decon Vestibule	MED-126	50	60
					AE-3344C	Med Treatment 2	MED-112	35	60

DAAMS

Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)
STATION INFORMATION				**HSTL INFORMATION**				
4728Q-AD	AFA Monitoring House #8	MH-801	VSL	AX-4728Q-A	MK-M07-0015 Bank 1 & 2	MK-M07-0015	70	60
4728Q-BD	AFA Monitoring House #8	MH-801	VSL	AX-4728Q-B	MK-M07-0015 Bank 2 & 3	MK-M07-0015	75	60
4728Q-CD	AFA Monitoring House #8	MH-801	VSL	AX-4728Q-C	MK-M07-0015 Bank 4 & 5	MK-M07-0015	95	60
4728Q-DD	AFA Monitoring House #8	MH-801	VSL/WPL	AX-4728Q-D	MK-M07-0052 Vestibule	MK-M07-0052	64	60
4728R-AD	AFA Monitoring House #8	MH-801	VSL	AX-4728R-A	MK-M07-0016 Bank 1 & 2	MK-M07-0016	74	60
4728R-BD	AFA Monitoring House #8	MH-801	VSL	AX-4728R-B	MK-M07-0016 Bank 2 & 3	MK-M07-0016	81	60
4728R-CD	AFA Monitoring House #8	MH-801	VSL	AX-4728R-C	MK-M07-0016 Bank 4 & 5	MK-M07-0016	97	60
4728R-DD	AFA Monitoring House #8	MH-801	VSL/WPL	AX-4728R-D	MK-M07-0054 Vestibule	MK-M07-0054	73	60
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MSM Monitoring Locations								
3233AD	MSM Monitoring House #2	MSM-108	VSL/WPL	AX-3233A	MSM North-South Transfer Corridor (center)	MSM-101	169	60
3233BD	MSM Monitoring House #1	MSM-107	VSL/WPL	AX-3233B	Munitions Service Magazine #3	MSM #3	147	60
3234AD	MSM Monitoring House #1	MSM-107	VSL/WPL	AX-3234A	MSM North-South Transfer Corridor (north)	MSM-101	111	60
3234BD	MSM Monitoring House #2	MSM-108	VSL/WPL	AX-3234B	Munitions Service Magazine #2	MSM #2	145	60
3235AD	MSM Monitoring House #3	MSM-109	VSL/WPL	AX-3235A	MSM East-West Transfer Corridor (west)	MSM-103	140	60
3235BD	MSM Monitoring House #3	MSM-109	VSL/WPL	AX-3235B	Munitions Service Magazine #1	MSM #1	145	60
3236D	MSM Monitoring House #3	MSM-109	VSL/WPL	AX-3236	MSM North-South Transfer Corridor (south)	MSM-100	82	60
3237D	ERB Mezzanine (west)	MSM-206	VSL/WPL	AX-3237	MSM East-West Transfer Corridor (east)	MSM-103	115	60
3240D	MAV Dock Monitoring House	MSM-110	WPL	AX-3240	MAV Unloading Dock	MAV Unloading Dock	99	60
3241D	MAV Dock Monitoring House	MSM-110	WPL	AX-3241	MAV Unloading Dock	MAV Unloading Dock	94	60
Laboratory/Treaty/Medical Monitoring Locations								
4012D	Lab South Corridor	LAB-121	WPL	AX-4012	Agent Standards Lab	LAB-119	25	60
4013D	Lab South Corridor	LAB-121	WPL	AX-4013	Sample Receipt	LAB-120	40	60
4014D	Lab South Corridor	LAB-121	WPL	AX-4014	Analytical Ops Lab	LAB-113	71	60
4018D	Lab South Corridor	LAB-121	GPL	AX-4018	Laboratory Fixed	---	29	60
3238D	TOF Comm Room Hallway	TOF-112	WPL	AX-3238	Inspector Office	TOF-100	55	60
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MINICAMS										DAAMS									
STATION INFORMATION					HSTL INFORMATION					STATION INFORMATION				HSTL INFORMATION					
Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	
Mobile Monitoring Locations																			
3350MM	Mobile Unit (ERB North Crdr)	ERB-119A	VSL	Once	AE-3350	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
3351MM	Mobile Unit (ERB East Crdr)	ERB-119	VSL	Once	AE-3351	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
3352MM	Mobile Unit (ERB South Crdr)	MSM-119B	VSL	Once	AE-3352	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
3353MM	Mobile Unit (Vestibule)	MSM-106	VSL	Once	AE-3353	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
3354MM	Mobile Unit (APB East Crdr)	APB-121	VSL	Once	AE-3354	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
3355MM	Mobile Unit (APB South Crdr)	APB-130	VSL	Once	AE-3355	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
3390MM	Mobile Unit (RTA)	ERB-106	VSL	Once	AE-3390A	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
	Comment: Typically this station is programmed to sample from AE-3390A in order to support OPP Monitoring, or programmed to sample from AE-3390B in order to support Airlocks.				AE-3390B	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
3391MM	Mobile Unit (MSM Crdr)	MSM-101	VSL	Once	AE-3391	---	---	Adjust as Needed	60	---	---	---	---	---	---	---	---	---	
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RTAP Stations																			
NOTE: Sample Lines may be tee'd at the proximal end to allow sampling of MINICAMS and DAAMS concurrently.																			
3357MM	RTAP #1	---	VSL	Mobile Criteria	AE-3357	---	---	Adjust as Needed	Mobile Criteria	**3357D**	RTAP #1	---	VSL/WPL	AX-3357	---	---	Adjust as Needed	Mobile Criteria	
3358MM	RTAP #1	---	VSL	Mobile Criteria	AE-3358	---	---	Adjust as Needed	Mobile Criteria	**3358D**	RTAP #1	---	VSL/WPL	AX-3358	---	---	Adjust as Needed	Mobile Criteria	
3359MM	RTAP #2	---	VSL	Mobile Criteria	AE-3359	---	---	Adjust as Needed	Mobile Criteria	**3359D**	RTAP #2	---	VSL/WPL	AX-3359	---	---	Adjust as Needed	Mobile Criteria	
3360MM	RTAP #2	---	VSL	Mobile Criteria	AE-3360	---	---	Adjust as Needed	Mobile Criteria	**3360D**	RTAP #2	---	VSL/WPL	AX-3360	---	---	Adjust as Needed	Mobile Criteria	
3363MM	RTAP #3	---	VSL	Mobile Criteria	AE-3363	---	---	Adjust as Needed	Mobile Criteria	**3363D**	RTAP #3	---	VSL/WPL	AX-3363	---	---	Adjust as Needed	Mobile Criteria	
3364MM	RTAP #3	---	VSL	Mobile Criteria	AE-3364	---	---	Adjust as Needed	Mobile Criteria	**3364D**	RTAP #3	---	VSL/WPL	AX-3364	---	---	Adjust as Needed	Mobile Criteria	
G-Block Locations																			
NOTE: Both Sample Lines for Igloos may be tee'd at the proximal end to allow sampling of MINICAMS and DAAMS concurrently.																			
N/A	N/A	N/A	VSL	Mobile Criteria	AE-0201R	Rear Section of Igloo G201	Igloo G201	100	60	**N/A**	N/A	N/A	VSL	AE-0201R	Rear Section of Igloo G201	Igloo G201	100	60	
N/A	N/A	N/A	VSL	Mobile Criteria	AX-0201F	Front Section of Igloo G201	Igloo G201	60	60	**N/A**	N/A	N/A	VSL	AX-0201F	Front Section of Igloo G201	Igloo G201	60	60	
N/A	N/A	N/A	VSL	Mobile Criteria	AE-0202R	Rear Section of Igloo G202	Igloo G202	100	60	**N/A**	N/A	N/A	VSL	AE-0202R	Rear Section of Igloo G202	Igloo G202	100	60	
N/A	N/A	N/A	VSL	Mobile Criteria	AX-0202F	Front Section of Igloo G202	Igloo G202	60	60	**N/A**	N/A	N/A	VSL	AX-0202F	Front Section of Igloo G202	Igloo G202	60	60	
N/A	N/A	N/A	VSL	Mobile Criteria	AE-0203R	Rear Section of Igloo G203	Igloo G203	100	60	**N/A**	N/A	N/A	VSL	AE-0203R	Rear Section of Igloo G203	Igloo G203	100	60	
N/A	N/A	N/A	VSL	Mobile Criteria	AX-0203F	Front Section of Igloo G203	Igloo G203	60	60	**N/A**	N/A	N/A	VSL	AX-0203F	Front Section of Igloo G203	Igloo G203	60	60	
N/A	N/A	N/A	VSL	Mobile Criteria	AE-0204R	Rear Section of Igloo G204	Igloo G204	100	60	**N/A**	N/A	N/A	VSL	AE-0204R	Rear Section of Igloo G204	Igloo G204	100	60	
N/A	N/A	N/A	VSL	Mobile Criteria	AX-0204F	Front Section of Igloo G204	Igloo G204	60	60	**N/A**	N/A	N/A	VSL	AX-0204F	Front Section of Igloo G204	Igloo G204	60	60	

MINICAMS										DAAMS									
STATION INFORMATION					HSTL INFORMATION					STATION INFORMATION				HSTL INFORMATION					
Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for MINICAMS Location	Room # for MINICAMS	Monitoring Level	MINICAMS Challenge Frequency (min per day)	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	Station Number (xxxxx) Cabinet Number (JA-J02-xxxxx)	Room Description for DAAMS Location	Room # for DAAMS	Monitoring Level	HSTL Sample ID	Room Description for Distal HSTL Location	Room # for Distal Location	HSTL (approx. ft.)	HSTL Challenge Frequency (max days)	

Notes:
1) MINICAMS are equipped with a Halogen Specific Detector (XSD)
2) MINICAMS and DAAMS Station information and HSTL Location information extracted from the following references:
   a) Piping & Instrument Diagram, Plant Area Agent Monitors, APB and ERB Misc. (24852-RD-M6-J02-J0002)
   b) Piping & Instrument Diagram, Plant Area Agent Monitors, Enhanced Reconfig Bldg (24852-RD-M6-J02-J0003)
   c) Piping & Instrument Diagram, Plant Area Agent Monitors, Agent Filter Area (24852-RD-M6-J02-J0004)
   d) Piping & Instrument Diagram, Plant Area Agent Monitors, MSM and ESM Corridors (24852-RD-M6-J02-J0005)

Enclosure 13

Proposed Revisions to the List of Drawings and List of Documents,

Attachment E, with changes depicted using “track changes”

The drawings listed in the table above are either included in the following pages of Attachment E or available at the PCAPP facility (InfoWorks) or via CDPHE.

Note: If there is a conflict between the revision numbers on the above table with the revision number shown on the attached drawings, the number on the table is considered to be correct.

Table E-2: List of Documents

Document Number	Rev	Reference[1]	Title
24852-GPP-GAM-00023	007 PCN-019-00137	K	Corrective Action Program
24852-GPP-GHX-00001	012	G	Emergency Response Plan CDRL D021
24852-OPS-OAP-W0009	011	K	Chemical Munitions Accountability
24852-OPS-OAP-W0031	006~~5~~	III	TraceTek and H_2Obvious Leak Detection Alarm Response
24852-OPS-OAP-W0038	005	J	Plant Contingency Procedure
24852-PLT-WMG-W0003	011	K	Preventive Maintenance Program
24852-RD-3DR-000-B0001	007	G	Design Criteria for Plant Process
24852-RD-3PS-000-A0210	017	III, IV	Engineering Specification for Special Coatings
24852-RD-3PS-000-A0211	006	III	Specification for Flexible Coating and Lining for Secondary Containment
24852-SOP-B00-W0004	010	J	ERB Housekeeping, Explosive Cleanup, and Decontamination
24852-SOP-B00-W0048	005 PCN-019-00203	V	G-Block Secondary Waste Storage and Shipment
24852-SOP-B00-W0049	001	V	Treatment of Agent-Contaminated Waste
PMF-M-M30-01	6	K	Monthly PM Fire Extinguishers Job Plan
PMM-A-M30-003	3	K	Annual M30 PM Fire Water Hydrants
PME-A-E20-EY01	2	K	Annual E20 Lightning Protection Inspection
PME-2-E20-EY05	1	K	Two Year E20 LPS Testing
PME-A-E20-EY03	1	K	Annual E20 Energetics Grounding Sub Systems Visual Inspection
PME-A-E20-EY04	0	K	H-Block Lightning Protection Annual Ground Resistance Testing PM Job Plan
PME-A-E20-EY05	0	K	G-block E20 Lightning Protection Ground Resistance Testing PM
PME-S-E20-006	0	K	H-Block Lightning Protection Semi-Annual Visual Inspection PM Job Plan
PME-S-E20-0007	0	K	G-Block E20 Visual Lightning Protection Inspection PM
PMM-M-000-018	1	K	Igloo Containment System Inspection PM
PMM-Q-M40-001	0	K	Quarterly M40-PLUM-04 Inspection of ESEW - APB
PMM-Q-M40-003	0	K	Quarterly M40 Inspections of SSEWs - UB
PMM-Q-M40-002	0	K	Quarterly M40-PLUM-04 Inspection of ESEWs – ERB
PMM-Q-M40-004	0	K	Quarterly M40-PLUM-11 Inspection of ESEWs - B12
PM-Q-M40-008	2	K	Quarterly PM Medical Clinic Showers/Eye Wash Station
PM-Q-M40-008	2	K	Quarterly M40-PLUM-04 Inspection of Decon Shower - MED
PMM-S-000-023	1	K	Igloo Door/Structural Inspection
PMM-S-000-024	0	K	Igloo Containment System Inspection PM
OPS-000003	6	K	Standby Diesel Generators Monthly PM Job Plan (E02 - Monthly MG-E02-0001A PM)

Enclosure 14

Proposed Revisions to the Contingency Plan, Attachment G,

with changes depicted using “track changes”

G-1 DESCRIPTION OF FACILITY OPERATIONS

G-1a GENERAL INFORMATION - OVERVIEW

This contingency plan is for the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP), a hazardous waste facility, which is located within the U.S. Army Pueblo Chemical Depot (PCD). A current copy of this plan is maintained at the facility. The primary purpose of the PCAPP is to neutralize the PCD chemical weapons stockpile, which consists of munitions containing HD and HT blister mustard agent.

This Contingency Plan is submitted and prepared in accordance with Volume 6 of the Code of Colorado Regulations (CCR) 1007-3 §264, Subpart D. The Contingency Plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. The Contingency Plan must be implemented whenever there is an imminent, potential, or actual emergency situation, such as a fire, explosion, or release of hazardous waste or hazardous waste constituents, which could threaten human health or the environment.

G-1b PCAPP OPERATIONS

PCAPP is located within the U.S. Army's PCD. PCD is operated as part of the chemical munitions storage complex, storing chemical munitions containing the mustard agents HD and HT. PCAPP receives the chemical munitions from PCD for short-term storage, prior to treatment and destruction.

PCAPP is located on the PCD, which is owned by the U.S. Department of the Army. PCD is located within Pueblo County in the State of Colorado, approximately 13 Miles east of the city of Pueblo on State Route 96 and 40 miles south-southeast of Colorado Springs. Pueblo County is sparsely populated and is dominated by grazing and agricultural land. The site is characterized by flat to gently rolling hills with average slopes of less than 1 percent. PCD is located in Pueblo County in Southeastern Colorado and is approximately seven miles in length and six miles in width, about 24,000 acres in total. The overall layout of PCAPP is shown in Figures G-1 and G-2.

Table G-1. PCAPP Emergency Coordinator List

	Name	Title	Work Phone
Primary	Kim Jackson	Plant Manager	(719) 549-5209
1st Alternate	Troy Worthen	Deputy Plant Manager (SDC)	(719) 549-5963
2nd Alternate	Jim Brewer	Deputy Plant Manager	(719) 549-56~~9~~16
3rd Alternate	Cliff Walter	Operations Manager	(719) 549-5628
4th Alternate	Mark Duling	Assistant Operations Manager	(719) 549-5423
Initial Shift EC and Backup		**Shift**	**Shift Phone: (719) 549-5615**
Primary	Cory Jaramillo	A	Plant Shift Manager
Back-up	Jamie Mascarenas	A	Operations Superintendent
Primary	Burke Leatham	B	Plant Shift Manager
Back-up	Jesse Garcia	B	Operations Superintendent
Primary	Kelly Sikes	C	Plant Shift Manager
Back-up	Keith Eyre	C	Operations Superintendent
Primary	Ted Pappas	D	Plant Shift Manager
Back-up	Lonny Anderson	D	Operations Superintendent

G-3 INITIAL RESPONSE ACTIONS

G-3A INITIAL RESPONSE ACTIONS – OVERVIEW

Upon receiving notification of an incident, the PCAPP EC will assess the severity of the incident, the potential hazard presented by the incident, if the incident could threaten human health and the environment, and if the incident meets the criteria for implementation of the PCAPP RCRA RD&D Permit Contingency Plan,

Table G-7, Waste Stream Generation, Storage, and Treatment Locations			
Waste Stream	**Waste Description**	**Potential HW Codes**	**Location**
ICB Effluent and Brine	Waste generated from the biotreatment of mustard agent hydrolysate at BTA and reduction of brine at BRS.	D002, D004-D011, D022, D028, D029, D039, D040, D043, K903	BTA. Piping between BTA and BCFTs; piping between BCFTs and BRS. BRS.
Spent Toxic Entry Waste	Waste generated during DPE entries [e.g., doffed PPE (DPE suits, supplied breathing air lines, toxicological agents protective (TAP) gear, charcoal filters, gloves)].	D002, D003, D004-D011, D022, D028, D029, D034, D039, D040, D043, K901, K902, K903	Generated from DPE entries in the ERB and the Toxic Room (APB-120) and Munition Washout System Room (APB-125) but staged in TMA-A (APB-126), TMA-B (APB-127), TMA-C (APB-128).
< 0.7 VSL Solid-Phase Waste and Recyclables (e.g., munitions bodies, debris, metal, plastic, and wood)	Munitions bodies and secondary wastes that are solids (not liquids), including wastes treated in the SDU or Autoclave	D001, D002, D003 (excludes prohibited waste, D004-D011, D018, D019, D022, D026, D028, D029, D033, D034, D035, D036, D037, D039, D040, D042, D043, F001-F005, K901, K902, K903	Munitions Bodies Storage Area
< 0.7 VSL Energetics and Miscellaneous Hazardous Waste	Energetics and secondary wastes, including wastes treated in the SDU or Autoclave	Energetics and explosive-contaminated inert materials: D001	H-block igloos

Table G-7, Waste Stream Generation, Storage, and Treatment Locations

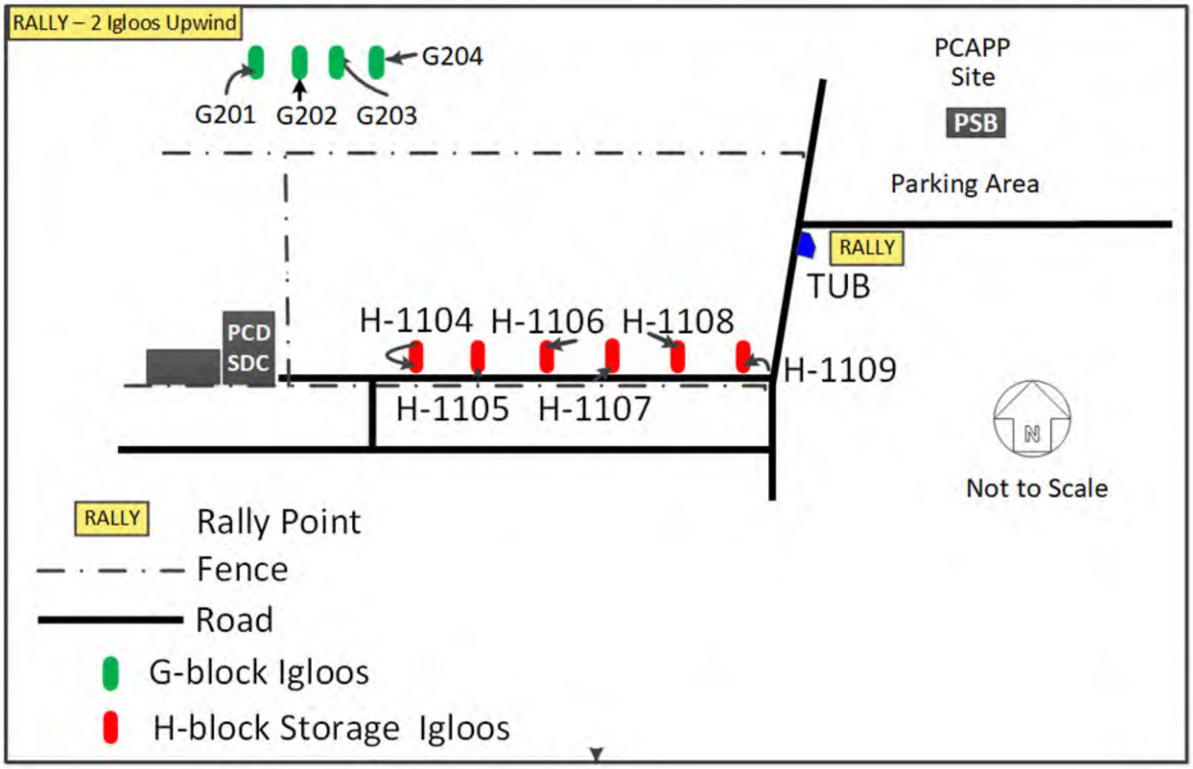
Waste Stream	Waste Description	Potential HW Codes	Location
(e.g., carbon, plastic, metal, debris, tools, and sludge)		D003, D005, D006, D007, D008, D030, P081, U105 Secondary waste: D001, D002, D004-D011, D022, D028, D029, D034, D035, D037, D040, D043, K901, K902, K903	
< 0.7 VSL Dunnage (e.g., wood crates and pallets) Solid-Phase Hazardous Waste	Dunnage (packaging) generated in the ERB during the munitions unpacking operation. Other solid phase hazardous waste generated in the CLA (e.g., carbon, discarded equipment, maintenance wastes, miscellaneous parts removed from munitions).	D001, D002, D003 (excludes prohibited waste), D004-D011, D018, D019, D022, D026, D028, D029, D033, D034, D035, D036, D037, D039, D040, D042, D043, F001-F005, K901, K902, K903	Dunnage Storage Area
With the exception of agent-containing munitions, all potential hazardous waste types at PCAPP (see above)	With the exception of agent-containing munitions, all potential hazardous waste types at PCAPP (includes above waste streams as well as waste streams managed in § 262~~.34~~ generator areas to include the Laboratory)	F001 – F005, D001, D002, D003 (excludes prohibited wastes), D004 - D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030 (excludes prohibited waste), D032 - D040, D041, D042, D043, P-series, U-series, K901, K902, K903	Waste Laydown Yard
Solid and liquid phase agent-	Lab agent-related waste may consist of: sample remnants and	D001, D002 D003, D004-D011, D022,	PCAPP Laboratory (in

Table G-7, Waste Stream Generation, Storage, and Treatment Locations			
Waste Stream	**Waste Stream**	**Waste Stream**	**Waste Stream**
agent-related lab waste treated with bleach	debris, standards (agent and non-agent, metals and organic), hydrolysate waste, acetone, bleach, chloroform, distilled water, hexane, isopropyl alcohol, methanol, chemical agent breakdown products, PPE, gloves, syringes, sorbent materials, paper wipes, glassware, pipette tips, wood products, DAAMS tubes, and NOx pads.	D004-D011, D022, D027, D028, D029, D030, D034, D039, D040, D043, P-series, U-series F003 K901, K902	Agent Fume Hoods)
Agent-contaminated waste and waste items	Agent-contaminated waste and waste items with residual agent or agent in occluded spaces (e.g., strainer debris and sediment, equipment, pumps, piping, valves, strainers, hoses, pre-filters and filters, PPE, containers, plastic)	D001, D002, D003, D004-D011, D022, D028, D029, D034, D039, D040, D043 K901, K902, K903	APB MWS Room and Toxic Room

G-3c(4) LIST OF HAZARDOUS WASTE ACCUMULATION AREAS

A list of the location of hazardous waste accumulation areas as defined at 6 CCR 1007-3 §262~~.34~~, is maintained at PCAPP in the Operating Record and will be readily available for use by the EC. The list is compiled and maintained by the PCAPP Waste Management Supervisor, or designee. The list shall be revised when a new hazardous waste accumulation area is established, or removed from service. The list and revisions to the list shall be submitted by the

Figure G-4, G-Block and H-Block Rally Point



The direction to go indoors will be announced over the PA&PS, two-way radio system, and/or the on-site telephone system. Personnel who do not serve on an emergency response team are to report to the nearest building and be accounted for there.

The following criteria will be used to select the buildings:

- Location of the incident,
- Prevailing wind direction,
- Potential for fire or explosion hazards,
- Areas required for emergency response personnel, and
- Ease of relocating personnel.

Post incident hazardous wastes will be managed in accordance with this Permit and 6 CCR 1007-3 §262~~.34~~ requirements.

G-6h POST INCIDENT AGENT-RELATED WASTE COLLECTION AND DISPOSAL

- *Inside the ERB*

Liquids from agent-related spills within the ERB will be containerized from the sumps and transferred to one of the APB sumps for transfer to the Spent Decontamination System (SDS) tanks. Contaminated or spilled solids will treated onsite and/or shipped off-PCD to an appropriate facility (e.g., TSDF, recycling or retort facility, or Subtitle D solid waste landfill) for disposition.

Runoff from fires inside the ERB will be collected in sumps, containerized and transferred to one of the APB sumps for transfer to the spent decontamination solution tanks. From there, the runoffs will be fed to the Agent Neutralization System.

- *Inside the APB*

Agent-related liquid spills within the APB will be transferred to the SDS Tanks. Contaminated or spilled solids will be placed into containers and treated onsite and/or shipped off-PCD to an appropriate facility (e.g., TSDF, recycling or retort facility, or Subtitle D solid waste landfill) for disposition.

Runoff from fires inside the APB will be collected in sumps that will be pumped to the SDS tanks and then treated in the Agent Neutralization System.

- *Outside the ERB and APB*

Spilled agent-related liquid waste outside the ERB and APB will be pumped into tanks, drums, or a vacuum truck and then transferred into the SDS tanks. Contaminated or spilled solids will be shoveled into containers or excavated with a backhoe and treated or dispositioned in accordance with PCAPP waste management procedures.

Any remaining materials in the affected area that may have been exposed to mustard agent may be decontaminated with decontamination solution staged for thermal treatment, or shipped off-PCD to an approved facility.

G-6i POST INCIDENT NON-AGENT-RELATED WASTE COLLECTION AND DISPOSAL

Spilled or contaminated materials resulting from non-agent-related incidents will be collected and staged as hazardous waste in accordance with 6 CCR 1007-3, Section 262~~.34~~, if applicable, until the waste is disposed of in accordance with PCAPP procedures and applicable permit and regulatory requirements.

Any contaminated sorbents or earthen materials will be collected and placed in drums disposal at an off-PCD facility.

G-6j POST INCIDENT HANDLING OF INCOMPATIBLE WASTES

At no time during a post incident response to an incident shall incompatible materials be staged or transported together without employing reasonable separation methods. Incompatible materials will remain segregated by space, berms, drip pans, etc. Hazardous wastes will be managed in accordance with this Permit and 6 CCR 1007-3 §262~~.34~~ requirements.

G-6k POST INCIDENT SAMPLING AND ANALYSIS

Following a chemical agent transportation accident or any spill of hazardous material to the ground, appropriate methods for inspecting, sampling, or analysis of potentially contaminated areas as described under an emergency permit issued by CDPHE in accordance with 6 CCR 1007-3, Section 100.10(a)(8) will be used to assure cleanup has been completed.

G-6l POST INCIDENT REPORTING RESPONSIBILITIES – OVERVIEW

Whenever the Contingency Plan is implemented, a report must be filed with CDPHE within 15 calendar days of the incident.

In addition, if the incident meets the immediate reporting requirements of Section **Error! Reference source not found.**, PCAPP will submit notification to CDPHE pursuant to 6 CCR 1007-3 § 264.56(i) stating that the facility is in compliance with paragraph 6 CCR 1007-3 § 264.56(h) before resuming operations

G-6m 15-DAY CONTINGENCY PLAN INCIDENT REPORT

[6 CCR 1007-3 §264.56(j)]

Enclosure 15

Proposed Revisions to the Training Plan, Attachment H,

with changes depicted using “track changes”

The purpose of the hazardous waste training program at the PCAPP facility is to ensure that personnel working with hazardous waste have adequate knowledge and understanding of the requirements of their job, the hazardous waste management procedures related to their jobs, hazardous waste regulatory requirements and permit conditions to be able to consistently perform their job duties safely and in compliance with the applicable regulations. The training also includes how to properly execute duties assigned as part of Contingency Plan implementation.

All facility personnel receive class room environmental compliance training as part of the PCAPP site worker training program. PCAPP Site Worker training also includes HAZCOM and following basic emergency response procedures. HAZCOM training is updated as required by 29 CFR 1910.1200(h)(1). Emergency response continuing training is provided through discussions at safety meetings, classroom training, computer based training or by drills that are conducted annually.

Employees with responsibilities related to hazardous waste generation, accumulation, treatment, labeling, packaging and preparation for transport receive training related to their specific duties and the procedures they are required to follow. At a minimum the training must include both classroom and on-the job training. Other training methods, such as computer based training, safety meetings, attending presentations may be used to supplement the classroom and on-the-job training and to provide refresher training.

Training requirements for these employees are developed based on the requirements of 6 CCR 1007-3 Sections 100.14 (a)(12), 264.16(a), 264.16(d)(3) and 262~~.34~~. The training program for employees engaged in hazardous waste activities and Contingency Plan implementation consists of a series of training modules, including mandatory basic RCRA training. The modules are designed to provide training to personnel based on the knowledge they need to conduct their job duties. The modules are supplemented with on-the job training.

Enclosure 16

Proposed Revisions to the Closure Plan, Attachment I,

with changes depicted using “track changes”

ACRONYMS AND ABBREVIATIONS

AABCDF	Accelerated Aberdeen Chemical Agent Disposal Facility
ABCDF	Aberdeen Chemical Agent Disposal Facility
ACANF	Aberdeen Chemical Agent Neutralization Facility
AGV	automated guided vehicle
APB	agent processing building
BRS	brine reduction system
BTA	biotreatment area
CAM	cavity access machine
CAMDS	Chemical Agent Munition Disposal System
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CHWR	Colorado Hazardous Waste Regulations
COC	contaminant of concern
CSAP	closure sampling and analysis plan
DOT	Department of Transportation
ECR	explosion containment room
EPA	Environmental Protection Agency
~~EDS~~	~~explosive destruction system~~
ERB	enhanced reconfiguration building
ESM	energetics service magazine
HVAC	heating, ventilating, and air conditioning
HWMU	hazardous waste management unit
ICB™	immobilized cell bioreactor
JACADS	Johnston Atoll Chemical Agent Destruction System
MCL	maximum contaminant level
MDL	method detection limit
MINICAMS®	Miniature Continuous Air Monitoring System
MSM	munitions service magazine
MTU	munitions treatment unit
MWS	munitions washout system
NRTM	near-real-time monitor/monitoring
OPP	overpack pallet
OTS	off-gas treatment system
PCAPP	Pueblo Chemical Agent-Destruction Pilot Plant
PCD	Pueblo Chemical Depot
PMD	projectile/mortar disassembly machine
PPE	personal protective equipment
RCOPC	RCRA constituents of potential concern
RCRA	Resource Conservation and Recovery Act
RR	reconfiguration room
RTA	receiving and traveling area

Explosive containment rooms (ECRs) that house fully automated projectile/mortar disassembly machines (PMDs) used to remove fuzes, booster charges, bursters, and other miscellaneous parts from the munitions

Monitoring areas, Munition Monitoring Enclosures, Parts Monitoring Enclosures, parts palletizing and staging areas, and munitions body palletizing areas where munition bodies are monitored after enhanced reconfiguration and where the bodies, removed energetics, and various miscellaneous parts are packaged and placed on pallets

AGV corridor, the transport corridor between the ERB and the APB, which is used for transfer of enhanced reconfigured munitions

Transfer corridors between the RTA and the palletizing areas to facilitate transfer of energetics from the RRs to the ESM

Munitions body storage area where enhanced reconfigured munitions in slave pallets are received and stored until transfer into the munitions receiving area

Munitions receiving area where enhanced reconfigured munitions are unpacked from the slave pallets and are loaded onto the Munitions Washout System (MWS) feed conveyor

The ERB energetics removal activities are not expected to generate any agent contamination because agent cavities are not accessed in the ERB, so there is little potential for agent-contamination in any area of the ERB. Leaking munitions will be detected when monitored prior to unpacking, or within the VCRs when the fiberboard shipping tubes are opened, or after exiting the ECRs following removal of bursters and fuzes. Leaker munitions are placed in single round containers and managed in the ~~EDS~~Static Detonation Chambers.

The APB contains:

Munitions body storage area

Munitions receiving area

This technical standard will be met by surface decontaminating associated equipment and demolishing the items to the extent necessary for disposition in accordance with Section I-5c(2). In lieu of surface decontamination followed by demolition, PCAPP may dismantle and decontaminate any equipment in the SDU or autoclave (subject to operational limitations in the permit including the restriction that the agent-contaminated components fed to these units will be restricted to solid-phase streams with residual amounts of agent) followed by off-site disposition in accordance with Section I-5c(2). Contaminated containment system components will be decontaminated as described in Section I-5f and dismantled for disposition in accordance with Section I-5c(2). All hazardous waste or hazardous waste residues removed during decontamination activities will be characterized and managed as newly generated hazardous waste.

This technical standard will be verified by performing site-wide post-closure sampling and analysis described in Section I-4c in addition to verification of the proper off-site disposition of the equipment and debris.

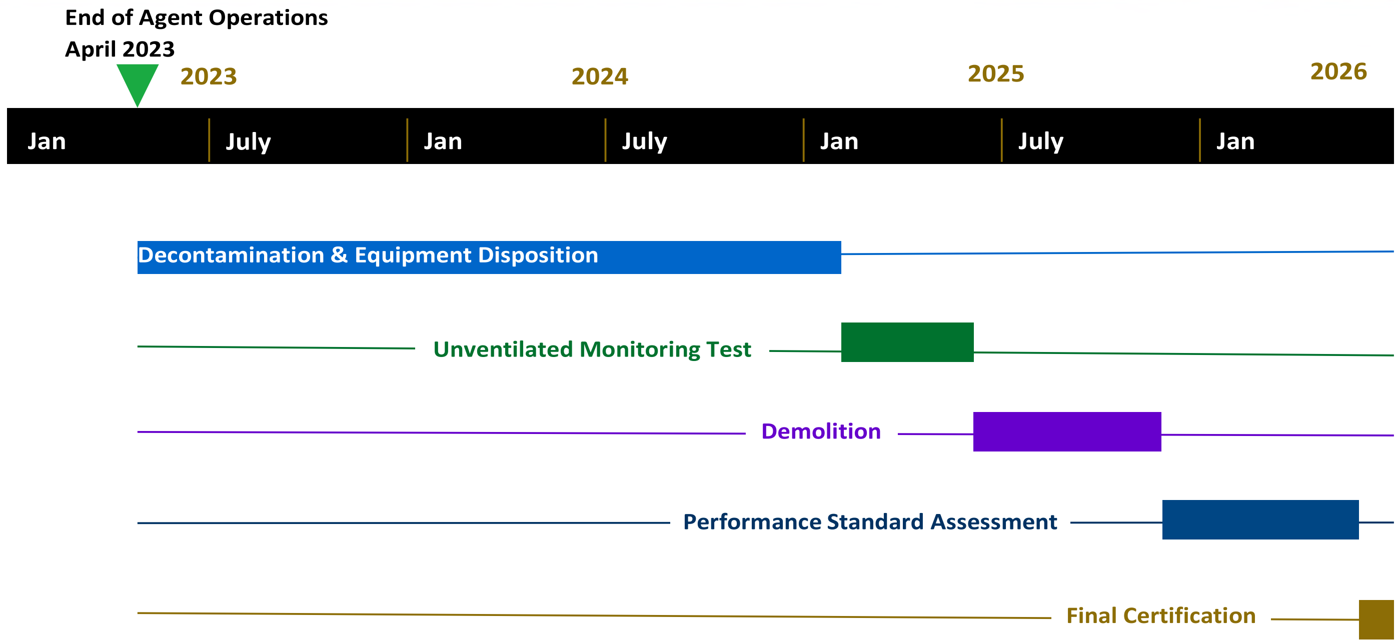
I-4c FINAL PERFORMANCE STANDARD VERIFICATION

After PCAPP has gained operational experience, a list of Resource Conservation and Recovery Act (RCRA) Constituents of Potential Concern (RCOPCs) will be developed and this list will be representative of the constituents found in the various waste streams managed at PCAPP. This list will be based upon routine analysis of waste streams in accordance with the Waste Analysis Plan (and with any additional analyses conducted during the ~~Pilot Test Demonstration Plan~~ pilot-test effort as well as generator knowledge. The RCOPC list will be used for verification that PCAPP has met the closure performance standards defined below. The RCOPC list will be included in the Closure Sampling and Analysis Plan (CSAP) described below. The decision-making process that will be used to determine the RCOPC list is described in Appendix I-1. At closure of the various PCAPP HWMUs, PCAPP will remove or decontaminate all waste residues, contaminated system components (liners etc…) contaminated soils, structures and

Table I-2 Maximum Inventory of Hazardous Waste Estimate

Hazardous Waste Management Units	Capacity (gal each)	Total Capacity (gal)
Toxic Maintenance Area (total A, B, and C)	5,940	5,940
Containment Buildings (# Units) – Note 3		
Munition Service Magazines (3)	43,421	130,264
Energetics Service Magazine (1)	24,437	24,437
Enhanced Reconfiguration Building, etc (1)	177,119	177,119
Total Containment Building Capacity		331,820
Container Storage Areas (# Units) – Note 4		
Munitions Bodies Storage Area (1)	169,646	169,646
H-block Igloos (6) – Note 5	20,196 or 25,346	~~121,176~~141,776
Dunnage Storage Area (1)	~~48,470~~113,098	~~48,470~~113,098
Waste Laydown Yard (1)	~~340,505~~382,916	~~340,505~~382,916
G-block Igloos (4)	11,310	45,240
Total Container Storage Area Capacity		~~725,037~~852,676
Total (Maximum Inventory of Hazardous Waste)		**~~4,709,591~~4,837,230**
Note 1: Tank capacities correspond to operating volumes presented in Parts III and IV of the permit as proposed to be modified by Mod #69.		
Note 2: As described above, Subpart X treatment units are not included. TMA capacities correspond to those presented in Hazard Preparedness and Prevention Plan (Attachment J of the permit).		
Note 3: Containment Building capacities correspond to those in the Part A. ERB containment building encompasses the RTA, VCRs, RRs, parts staging and palletizing/repack areas, transfer corridors, AGV corridor, munition body storage building, munitions receiving room.		
Note 4: Container storage volumes correspond to those volumes identified in the Part A and Part V of the permit. Cubic yards have been converted to gallons using the multiplier 7.48 gallons/cubic foot.		
Note 5: Storage capacity for H1104 and H1106 is 20,196 gallons each. Storage capacity for H1105, H1106, H1107, and H1108 is 25,346 gallons each. Total storage capacity for six H-block igloos (H1104 through H1109) is 141,776 gallons.		

Appendix I-2, Closure Schedule



Data as of February 5, 2020

Enclosure 17

Proposed Revisions to the Hazard Preparedness and Prevention Plan,

Attachment J, with changes depicted using “track changes” condensation. Wastes containing free liquids may be stored in the Waste Laydown Yard Munitions Body Storage Area and the Dunnage Storage Area on spill containment pallets or pans. Management of waste in these areas is performed in a manner that is protective of surface water quality.

The permitted hazardous waste tanks have adequate secondary containment that shall be maintained to contain a full volume release (i.e., volume released from the largest tank). The permitted hazardous waste tank systems located outside of a building have adequate secondary containment that shall be maintained to manage a full volume release and the precipitation from a 25-year, 24-hour storm. For hydrolysate and brine piping located outside of the APB, the 30-Day Hydrolysate Tank secondary containment area, the BTA secondary containment area, the Brine Concentrator Feed Tank secondary containment area, and the BRS secondary containment area, PCAPP will use H2Obvious™ leak detection devices for indication of pipe leakage. Therefore, leaks of hazardous waste constituents from permitted hazardous waste tank systems and or piping will be contained or promptly identified and collected to prevent mixing of the constituents with storm water runoff.

In the event that liquid hazardous materials or HWCs are involved in an incident or the materials/HWCs are spilled into or otherwise exposed to water (e.g., water used to fight a fire), sorbent materials or containment berms will be used to absorb/adsorb and limit the spread of contaminants. Sorbent materials compatible with the materials/HWCs [pourable universal silica-free clay (or similar), loose organic materials, or commercial absorbent products] may be placed directly on the liquid to prevent it from spreading and to aid in the waste recovery.

J-4b(1) PREVENTION OF WATER SUPPLY CONTAMINATION [6 CCR 1007-3 §100.41(a)(8)(iii)]

PCAPP provides an integrated approach to the protection of the local water supply through facility design, engineering and administrative controls, and hazardous waste management procedures. Permitted secondary containment structures without overlying roofing protection (thus, open to the environment) are designed to hold the precipitation from a 25-year, 24-hour on the supplies to each building provided with potable water. There are also backflow preventers on the connections to mechanical or process equipment. The plumbing fixtures and accessories are designed with an air gap between the potable water supply and the sanitary drain system.

J-4c EQUIPMENT AND POWER FAILURE

[6 CCR 1007-3 §100.41(a)(8)(iv), ~~Permit Condition I.J.2.b.iv.~~]

The primary utility power for the PCAPP facility comes from a single 115 kV transmission line. Two 100 percent SDGs are available to power the essential loads when the primary utility power is interrupted. The starting reliability of each SDG is assumed to be 0.97 and the probability of failure to start either of the SDG's is 0.0009. Each SDG is aligned to energize one set of essential buses. The external power system consists of the utility supply, power transformers, generators, and power feeders to the main 13.2 kV switchgear at the internal power systems. The internal power system consists of the main 13.2 kV switchgear, 480 V distribution switchgear, and motor control centers (MCCs). Study results indicate the overall availability of the PCAPP power distribution system is greater than 99.999 percent.

J-4c(1) Essential Power

PCAPP's essential power system consists of medium voltage (13.2 kV) switchgear, 480 volt (V) switchgear, motor control centers, distribution panels and two parallel-redundant 3300 kW rated SDGs [each rated at 100 percent (%) the total 3300 kW plant load] that shall be maintained by the Permittees to provide a reliable on-PCAPP source of electrical power should electrical service from Black Hills Energy be interrupted. The major difference between PCAPP's standard power distribution system and the essential power system is the source of power. Both SDGs start and reach operating voltage and frequency within 30 seconds following loss of electrical service. One SDG is selected as described above. The essential loads required to safely shut down the facility will automatically start within the next 60 seconds. The starting of an individual load is by load block [there are five (5) load blocks], with all loads in a particular load block starting within the specified time range as shown on Table J-1of this Attachment. All automatically starting loads do so without CON intervention. The SDG reaches full load within

J-4d EQUIPMENT FAILURE CONTROL

[6 CCR 1007-3, §100.41(a)(8)(iv), ~~Permit Condition I.J.2.b.v.~~]

PCAPP uses two control systems to control and monitor plant operations and to notify the CON Operators when established process indicators/alerts or alarms are reached, the Facility Control System (FCS) and the Facility Protection System (FPS). The purpose of the indicators/alerts and alarms is to direct the CON Operator's attention towards conditions requiring timely assessment or action. A process indicator/alert is an expected event that may require CON Operator action (e.g., adjust the process to remove process instability) but is not necessarily time critical and presents negligible risk to human health or the environment; whereas, an alarm is an unexpected event that requires timely CON Operator action and varies in the level-of-risk from a slight to a potentially serious impact to human health or the environment. The FCS shall be operated and maintained to control, monitor and provide alarms for PCAPP process tank systems, munitions handling robots, PMDs, conveyors, blast gates, MTUs, cavity access machines (CAMs), the SDU, the autoclave, utilities, heating, ventilation and air conditioning (HVAC), and APB off-gas treatment systems. The FCS has the capability for both manual and automatic functions, including operation of plant equipment and the ability to shut down equipment to prevent release of hazardous waste constituents to the environment and to prevent equipment damage resulting from process excursions beyond predetermined process limits.

The FPS is a dedicated, microprocessor-based, fault-tolerant, independent system that shall be operated and maintained to prevent agent release and provide protection from fire. The FPS is connected to dedicated field instruments, MINICAMS® and FACPs. The FPS logic generates interlocks independent of the FCS. The FPS trip and isolation actions (agent release interlocks) are preemptive and function regardless of FCS status. As needed, the FPS is capable of isolating appropriate sections of the plant automatically or by direct CON Operator action and shuts down the process when any of the monitored parameters exceed predetermined critical limits, including automatically initiating protective actions to isolate areas or equipment to prevent mustard agent migration to areas of lesser contamination or the release of mustard agent from the permitted HWMUs to the environment. The FPS will automatically close dampers in ventilation ducts to isolate any room(s) that has fire rated walls in which fire is detected. ~~The FPS also will automatically shut down any AFA filter bank in the event of mustard agent detection (MINICAMS®) at 0.2 VSL following the fourth carbon filter. When a filter bank is shut down, the FCS will automatically start the standby filter bank.~~

During mustard agent operations, the FCS and FPS shall be continuously monitored by CON Operators at one of ten (10) CON stations each dedicated to a specific process or equipment, as follows: Agent Neutralization System (ANS), MTUs, mustard agent monitoring and HVAC (which includes the ERB and APB cascade ventilation system and the AFA), utilities, a station for each of the two MWSs and a station for each of the three PMDs. The tenth station is primarily for backup. Although the BTA and BRS areas are controlled by local PLCs with datalink network connection to interconnect the FCS and PLCs to allow for system monitoring at the CON, the BRS and BTA areas normally will be monitored in the BRS Control Room that is located in Building K-189.

The AGV is controlled by a PLC with local control stations. AGV local control stations are located in the Munitions Body Palletizing Area and the MBSB. An interface between the AGV PLC and the FCS is used for exchange of monitoring and control data for doors and pallet sensors that interface with the AGV.

The CON has full access to the APB Off-Gas Treatment System (OTS) operating parameters (temperature, flow rates, pressures, levels, solution pH, and vent relative humidity). The CON Operator monitoring the OTS cannot control the vent flow into the OTS as vent flow is monitored and controlled as appropriate by the CON Operator assigned to the specific mustard agent process system producing the vent flow to the OTS. Agent Neutralization System's off gas will result when the tanks vent during filling; however, this off gas is not monitored or modulated prior to treatment in the OTS. The Secondary Decontamination Unit (SDU) and autoclave vents will be controlled automatically as part of the programmed SDU and autoclave process. The Munition Treatment Unit (MTU) vent shall be modulated and monitored by a CON Operator assigned to the MTU. The total vent flow into the OTS is not modulated, but it is displayed and monitored by the CON Operator assigned to the APB OTS.

supply systems linked to a common filtered exhaust system. The ERB supply system has two air handling unit (AHU)s, one operating and one in standby; the APB supply system has three air AHUs, two in operation and one in standby. The standby AHUs are provided to allow for isolation of a single AHU for maintenance without disruption of service and to serve as backup to the operating AHU in case of off-normal operating plant conditions.

The AFA is comprised of ten (10) filter units. During mustard agent processing, eight of the 10 will be operating and at least one of the 10 will be in automatic standby. Each of the 10 filter units has a nine-stage filtering train. The first-filtering stage is a prefilter for removal of large particulates from the exhaust stream. The second stage consists of a high-efficiency particulate air (HEPA) filter for removal of fine particles. The third stage is the primary carbon filter that removes mustard and VOCs from the airstream. The next five filter stages consist of carbon filters that function as backup in the event of saturation or a breakthrough of the first carbon filter. At least one of the five carbon filters will be sulfur-impregnated. The final filter stage is a HEPA filter for the purpose of collecting any fine particulate that may erode from the carbon filters.

Operating details of the AFA including sampling for 1,2-DCA and response to filter breakthrough is described in Part IV Table IV.D.6 of this Permit. ~~For each of the 10 filter units, a sampling probe that directs air to MINICAMS®s for monitoring is positioned between carbon filters 1 and 2 that will monitor the airstream to warn of mustard agent breaking-through filter 1. Filter 1 is also known as the primary filter. To warn of breakthrough in carbon filter 2, a second MINICAMS® sampling probe located between carbon filters 2 and 3 will monitor the air stream following indication that mustard agent has broken-through the primary carbon filter and during change-out of the primary carbon filter. A monitoring point is also positioned between carbon filters 4 and 5 to provide further evidence of filtering integrity. One near-real-time monitoring MINICAMS® will be used to monitor all three monitoring points in each filter unit~~. Stack emissions shall be monitored for mustard agent using both MINICAMS® and Depot Area Air Monitoring System (DAAMS). A release from the stack of a concentration measured equal to or greater than the airborne exposure limit of 1.0 VSL (0.003 mg/m³) mustard agent as measured by MINICAMS® and then confirmed by the DAAMS requires implementation of the Contingency Plan, (Attachment G) of this permit.

The BRS OTS is provided three carbon filters, two will be in service and the third is standby and rotated into service when one of the two in-service filters requires replacement or servicing. The BRS OTS blower is designed and operated to pull the air through the two carbon filters to remove chemical constituents prior to discharge to the atmosphere. The BRS OTS does not utilize a thermal heater/reheater.

The Brine Concentrator Feed Tanks OTS also is designed, constructed and operated with a blower to pull the airstream from the three (3) Brine Concentrator Feed Tanks through two carbon filters in a lead/lag configuration and to facilitate replacement of one filter while the other remains operational.

The fourth PCAPP OTS is a passive system (no blower fan) that filters the airstream emitting from the three (3) 30-day Hydrolysate Storage Tanks through two carbon filters in parallel (of which only one is in-service at any given time) and a third filter in series. Because the filtration system is passive, the transport of chemical-vapor-laden air through the carbon filters is periodic, not continuous, and is driven by displacement when filling and draining the 30-day Hydrolysate Storage Tanks.

J-4g PROCESS FOR MANAGING LEAKER[1] MUNITIONS

~~[Permit Condition I.J.2.b.ii]~~

The PCAPP mission includes demilitarization of 105mm and 155mm projectiles, and 4.2 inch mortars that currently are being stored in PCD G-block igloos. When stored munitions are scheduled for demilitarization, the PCD will transfer custody of the munitions to PCAPP and the munitions will then be transferred from the G-block igloo to PCAPP in accordance with the Operating Plan. During the PCAPP demilitarization process the energetics will be removed from projectiles and mortars in the ERB before the reconfigured munition bodies are transferred to the APB for the washout and treatment of the mustard agent. A potential exists for a munition in

[1] A leaking munition, or leaker, is determined to have released either mustard agent liquid or vapor as determined by observation or monitoring equipment such as MINICAMS®.

2. Being moved from the MAV unloading area through the MSM Corridor to the MSM,
3. Stored in a MSM,
4. Being moved through the MSM Corridor to the Receiving and Travel Area (RTA),
5. Staged in the RTA.

During the above steps, if an OPP is determined by MINICAMS® monitoring to contain a leaker, then a Vapor Containment Room (VCR) will be prepared to receive the OPP and the OPP transferred to the VCR. Once in the VCR, the OPP will be opened and the leaking munition identified using polyethylene sheeting and bags allowing each munition in the OPP to be singly monitored using MINICAMS®. Once identified, the leaker shall be placed in a Single Round Container (SRC) and may be stored in a MSM prior to transfer to H-block igloo H1102 or G-block igloos G101, G102, or G103 prior to treatment in a Static Detonation Chamber (SDC) or sent directly to an SDC.~~a CDPHE-permitted G-block igloo.~~ Non-leaking munitions will be processed normally.

Munitions with energetics requiring baseline reconfiguration (i.e., removal of propellant and igniter/primer) will be unloaded, following MINICAMS® indication that mustard agent vapor is not present, from the OPP in the RTA and conveyed to the VCR and then transferred to the Reconfiguration Rooms (RR) for removal of the propellant/primer energetics. Once baseline reconfigured, the munition will be placed into munitions pallets that are placed in OPPs that are transferred to G-Block igloo in accordance with the Operating Plan for storage awaiting transfer back to PCAPP for enhanced reconfiguration where the remaining energetics (e.g., fuze and burster) are removed from the munition, or to the SDCs for treatment.

A munition outside an OPP discovered to be leaking will be placed (isolated) in a plastic bag for contamination control and a VCR prepared to receive the leaking munition and then the leaker transferred to the prepared VCR. The leaker will then be placed in a SRC. The SRC may be stored in a MSM while waiting transfer to a permitted G-block igloo. Non-leaking munitions will be processed normally.

J-5 PREVENTION OF IGNITION OR REACTION OF IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

[6 CCR 1007-3 §264.17~~, Permit Condition I.J.2.b.i.~~]

J-5a Ignitable Waste

Pursuant to 6 CCR 1007-3 §261.21(b), ignitable waste generated during reconfiguration activities and maintenance activities will be stored in waste accumulation areas or HWMUs permitted to store D001 waste while waiting transport to an off-PCD TSDF. All PCAPP ignitable hazardous waste, including ignitable energetics (e.g., M6 propellant from the 4.2 inch mortar), shall be separated from sources of ignition, including but not limited, to open flame or spark-producing abrasive cutting, thermal welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat producing chemical reactions), and radiant heat. Smoking of cigarettes, cigars, or pipes and the use of open-flame lighters or matches will be confined to designated locations located outside and away from HWMUs. No Smoking signs shall be conspicuously placed leading into HWMUs and/or the CLA.

- Additional controls to prevent ignition of ignitable energetics include, but is not limited to:

- Room sprinkler system and ultra-high-speed deluge fire suppression systems are in place and maintained in each Reconfiguration Room such that if ignition of propellant or of equipment within a RR occurs, the deluge system will provide fire protection to the worker and prevent the fire from spreading to nearby munitions;
- Fuzes have safeties that preclude detonation due to a fire or impact;
- Work surfaces and conveyors are designed to prevent roll-off, as well as being grounded and bonded;
- Any mortar cartridges with striker nuts that cannot be removed without undue force will be rejected, packaged in an SRC or propelling charge container, and sent to permitted storage. Undue force is determined to be any value greater than hand tight.

Each permitted HWMU is protected from fires and explosions from non-reconfigured (functioning) munitions, electrical shorts, overheated equipment, or operator failures by a fire protection system designed to meet the special needs of the processing areas. PCAPP personnel are required to immediately notify the CON whenever a fire event occurs, or is discovered. Both firefighting and evacuation are possible options in an emergency situation. If the fire involves explosive materials or is supplying heat to explosives, or if the fire is so large that it cannot be extinguished with the equipment at hand, the personnel involved shall evacuate the immediate area and seek safety.

Lightning protection within the PCAPP CLA is provided by an integrated mounted system of air terminals and down conductors that conform to NFPA® 780. With the exception of H-block and G-block igloo storage areas, lightning protection systems that protect hazardous waste management units that contain energetic/explosive wastes are depicted on the following drawings in Attachment E of this Permit: 24852-RD-EY-ERB-E0001, E0005, E0006, E0007, E0008, *Enhanced Reconfiguration Building Lightning Protection Plan.*

Lightning protection systems that protect the H-block and G-block igloos are Integral Type Lightning Protection Systems (LPS) consisting of vertical equally-spaced air terminals (aerials) bonded to a bare grounding wire (down conductor) that runs along the top of the magazine on the long axis from the rear vent stack to the headwall or front of the magazine. The down conductor is attached to at least 2 grounding rods (per Table 17-2 Ground Rod Quantity Requirements, DA PAM 385-64) embedded in the ground.

Bonding is used to reduce the possibility of side flashing and to prevent electrical potential differences (via induction) that could be produced by lightning current. Bonding requirements are per Chapter 4 DA PAM 385-64. DA PAM 385-64 requires that metal ventilators, steel doors, door frames, and steel reinforcement be bonded to the structure's grounding system.

Description	Room No.	Requirements
		pallets with non-combustible hazardous waste items. A row of hazardous waste containers or steel pallets with non-combustible hazardous waste items (one container/item wide) may be placed against, or less than 28 inches from structural walls, or non-portable equipment when a minimum 28-inch aisle space is maintained to the front of the row.
		Inventory limit per MWS line (i.e., on conveyors, held by the MHR, and within the CAMS) at any time within the MWS Room shall be as follows: seven (7) 155mm projectiles or eight (8) 105mm projectiles or eight (8) 4.2-inch mortars munition bodies.
Toxic Maintenance Area - Category A Room	APB 126	Inventory limit will not exceed two (2) 4 ft x 6 ft bin containers plus twenty-four (24) 55-gallon drums of RCRA-regulated secondary waste. Combination of container types is allowed but the limit of the two (2) bins plus twenty-four (24) 55-gallon drum equivalents cannot be exceeded. ~~Inventory limit does not exceed 26 total waste containers of RCRA-regulated secondary waste. Two (2) 4 ft x 6 ft bin containers are allowed and no more than twenty-four (24) 55-gallon drums. Containers > 55 gallon (e.g. 85/95-gallon drum containers) shall count as two (2) 55-gallon drums. Containers ≤ 55-gallons shall count as One (1) 55-gallon drum. Combination of containers types is allowed but the limit of twenty-four (24) 55-gallon drum equivalents cannot be exceeded~~. Drum containers must be stored in a dedicated area, or areas, that have boundaries marked-out on the floor or otherwise delineated and each 4 ft X 6 ft bin container must be stored in one of two dedicated 8.5 ft x 6.0 ft areas that have boundaries marked-out on the floor or otherwise delineated. Storage of non-combustible hazardous waste items, (e.g., pumps, piping, etc.) that cannot be placed in a waste container due to size, shape or weight shall be limited by the Permittees ability to maintain the required aisle space. Equipment containing small quantities of occluded liquids may be stored on metal pallets not more than one item high. Stored hazardous waste items and containers shall be arranged to allow their inspection in accordance with the Inspection Plan (Permit Attachment K). Sealed plastic bags containing waste generated during toxic entries will be delivered to the TMA-A and then placed into a container by personnel working in TMA-A; however, if no personnel are working in TMA-A at the time the waste is delivered, then the bagged waste will be placed on the floor and stored in a drum or bin container on subsequent waste packaging entry into TMA-A. See Permit Conditions IV.D.4.a.ii through IV.D.4.a.ii.(N) and IV.D.4.g.iii for additional storage requirements.
		Twenty-eight (28) inches minimum aisle space between rows of hazardous waste containers, or items and structural walls or non-portable equipment or metal pallets with non-combustible hazardous waste items. A row of hazardous waste containers or metal pallets with non-combustible hazardous waste items (one container/item wide) may be placed against, or less than 28 inches from, structural walls or non-portable equipment when a minimum 28-inch aisle space is maintained to the front of the row. These aisle requirements do not apply for plastic bags placed on the floor, as described above, that are awaiting placement into a drum or bin container

Description	Room No.	Requirement
		equipment. A row of hazardous waste containers or hazardous waste items (one container/item wide), or contamination control drip pans may be placed against, or be less than 28-inches from, structural walls or non-portable equipment when a minimum 28-inch aisle space is maintained to the front of the row. See Permit Conditions IV.D.4.a.ii through IV.D.4.a.ii.(N) and IV.D.4.g.iii for additional storage requirements. Stored hazardous waste containers/items will be arranged to allow using CCTV to conduct their hazardous waste inspection.
Energetics Service Magazine (ESM) Corridor		The contents of a forklift may be placed in the corridor (e.g., because of equipment breakdown), but **NOT** for longer than 24 hours.
Energetics Service Magazine (ESM)		Only containerized energetics shall be stored in the ESM.
		Inventory limit is 5,000 pounds net explosive weight (NEW).
		A travel path that allows safe movement of forklifts and other waste handling rolling-stock shall be maintained. 28 inch minimum horizontal distance between (individual containers or palletized container units) rows and structural wall. A row of hazardous waste containers or hazardous waste items (one container/item wide) may be placed against, or less than 28 inches from, structural walls, or non-portable equipment when a minimum 28-inch aisle space is maintained to the front of the row.
Munitions Bodies Storage Area		Container storage of munitions bodies that have been treated in the Munitions Treatment Unit and of solid and liquid-phase hazardous waste in drums, crates, or other DOT containers.
		Inventory limit of solid and liquid-phase hazardous waste is 840 cubic yards in any combination of DOT containers that are on pallets or are elevated above the concrete pad surface. • For example: o 175 munitions body storage bins containing munitions bodies, o 224 drums or 28 boxes/crates (elevated or on pallets), and o 15 munitions bodies storage bins on trailers Containers may be stored on flatbed trailers in the storage area.
		Multiple double rows (two bins or two pallets wide) will be separated by 28 inches wide aisle space. Flatbed trailers will be separated by a 28 inch wide aisle space. An approximately 28 inch wide aisle will extend around the exterior of the storage pad. Containers of waste with free liquids will be stored on spill containment pallets or secondary containment pans
H-block Igloos		Container storage of energetics or waste in H-block igloos numbers H1104 through H1109
		Inventory limits of 100 cubic yards in igloos H1104 and H1109, and 125.5 cubic yards in igloos H1105, H1106, H1107, and H1108: • ~~44~~ 60 pallets of containerized waste (other than energetics) per igloo, or • 44 pallets of energetics in H1104 and H1109, and 60 pallets of energetics in H1105, H1106, H1107, and H1108 AND

Description	Room No.	Requirement
		• Less than Net Explosive Weight (NEW) of energetics for each igloo as identified in Tables V-3 and V-4 **AND** • Only single type of containerized energetic component to be stored in each igloo, and • No waste storage in the same igloo with energetics storage
		• Two single longitudinal rows of palletized energetics along each side wall in H1104 and H1109 ~~of the H-block igloos~~ (Figure V-2), single stack for all energetics except pallets of 105 mm M67 propellant with M28A2 primer, which may be double-stacked. • Two single longitudinal rows of palletized energetics along each side wall, and one central row of palletized energetics in H1105, H1106, H1107, and H1108 (Figure V-2), single stack for all energetics except pallets of 105 mm M67 propellant with M28A2 primer, which may be double-stacked. • Two single longitudinal rows of palletized waste ~~drums~~ containers along each side wall, and one central row of palletized waste containers in~~of~~ the H-block igloos H1104, H1105, H1106, H1107, H1108, and H1109 • Minimum horizontal distance at the floor of 3 feet between RCRA-regulated waste containers and the igloo's structural wall
Dunnage Storage Area		Container storage of dunnage and/or solid and liquid-phase waste
		Inventory limits: • ~~240~~ 560 cubic yards of waste in any combination of DOT containers that are on pallets or are elevated above the concrete pad surfaces. • For example: o 14~~6~~ x 40 cubic yard rolloffs of dunnage or other solid phase waste stored in containers that are elevated above the concrete pad and separated by a minimum of 28 inch aisle space. OR o ~~240~~ 560 cubic yards of waste in various elevated containers. o Containers of waste with free liquids will be stored on spill containment pallets or secondary containment pans
		• Single rows of rolloffs separated by 28 inch aisle space. • Double rows of palletized drums or other DOT approved containers separated by 28 inch aisle space
Waste Laydown Yard		Container storage of solid- and liquid-phase hazardous wastes.
		Inventory limits: • ~~1686~~ 1896 cubic yards of hazardous waste in any combination of DOT approved containers ~~that are on pallets or are elevated above the concrete pad surface.~~

Description	Room No.	Requirement
		• 28 inch minimum aisle space between rows of rolloffs or of palletized DOT approved containers • Concrete pads: ~~o~~ o Containers of solid-phase waste are stored on pallets or are elevated above the concrete pad surface • Waste containing free liquids ~~will be~~are stored in DOT approved containers on spill containment pallets/pans • Asphalt pad: o Containers of both solid and liquid-phase wastes are stored on spill containment pallets or secondary containment pans.
G-block Igloo Storage Area		Inventory limits for each igloo: • 56 cubic yards of waste (e.g., 51 pallets each with four 55-gallon drums totaling 204 drums) • 1000 lbs. Net Explosive Weight (NEW).
		• Two single longitudinal rows of palletized waste containers, each row located along each wall, and a single row of palletized waste containers along the center of the igloo • Minimum horizontal distance at the floor of 3 feet between RCRA-regulated waste containers and the igloo's structural wall • Minimum aisle space of 3 feet between the pallets in the longitudinal rows and the pallets in the center row • Waste containing free liquids will be stored in DOT approved containers on spill containment pallets/pans

1. Does not include storage in tanks or accumulation of hazardous waste outside of CDPHE-permitted HWMUs (i.e., in generator waste accumulation areas operated per 6 CCR 1007-3, ~~40~~ Part 262).

2. Hazardous waste munitions may be stored in the VCRs, MTUs, ~~SDU, Autoclave,~~ PMEs, MMEs, MHR, Munition Weigh Station, Munition Loading conveyor or MWS Feed Conveyor for longer than 24 hours only in the event of an off-normal situation (e.g., equipment failure or malfunction, or mustard agent release resulting in response and decontamination activities that affect operations) with a notification to the Division within 24 hours of exceeding the 24 hour storage limit. The notification shall include a description of planned corrective actions and associated schedule if the off-normal situation has not been resolved at the time of notification.

Enclosure 18

Proposed Revisions the Inspection Plan, Attachment K and

Inspection Forms, Appendix K-4,

with changes depicted using “track changes”

The following tables, in accordance with 6 CCR 1007-3 §§264.15(b)(1), 264.15(b)(4) and 264.15(b)(3), list and/or address the item to be inspected, frequency of inspection of the items and types of problems, respectively.

A summary of inspection frequency and methodology for sumps, and a clarification of other aspects of PCAPP's inspections, follows in Sections K - 5a through K - 5c.

K-5a Enhanced Reconfiguration Building (ERB) Sump Inspection

The sumps in the ERB are lined with special coatings and are used to collect accidental releases rather than for routine waste management (i.e., waste is not intentionally placed in these sumps). During normal operations the probability of agent contact with the floor or sumps is low. The sumps are therefore normally dry but may be used occasionally for the collection or accumulation of newly generated wastes (e.g., spent decontamination solutions). These sumps are emptied of free liquids as part of the spill response, cleanup, and decontamination processes.

Any liquid wastes generated during spill response, cleanup, and decontamination activities will not be stored in the ERB (containment) building in accordance with Subpart DD requirements. Instead the liquid will be managed in permitted waste management areas or generator waste accumulation areas in accordance with 6 CCR 1007-3 §262~~.34~~, as recyclable materials in accordance with 6 CCR 1007-3 Part 267, as universal waste in accordance with 6 CCR 1007-3 Part 273, or as used oil in accordance with 6 CCR 1007-3 Part 279. The sumps in the ERB are inspected daily[2] for the presence of unexpected liquids.

The sump surfaces are not subject to damage from traffic (e.g., forklift traffic) and are not expected to exhibit cracking or other deterioration. The ERB sumps shall be inspected quarterly for damage (i.e., cracks exceeding $^{1}/_{32}$-inch width, or gaps, divots, or similar) to the special coating that may expose underlying coating or concrete.

The RCRA inspection criteria and frequency of inspection of the ERB are found in Table K - 6.

[2] The floor and sump/trench will be inspected for spills or leaks of mustard agent and unexpected liquids by an entrant if an ECR entry is conducted that day; otherwise if no entry is scheduled for that day then the floor and sump/ trench will be inspected by CCTV for spills or leaks of mustard agent and unexpected liquids. (see Table K-6).

Table K-13 Biotreatment Area (BTA) Inspection

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
Biotreatment Area (BTA)		
BTA Module 1 **ref. dwg. 24852-RD-P1-BTA-P0002 & 24852-RD-M6-B09-M0001** **Feed Tank** (MT-B09-0101) **Feed Pump** (MP-B09-0101) **1). Bioreactor** (MW-B09-0101) **Recycle Pump** (MP-B09-0111) **2). Bioreactor** (MW-B09-0102) **Recycle Pump** (MP-B09-0112) **3). Bioreactor** (MW-B09-0103) **Recycle Pump** (MP-B09-0113) **4). Bioreactor** (MW–B09-0104) **Recycle Pump** (MP-B09-0114) **Moisture Separator** **(MT-B09-0103)** **Effluent Tank (MT-B09-0102)** **Effluent Pump (MP-B09-0102)**	**BTA Module 2** **ref. dwg. 24852-RD-M6N-B09-M0204, 24852-RD-P1-BTA-P0003 & 24852-RD-M6-B09-M0002** **Feed Tank** (MT-B09-0201) **Feed Pump** (MP-B09-0201) **1). Bioreactor** (MW-B09-0201) **Recycle Pump** (MP-B09-0211) **ICB Sample Return Funnel** (MX-B09-0002) **2). Bioreactor** (MW-B09-0202) **Recycle Pump** (MP-B09-0212) **3). Bioreactor** (MW-B09-0203) **Recycle Pump** (MP-B09-0213) **4). Bioreactor** (MW–B09-0204) **Recycle Pump** (MP-B09-0214) **Moisture Separator** (MT-B09-0203) **Effluent Tank** (MT-B09-0202) **Effluent Pump** (MP-B09-0202)	**BTA Module 3** **ref. dwg. 24852-RD-P1-BTA-P0004 & 24852-RD-M6-B09-M0003** **Feed Tank** (MT-B09-0301) **Feed Pump** (MP-B09-0301) **1). Bioreactor** (MW-B09-0301) **Recycle Pump** (MP-B09-0311) **2). Bioreactor** (MW-B09-0302) **Recycle Pump** (MP-B09-0312) **3). Bioreactor** (MW-B09-0303) **Recycle Pump** (MP-B09-0313) **4). Bioreactor** (MW–B09-0304) **Recycle Pump** (MP-B09-0314) **Moisture Separator** (MT-B09-0303) **Effluent Tank** (MT-B09-0302) **Effluent Pump (MP-B09-0302)**
Released HWCs	D	**Problem**: Presence of HWCs released from equipment listed in this table, pipes, or other ancillary equipment. **Inspection**: Inspect the containment area for the presence of any liquids not related to precipitation.
Released HWCs from ICB Sample Return Funnel	D	**Problem:** Presence of HWCs released from ICB Sample Return Funnel (MX-B09-0002). **Inspection:** Inspect the ICB Sample Return Funnel located on the top of Bioreactor (MW-B09-0201) to confirm that there is no leakage of any liquids.
Presence of Liquid in Coated Sump	D	**Problem**: Presence of liquid in sump. **Inspection**: Inspect the sump for the presence of any liquid. Liquids discovered in the sump will be characterized in accordance with Permit Condition III.F.14.

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

Table K-15 Brine Reduction System (BRS) Inspection (cont'd pg. 3 of 6)

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
Brine Reduction System (BRS)		
Overfill/Spill Control Equipment	D	**Problem**: Malfunction could lead to overfilling. **Inspection**: CON Operators monitor and record tank liquid level and volume daily.
Pipes, Valves and Fittings	D[b]	**Problem**: Damage, corrosion or other deterioration of pipes, valves, and fittings leads to release of HWCs. **Inspection**: Inspect the following piping: • B12-EF Evaporator Feed • B12-EF Evaporator Feed Recirculated • B12-RW Recovered Water • B12-RW Recovered Water Manifold • B12-RW Recovered Water ~~(Pilot Test Only)~~ originating from the BRS Distillate Carbon Filter terminating at the ~~Pilot Test~~ Storage Location, • B12-SL Slurry • B12-DR Drain • B12-DR Drain to Process Header • B12-Drain [originating from the BRS (Oberlin) Belt Filter Press and terminating where the pipe discharges into the BRS Filter Press Building sump] Valves and fittings for indications of damage, leak, or the indication of leaks (e.g., staining), or corrosion that has the potential to cause a release of brine, evaporator feed, brine slurry, recovered water, or drain water. For insulated pipes, valves, and fittings inspect the insulation on the piping, valve, or fitting for damage that could indicate leakage, or damage to the underlying pipe, valve, or fitting that requires additional evaluation by a subject matter expert. This damage includes missing insulation, impact or corrosion holes in the insulation or jacketing and deep dents in the insulation or jacketing.

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

b. Inspection required only when piping contains RCRA-hazardous waste.

Table K-16 Air Pollution Control Systems – General Inspection (cont’d pg. 5 of 12)

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
30-Day Hydrolysate Tanks Air Pollution Control System ref. dwg. 24852-RD-P1-Y-P0014 30-Day Tank Vent Carbon Filters (MK-B04-003A, MK-B04-003B, MK-B04-0004)		
Mechanical Integrity	W	Continued from previous page For insulated vent piping inspect the insulation on the duct for damage that could indicate leakage, or damage to the underlying duct that requires additional evaluation by a subject matter expert. This damage includes missing insulation, impact or corrosion holes in the insulation or jacketing and deep dents in the insulation or jacketing.
Brine Treatment Area (BTA) Tanks Air Pollution Control System		
BTA Module 1 **ref. dwg. 24852-RD-P1-BTA-P0002** ICB Off Gas Heaters (ME-B11-0101) ICB Off Gas Fans (MA-B11-0101) ICB Off Gas Carbon (MK-B11-0101) ICB Off Gas Carbon (MK-B11-0102)	**BTA Module 2** **ref. dwg. 24852-RD-P1-BTA-P0002** ICB Off Gas Heaters (ME-B11-201) ICB Off Gas Fans (MA-B11-0201) ICB Off Gas Carbon (MK-B11-0201) ICB Off Gas Carbon (MK-B11-0202)	**BTA Module 3** **ref. dwg. 24852-RD-P1-BTA-P0004** ICB Off Gas Heaters (ME-B11-0301) ICB Off Gas Fans (MA-B11-0301) ICB Off Gas Carbon (MK-B11-0301) ICB Off Gas Carbon (MK-B11-0302)
Leaks from the Moisture Separator	D	**Problem**: ICB effluent leaking from the moisture separator into the secondary containment **Inspection**: Inspect the moisture separator for indication of leaks.
Valve Positions	W	**Problem**: Valve positions preventing air flow from the ICBs into exhaust filtration unit or valve locks removed. **Inspection**: Inspect valves to confirm that the alignment exhausts the ICB through two filters operating in series and the locks are present and locked.

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

Table K-16 Air Pollution Control Systems – General Inspection (cont'd pg. 6 of 12)

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
Brine Treatment Area (BTA) Tanks Air Pollution Control System		
BTA Module 1 **ref. dwg. 24852-RD-P1-BTA-P0002** ICB Off Gas Heaters (ME-B11-0101) ICB Off Gas Fans (MA-B11-0101) ICB Off Gas Carbon (MK-B11-0101) ICB Off Gas Carbon (MK-B11-0102)	**BTA Module 2** **ref. dwg. 24852-RD-P1-BTA-P0002** ICB Off Gas Heaters (ME-B11-201) ICB Off Gas Fans (MA-B11-0201) ICB Off Gas Carbon (MK-B11-0201) ICB Off Gas Carbon (MK-B11-0202)	**BTA Module 3** **ref. dwg. 24852-RD-P1-BTA-P0004** ICB Off Gas Heaters (ME-B11-0301) ICB Off Gas Fans (MA-B11-0301) ICB Off Gas Carbon (MK-B11-0301) ICB Off Gas Carbon (MK-B11-0302
Mechanical Integrity	W	**Problem**: Damage, deterioration, wear or corrosion to equipment or pipes that is allowing, or may lead to, release of gases or vapors to the atmosphere. **Inspection**: Inspect the carbon filters, equipment, and the following vent piping: • Labeled **B11-VT-BTA Off Gas** originating from each ICB, terminating at the Moisture Separator • Labeled **B11-VT-BTA Off Gas**, originating from the Effluent Tank, terminating at the Moisture Separator • Labeled **B11-VT-BTA Off Gas**, originating at the Moisture Separator, terminating at ambient air intake, • Labeled **B11-VTA-BTA Off Gas**, originating at the air intake, terminating at the ICB Off Gas Fans • Labeled **B11-VT-BTA Off Gas** originating at the blower, terminating at the Carbon Filter (lead) • Labeled **B11-VT-BTA Off Gas** originating at the (lead) Carbon Filter, terminating at the (lag) Carbon Filter continued on next page

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

Table K-16 Air Pollution Control Systems – General Inspection (cont'd pg. 7 of 12)

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
Brine Treatment Area (BTA) Tanks Air Pollution Control System		
BTA Module 1 **ref. dwg. 24852-RD-P1-BTA-P0002** ICB Off Gas Heaters (ME-B11-0101) ICB Off Gas Fans (MA-B11-0101) ICB Off Gas Carbon (MK-B11-0101) ICB Off Gas Carbon (MK-B11-0102)	**BTA Module 2** **ref. dwg. 24852-RD-P1-BTA-P0002** ICB Off Gas Heaters (ME-B11-201) ICB Off Gas Fans (MA-B11-0201) ICB Off Gas Carbon (MK-B11-0201) ICB Off Gas Carbon (MK-B11-0202)	**BTA Module 3** **ref. dwg. 24852-RD-P1-BTA-P0004** ICB Off Gas Heaters (ME-B11-0301) ICB Off Gas Fans (MA-B11-0301) ICB Off Gas Carbon (MK-B11-0301) ICB Off Gas Carbon (MK-B11-0302
Mechanical Integrity	W	continued from previous page • Labeled **B11-VTA-BTA Off Gas** non-insulated piping originating at the (lead) Carbon Filter, terminating at the Effluent Stack • Labeled **B11-VTA-BTA Off Gas** originating at the (lag) Carbon Filter, terminating at the Effluent Stack for indications of mechanical damage, wear, holes, gaps, cracks, corrosion or deterioration that is causing, or that may lead to, release of vapors or gases to the atmosphere. For insulated vent piping inspect the insulation on the pipe for damage that could indicate leakage, or damage to the underlying pipe that requires additional evaluation by a subject matter expert. This damage includes missing insulation, impact or corrosion holes in the insulation or jacketing and deep dents in the insulation or jacketing.

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

Table K-17 Tanks Inspected per 6 CCR 1007-3 [40 CFR Part 264 Subpart CC] (cont'd pg. 4 of 6)

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
30-Day Hydrolysate Tanks **ref. dwg. 24852-RD-P1-Y-P0014** 30-Day Hydrolysate Tank (MT-B04-0101, -0201, -0301)		
Tank Condition	A	**Problem**: Tank defect that is allowing HWCs to be released.
		Inspection: Inspect the tank top (roof) and the seam between the tank sides and top for defects such as cracks, holes, gaps or other damage.
Closure Devices	A	**Problem**: Defects such as broken or missing seals on hatches or covers, or missing caps, covers or valves that are allowing HWCs to be released.
		Inspection: Inspect tanks and tank penetrations to ensure that the flange covers are in place and the gaskets are in good condition, that all penetrations are either connected to a closed piping or instrument system, PSV, cap, blind flange or other sealing device. Confirm closure devices are in good condition and performing as designed.
Biotreatment Area (BTA) Tanks		
BTA Module 1 **ref. dwg. 24852-RD-P1-BTA-P0002** ICB Feed Tank (MT-B09-0101) Bioreactor MW-B09-0101, -0102, 0103, -0104) ICB Effluent Tank (MT-B09-0102)	**BTA Module 2** **ref. dwg. 24852-RD-P1-BTA-P0003** ICB Feed Tank (MT-B09-0201) Bioreactor MW-B09-0201, -0202, 0203, -0204) ICB Effluent Tank (MT-B09-0202)	**BTA Module 3** **ref. dwg. 24852-RD-P1-BTA-P0004** ICB Feed Tank (MT-B09-0301) Bioreactor MW-B09-0301, -0302, 0303, -0304) ICB Effluent Tank (MT-B09-0302)
Tank Condition	A	**Problem**: Tank defect that is allowing HWCs to be released.
		Inspection: Inspect the tank top (roof) and the seam between the tank sides and top for defects such as cracks, holes, gaps, or other damage.

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

Table K-19 Munitions Bodies Storage Area (pg. 1 of 3)

Item 6 CCR 1007-3 §264.15(b)(1)	**Frequency[a]** 6 CCR 1007-3 §264.15(b)(4)	**Types of Problems** 6 CCR 1007-3 §264.15(b)(3)
Munitions Bodies Storage Area		
Waste Storage	W	**Problem**: The contents of open containers are not controlled and are more likely to spill
		Inspection: Visually verify that containers are closed except when adding or removing waste, or sampling or monitoring waste container.
Container Integrity	W	**Problem**: Damaged containers may release hazardous waste to the storage pad and/or to the environment.
		Inspection: Visually inspect the containers containing RCRA-regulated hazardous waste for signs of leakage or deterioration.
Containment	W	**Problem**: Lack of segregation between incompatible waste types may result in unintended reactions.
		Inspection: Visually verify that containers of incompatible wastes are separated by a berm, dike, wall, secondary containment, physical separation (distance), or by other means.
Containment	W	**Problem**: Damage to secondary containment pallets/pans and enclosures may cause migration of hazardous waste to the environment
		Inspection: Visually inspect containment pallets/pans and enclosures for cracks, chips, holes, areas that indicate excessive wear or deterioration, and indications of issues with structural integrity.
Containment	W	**Problem**: Liquids in containment may be an indicator of a spill or release from a container.
		Inspection: Visually inspect containment for liquids and signs of leakage from the stored containers.

Table K-20 H-Block Igloo Storage Areas (cont'd pg. 2 of 4)

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
Containment	W	**Problem**: Damage to concrete floor and/or secondary containment pallets may cause migration of hazardous waste to the environment.
		Inspection: Visually inspect the concrete floor for cracks and gaps exceeding ½ inch width. Visually inspect containment pallets for cracks, chips, holes, areas that indicate excessive wear or deterioration, and indications of issues with structural integrity.
Containment	W	**Problem**: Liquids in containment may be an indicator of a spill or release from a container.
		Inspection: Visually inspect the concrete floor for evidence of liquids from containers or from precipitation leaking into the igloo. Visually inspect containment pallets for liquids and signs of leakage from the stored containers
Aisle Space	W	**Problem**: Less than the Permit-required aisle space.
		Inspection: Visually inspect to confirm that the aisle spacing meets the following criteria: • Minimum horizontal distance of 3 feet at floor level between RCRA-regulated waste containers and the igloo's structural walls • Travel path for the forklift that allows safe movement
Inventory Limits	W	**Problem**: More than the permitted inventory/capacity identified in Appendix J-1, Attachment J, is stored in an H-block igloo or NEW has been exceeded for the specific H-block igloos.~~More than 44 pallets (or 88 pallets for 105 mm propellant/primer) of containerized waste in an igloo or NEW has been exceeded for specific H-block igloos~~
		Inspection: Visually inspect to confirm that the inventory limits identified in Appendix J-1 of Attachment J are not exceeded and the NEW limits for the specific igloos is not exceeded using Permit Part V Table V-4 Storage Area Specific Conditions – Maximum Allowable Net Explosive Weight (NEW) for Each H-Block Storage Igloo.

Table K-21 Dunnage Storage Area (pg. 1 of 2)

Item **6 CCR 1007-3 §264.15(b)(1)**	**Frequency[a]** **6 CCR 1007-3 §264.15(b)(4)**	**Types of Problems** **6 CCR 1007-3 §264.15(b)(3)**
Dunnage Storage Area		
Waste Storage	W	**Problem**: The contents of open containers are not controlled and are more likely to spill
		Inspection: Visually verify that containers are closed except when adding or removing waste, or sampling or monitoring waste container
Container Integrity	W	**Problem**: Damaged containers may release hazardous waste to the storage pad and/or to the environment.
		Inspection: Visually inspect the containers containing RCRA-regulated hazardous waste for signs of leakage or deterioration.
Containment	W	**Problem**: Lack of segregation between incompatible waste types may result in unintended reactions.
		Inspection: Visually verify that containers of incompatible wastes are separated by a berm, dike, wall, secondary containment, physical separation (distance), or by other means.
Containment	W	**Problem**: Damage to secondary containment pallets/pans, and enclosures may cause migration of hazardous waste to the environment.
		Inspection: Visually inspect containment pallets/pans, and enclosures for cracks, chips, holes, areas that indicate excessive wear or deterioration, and indications of issues with structural integrity.
Containment	W	**Problem**: Liquids in containment may be an indicator of a spill or release from a container.
		Inspection: Visually inspect containment for liquids and signs of leakage from the stored containers.

Table K-21 Dunnage Storage Area (pg. 2 of 2)

Item **6 CCR 1007-3 §264.15(b)(1)**	**Frequency**[a] **6 CCR 1007-3 §264.15(b)(4)**	**Types of Problems** **6 CCR 1007-3 §264.15(b)(3)**
Containment	W	**Problem**: RCRA-regulated hazardous waste that has been spilled onto the concrete pad may result in a release of hazardous waste to the environment **Inspection**: Visually inspect the concrete pad for evidence of spilled RCRA-regulated hazardous waste
Aisle Space	W	**Problem**: Less than the Permit-required aisle space. **Inspection**: Visually inspect to confirm that the aisle spacing meets the following criteria: • Minimum of 28 inches between rolloffs, and between rows of palletized drums of waste
Inventory Limits	W	**Problem**: More than 560~~240~~ cubic yards of waste is stored in the Dunnage Storage Area **Inspection**: Visually inspect to confirm that the inventory stored in the Dunnage Storage Area does not exceed 560~~240~~ cubic yards.
Hazardous Waste Labels	W	**Problem**: Hazardous waste labels are not visible and/or legible.~~.~~ **Inspection**: Visually inspect to verify that hazardous waste labels are visible and legible.
Signs	W	**Problem**: Unauthorized personnel may unknowingly enter the storage area **Inspection:** Visually verify that signs with the legend, "Danger--Unauthorized Personnel Keep Out" are posted at the storage area, and are visible and legible from 25 feet as one approaches the storage area.

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

Table K-22 Waste Laydown Yard (pg. 2 of 3)

Item **6 CCR 1007-3 §264.15(b)(1)**	**Frequency[a]** **6 CCR 1007-3 §264.15(b)(4)**	**Types of Problems** **6 CCR 1007-3 §264.15(b)(3)**
Containment	W	**Problem**: RCRA-regulated hazardous waste that has been spilled onto the concrete or asphalt pads may result in a release of hazardous waste to the environment **Inspection**: Visually inspect the ~~concrete~~ pads for evidence of spilled RCRA-regulated hazardous waste
Containment	W	**Problem**: RCRA-regulated hazardous waste that has been spilled onto the asphalt pads may result in a release of hazardous waste to the environment. **Inspection**: Visually inspect to confirm that solid- and liquid-phase hazardous waste stored on the asphalt pad are stored on spill containment pallets or secondary containment pans, or in enclosures that provide secondary containment.
Containment	W	**Problem**: Damage to secondary containment pallets/pans and enclosures may cause migration of hazardous waste to the environment. **Inspection**: Visually inspect containment pallets, pans and enclosures for cracks, chips, holes, areas that indicate excessive wear or deterioration, and indications of issues with structural integrity.
Containment	W	**Problem**: Liquids in containment may be an indicator of a spill or release from a container. **Inspection**: Visually inspect containment ~~pallets~~ for liquids and signs of leakage from the stored containers
Containment	W	**Problem**: Insufficient capacity in the secondary containment pallets/pans may cause migration of hazardous waste to the environment. **Inspection**: Visually inspect containment pallets to verify that each has the capacity to contain at least 10 percent of the total volume of all containers or the volume of the largest container in the containment system, whichever is greater

Table K-22 Waste Laydown Yard (pg. 3 of 3)

Item 6 CCR 1007-3 §264.15(b)(1)	Frequency[a] 6 CCR 1007-3 §264.15(b)(4)	Types of Problems 6 CCR 1007-3 §264.15(b)(3)
Storage	W	**Problem**: Hazardous waste storage shall meet the requirements of 6 CCR 1007-3 Section 268.50, Prohibition on Storage of Restricted Wastes.
		Inspection: Identify the quantity and identification numbers of containers that have accumulation start dates equal to or greater than 260 days prior to the inspection date.
Inventory Limits	W	**Problem**: More than 1896~~1686~~ cubic yards of waste is stored in the Waste Laydown Yard Storage Area
		Inspection: Visually inspect to confirm that ~~-~~the inventory stored in the Waste Laydown Yard does not exceed 1896~~1686~~ cubic yards
Hazardous Waste Labels	W	**Problem**: Hazardous waste labels are not visible and/or legible.
		Inspection: Visually inspect to verify that hazardous waste labels are visible and legible.
Signs	W	**Problem**: Unauthorized personnel may unknowingly enter the storage area
		Inspection: Visually verify that signs with the legend, "Danger--Unauthorized Personnel Keep Out" are posted at the storage area, and are visible and legible from 25 feet as one approaches the storage area.
Fence, Gates, and Locks	W	**Problem**: Unauthorized personnel may unknowingly enter the storage area
		Inspection: Visually verify that fence surrounding the Waste Laydown Yard, gates, and locks are in operable condition to prevent inadvertent entry

a. D = Once per calendar day; W = Once per calendar week; M = Once per calendar month; Q = Once per calendar quarter; S = Once per six-month calendar period; A = At least once during a 12-month period ± 30 calendar days.

K-7 INSPECTION MAINTENANCE OF MISCELLANEOUS UNITS [6 CCR 1007-3 §100.41(b)(10)(i)(B)~~, Permit Condition I.J.2.d.iii~~]

The following are permitted at PCAPP as miscellaneous HWMUs in accordance with 6 CCR 1007-3 Part 264, Subpart X: Projectile and Mortar Disassembly [PMD (machine)], Munitions Washout System (MWS), Munitions Treatment Unit (MTU), Supplemental Decontamination Unit (SDU), Autoclave, Brine Concentrator Evaporator, Brine Concentrator Vapor Washer, Brine Concentrator Evaporator Distillate Tank, and Crystallizer**.** The maintenance for these HWMUs include maintenance inspections of the components that have been determined to be important for the function and safe operation for protection of human health and the environment. Maintenance of the HWMUs includes both corrective maintenance, which is not conducted to a pre-established schedule and is done to repair conditions affecting the normal operation of the HWMU, and preventive maintenance (PM), which is routine and planned, and is done to allow the HWMU to function reliably as designed. PM of the listed HWMUs is conducted on an established frequency that is generally tracked via the PCAPP computerized maintenance management system-Maximo®. The selection of the type and frequency of maintenance is determined by experienced personnel considering equipment inspection and monitoring needs, industry codes and standards, maintenance and engineering principles and manufacturer recommendations. These same criteria are used to determine the method of the PM and to develop the Maximo® job plan or statement of work. The inspection PM of the HWMU's will involve visual, function, and operation parameter inspections, cleaning (as required), and lubricating (as required) to ensure that the HWMU is maintained in operational condition and to discover and correct any defects before they may result in serious damage or failure. HWMU moving parts such as rotating pedestals, latches, seals, conveyors, pumps, pressurized lines, valves, gauges, etc. that are identified as deficient by visual inspection will have maintenance scheduled using Maximo®. For example, the monthly PM includes: physical inspections of the PMDs and MWS. For the PMDs, the equipment will be inspected for physical damage, excessive wear, and fluid leaks. The MWS components will be inspect for physical damage, excessive wear, and hydraulic or water leaks, and the CAMs and sprays will be inspected for looseness of bolts/parts or damage. For both the PMDs and MWS, the sensor mountings will be b.

RCRA INSPECTION – WEEKLY – MUNITIONS BODIES STORAGE AREA FORM

Total page count: 1

Waste Management Munitions Bodies Storage Area Weekly Inspection			
Inspector's Name and Signature:			
Inspection Date and Time:			
Location:	MBSA		

Item	Criteria	SAT	UNSAT
1	Visually inspect to verify that "Hazardous Waste" signs are posted at the corners of the storage area for the Munitions Bodies Bins	☐	☐
2	Visually inspect to verify that "Danger-Unauthorized Personnel Keep Out" signs are posted at the corners of the storage area.	☐	☐
3	Visually verify adequate aisle space (minimum of 28")	☐	☐
4	Visually verify that containers are closed except when adding or removing waste, or sampling or monitoring waste container	☐	☐
5	Visually inspect the containers for signs of leakage or deterioration (e.g., holes, bulges, severe rusting that would impact structural integrity, or warped container lid)	☐	☐
6	Visually inspect the concrete pad for significant deterioration affecting the integrity of the pad.	☐	☐
7	Visually verify that containers of incompatible wastes are separated by a berm, dike, wall, secondary containment, physical separation (distance), or by other means	☐	☐
8	Visually inspect the concrete pad for evidence of spilled RCRA-regulated hazardous waste	☐	☐
9	Visually inspect spill containment pallets/pans, and enclosures for liquids and signs of leakage from the stored waste containers	☐	☐
10	Visually inspect spill containment pallets/pans, and enclosures for cracks, chips, holes, areas that indicate excessive wear or deterioration, and indications of issues with structural integrity	☐	☐
11	Visually inspect the containers to verify that hazardous waste labels are visible and legible on hazardous waste containers	☐	☐
12	Verify inventory is less than 840 cubic yards.	☐	☐

TO BE COMPLETED BY THE SUPERVISOR OR DELEGATE BY THE END OF WEEK	
Any unsatisfactory condition requires this section to be completed. Additionally, list all Service Requests/ Work Order Numbers generated from this inspection.	
I have reviewed this inspection sheet and found it to be complete and accurate to the best of my knowledge	**Supervisor Initials**

RCRA INSPECTION – WEEKLY – H-BLOCK IGLOO FORM

Total page count: 1

Waste Management H-Block Igloo Weekly Inspection			
Inspector's Name and Signature:			
Inspection Date and Time:			
Location:	☐ **H1104** ☐ **H1105** ☐ **H1106** ☐ **H1107** ☐ **H1108** ☐ **H1109**		
Item	**Criteria**	**SAT**	**UNSAT**
1	Visually inspect containers for damage, leakage, holes, cracks, or deterioration.	☐	☐
2	Visually verify that containers are closed except when adding or removing waste or sampling or monitoring waste container.	☐	☐
3	Visually verify that hazardous waste labels are completed, visible, and legible on waste containers and/ or palletized loads.	☐	☐
4	Visually verify that containers of incompatible wastes are separated by a berm, dike, wall, secondary containment pan, physical separation (distance), or by other means.	☐	☐
5	Visually inspect the concrete floor for evidence of liquids from containers or from precipitation leaking into the igloo.	☐	☐
6	Visually inspect containment pallets for liquids and signs of leakage from the stored containers.	☐	☐
7	Visually inspect the concrete floor for cracks and gaps exceeding ½ inch width.	☐	☐
8	Visually inspect containment pallets, if present, for cracks, chips, or gauges and areas that indicate excessive wear or deterioration and indications of issues with structural integrity.	☐	☐
9	Visually inspect to confirm that the aisle spacing meets the following criteria: • Minimum horizontal distance of 3 feet at floor level between RCRA-regulated waste containers and the igloo's structural walls. • Minimum of 3ft aisle space between rows of pallets	☐	☐
10	• Visually inspect the NEW limits for the specific igloos are not exceeded using H-Block Energetics Storage Maximum NEW for Each Igloo (**Error! Reference source not found.**, **Error! Reference source not found.**) and posted H-Block Igloo Storage Limits (job aid).	☐	☐
11	• Visually verify that signs communicating, "Danger-Unauthorized Personnel Keep Out" are located east of igloo H1109 and west of H1104 adjacent to the road that provides access to the H-block storage igloos (H1104, H1105, H1106, H1107, H1108, and H1109).	☐	☐
12	• Visually verify that "No Smoking" signs are posted near or on the exterior entrance wall to each H-block storage igloo.	☐	☐
13	• Visually verify that spill pallets or containments has the capacity to contain at least 10 percent of the total volume of all liquid containers or the volume of the largest container on that containment system, whichever is greater.	☐	☐
TO BE COMPLETED BY THE SUPERVISOR OR DELEGATE BY THE END OF WEEK			
Any unsatisfactory condition requires this section to be completed. Additionally, list all Service Requests/ Work Order Numbers generated from this inspection.			
I have reviewed this inspection sheet and found it to be complete and accurate to the best of my knowledge	**Supervisor Initials**		

RCRA INSPECTION – WEEKLY – DUNNAGE STORAGE AREA FORM

Total page count: 1

Waste Management Dunnage Storage Area Weekly Inspection			
Inspector's Name and Signature:			
Inspection Date and Time:			
Location:	Dunnage Storage Area		
Item	**Criteria (Physical Inspection)**	**SAT**	**UNSAT**
1	Visually inspect to verify that "Danger-Unauthorized Personnel Keep Out" signs are posted at the corners of the storage area.	☐	☐
2	Visually verify adequate aisle space (minimum of 28")	☐	☐
3	Visually verify that containers are closed except when adding or removing waste, or sampling or monitoring waste container	☐	☐
4	Visually inspect the containers for signs of leakage or deterioration (e.g., holes, bulges, severe rusting that would impact structural integrity, or warped container lid)	☐	☐
5	Visually verify that containers of incompatible wastes are separated by a berm, dike, wall, secondary containment, physical separation (distance), or by other means	☐	☐
6	Visually inspect the concrete pad for evidence of spilled RCRA-regulated hazardous waste	☐	☐
7	Visually inspect to verify that hazardous waste labels are visible and legible on hazardous waste containers	☐	☐
8	Visually inspect spill containment pallets/pans and enclosures for liquids and signs of leakage from the stored waste containers	☐	☐
9	Visually inspect the containment pallets/pans and enclosures for cracks, chips, holes, areas that indicate excessive wear or deterioration, and indications of issues with structural integrity	☐	☐
10	Verify inventory is less than 560 cubic yards.	☐	☐

TO BE COMPLETED BY THE SUPERVISOR OR DELEGATE BY THE END OF WEEK	
Any unsatisfactory condition requires this section to be completed. Additionally, list all Service Requests/ Work Order Numbers generated from this inspection.	
I have reviewed this inspection sheet and found it to be complete and accurate to the best of my knowledge	**Supervisor Initials**

RCRA INSPECTION – WEEKLY - PCAPP WASTE LAYDOWN YARD STORAGE AREA FORM

Total page count: 1

Waste Management PCAPP Waste Laydown Yard Weekly Inspection			
Inspector's Name and Signature:			
Inspection Date and Time:			
Location:	PCAPP Waste Laydown Yard		

Item	Criteria (Physical Inspection)	SAT	UNSAT
1	Visually verify adequate aisle space (minimum of 28”)	☐	☐
2	Visually verify that waste storage is within approved areas in the Waste Laydown Yard Storage Area	☐	☐
3	Visually verify that both solid- and liquid-phase hazardous waste containers are stored on spill containment pallets/pans or in enclosures on the asphalt pad	☐	☐
4	Visually verify that containers are closed except when adding or removing waste, or sampling or monitoring waste container	☐	☐
5	Visually inspect the containers for signs of leakage or deterioration (e.g., holes, bulges, severe rusting that would impact structural integrity, or warped container lid)	☐	☐
6	Visually verify that containers of incompatible wastes are separated by a berm, dike, wall, secondary containment, physical separation (distance), or by other means	☐	☐
7	Visually inspect the concrete pads for evidence of spilled RCRA-regulated hazardous waste	☐	☐
8	Visually inspect spill containment pallets/ pans for liquids and signs of leakage from the stored waste containers	☐	☐
9	Visually inspect the containers to verify that hazardous waste labels are visible and legible on hazardous waste containers	☐	☐
10	Visually inspect to verify that “Danger-Unauthorized Personnel Keep Out” signs are posted at the corners of the storage area.	☐	☐
11	Visually inspect to verify that “No Smoking” signs are posted if ignitable or reactive wastes are present	☐	☐
12	Visually inspect to verify that the fence surrounding the Waste Laydown Yard, and the associated gates, and locks are in operable condition to prevent inadvertent entry	☐	☐
13	Visually inspect containment pallets, if present, for cracks, chips, or gauges and areas that indicate excessive wear or deterioration and indications of issues with structural integrity.	☐	☐
14	Verify inventory is less than 1896 cubic yards	☐	☐
15	Visually verify that spill pallets or containments has the capacity to contain at least 10 percent of the total volume of all liquid containers or the volume of the largest container on that containment system, whichever is greater.	☐	☐
16	Identify the quantity and identification numbers of containers that have accumulation start dates equal to or greater than 260 days prior to the inspection date	☐	☐

TO BE COMPLETED BY THE SUPERVISOR OR DELEGATE BY THE END OF WEEK	
Any unsatisfactory condition requires this section to be completed. Additionally, list all Service Requests/ Work Order Numbers generated from this inspection	
I have reviewed this inspection sheet and found it to be complete and accurate to the best of my knowledge	**Supervisor Initials**

Enclosure 19

Proposed Revisions to the Operations Plan, Attachment L,

with changes depicted using “track changes”

PROJECTILE MORTAR DISASSEMBLY MACHINE COMPLIANCE TABLE (B01) – 11.13.2015
PROJECTILE/MORTAR DISASSEMBLY (PMD) MACHINE – 24852-SOP-W0002

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
1	Pre Operational Conditions (PMD)	Verify there are no active lockout/tagouts that will affect operation Verify FCS permissive met Verify FCS that E-STOPs are not activated Ensure power and switches are in proper alignment	Area Supervisor – ensure checklists are complete CRO – verify setup Ordnance Technician – ensure proper alignment, pressure	Plant air to ECRs	Pressure	85-95 psig	Visual inspection	Each time operation is performed	SOP-Operation 1	1	Level D with mask slung, TAP gloves/boots
				Plant air booster	Pressure	310-375 psig	Visual inspection	Each time operation is performed	SOP-Operation 1	1	
~~3~~		~~Monitor PMD cell stations and confirm successful processing from NCRS thru burster detection system (BDS)~~	~~CRO – verify step~~	~~PMD stations:~~ ~~MJ-B01-1200, 2200, 3200~~ ~~Nose Closure Removal Station (NCRS)~~ ~~MJ-B01-1300, 2300, 3300~~ ~~Miscellaneous Parts Removal Station (MPRS)~~ ~~MJ-B01-1400, 2400, 3400~~ ~~Burster Removal Station~~	~~Energetics and miscellaneous parts removed~~	~~Complete removal, otherwise the munition is a reject~~	~~Munitions reconfigured: PLC Counter QI8000A/B/C-A~~	~~Continuous~~	~~PTDP – Table 2-1~~	~~1~~	~~N/A for CON~~
					~~Number of processed munitions~~	~~To be determined during pilot testing~~	~~Munitions processed: PLC Counter QI8000A/B/C-B~~	~~Continuous count during operation~~	~~Permit condition IV.D.2.c.2.ii~~ ~~PTDP – Appendix A1, Table A1-2 – PDARS-Recorded Process Parameters and Instruments~~	~~1~~	~~N/A for CON~~
					~~Number of rejected munitions~~	~~To be determined during pilot testing~~	~~Munitions rejected: PLC counter QI8000A/B/C-C~~	~~Continuous count during operation~~	~~PTDP – Appendix A1, Table A1-2 – PDARS-Recorded Process Parameters and Instruments~~	~~1~~	~~N/A for CON~~
3		Verify burster removed at BDS	CRO – verify burster detect alarm did not annunciate	MJ-B01-4320 MJ-B01-4420 MJ-B01-4520 Burster Detection Station	Presence of burster	No burster present	B01-ZI-8201A/B/C	1 per munition	~~PTDP – Table 2-1~~ SOP-Operation 3	1	N/A for CON

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[(b)]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
4	Munitions Monitoring Area (PMD)	Load MMEs and monitor munitions for agent	CRO – verify step CRO – receive results Ordnance Technician – perform steps	Munitions monitoring enclosures (MMEs): MQ-B01-4302, -4303, -4305, -4306, -4308, - 4309 – available for operation	The maximum number of munitions per MME is 10	Maximum number of munitions is 10	PLC	Continuous	Permit Condition–IV.D.2.f.1	1	Level D with mask slung, TAP gloves/boots
		Complete MINICAMS® monitoring Move munitions to slave pallet		MQ-B01-4301, -4304, -4307 – out of service MQ-B01-4310, -4311 - spares	Agent concentration	<0.2 VSL	J02-AE-3263/3264/3275/3276/3283/3284	1 per MME (up to 10 munitions bodies per MME	~~PTDP – Table 2-1~~ SOP-Operation 4	1	
	Parts Monitoring Area (PMD)	Load PMEs and monitor for agent	CRO – verify step CRO – receive results Ordnance Technician – perform steps	Parts monitoring enclosures (PMEs): MQ-B01-4402, -4403, -4405, -4406, -4408, -4409 – available for operation MQ-B01-4401, -4404, -4407 – out of service	The maximum number of trays per PME is 10	Maximum number of Trays is 10	PLC	Continuous	Permit Condition–IV.D.2.f.1	1	Level D with mask slung, TAP gloves/boots
		Complete MINICAMS® monitoring Place parts in containers		MQ-B01-4410, -4411 - spares	Agent concentration	<0.2 VSL	J02-AE-3266/3267/3278/3279/3286/3287	1 per PME (up to 10 trays per PME	~~PTDP – Table 2-1~~ SOP-Operation 4	1	

is pumped to the Agent Water Separator for processing through the agent neutralization system to remove the agent by chemical hydrolysis.

Rejects may also be generated by the Munitions Washout System. Rejects are containerized and transferred to SDC~~EDS~~ for processing or PCD permitted G Block igloos G101, G102, G103 or H Block Igloo 1102 for storage prior to treatment in the SDC~~EDS~~.

The potential exists to generate agent-contaminated decontamination liquid and cleanup materials. Decontamination solutions may be collected in the room sumps and pumped to the spent decon system or pumped to containers for transfer and treatment.

Secondary waste from decontamination activities will include but not be limited to contaminated PPE, DPE suits, TAP gear, and items used for clean-ups. The ≥ 1 VSL secondary wastes may be decontaminated as an integral part of the waste generation process, may be treated in accordance with Part V of the Permit, or may be treated in the Secondary Decontamination Unit/Autoclave. Alternatively, the waste may be packaged and shipped offsite for treatment and/or disposal. The treated waste will be classified as either greater than or less than 0.7 VSL and sent off-site for treatment.

Equipment and parts that no longer meet operating requirements may become hazardous waste generated from maintenance activities. These items may be decontaminated in the SDU or Autoclave following the steps for the Secondary Waste Treatment system – B24.

Stationary equipment, structural elements, piping, conduit and other fixed items that become contaminated with agent are decontaminated by operators performing entries. Decontamination is performed following the procedure Equipment and Building Decontamination, 24852-SOP-B00-W0037.

The primary decontamination solution provided for use in the APB is water supplied through the site water system. Other decon materials may be employed (independently of the site water system) in the APB and other areas of the plant to augment the decontamination capabilities provided by water. These materials include the use of surfactants, commercially available decontamination solutions, and steam. Before PCAPP uses any surfactants or commercially available decontamination solutions in areas monitored via the Agent Monitoring System, PCAPP will evaluate the materials to ensure that they are not an interfering material.

VI. HAZARD ANALYSIS, HEALTH AND SAFETY REQUIREMENTS, PPE

The Job Hazard Analysis for operation of the MWS is provided at the end of the standing operating procedure which is provided in digital format as a standalone document. The scope of the Job Hazard Analysis excludes entries into toxic areas since the operation of the MWS is performed remotely from the Control Room.

PPE selection is based on the procedure Toxic Chemical Agent Safety program, 24852-SAF-SAP-W0011. Final selection of PPE will be made as part of the Pre-Entry Briefing or the Pre-Job Planning.

MUNITION WASHOUT SYSTEM COMPLIANCE TABLE (B02)

Line Number	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Response Level[e]
16	MV-B02-0101 Washed agent and water surge drum 0101	B02 – Washed agent and water surge drum 0101 – vent flow – high	<130 scfm	B02-FAH-0707A	Continuous	1
17	MV-B02-0201 Washed agent and water surge drum 0201	B02 – Washed agent and water surge drum 0201 – vent flow – high	<130 scfm	B02-FAH-0707B	Continuous	1
18	MV-B02-0101 Washed agent and water surge drum 0101	B02 – Washed agent and water surge drum 0101 – line 1 - vent flow – low low	>85 scfm	B02-FALL-0707A	Continuous	3
19	MV-B02-0201 Washed agent and water surge drum 0201	B02 – Washed agent and water surge drum 0201 – line 2 - vent flow – low low	>85 scfm	B02-FALL-0707B	Continuous	3
20	MV-B02-0101 Washed agent and water surge drum 0101	B02 -Washed agent and water surge drum 0101 – vent pressure – high	< 0 psig	B02-PAH-0721A	Continuous	2
21	MV-B02-0201 Washed agent and water surge drum 0201	B02 -Washed agent and water surge drum 0201 – vent pressure – high	< 0 psig	B02-PAH-0721B	Continuous	2
22	MV-B02-0101 Washed agent and water surge drum – 0101	B02 - MV-B02-0101 Washed agent and water surge drum – 0101 – level – high high	<20 inches above bottom of vessel	B02-LAHH-0707A	Continuous	2
23	MV-B02-0201 Washed agent and water surge drum – 0201	B02 - MV-B02-0201 Washed agent and water surge drum – 0201 – level – high high	<20 inches above bottom of vessel	B02-LAHH-0707B	Continuous	2
24	MV-B02-0101 Washed agent and water surge drum – 0101 MV-B02-0201 Washed agent and water surge drum – 0201	B02 - Organic vapor pressure of the contents of the washed agent and water surge drums	<76.6 kPa	Calculation[a]	Permit Condition IV.L.3.b.i ~~Annual calculation~~[c]	1
25	N/A – air to line 1 booster pumps and CAMs	B02 – air pressure to line 1 equipment - low	>65 psig	B02-PAL-0663A	Continuous	1
26	N/A – air to line 2 booster pumps and CAMs	B02 – air pressure to line 2 equipment - low	>65 psig	B02-PAL-0663B	Continuous	1
27	MP-B02-0111-1A High pressure hydraulic fluid pump 0111-1A PY8706 strainer	B02 – Differential pressure across high pressure hydraulic pump 0111-1A strainer PY8706 – high	<6 in w.c.	B02-PDAH-0771AA	Continuous	1
28	MP-B02-0111-1B High pressure hydraulic fluid pump 0111-1B PY8707 strainer	B02 – Differential pressure across line 1 high pressure hydraulic pump 0111-1B strainer PY8707 – high	<6 in w.c.	B02-PDAH-0771AB	Continuous	1
29	MP-B02-0111-2A Low pressure hydraulic fluid pump 0211-2A PY8712 strainer	B02 – Differential pressure across line 1 low pressure hydraulic pump 0111-2A strainer PY8712 – high	<6 in w.c.	B02-PDAH-0771BA	Continuous	1
30	MP-B02-0111-2B Low pressure hydraulic fluid pump 0111-2B PY8717 strainer	B02 – Differential pressure across line 1 low pressure hydraulic pump 0111-2B strainer PY8717– high	<6 in w.c.	B02-PDAH-0771BB	Continuous	1
31	MP-B02-0211-1A High pressure hydraulic fluid pump 0211-1A PY8741 strainer	B02 – Differential pressure across line 2 high pressure hydraulic pump 0211-1A strainer PY8741 – high	<6 in w.c.	B02-PDAH-0781AA	Continuous	1

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
2	System Startup (continued)	Set off-gas flow indicating controller	CRO – performs steps	ME-B03-0103, 0203 Munitions Treatment Unit	Offgas vent flowrate	225~~220~~-450 SCFM	B03-FIT-9308A/B	Continuous	Set point matrix ~~PTDP Table A2B-2~~	2	N/A – operations performed from control room
		Set room air inlet flow indicating controller				≥ 225~~250~~ SCFM	B03-FALL-9308A/B	Continuous	Instrument Set Point Matrix	2	
						≤ 450 SCFM	B03-FAH-9308A/B	Continuous	Instrument Set Point Matrix	1	
						≥ 225~~250~~ SCFM	B03-FIT-9308A/B	Continuous	Instrument Set Point Matrix	2	
2	System Startup	Set room air inlet flow indicating controller	CRO perform steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - room air into MTU #1 – flow - low	>150 SCFM	B03-FAL-9368A	Continuous	Set point matrix Permit condition IV.D.4.f.iii	3	N/A – operations performed from control room
2	System Startup	Set room air inlet flow indicating controller	CRO perform steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - room air into MTU #2 – flow - low	>150 SCFM	B03-FAL-9368B	Continuous	Set point matrix Permit condition IV.D.4.f.iii	3	N/A – operations performed from control room
2				ME-B03-0103 – MTU 1	B03 – MTU 1 – Unit 0103 – Zone 1 Temperature – High High	<1275ºF	B03-TAHH-9310A-A	Continuous	Set point matrix	2	
2				ME-B03-0103 – MTU 1	B03 – MTU 1 – Unit 0103 – Zone 2 Temperature – High High	<1475ºF	B03-TAHH-9310A-B	Continuous	Set point matrix	2	
~~2~~	~~System Startup~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0203 Munitions Treatment Unit~~	~~MTU - unit 0203 - zone 1 - temperature - high high~~	~~<1275ºF~~	~~B03-TSHH-9310B-A~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
2	System Startup	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - zone 1 – temperature – low low	>1225ºF	B03-TALL-9301A-A	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - zone 1 – temperature – low low	>1225ºF	B03-TALL-9301B-A	Continuous	Set point matrix	3	N/A – operations performed from control room
~~2~~	~~System Startup~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60ºF an hour.~~ ~~Place oven belt conveyor in AUTO.~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO.~~	~~CRO – performs steps~~	~~ME-B03-0203 Munitions Treatment Unit~~	~~MTU – unit 0203 – zone 2 – temperature – high high~~	~~<1475ºF~~	~~B03-TSHH-9310B-B~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
~~2~~	~~System Startup~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0103 Munitions Treatment Unit~~	~~MTU - unit 0103 - zone 2 - temperature – low low~~	~~>1425ºF~~	~~B03-TALL-9301A-B~~	~~Continuous~~	~~Set point matrix~~	~~3~~	~~N/A – operations performed from control room~~
2	System Startup	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - zone 2 - temperature – low low	>1425ºF	B03-TALL-9301A-B	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - zone 2 - temperature – low low	>1425ºF	B03-TALL-9301A-B	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - zone 2 – temperature - low low	>1425ºF	B03-TALL-9301B-B	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Set room air inlet flow indicating controller	CRO – performs steps	ME-B03-0103, 0203 Munitions Treatment Unit	MTU Pressure	-1.6 to -2.25 inches w.c. with respect to atmosphere (PDIT measures with respect to MTU room pressure)	B03-PDIT9308A/B	Continuous	B03 – CON Reading Sheet	1	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103, 0203 Munitions Treatment Unit	Z1 phase 1 current[c]	< 15 amps	B03-IT-9387A-A/B-A	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	N/A – operations performed from control room
					Z1 phase 2 current[c]	< 15 amps	B03-IT-9387A-B/B-B	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z1 phase 3 current[c]	< 15 amps	B03-IT-9387A-C/B-C	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z2 phase 1 current[c]	< 15 amps	B03-IT-9387A-D/B-D	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z2 phase 2 current[c]	< 15 amps	B03-IT-9387A-E/B-E	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z2 phase 3 current[c]	< 15 amps	B03-IT-9387A-F/B-F	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[(b)]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0103~~ ~~Munitions Treatment Unit~~	~~MTU - unit 0103 - zone 3 - temperature - high high~~	~~<1525ºF~~	~~B03-TSHH-9310A-C~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0203~~ ~~Munitions Treatment Unit~~	~~MTU - unit 0203 - zone 3 - temperature - high high~~	~~<1525ºF~~	~~B03-TSHH-9310B-C~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - zone 3 – temperature – low low	>1475ºF	B03-TALL-9301A-C	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - zone 3 – temperature – low low	>1475ºF	B03-TALL-9301B-C	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place unload rotary valve in AUTO (continued)	CRO – performs steps (continued)	ME-B03-0103, 0203 Munitions Treatment Unit (continued)	Z3 phase 1 current[(c)]	< 15 amps	B03-IT-9387A-G/B-G	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	N/A – operations performed from control room
					Z3 phase 2 current[(c)]	< 15 amps	B03-IT-9387A-H/B-H	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z3 phase 3 current[(c)]	< 15 amps	B03-IT-9387A-I/B-I	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0103~~ ~~Munitions Treatment Unit~~	~~MTU - unit 0103 - zone 4 - temperature - high high~~	~~<1525ºF~~	~~B03-TSHH-9310A-D~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~

Operation Number(a)	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description(b)	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0203 Munitions Treatment Unit~~	~~MTU - unit 0203 - zone 4 - temperature - high high~~	~~<1525^{0}F~~	~~B03-TSHH-9310B-D~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - zone 4 - temperature – low low	>1475^{0}F	B03-TALL-9301A-D	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - zone 4 - temperature – low low	>1475^{0}F	B03-TALL-9301B-D	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	Z4 phase 1 current(c)	< 15 amps	B03-IT-9387A-J/B-J	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z4 phase 2 current(c)	< 15 amps	B03-IT-9387A-K/B-K	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z4 phase 3 current(c)	< 15 amps	B03-IT-9387A-L/B-L	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0103 Munitions Treatment Unit~~	~~MTU - unit 0103 - zone 5 - temperature - high high~~	~~<1375^{0}F~~	~~B03-TSHH-9310A-E~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0203 Munitions Treatment Unit~~	~~MTU - unit 0203 - zone 5 - temperature - high high~~	~~<1375^{0}F~~	~~B03-TSHH-9310B-E~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - zone 5 – temperature – low low	>1325^{0}F	B03-TALL-9301A-E	Continuous	Set point matrix	3	N/A – operations performed from control room
~~Operation~~	~~Operation~~	~~Description of Process Steps~~	~~Roles and~~	~~Equipment Number and~~	~~Operating Parameter~~	~~Normal Operating~~	~~Method for Monitoring~~	~~Frequency~~	~~Source of Requirements~~	~~Response Level~~	~~Required PPE~~

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
~~Number[a]~~	~~Description~~		~~Responsibilities of Ops Staff~~	~~Description[b]~~		~~Range~~		~~of Monitoring~~			
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - zone 5 – temperature – low low	>1325ºF	B03-TALL-9301B-E	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	Z5 phase 1 current[c]	< 15 amps	B03-IT-9387A-M/B-M	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z5 phase 2 current[c]	< 15 amps	B03-IT-9387A-N/B-N	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z5 phase 3 current[c]	< 15 amps	B03-IT-9387A-O/B-O	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0103~~ ~~Munitions Treatment Unit~~	~~MTU - unit 0103 - zone 6 - temperature - high high~~	~~<1255ºF~~	~~B03-TSHH-9301A-F~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
~~2~~	~~System Startup (continued)~~	~~Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour~~ ~~Place oven belt conveyor in AUTO~~ ~~Place rotary valve in AUTO~~ ~~Place unload rotary valve in AUTO~~	~~CRO – performs steps~~	~~ME-B03-0203~~ ~~Munitions Treatment Unit~~	~~MTU - unit 0203 - zone 6 - temperature - high high~~	~~<1255ºF~~	~~B03-TSHH-9301B-F~~	~~Continuous~~	~~Set point matrix~~	~~2~~	~~N/A – operations performed from control room~~
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - zone 6 – temperature – low low	>1125ºF	B03-TALL-9301A-F	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place rotary valve in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - zone 6 – temperature – low low	>1125ºF	B03-TALL-9301B-F	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Startup (continued)	Perform normal ramp up of MTU's to normal zone temperatures at a ramp rate of 60° F. an hour Place oven belt conveyor in AUTO Place unload rotary valve in AUTO	CRO – performs steps	ME-B03-0103, 0203 Munitions Treatment Unit	Z6 phase 1 current[c]	< 15 amps	B03-IT-9387A-P/B-P	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z6 phase 2 current[c]	< 15 amps	B03-IT-9387A-Q/B-Q	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	
					Z6 phase 3 current[c]	< 15 amps	B03-IT-9387A-R/B-R	Continuous	~~PTDP Table A2B-2,~~ SOP – CON Sheet	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
~~Operation Number[a]~~	~~Operation Description~~	~~Description of Process Steps~~	~~Roles and Responsibilities of Ops Staff~~	~~Equipment Number and Description[b]~~	~~Operating Parameter~~	~~Normal Operating Range~~	~~Method for Monitoring~~	~~Frequency of Monitoring~~	~~Source of Requirements~~	~~Response Level~~	~~Required PPE~~
2	System Startup (continued)	Place oven belt drive speed controller in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - oven belt - speed – low low	>1.25 inches/min	B03-SIC-9315A-A	Continuous	Set point matrix	1	N/A – operations performed from control room
2	System Startup (continued)	Place oven belt drive speed controller in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - oven belt – speed low low	>1.25 inches/min	B03-SIC-9315B-A	Continuous	Set point matrix	1	N/A – operations performed from control room
2	System Startup (continued)	Place oven belt drive speed controller in AUTO	CRO – performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - oven belt – speed - high	<8.0 Inches/min	B03-SIC-9315A-A	Continuous	Set point matrix ~~PTDP Table A2B-2~~	3	N/A – operations performed from control room
2	System Startup	Place oven belt drive speed controller in AUTO	CRO – performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - oven belt – speed - high	<8.0 inches/min	B03-SIC-9315B-A	Continuous	Set point matrix ~~PTDP Table A2B-2~~	3	N/A – operations performed from control room
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - maximum processing rate for 155mm munition bodies	≤32 projectiles/hr See Note~~s~~ e~~,f~~	B03-QAH-9312-A_A~~B03-XI-9312A~~	Continuous	Permit Condition IV.D.4.f.iv	3	N/A - operations performed from control room
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - maximum processing rate for 155mm munition bodies	≤32 projectiles/hr See Note~~s~~ e~~,f~~	B03-QAH-9312B_A~~B03-XI-9312B~~	Continuous	Permit Condition IV.D.4.f.iv	3	N/A - operations performed from control room
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - exhaust – temperature - low	>500ºF	B03-TIT-9309A	Continuous	Set point matrix	2	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A CON
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0103 Munitions Treatment Unit	MTU - unit 0103 - exhaust – temperature – high high	<1100ºF	B03-TIT-9309A	Continuous	Set point matrix	2	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – CON
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - exhaust – temperature - low	>500ºF	B03-TIT-9309B	Continuous	Set point matrix	2	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – CON
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0203 Munitions Treatment Unit	MTU - unit 0203 - exhaust – temperature - high high	<1100ºF	B03-TIT-9309B	Continuous	Set point matrix	2	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A CON
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0103, 0203 Munitions Treatment Unit	Differential Pressure across OTS filter	<4 in W.C.	B03-PDIT-9313A-A/B-A	Continuous	Set point matrix~~PTDP Table A2B-2~~	2	Operator – Leather Gloves, Safety Glasses, and Hearing Protection. CRO – N/A CON
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0203 Munitions Treatment Unit	Agent concentration in air at exit from MTU #1 conveyor - high	< 0.2 VSL	J02-AIT-3377A	Continuous	Set point matrix	3	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0203 Munitions Treatment Unit	Agent concentration in air at exit from MTU #2 conveyor - high	< 0.2 VSL	J02-AIT-3377B	Continuous	Set point matrix	3	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
3	Normal Operations	Record readings listed in the Control Room Operator Reading Sheets and the Operator Reading Sheets	Plant operator and CRO performs steps	ME-B03-0103, 0203 Munitions Treatment Unit	CO_2 concentration in MTU vent to OTS	0.28% CO_2 See Note f	B03-AIT-9319A/B	Continuous	**Final Pilot Test Report, Recommendation 6** ~~**PLACE HOLDER**~~	2	N/A - operations performed from control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
4	Waste Container Changeout Operations	Notify waste operators Verify bin is present	CRO – performs steps	MH-B15-0001/00002 Munition body Bin Enclosure	Bin present	Bin is present	B03-XA-9323A-A/B-B	Continuous	SOP-Operation 4	1	N/A – operations performed from control room
		Perform waste bin changeout	Waste operators performs task		None	N/A	N/A	N/A	SOP-Operation 4	N/A	Level D
10	OTS Filter Drum Changeout Sampling	Prepare for drum changeout and collect sample of drum contents Monitor sample bag for agent	Plant operator Entrant	MF-B03-0412/0512 OTS Filter	Concentration of agent in sample bag	<0.2 VSL	Portable MINICAM	Once per sample	SOP-Operation 10	2	OSHA level A

Notes:

a. The operations numbers are from the Munitions Treatment Unit SOP 24852-SOP-B03-W0001, Rev 000, 20 Aug, 2015
b. Equipment identified in this table is limited to major pieces of equipment. Equipment that is considered to be minor includes pumps, seal tanks, fans, etc.
c. The phase current listed in the table is the current difference BETWEEN phases and is not the total current to the phase. The total current will normally be higher than 15 amps.
d. The maximum weight limit only applies if the munition weight exceeds the limit after two washes. The operating procedure allows the munition to be washed two times before it is transferred to the reject table. The 81.6 pounds applies to 155mm munitions.
e. If one or both MTUs are Operational in a given hour, the combined maximum processing rate for 155 mm projectiles will not exceed 65 rounds per hour, and for 105 mm projectiles, the processing rate shall not exceed 100 rounds per hour. The target range for the 105 mm processing rate shall be demonstrated by the Washout Performance Validation Plan. These limitations shall not apply to any Division approved increases in munitions processing rates.~~If one or both MTUs are Operational in a given hour, the combined maximum processing rate will not exceed 6532 rounds per hour. This limitation shall not apply to any division approved increases in munitions processing rates~~.
f. Response to alarm setpoint of 0.28% CO_2 will be conducted in accordance with the conditions described in Part IV.D.4.f.v. steps 1-3.

L - 6 - AGENT COLLECTION AND NEUTRALIZATION SYSTEM COMPLIANCE TABLE (B04)

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	Agent collection configuration	Configure separator Verify no alarms Verify valve positions Set wash water level controller to 75% Configure wash water collection tanks to accept water Verify adequate empty volume in wash water tank Place wash water pumps in auto Verify no alarms for seal pots or low instrument air	CRO - performs steps CRS – select tank to receive water	MV-B04-0001/0002 Agent water separators	High level alarm – agent	<4.33 feet	B04-LAH-0961AA/BA	Continuous	Permit Table - IV.A.4.c.a	1	N/A – operations performed from control room
						<4.33 ft 83.2%	B04-LIT-0961AA-BB	Continuous	Set point matrix	1	
					High high level – water	<12'-8" alarm	B04-LAHH-0973A/B	Continuous	Permit Table - IV.A.4.c.a	2	
						<11.33 ft 88.5%	B04-LAHH-0973A/B	Continuous	Set point matrix	2	
					High level – water	<12'-2"	B04-LAH-0973A/B	Continuous	Permit Table - IV.A.4.c.a	1	
						<10.83 ft 84.5%	B04-LAH-0973A/B	Continuous	Set point matrix	1	
					Level – water	72-84%	B04-LI-0973A/B	Continuous	SOP – CON Operating Parameters	1	
					Low level – water	>9.21 ft	B04-LAL-0973A/B	Continuous	SOP-Operation 2	1	
						>9.21 ft 71.6%	B04-LAL-0973A/B	Continuous	Set point matrix	1	
					Low low level – water	>8.96 ft	B04-LALL-0973A/B	Continuous	SOP-Operation 2	2	
						>8.96 ft 69.7%	B04-LALL-0973A/B	Continuous	Set point matrix	2	
					Organic vapor pressure	<76.6 kPa	Calculation[b]	Permit Condition IV.L.3.b.i. ~~Annual calculation~~[b]	Permit Condition - IV.L3.a.i	1	
					Agent wash water flow	>0.5 gpm	B04-FIT-0966	Continuous	Set Point Matrix~~PTDP – Table A3A-2~~	1	
					Agent Concentrate flow	>0.2 gpm	B04-FIT-0976AA/AB/BB/BA	Continuous	Set Point Matrix~~PTDP – Table A3A-2~~	1	
					Agent Concentrate density	>1.25 (SG)	B04-DIT-0976 AA/AB/BB/BA	Continuous	Set Point Matrix~~PTDP – Table A3A-2~~	1	
					Washwater density	<1.02 gpm	B04-DIT-0981	Continuous	Set Point Matrix~~PTDP – Table A3A-2~~	1	
					Washwater flow	>0.5 gpm	B04-FIT-0981	Continuous	Set Point Matrix~~PTDP – Table A3A-2~~	1	
					AWS headspace pressure	-1 to 5 psig	B04-PIT-0962A/B	Continuous	Set Point Matrix~~PTDP – Table A3A-2~~	1	
				MV-B04-0104/0204 MWS wash water collection tanks	High high level	<11 feet	B04-LAHH-7003AA/AB	Continuous	Permit Table - IV.A.4.c.a	2	
						<14 ft	B04-LAHH-7003AA/BB	Continuous	Set point matrix	2	
					High level – switch closes inlet valve on one and opens on another	<10' 9"	B04-LSH-0973	Continuous	Permit Table - IV.A.4.c.a	1	
					High level	<13 ft 76.79%	B04-LIT-7003AA/AB	Continuous	Set point matrix	1	
					Low low level	>1.21 ft 7.1 %	B04-LALL-7003	Continuous	SOP-Operation 2	2	
					Organic vapor pressure	<76.6 kPa	Calculation[b]	Permit Condition IV.L.3.b.i. ~~Annual calculation~~[b]	Permit Condition - IV.L3.a.i	1	
				MP-B04-0105A/B Wash Water Pump	Seal pot low level	>13.876 inches	B04-LAL-7014	Continuous	SOP-Operation 2	1	
3	Hydrolyzer supply configuration	Determine batch recipe Program volumes into FCS Confirm volumes available	CRS and CRO – determine recipe CRO programs volumes	MV-B04-0101/0201 Agent hydrolyzers	Gallons of agent[c]	Typical 0 - 212	B04-FQIS-0976	1 per batch	SOP-Appendix 8 – Batch recipe	1	N/A – operations performed from control room
					Gallons of wash water[c]	Typical 0 - 3275	B04-FQIS-7062	1 per batch	SOP-Appendix 8 – Batch recipe	1	
					Gallons of spent decon[c]	Typical 0 - 3275	B04-FQIS-7042	1 per batch	SOP-Appendix 8 – Batch recipe	1	
					Gallons of caustic[c]	Typical 200 - 428	B04-FQIS-7175	1 per batch	SOP-Appendix 8 – Batch recipe	1	
					Gallons of process water[c]	Typical 0 - 2835	B04-FQI-7181	1 per batch	Operations Plan, Rev 0, Dec 2013 P&ID – ANS Hot Process Water Supply	1	
					Agent level in separator	3.2-96%	B04-LIT-0961A	Continuous	~~SOP-Operation 3~~Set point matrix	1	
						8.0-96%	B04-LIT-0961B	Continuous	Set point matrix	1	
						>0.42~~.167~~ ft (8.0%)	B04-LALL-0961B	Continuous	Set point matrix	1	
						>0.58~~0.33~~ ft (11.2%)	B04-LAL-0961B	Continuous	Set point matrix	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
						>0.17 ft (3.2%)	B04-LALL-0961A	Continuous	Set point matrix	1	
						>0.33 ft (6.4%)	B04-LAL-0961BA	Continuous	Set point matrix	1	
						<4.33 ft	B04-LAH-0961	Continuous	Set point matrix	1	
						<5 ft	B04-LAHH-0961	Continuous	Set point matrix	2	
					Water level in wash water collection tank	7.1-82.6%	B04-LI-7003	Continuous	SOP-Operation 3	1	
					Level in spent decon storage tank	2.21-10.22 ft	B04-LI-0827	Continuous	SOP-Operation 3	1	

AGENT COLLECTION AND NEUTRALIZATION SYSTEM COMPLIANCE TABLE (B04) – 10.16.2015

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
4	Neutralization operations	Verify no alarm conditions, NaOH available Verify hydrolyzer Set destination hydrolysate hold tank Align valves for holding tank, set pump to auto Start and monitor batch, verify no alarm conditions Verify sequence steps being performed Verify agitator operating Verify temperature sequence Verify agent pump stops Verify Agent mixer flush Verify hydrolyzer recirculation time Verify caustic addition Verify pH at target, if pH not at target, add NaOH Verify 30 minute countdown Transfer batch to selected hydrolysate hold tank Ensure 30 minutes recirculation prior to sampling Verify sampling pump starts	CRO performs tasks	MV-M16-0001 Hot Process Water Tank	Low temperature	185-210ºF	M16~~B04~~-TIT-5403	Continuous	SOP-Operation 4	1	N/A – operations performed from control room
				MV-B04-0101/0201 Agent hydrolyzers	Low low level	>0.75 ft	B04-LALL-7089	Continuous	SOP-Operation 4	1	
						>0.75 ft 5.4%	B04LIT-7089AA/AB/BA/BB	Continuous	Set point matrix	1	
					Low level	>6.91 ft	B04-LAL-7089	Continuous	SOP-Operation 4	1	
						>6.91 ft 49.4%	B04-LIT-7089AA/AB/BA/BB	Continuous	Set point matrix	1	
					High level alarm	< 6'8"	B04-LAH-7089	Continuous	Permit Table – IV.A.4.d	1	
						<10.17 ft 72.6%	B04-LIT-7089AA/AB/BA/BB	Continuous	Set point matrix	1	
					High high level	≤7'-4" alarm	B04-LIT-7089	Continuous	Permit Table – IV.A.4.d	1	
						≤10.83 ft 77.4%	B04-LIT-7089AA/ AB/BA/BB	Continuous	Setpoint matrix	1	
Operation Number[(a)]	**Operation Description**	**Description of Process Steps**	**Roles and Responsibilities of Ops Staff**	**Equipment Number and Description**	**Operating Parameter**	**Normal Operating Range**	**Method for Monitoring**	**Frequency of Monitoring**	**Source of Requirements**	**Response Level**	**Required PPE**
4	Neutralization operations	Verify no alarm conditions, NaOH available Verify hydrolyzer	CRO performs tasks	MV-B04-0101/0201 Agent hydrolyzers							N/A – operations performed from control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of	Source of Requirements	Response Level	Required PPE
		Set destination hydrolysate hold tank Align valves for holding tank, set pump to auto Start and monitor batch, verify no alarm conditions Verify sequence steps being performed Verify agitator operating Verify temperature sequence Verify agent pump stops Verify Agent mixer flush Verify hydrolyzer recirculation time Verify caustic addition Verify pH at target, if pH not at target, add NaOH Verify 30 minute countdown Transfer batch to selected hydrolysate hold tank Ensure 30 minutes recirculation prior to sampling Verify sampling pump starts									
					~~Daily m~~Maximum batches per ~~day~~ week	~~10~~ 42	Operator log	~~Daily~~Weekly	Permit Condition - IV.D.4.d.iv. (A)	2	
					Average maximum batches per day on a monthly basis (30 consecutive days)	~~8~~≤ 6	Operator log	Daily	Permit Condition - IV.D.4.d.iv. (A)	~~2~~	
					ANR reactor temperature	170ºF- 250ºF (see note i)	TIT-7091	Continuous	Set Point Matrix~~PTDP – Table A3B-2~~	1	
					Agent concentration	8.6% wt (normal) ~~(During Pilot Test also tested at 12% and 15%)~~	Batch worksheet	1 per batch	Permit Condition - IV.D.4.d.iv. (A)	1	
					Batch pH[d]	Either stable at ≥ 10 or the conditions identified in permit condition IV.D.4.iv.(F) have been met	B04-KQI-0709A-A	After NaOH addition, pH adjustment	~~PTDP – Table A3B-2,~~ Permit Condition - IV.D.4.d.iv. (F)	1	
					Organic vapor pressure	<76.6 kPa	Calculation[b]	Permit Condition IV.L.3.b.i. ~~Annual calculation~~[b]	Permit Condition - IV.L3.a.i	1	
					Washwater recirculation flow	>175 gpm	B04-FIT-7004	Continuous	Set Point Matrix~~PTDP – Table A3B-2~~	1	
					Agent hydrolyzer pH	≥10 or the conditions identified in permit condition IV.D.4.iv.(F) have been met	B04-AI-7108	After NaOH addition, pH adjustment	Set Point Matrix~~PTDP – Table A3B-2~~	1	
					Agent Concentrate flow totalizer	Set by CRO	B04-FQIS-0976	Continuous	Set Point Matrix~~PTDP – Table A3B-2~~	1	
					ANR headspace pressure	<40 psig	B04-PIC -7085	Continuous	Set Point Matrix~~PTDP – Table A3B-2~~	2	
					Agitator speed(f)	≤77 rpm	B04-SIC-7087	Continuous	SOP-Operation 4 SOP – CON Operating Parameters	1	
					Recirculation time with agent	30 minutes	B04-KQI-0708A	Per batch	SOP – Operation 4	1	
					Recirculation time water only	100 minutes (spent decon, wash water) 200 minutes (failed batch)	B04-KQI-0708A	Per batch	SOP – Operation 4	1	

			of Ops Staff					**Monitoring**			
4	Neutralization operations	Verify no alarm conditions, NaOH available Verify hydrolyzer Set destination hydrolysate hold tank Align valves for holding tank, set pump to auto Start and monitor batch, verify no alarm conditions Verify sequence steps being performed Verify agitator operating Verify temperature sequence Verify agent pump stops Verify Agent mixer flush Verify hydrolyzer recirculation time Verify caustic addition Verify pH at target, if pH not at target, add NaOH Verify 30 minute countdown Transfer batch to selected hydrolysate hold tank Ensure 30 minutes recirculation prior to sampling Verify sampling pump starts	CRO performs tasks	MP-B04-0103A/B Agent Hydrolyzer Recirculation Pumps	Seal pot low level	>13.876 inches	B04-LAL-7114	Continuous	SOP-Operation 4	1	N/A – operations performed from control room
					Seal pot air pressure	>75 psig	B04-PSL-7115A/AB	Continuous	Set Point Matrix	1	
					Pump speed (prior to to batch transfer)	<1700 rpm	B04-SIT-7105AA/AB/BA/BB	Continuous	SOP-Operation 4 SOP – CON Operating Parameters	1	
			CRO performs tasks	MV-B04-0103/0203 Agent hydrolysate hold tanks	Low low alarm	>1.08 ft	B04-LALL-7127	Continuous	SOP-Neutralization	1	
						>1.08 ft 6.8%	B04-LIT-7127AA/BB	Continuous	Set point matrix	1	
					Low level alarm	>5.0 ft	B04-LAL-7127	Continuous	SOP-Neutralization	1	
						>1.92 ft 12.0%	B04-LIT-7127AA/BB	Continuous	Set point matrix	1	
					High level alarm	<12.5 ft 78.5%	B04-LIT-7127AA/BB	Continuous	Set point matrix	1	
					High high level	≤10'3" alarm	B04-LAHH-7127	Continuous	Permit Table – IV.A.4.d	2	
						<14 ft 88%	B04-LIT-7127AA/BB	Continuous	Set point matrix	2	
					Hold tank pressure	≤45 psig	B04-PV-7126	Continuous	SOP – CON Operating Parameters	2	
					Organic vapor pressure	<76.6 kPa	Calculation[b]	Permit Condition IV.L.3.b.i. ~~One time calculation~~[b]	Permit Condition - IV.L3.a.i	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
11	Glovebox sampling	Confirm glovebox negative pressure	Sampling operator	Glovebox	Glovebox differential pressure	<-0.25 in w.c.	B04-PDI - 7191	Each sampling event	SOP-Glove Box Sampling	1	Nitrile gloves
11	Glovebox sampling	Glovebox Sampling	Sampling operator	MV-B04-0103 Agent hydrolysate hold tank sample lines	Flow in sample line	Periodic positive values for flowrate	B04-FI-7190A-A	Each sampling event	SOP – Glovebox Sampling	None[h]	Level D with slung respirator
11	Glovebox sampling	Glovebox Sampling	Sampling operator	MV-B04-0103 Agent hydrolysate hold tank sample lines	Flow in sample line	Periodic positive values for flowrate	B04-FI-7190A-B	Each sampling event	SOP – Glovebox Sampling	None[h]	Level D with slung respirator
11	Glovebox sampling	Glovebox Sampling	Sampling operator	MV-B04-0103 Agent hydrolysate hold tank sample lines	Flow in sample line	Periodic positive values for flowrate	B04-FI-7190A-C	Each sampling event	SOP – Glovebox Sampling	None[h]	Level D with slung respirator
11	Glovebox sampling	Glovebox Sampling	Sampling operator	MV-B04-0203 Agent hydrolysate hold tank sample lines	Flow in sample line	Periodic positive values for flowrate	B04-FI-7190B-A	Each sampling event	SOP – Glovebox Sampling	None[h]	Level D with slung respirator
11	Glovebox sampling	Glovebox Sampling	Sampling operator	MV-B04-0203 Agent hydrolysate hold tank sample lines	Flow in sample line	Periodic positive values for flowrate	B04-FI-7190B-A	Each sampling event	SOP – Glovebox Sampling	None[h]	Level D with slung respirator
11	Glovebox sampling	Glovebox Sampling	Sampling operator	MV-B04-0203 Agent hydrolysate hold tank sample lines	Flow in sample line	Periodic positive values for flowrate	B04-FI-7190B-A	Each sampling event	SOP – Glovebox Sampling	None[h]	Level D with slung respirator
11	Glovebox sampling	Collecct Sample	Sampling Operator	Glovebox	Blow down pressure	10.5-13.5 psig	B04-PI - 7199	Each sampling event	SOP-Glove Box Sampling	1	Nitrile gloves
					Sample temperature	<140ºF	B04-TI-7199	Each sampling event	SOP-Glove Box Sampling	1	Nitrile gloves
					Sample container MINICAMs reading	<0.20 VSL	B04-AIT-3376	Each sampling event	SOP-Glove Box Sampling	1	Nitrile gloves
11	Glovebox sampling	Collecct Sample	Sampling Operator	Glovebox	Waste MINICAMs reading	<0.20 VSL	B04-AIT-3376	Each sampling event	SOP-Glove Box Sampling	1	Nitrile gloves

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
5	Passing Batch Operations	Ensure neutralization operation is complete Verify analysis indicates batch has passed Review documentation, verify batch meets passing criteria Set valves, pumps, agitators for transfer Confirm transfer path Verify hydrolysate storage tank configured to receive batch Place storage tank in cooling mode if required Place 30-day storage tank in ICB feed configuration Co-ordinate placing 30 day tank in BTA feed configuration with BTA CRO Verify valve settings and pump is running	CRO performs task	MV-B04-0103/0203 Agent hydrolysate hold tanks	Concentration of agent in the contents of hydrolysate hold tank.	After determination that the hydrolysate does not contain agent at a concentration above the performance based method detection limit not to exceed 20 parts per billion (ppb) for HD and ≤ 200 ppb for T, the hydrolysate is transferred to the 30-Day Storage Tanks. Hydrolysate that does not meet the clearance criteria is pumped back to the agent hydrolyzers for re-processing.	Mustard Agent in HD/HT Water Hydrolysate 24852- GPP-GGL-00204	Once per batch	Permit Condition – IV.A.4.f Permit condition – IV.D.4.e.ii (Analyzed in accordance with WAP, Attachment D) LAMP, 24852-GPP-GGL-00002 Rev 007 Section 3.2.2	2	N/A – operations performed from control room
					pH	>10 as reported on Laboratory form GPP-GGL-00204-F001	Determination of pH 24852-GPP-GGL-00101	1 per batch	SOP – Passing Batch Operations	1	
				MV-B04-0301/0201/0101 30-day tanks	High high level	≤23 feet Above tank bottom LSHH – 7160 is 20.5 ft above LIT 7154 tap which is 2.5 ft above tank bottom	B04 - LSHH-7160A/B/C LSHH – will auto shut off feed LSHH – will open inlet valve to next tank	Continuous	~~PTDP – Table A3B-2~~ Permit condition III.A.1 Permit Condition III.F.2.A	2	
					High level	≤20 Feet	B04-LAH-7154A/B/C	Continuous	Permit Condition III.F.2.A	1	
					High level	≤20 Feet 93%	B04-LIT-7154AA/AB/BA/BB	Continuous	Setpoint matrix	1	
				MV-B04-0301 30-Day Tank - 0301	ANS - 30-Day Tank - 0301 - level - tag AA – low low	2.33 ft. (10.9%)	B04-LALL-7154AA	Continuous	Setpoint matrix	1	
				MV-B04-0301 30-Day Tank - 0301	ANS - 30-Day Tank - 0301 - level - tag AB – low low	2.33 ft. (10.9%)	B04-LALL-7154AB	Continuous	Setpoint matrix	1	
				MV-B04-0201 30-Day Tank - 0201	ANS - 30-Day Tank - 0201 - level - tag BA – low low	2.33 ft. (10.9%)	B04-LALL-7154BA	Continuous	Setpoint matrix	1	
				MV-B04-0201 30-Day Tank - 0201	ANS - 30-Day Tank - 0201 - level - tag BB – low low	2.33 ft. (10.9%)	B04-LALL-7154BB	Continuous	Setpoint matrix	1	
				MV-B04-0101 30-Day Tank – 0101	ANS - 30-Day Tank - 0101 - level - tag BA – low low	2.33 ft. (10.9%)	B04-LALL-7154CA	Continuous	Setpoint matrix	1	
				MV-B04-0101 30-Day Tank - 0101	ANS - 30-Day Tank - 0101 - level - tag BB – low low	2.33 ft. (10.9%)	B04-LALL-7154CB	Continuous	Setpoint matrix	1	
					Low low temperature	40ºF	B04-TIT-7198	Continuous	Set Point Matrix~~PTDP – Table A3B-2~~	2	
					High high temperature	110ºF	B04-TIT-7198	Continuous	Set Point Matrix~~PTDP – Table A3B-2~~	2	
					Liquid specific gravity	≤1.27 (SG)	Grab sample Determination of Specific Gravity in a Hydrolysate Matrix 24852-GPP-GGL-00113	~~During Pilot Test &~~ Annually or Campaign Change	Permit condition III.B.2.b	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
5	Passing Batch Operations	Ensure neutralization operation is complete Verify analysis indicates batch has passed Review documentation, verify batch meets passing criteria Set valves, pumps, agitators for transfer Confirm transfer path Verify hydrolysate storage tank configured to receive batch Place storage tank in cooling mode if required Place 30-day storage tank in ICB feed configuration Co-ordinate placing 30 day tank in BTA feed configuration with BTA CRO Verify valve settings and pump is running	CRO performs task	MV-B04-0301/0201/0101 30-day tanks	Organic vapor pressure	≤5.2kPa	Calculation[b]	Permit Condition III.M.1.b.i. ~~Annual calculation[b]~~	Permit condition III.M.1.a.i	1	
					Temperature	100-105ºF	B04-TIT-7198	Once per shift	SOP - Operator Reading Sheets	1	
5	Passing Batch Operations	Ensure neutralization operation is complete Verify analysis indicates batch has passed Review documentation, verify batch meets passing criteria Set valves, pumps, agitators for transfer Confirm transfer path Verify hydrolysate storage tank configured to receive batch Place storage tank in cooling mode if required Place 30-day storage tank in ICB feed configuration Co-ordinate placing 30 day tank in BTA feed configuration with BTA CRO Verify valve settings and pump is running	CRO performs task	MP-B04-0106A/B MP-B04-0206A/B MP-B04-0306A/B Bioreactor Transfer Pumps	Discharge pressure	38*45 psig	B04-PI - 7158	Once per shift	SOP - Operator Reading Sheets	1	
					Inlet strainer pressure drop	< 2 psi	B04-PDI - 7197	Once per shift	SOP - Operator Reading Sheets	1	
					Discharge hydrolysate duplex filter differential pressure	< 15 psi	B04-PDI - 7156	Once per shift	SOP - Operator Reading Sheets	1	
Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE

6	Failed Hydrolysate Batch Operations	Verify analytical results for hydrolysate hold tank Notify CRS of results of analytical results of failed batch Review documentation, verify laboratory results indicate a failed batch Review worksheets and analytical results	CRO performs task Independent reviewer	MV-B04-0103/0203 Agent hydrolysate hold tanks	Concentration of agent in the contents of hydrolysate hold tank.	After determination that the hydrolysate does not contain agent at a concentration above the performance based method detection limit not to exceed 20 parts per billion (ppb) for HD and ≤ 200 ppb for T, the hydrolysate is transferred to the 30-Day Storage Tanks. Hydrolysate that does not meet the clearance criteria is pumped back to the agent hydrolyzers for re-processing.	Mustard Agent in HD/HT Water Hydrolysate 24852- GPP-GGL-00204	Once per batch	Permit Condition – IV.A.4.f Permit condition – IV.D.4.e.ii(Analyzed in accordance with WAP, Attachment D) LAMP, 24852-GPP-GGL-00002 Rev 007 Section 3.2.2	1	N/A – operations performed from control room
		Transfer failed batch from hydrolysate hold tank to hydrolyzer Set hydrolyzer for failed hydrolysate mode Verify transfer Configure hydrolyzer for failed batch Perform processing of failed batch	CRO performs task	MV-B04-0101/0201 Agent hydrolyzers	Gallons of agent	0	B04-FQIS - 0976	Once per batch	SOP – Failed hydrolysate batch	1	
					Gallons of wash water	0	B04-GQIS-7062	Once per batch	SOP – Failed hydrolysate batch	1	
					Gallons of spent decon	0	B04-GQIS-7042	Once per batch	SOP – Failed hydrolysate batch	1	
					Gallons of caustic	As needed if necessary to adjust pH to ≥ 10.	B04-GQIS-7175	Once per batch	SOP – Failed hydrolysate batch	1	

Notes:

a. The operation numbers are from the Agent Collection and Neutralization SOP 24852-SOP-B04-W0001, Rev 000, 18 August, 2015.
b. The vapor pressure is calculated based on the sum of the vapor pressures from the concentrations of the individual components in the liquid phase.
c. The gallons of agent, wash water, spent decon and caustic are subject to change based on the batch recipe.
d. The initial pH of the batch will be acidic due to the production of HCl from the hydrolysis. The final stable pH≥10 will occur when NaOH is added to the batch.
e. Reserved
f. Reserved
g. Reserved
h. No response level is assigned to this operating parameter because the response to no indication of flow is to notify the Control Room Supervisor.
i. Temperature range presented is agent concentration batches for other batch types (wash water, spent decon, failed batch), the temperature range is ambient to 195 ^{o}F.
f. Per Final Pilot Test Report, agitator operation is not necessary (for agent loadings ≤ 8.6 wt%).

L – 7 - SPENT DECON STORAGE SYSTEM COMPLIANCE TABLE (B05)

Operation Number[1]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[2]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	System Start up	Configure pumps for service Verify no alarms Verify valve positions Set recirculation valve controller set point Ensure recirculation pumps in auto	CRO-performs steps	MP-B05-1010A/B MP-B05-0201A/B Spent Decon Feed Pump and Spare MV-B05-0101/10102 Spent Decon Holding Tanks	Spent decon low low level	>0.53 ft	B05-LSLL-0828A/B	Continuous	SOP-Operation 2	2	N/A – operations performed from control room
					Spent decon pump discharge pressure	>17.7 psig	B05-PALL-0841A/B	Continuous	SOP-Operation 2	1	
		Configure Fill tank to accept liquid from floor sumps Place category A. B, &C sump pumps into auto	CRO-performs steps	MV-B05-0101/10102 Spent Decon Holding Tanks	High high level	<8'9"	B05-LSHH-0826	Continuous	Permit condition - Table IV.A.4.c.a	2	N/A – operations performed from control room
						<10.22 ft	B05-LSHH-0826	Continuous	Set point matrix	2	
					Organic vapor pressure[3]	<76.6 kPa	Calculation[3]	~~Annual calculation~~ Permit Condition IV.L.3.b.i.[3]	Permit condition - IV.L.3.a.i	1	
		Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0040 RM-APB-118 Sump Pump MWS Room Decon Airlock (A)	Low level alarm	>0.5 ft	B05-LSL-6701	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<1.71 ft	B05-LSH-6701	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.375 ft	B05-LSHH-6701	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6703	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0040 Sump pump	SDS - Sump - APB - 118 - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6700	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
				MP-B05-0041 Rm APB-125 Sump pump MWS Room NW (A)	Low level alarm	>0.5 ft.	B05-LSL-6706	Continuous	SOP – Operation 2	1	
					High level alarm	<1.73 ft.	B05-LSH-6706	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.396 ft.	B05-LSHH-6706	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110 psig	B05-PIT-6708	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0041 Sump pump	SDS - Sump - APB - 125(NW) - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6705	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0044 Rm APB-125 Sump pump MWS Room SW (A	Low level alarm	>0.5 ft.	B05-LSL-6721	Continuous	SOP – Operation 2	1	
					High level alarm	<1.81 ft.	B05-LSH-6721	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.479 ft.	B05-LSHH-6721	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6723	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0044 Sump pump	SDS - Sump - APB - 125(SW) - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6720	Continuous	Set point matrix Permit Condition IV.C.4	3	
				MP-B05-0045 Rm APB-125 Sump pump MWS Room NE (A)	Low level alarm	>0.5 ft.	B05-LSL-6726	Continuous	SOP – Operation 2	1	
					High level alarm	<1.73 ft.	B05-LSH-6726	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.396 ft.	B05-LSHH-6726	Continuous	SOP – Operation 2	2	

Operation Number[1]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[2]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0045 Rm APB-125 Sump pump MWS Room NE (A)	Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6728	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0045 Sump pump	SDS - Sump - APB - 125(NE) - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6725	Continuous	Set point matrix	3	N/A – operations performed from control room
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0046 Rm APB-134 Sump Pump MWS Room Decon Airlock (A)	Low level alarm	>0.5 ft.	B05-LSL-6731	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<1.83 ft.	B05-LSH-6731	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.500 ft.	B05-LSHH-6731	Continuous	SOP – Operation 2	2	N/A – operations performed from control room
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6733	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0046 Sump pump	SDS - Sump - APB - 134 - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6730	Continuous	Set point matrix Permit Condition IV.C.4	3	
				MP-B05-0048 Rm APB-136 Sump pump TMA Decon Airlock (A)	Low level alarm	>0.5 ft.	B05-LSL-6741	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft.	B05-LSH-6741	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6741	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6743	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0048 Sump pump	SDS - Sump - APB - 136 - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6740	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0066 Rm APB-120 Sump pump Toxic Room (A)	Low level alarm	>0.5 ft	B05-LSL-2806	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-2806	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-2806	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110 psig	B05-PIT-2807	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0066 Sump pump	SDS - Sump - APB - 120 - Liquid in lined sump interstitial space - high	No signal	B05-LAH-2805	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
				MP-B05-0047 Rm APB-126 Sump pump toxic maintenance (A)	Low level alarm	>0.5 ft	B05-LSL-6736	Continuous	SOP – Operation 2	1	
					High level alarm	<1.90 ft	B05-LSH-6736	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.563 ft	B05-LSHH-6736	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6738	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0047 Sump pump	SDS - Sump - APB - 126 - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6735	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
				MP-B05-0042 Rm APB-125 Sump MWS Room SE (A) Pumped by MP-B05-0047	Low level alarm	>0.5 ft	B05-LSL-6711	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6711	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6711	Continuous	SOP – Operation 2	2	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0042 Sump pump	SDS - Sump - APB - 125(SE) - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6710	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
				MP-B05-0049 Rm APB-145 Sump TMA Airlock (B)	Low level alarm	>0.5 ft	B05-LSL-6746	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6746	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6746	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6748	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0050 Rm APB-137 Sump TMA Airlock (B)	Low level alarm	>0.5 ft	B05-LSL-7351	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<2.00 ft	B05-LSH-7351	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7351	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6623	Continuous	SOP – Operation 2	1	

Operation Number[1]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[2]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
Operation Number[1]	**Operation Description**	**Description of Process Steps**	**Roles and Responsibilities of Ops Staff**	**Equipment Number and Description[2]**	**Operating Parameter**	**Normal Operating Range**	**Method for Monitoring**	**Frequency of Monitoring**	**Source of Requirements**	**Response Level**	**Required PPE**
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0050 Sump pump	SDS - Sump - APB - 137 - Liquid in lined sump interstitial space - high	No signal	B05-LAH-7350	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
				MP-B05-0052 Rm APB-127 Sump TMA Airlock (B)	Low level alarm	>0.5 ft	B05-LSL-7346	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-7346	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7346	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6630	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0052 Sump pump	SDS - Sump - APB - 127 - Liquid in lined sump interstitial space - high	No signal	B05-LAH-7345	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0065 Rm APB-113 Sump NW Airlock (B)	Low level alarm	>0.5 ft	B05-LSL-7341	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-7341	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7341	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6653	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0069 Rm APB-143 Sump SW Airlock (B)	Low level alarm	>0.5 ft	B05-LSL-6751	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6751	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6751	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6753	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0051 Rm APB-116 Sump OTS Room SE (C)	Low level alarm	>0.5 ft	B05-LSL-6756	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6756	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6756	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6758	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0051 Sump pump	SDS - Sump - APB - 116(SW) - Liquid in lined sump interstitial space - high	No signal	B05-LAH-6755	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0053 Rm APB-129 Sump Glove Box Vestibule (C)	Low level alarm	>0.5 ft	B05-LSL-6766	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6766	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6766	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6768	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0054 Rm APB-128 Sump TMA (C)	Low level alarm	>0.5 ft	B05-LSL-6771	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6771	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6771	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6773	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0055 Rm APB-132 Sump MWS Washout Water Storage Room (C)	Low level alarm	>0.5 ft	B05-LSL-6776	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<2.00 ft	B05-LSH-6776	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6776	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6778	Continuous	SOP – Operation 2	1	

Operation Number[1]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[2]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
Operation Number[1]	**Operation Description**	**Description of Process Steps**	**Roles and Responsibilities of Ops Staff**	**Equipment Number and Description[2]**	**Operating Parameter**	**Normal Operating Range**	**Method for Monitoring**	**Frequency of Monitoring**	**Source of Requirements**	**Response Level**	**Required PPE**
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0056 Rm APB-133 Sump MTU Room (C) Pumped by MP-B05-0056	Low level alarm	>0.5 ft	B05-LSL-6781	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<2.00 ft	B05-LSH-6781	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High high level alarm	<2.670 ft	B05-LSHH-6781	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6783	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0057 Rm APB-130 Sump South Corridor (C)	Low level alarm	>0.5 ft	B05-LSL-6786	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6786	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6786	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6788	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0058 Rm APB-147 Sump TMA Airlock (C)	Low level alarm	>0.5 ft	B05-LSL-6791	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6791	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6791	Continuous	SOP – Operation 2	2	N/A – operations performed from control room
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6793	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0059 Rm APB-114 Sump Munitions Receiving Room W (C)	Low level alarm	>0.5 ft	B05-LSL-6796	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-6796	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6796	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6798	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0060 Rm APB-114 Sump Munitions Receiving Room SE (C)	Low level alarm	>0.5 ft	B05-LSL-7301	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-7301	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High high level alarm	<2.670 ft	B05-LSHH-7301	Continuous	SOP – Operation 2	2	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0061 Rm APB-122 Sump Hydrolysate Tank Room (C) P	Low level alarm	>0.5 ft	B05-LSL-7306	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-7306	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7306	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-7308	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO and ready	CRO-performs steps	MP-B05-0061 Sump pump	SDS - Sump - APB - 122 - Liquid in lined sump interstitial space - high	~~<0.01 ft~~ No signal	B05-LAH-7305	Continuous	Set point matrix Permit Condition IV.C.4	3	N/A – operations performed from control room
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0062 Rm APB-121 Sump East Corridor (C)	Low level alarm	>0.5 ft	B05-LSL-7311	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<2.00 ft	B05-LSH-7311	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7311	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-7313	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0063 Rm APB-124 Sump pump West Corridor (C)	Low level alarm	>0.5 ft	B05-LSL-7316	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-7316	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7316	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-7318	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0064 Rm APB-112 Sump pump MWS Room Airlock (C)	Low level alarm	>0.5 ft	B05-LSL-7321	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<2.00 ft	B05-LSH-7321	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7321	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-7323	Continuous	SOP – Operation 2	1	
2	System Start up	Verify sump pumps are in AUTO	CRO-performs	MP-B05-0070	Low level alarm	>0.5 ft	B05-LSL-6761	Continuous	SOP – Operation 2	1	

Operation Number(1)	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description(2)	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
	(continued)	and ready (continued)	steps	Rm APB-116 Sump pump OTS Room SE (C)	High level alarm	<2.00 ft	B05-LSH-6761	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-6761	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-6763	Continuous	SOP – Operation 2	1	
Operation Number(1)	**Operation Description**	**Description of Process Steps**	**Roles and Responsibilities of Ops Staff**	**Equipment Number and Description(2)**	**Operating Parameter**	**Normal Operating Range**	**Method for Monitoring**	**Frequency of Monitoring**	**Source of Requirements**	**Response Level**	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0074 Rm APB-116 Sump pump MTU Room E (C)	Low level alarm	>0.5 ft	B05-LSL-7326	Continuous	SOP – Operation 2	1	
					High level alarm	<2.00 ft	B05-LSH-7326	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7326	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-7329	Continuous	SOP – Operation 2	1	
2	System Start up (continued)	Verify sump pumps are in AUTO and ready (continued)	CRO-performs steps	MP-B05-0075 Rm APB-130 Rm South Corridor (C)	Low level alarm	>0.5 ft	B05-LSL-7331	Continuous	SOP – Operation 2	1	N/A – operations performed from control room
					High level alarm	<2.00 ft	B05-LSH-7331	Continuous	SOP – Operation 2	1	
					High high level alarm	<2.670 ft	B05-LSHH-7331	Continuous	SOP – Operation 2	2	
					Motive air pressure for sump pump	10-110~~70-100~~ psig	B05-PIT-7334	Continuous	SOP – Operation 2	1	
3	Normal operations	Verify that readings are within normal operating range	CRO-performs steps	MV-B05-010/10201 Spent decon holding tank	Level	2.21-10.22 feet	B05-LIT-0827A/B	Continuous	SOP-CON Reading Sheet	1	N/A – operations performed from control room
					High high level	<10.22 feet	B05-LSHH-0826A/B	Continuous	SOP-CON Reading Sheet, Instrument setpoint matrix	2	
3	Normal operations	Verify that readings are within normal operating range	CRO-performs steps	MV-B05-0101 Spent decon holding tank	SDS - spent decon holding tank - 0101 vent header – pressure - high	<10 psig	B05-PAH-0833A	Continuous	Instrument set point matrix	3	N/A – operations performed from control room
3	Normal operations	Verify that readings are within normal operating range	CRO-performs steps	MV-B05-0201 Spent decon holding tank	SDS - spent decon holding tank - 0201 - vent header – pressure - high	<10 psig	B05-PAH-0833B	Continuous	Instrument set point matrix	3	N/A – operations performed from control room
3	Normal operations	Verify that readings are within normal operating range	CRO-performs steps	MP-B05-0101A/B Spent decon pump inlet strainer	Pressure drop across strainer	3-15 psid	B05-PDIT-0847A/B	Continuous	SOP-Operation 3	1	
3	Normal operations	Verify that readings are within normal operating range	CRO-performs steps	MP-B05-0101A/B Spent decon feed pump	Discharge pressure	17.7-44.6	B05-PIT-0841A/B	Continuous	SOP-CON Reading Sheet, Instrument setpoint matrix	1	

Notes:
1. The operating steps are from the Spent Decon Storage System SOP 24852-SOP-B05-W0001, Rev 000, 17 Feb, 2015.
2. The lined sumps are ancillary equipment to the Toxic Storage and Spent Decon System B05 and not secondary containment. These primary containment sumps also function as secondary containment for other equipment, and the sudden and unexpected rise of liquid within these sumps could indicate leakage or spills in the area.
3. The vapor pressure is calculated based on the sum of the vapor pressures from the concentrations of the individual components in the liquid phase.

BIOTREATMENT AND OFF-GAS TREATMENT COMPLIANCE TABLE (B09, B11) – 2.4.2016

BIOTREATMENT AREA RISK REDUCTION TDG SURROGATE TEST 3 BIOTREATMENT (B09) AND BIOREACTOR OFF-GAS TREATMENT (B11) STARTUP – 24852- SYS – STP –W0135

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
~~**6.4**~~ ~~System Startup~~	~~Analyze feed to ICBs~~	~~Analyze contents of 30 day tank that will feed the BTA during the test for TDG concentration~~	~~Laboratory~~	~~MT-B04 – 0301~~ ~~30 Day Storage Tank~~	~~TDG concentration~~	~~Approximately 5.6 wt%~~	~~Determination of TDG, T-OH and Q-OH in Hydrolysate Matrix~~ ~~24852-GPP-GGL-00114~~	~~Grab sample prior to start of feed~~	~~24852-SYS-STP-W0135~~ ~~PTDP Appendix A4A - Biotreatment System, System Description~~	~~1~~	~~CRO-N/A~~ ~~BTS operator– face shield and gloves (leather or heat resistant)~~
6.4 System Startup Batch Mode 1[c]	Confirm water levels in ICBs	Ensure water level ≈ 63 in. in all 3 compartments of all 4 ICBs	BTS Operator – field operations	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICB	Level - ICB	Approximately 63 inches	Visual observation through side port sampling location	Once as part of startup	24852-SYS-STP-W0135	1	
	Start module 1 ICB blower and OTS fan	Align valves/dampers Start an ICB blower When off-gas pressure or air flow change seen, start ICB Off-gas fan Ensure dissolved oxygen level of greater than or equal to 2 mg/l	CRO - control room operations BTS Operator – field operations	MA-B09-0101/0102 ICB Blower MA-B11-0101 ICB Off-gas Fan MW-B09-0101 ICB Compartment 1	Pressure – ICB air blower header						
						>1 psig	B09-PALL-1362A	Continuous	Set point matrix	1	
						>2 psig	B09-PAL-1362A	Continuous	Set point matrix	1	
						<8.7 psig	B09-PAH-1362A	Continuous	Set point matrix	1	
					Temperature – ICB air blower header	77-198ºF	B09-TIT-1361A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>95ºF	B09-TAL-1361A	Continuous	Set point matrix	1	
						>210ºF	B09-TAH-1361A	Continuous	Set point matrix	1	
				MW-B09-0101 ICB	Flowrate – Air in MW-B09-0101 header	541-3059 scfm	B09-FIC-1363A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						180 scfm	B09-FAL-1363A	Continuous	Set point matrix	1	
						3400 scfm	B09-FAH-1363A	Continuous	Set point matrix	1	
				MW-B09-0102 ICB	Flowrate – Air in MW-B09-0102 header	541-3059 scfm	B09-FIC-1364A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						180 scfm	B09-FAL-1364A	Continuous	Set point matrix	1	
						3400 scfm	B09-FAH-1364A	Continuous	Set point matrix	1	
				MW-B09-0103 ICB	Flowrate – Air in MW-B09-0103 header	541-3059 scfm	B09-FIC-1365A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						180 scfm	B09-FAL-1365A	Continuous	Set point matrix	1	
						3400 scfm	B09-FAH-1365A	Continuous	Set point matrix	1	
6.4 System Startup Batch Mode 1	Start module 1 ICB blower and OTS fan	Align valves/dampers Start an ICB blower	CRO - control room operations	MW-B09-0104 ICB	Flowrate – Air in MW-B09-0104 header	541-3059 scfm	B09-FIC-1366A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	CRO-N/A BTS operator– face

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		When off-gas pressure or air flow change seen, start ICB Off-gas fan Ensure dissolved oxygen level of greater than or equal to 2 mg/l	BTS Operator – field operations								shield and gloves (leather or heat resistant)
						180 scfm	B09-FAL-1366A	Continuous	Set point matrix	1	
						3400 scfm	B09-FAH-1366A	Continuous	Set point matrix	1	
				MA-B09-0101/0102 ICB Blower	Off-gas pressure	0.34-4.17 psig	B11-PIC-1505A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>-0.3 psig	B11-PAL-1505A	Continuous	Set point matrix	1	
						<0.2 psig	B11-PAH-1505A	Continuous	Set point matrix	1	
				MW-B09-0101 ICB	Flow – Air to Compartment 1a	136-764 SCFM	B09-FI-1388A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1388A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 1b	136-764 SCFM	B09-FI-1390A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1390A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 2	136-764 SCFM	B09-FI-1394A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1394A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 3	136-764 SCFM	B09-FI-1399A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1399A	Continuous	Set point matrix	1	
				MW-B09-0102 ICB	Flow – Air to Compartment 1a	136-764 SCFM	B09-FI-1418A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL-1418A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 1b	136-764 SCFM	B09-FI-1420A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1420A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 2	136-764 SCFM	B09-FI-1424A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1424A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 3	136-764 SCFM	B09-FI-1429A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1429A	Continuous	Set point matrix	1	
				MW-B09-0103 ICB	Flow – Air to Compartment 1a	136-764 SCFM	B09-FI-1448A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL-1448A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 1b	136-764 SCFM	B09-FI-1450A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1450A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 2	136-764 SCFM	B09-FI-1454A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1454A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 3	136-764 SCFM	B09-FI-1459A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1459A	Continuous	Set point matrix	1	
6.4 System Startup Batch Mode 1	Start module 1 ICB blower and OTS fan	Align valves/dampers Start an ICB blower When off-gas pressure or air flow change seen, start ICB Off-gas fan Ensure dissolved oxygen level	CRO - control room operations BTS Operator – field operations	MW-B09-0104 ICB	Flow – Air to Compartment 1a	136-764 SCFM	B09-FI-1478A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		of greater than or equal to 2 mg/l									
						>45 SCFM	B09-FAL-1478A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 1b	136-764 SCFM	B09-FI-1480A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1380A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 2	136-764 SCFM	B09-FI-1484A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL148A	Continuous	Set point matrix	1	
					Flow – Air to Compartment 3	136-764 SCFM	B09-FI-1489A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>45 SCFM	B09-FAL1489A	Continuous	Set point matrix	1	
				~~MW-B09-0101~~ ~~ICB Compartment 1~~	~~Dissolved Oxygen, Compartment 1~~	~~≥ 2 mg/l~~	~~B09 –AIT-1386A~~	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1386A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
				~~MW-B09-0102~~ ~~ICB Compartment 1~~		~~≥ 2 mg/l~~	~~B09 –AIT-1416A~~	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1416A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
				~~MW-B09-0103~~ ~~ICB Compartment 1~~		~~≥ 2 mg/l~~	~~B09 –AIT-1446A~~	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1446A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
				~~MW-B09-0104~~ ~~ICB Compartment 1~~		~~≥ 2 mg/l~~	~~B09 –AIT-1476A~~	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1476A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
6.4 System Startup Batch Mode 1	ICB startup	Start ICB feed tank Heating ICB contents (If required)	CRO - control room operations BTS Operator – field operations	MT-B09-0101 ICB Feed Tank	Temperature - ICB Feed Tank	75-85ºF	B09-TIC-1347A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
						>75ºF	B09-TAL-1347A	Continuous	24852-SYS-STP-W0135	1	
						<85ºF	B09-TAH-1347A	Continuous	24852-SYS-STP-W0135	1	
					Flow – steam to ICB feed tank	0-492 lb/hr	B09-FI-1319A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
						>550 lb/hr	B09-FAH-1319A	Continuous	Set point matrix	1	
					Pressure – ICB feed tank	-1.06 to 8.04 psig	B09-PIC-1307A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
						>-0.3 psig	B09-PALL-1307A	Continuous	Set point matrix	1	
						>-0.2 psig	B09-PAL-1307A	Continuous	Set point matrix	1	
						<0.1 psig	B09-PAH-1307A	Continuous	Set point matrix	1	
						<0.3 psig	B09-PAHH-1307A	Continuous	Set point matrix	1	
					Current – ICB feed tank agitator	2.26 – 12.74 amps	B09-IT-1316A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
						>1 amp	B09-IAL-1316A	Continuous	Set point matrix	1	
						>14 amps	B09-IAH-1316A	Continuous	Set point matrix	1	
					Pressure – ICB feed pump	1-20 psig	B09-PIT-1328A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
					Conductivity – ICB feed	3001-16999 µS/cm	B09-AIT-1326A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
6.4 System Startup Batch Mode 1	ICB startup	Heating ICB contents (If required)	CRO - control room operations BTS Operator –	MW-B09-0101 ICB	ICB temperature						

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
			field operations								
						80-100ºF	B09-TIT-1391A	Continuous	24852-SYS-STP-W0135	1	
						80-100ºF	B09-TIT-1395A	Continuous	24852-SYS-STP-W0135	1	
				MW-B09-0102 ICB	ICB temperature						
						80-100ºF	B09-TIT-1421A	Continuous	24852-SYS-STP-W0135	1	
						80-100ºF	B09-TIT-1425A	Continuous	24852-SYS-STP-W0135	1	
				MW-B09-0103 ICB	ICB temperature						
						80-100ºF	B09-TIT-1451A	Continuous	24852-SYS-STP-W0135	1	
						80-100ºF	B09-TIT-1455C	Continuous	24852-SYS-STP-W0135	1	
				MW-B09-0104 ICB	ICB temperature						
						80-100ºF	B09-TIT-1481A	Continuous	24852-SYS-STP-W0135	1	
						80-100ºF	B09-TIT-1485A	Continuous	24852-SYS-STP-W0135	1	
~~**6.4**~~ ~~System Startup Batch Mode 1~~	~~ICB startup~~	~~Monitoring dissolved oxygen~~	~~CRO - control room operations~~ ~~BTS Operator – field operations~~	~~MW-B09-0101~~ ~~ICB compartment 1~~	~~Dissolved oxygen~~	~~≥ 2 mg/l~~	~~B09-AIT-1386A~~	~~continuous~~	~~24852-SYS-STP-W0135 – Procedure 2~~	~~1~~	~~CRO-N/A~~ ~~BTS operator– face shield and gloves (leather or heat resistant)~~
						~~<1.5 mg/l~~	~~B09-AAL-1386A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
		Add sodium bicarbonate to compartment 1 of all 4 ICBs Add biomass to compartment 1 of all 4 ICBs Recycle ICB contents	BTS Operator – field operations	MW-B09-0101 ICB MP-B09-0111 ICB recycle pump	Pressure – recycle pump outlet	4-21 psig	B09-PIT-1401A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
						>1 psig	B09-PAL-1401A	Continuous	Set point matrix	1	
						< 31 psig	B09-PAH-1401A	Continuous	Set point matrix	1	
		Add sodium bicarbonate to compartment 1 of all 4 ICBs Add biomass to compartment 1 of all 4 ICBs Recycle ICB contents	CRO - control room operations BTS Operator – field operations	MW-B09-0102 ICB MP-B09-0112 ICB recycle pump	Pressure – recycle pump outlet	4-21 psig	B09-PIT-1431A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
						>1 psig	B09-PAL-1431A	Continuous	Set point matrix	1	
						< 31 psig	B09-PAH-1431A	Continuous	Set point matrix	1	
6.4 **System Startup Batch Mode 1**	ICB startup	Add sodium bicarbonate to compartment 1 of all 4 ICBs Add biomass to compartment 1 of all 4 ICBs	CRO - control room operations BTS Operator – field operations	MW-B09-0103 ICB MP-B09-0113 ICB recycle pump	Pressure – recycle pump outlet	4-21 psig	B09-PIT-1461A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		Recycle ICB contents									
						>1 psig	B09-PAL-1461A	Continuous	Set point matrix	1	
						< 31 psig	B09-PAH-1461A	Continuous	Set point matrix	1	
					Pressure – recycle pump outlet	4-21 psig	B09-PIT-1491A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
						>1 psig	B09-PAL-1491A	Continuous	Set point matrix	1	
						< 31 psig	B09-PAH-1491A	Continuous	Set point matrix	1	
					Temperature – recycle line	80-100 ºF	B09-TIT-1371A	Continuous	24852-SYS-STP-W0135 - Appendix 11	1	
		Aerate the ICBs	CRO - control room operations BTS Operator – field operations	MA-B09-0101/0102 ICB Blower MA-B11-0101 ICB Off-gas Fan	Off-gas pressure	-0.3 to 0.2 psig	B11-PIC-1505A	Continuous	24852-SYS-STP-W0135	1	
6.4 System Startup Batch Mode 1	ICB startup	Conduct sampling and analyses listed in Appendix 04	Laboratory technician	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICBs	pH	7.5-8.5	Determination of pH 24852-GPP-GGL-NP005	Weekly	24852-SYS-STP-W0135 – Appendix 04 LSAP	1	Laboratory technician – eye protection and gloves
					Dissolved oxygen (DO)	1.51-8.49 mg/l	Field Analysis Procedures	Continuous	24852-SYS-STP-W0135 – Appendix 04	1	
~~**6.4**~~ ~~System Startup Batch Mode 1~~	~~ICB startup~~	~~Conduct sampling and analyses listed in Appendix 04~~	~~Laboratory technician~~	~~MW-B09-0101~~ ~~MW-B09-0102~~ ~~MW-B09-0103~~ ~~MW-B09-0104~~ ~~ICBs~~	~~Oxygen Uptake Rate (OUR)~~	~~TBD during pilot test~~	~~This is a standard test. The procedure will be selected prior to the surrogate test.~~	~~TBD during pilot test~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	~~Laboratory technician – eye protection and gloves~~
					~~Total organic carbon (TOC)~~	~~TBD during pilot test~~	~~Determination of organic carbon in a hydrolysate matrix~~ ~~24852-GPP-GGL-00117~~	~~Daily~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					~~Thiodiglycol (TDG)~~	~~TBD during pilot test~~	~~Determination of TDG, T-OH and Q-OH in Hydrolysate Matrix~~ ~~24852-GPP-GGL-00114~~	~~Daily~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					NH_3 - Nitrogen	5-10 mg/l as N (startup only)	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	Every other day	24852-SYS-STP-W0135 – Appendix 04	1	
					PO_4 - Phosphorus	1-2 mg/l as P (startup only)	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	Every other day	24852-SYS-STP-W0135 – Appendix 04	1	
					~~Total suspended solids (TSS)~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix~~ ~~24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					~~Volatile suspended solids~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix~~ ~~24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					~~Total dissolved solids (TDS)~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix~~	~~Weekly~~	~~24852-SYS-STP-W0135 – Appendix 04~~		

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
							~~24852-GPP-GGL-00106~~				
					Density - surrogate	0.99 – 1.11 gm/cm^3	B09-DIT-1309A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
6.4 System Startup Batch Mode 1	Make first batch of surrogate in ICB feed tank	Determine dilution ratio Start agitator Add surrogate to ICB feed tank	Test director CRO	MT-B09-0101 ICB Feed Tank	Feed dilution ratio[d]	See note d	B09-HIC-1309A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
6.4 System Startup Batch Mode 1	Make first batch of surrogate in ICB feed tank	Determine dilution ratio Start agitator Add surrogate to ICB feed tank	Test director CRO	MT-B09-0101 ICB Feed Tank	Flow, Process Water	23-127 gpm	B09-FIC-1301A	Continuous	24852-SYS-STP-W0135 - Appendix 08	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
					Flow, surrogate to ICB feed tank	3.1-16.9 gpm	B09-FIC-1309A	Continuous	24852-SYS-STP-W0135 - Appendix 08	1	
					Level - ICB feed tank	2.1-7.9 ft	B09-LIC-1303A	Continuous	24852-SYS-STP-W0135 - Appendix 08	1	
						>2.5 ft	B09-LAL-1303A	Continuous	Set point matrix	1	
						<7.5 ft	B09-LAH-1303A	Continuous	Set point matrix	1	
						<8.5 ft	B09-LSHH-1311A	Continuous	Permit – III..F.3.b Set point matrix	2	
						>1.5 ft	B09-LSLL-1313A	Continuous	Set point matrix	1	
					Agitator Speed	≤212 rpm	B09-XI-1305A	Continuous	24852-SYS-STP-W0135	1	
					Organic vapor pressure	<76.6 kPa	Calculation[e]	Annual calculation[e]	Permit - III.M.1.a and b	1	
		Add nutrients to ICB feed tank	BTS Operator	MT-B09-0101 ICB Feed Tank MP-B09-0104 and 0105, Nutrient pumps	Nitrogen nutrient flow	< 16 gpm	B09-FIC-1317A	Continuous	24852-SYS-STP-W0135	1	
					Phosphate nutrient flow	< 16 gpm	B09-FIC-1321A	Continuous	24852-SYS-STP-W0135	1	
		Align valves for recirculation Start feed pump Observe pH reading Adjust pH as needed[f] by adding sulfuric acid	CRO BTS Operator	MT-B09-0101 ICB Feed Tank MP-B09-0101 ICB Feed Pump	pH - recycled surrogate	7.5 – 8.5 (after acid addition and mixing)[f]	B09-AIT-1325A	Continuous	24852-SYS-STP-W0135 Permit – III.B.3.d[6]	1	
						>7.0	B09-AALL-1325A	Continuous	Set point matrix	1	
						>7.5	B09-AAL-1325A	Continuous	Set point matrix	1	
						<9.0	B09-AAH-1325A	Continuous	Set point matrix	1	
						<9.5	B09-AAHH-1325A	Continuous	Set point matrix	1	
		Read ICB feed tank temperature	CRO	MT-B09-0101 ICB Feed Tank	Temperature	>70ºF	B09-TIC-1347A	Continuous	24852-SYS-STP-W0135	1	
6.4 System Startup	Transfer contents of ICB feed tank to	Align valves for transfer	CRO	MT-B09-0101 ICB Feed Tank	Level - ICB Feed Tank	2.5 ft	B09-LIC-1303A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
Batch Mode 1	ICBs	Start ICB feed pump When ICB Feed Tank approaches low level alarm stop feed.		MP-B09-0101 ICB feed pump							(leather or heat resistant)
				MW-B09-0101 ICB	Level – ICB 0101 - compartment 3	< 9.5 ft	LI-1408A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	LAH-1408A	Continuous	Set point matrix	1	
						<10 ft	LSHH-1406A	Continuous	Permit – III.F.3.b, Set point matrix	2	
				MW-B09-0102 ICB	Level – ICB 0102 - compartment 3	< 9.5 ft	LI-1438A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	LAH-1438A	Continuous	Set point matrix	1	
						<10 ft	LSHH-1436A	Continuous	Permit – III.F.3.b, Set point matrix	2	
				MW-B09-0103 ICB	Level – ICB 0103 - compartment 3	< 9.5 ft	LI-1468A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	LAH-1468A	Continuous	Set point matrix	1	
						<10 ft	LSHH-1466A	Continuous	Permit – III.F.3.b, Set point matrix	2	
				MW-B09-0104 ICB	Level – ICB 0104 - compartment 3	< 9.5 ft	LI-1498A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	LAH-1498A	Continuous	Set point matrix	1	
						<10 ft	LSHH-1496A	Continuous	Permit – III.F.3.b, Set point matrix	2	
				MW-B09-0101-0104 ICBs	Organic vapor pressure	<5.2 kPa	Calculation[e]	Permit Condition III.M.1.b.i..i ~~Annual calculation~~[e]	Permit - III.M.1.a and b	1	
6.4 System Startup Batch Mode 1	Analyze contents of ICB Compartment 1 Complete batch mode 1.	Analyze for Appendix 04 parameters Continue processing and analyses until TDG has been reduced by 75-85%.	Laboratory – collect and analyze samples Test coordinator- review data decide to continue or stop processing.	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICBs ICB compartment 1	pH	7.5-8.5	Determination of pH 24852-GPP-GGL-NP005	Weekly	24852-SYS-STP-W0135 – Appendix 04 LSAP	1	Laboratory technician – eye protection and gloves
					Dissolved oxygen (DO)	1.51-8.49 mg/l	Field Analysis Procedures 24852-GPP-GGL-NP005	Continuous	24852-SYS-STP-W0135 – Appendix 04	1	
					~~Oxygen Uptake Rate (OUR)~~	~~TBD during pilot test~~	~~This is a standard test. The procedure will be selected prior to the surrogate test.~~	~~TBD during pilot test~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					~~Total organic carbon (TOC)~~	~~TBD during pilot test~~	~~Determination of organic carbon in a hydrolysate matrix 24852-GPP-GGL-00117~~	~~Daily~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					~~Thiodiglycol (TDG)~~	~~TBD during pilot test~~	~~Determination of TDG, T-OH and Q-OH in Hydrolysate Matrix~~	~~Daily~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	

BIOTREATMENT (BTA) AMD BIOREACTOR OFF-GAS TREATMENT – B09/B11

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
							~~24852-GPP-GGL-00114~~				
					NH_3 - Nitrogen	5-10 mg/l as N (startup only)	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	Every other day	24852-SYS-STP-W0135 – Appendix 04	1	
					PO_4 - Phosphorus	1-2 mg/l as P (startup only)	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	Every other day	24852-SYS-STP-W0135 – Appendix 04	1	
					~~Total suspended solids (TSS)~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix 24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					~~Volatile suspended solids~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix 24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
6.4 System Startup Batch Mode 1	Analyze contents of ICB Compartment 1 Complete batch mode 1.	Analyze for Appendix 04 parameters Continue processing and analyses until TDG has been reduced by 75-85%.	Laboratory – collect and analyze samples Test coordinator- review data decide to continue or stop processing.	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICBs ICB compartment 1	Pressure – ICB effluent tank	-8.3 to 5.5 in wc	B09-PIT-1511A	Continuous	Set point Matrix	1	Laboratory technician – eye protection and gloves
						<5.5 in wc	B09-PAH-1511A	Continuous	Set point matrix	1	
					Pressure – ICB effluent pump	8-42 psig	B09-PIT-1521A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>8.25 psig	B09-PAL-1521A	Continuous	Set point matrix	1	
						<47.5 psig	B09-PAH-1521A	Continuous	Set point matrix	1	
					Flow - ICB effluent pump	4.1-22.7 gpm	B09-FIC-1523A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>13	B09-FAL-1523A	Continuous	Set point matrix	1	
						>19	B09-FALL1523A	Continuous	Set point matrix	1	
					Concentration – hydrogen sulfide	<5 ppm	B11-AAH-1722A	Continuous	Set point matrix	2	
					Temperature – off-gas heater	66-134 ºF	B11-TIC-1724A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						<80 ºF	B11-TAH-1724A	Continuous	Set point matrix	1	
						<110 ºF	B11-TAHH-1724A	Continuous	Set point matrix	2	
					Temperature – inlet gas stream to the ICB offgas carbon filters	66-170 ºF	B11-TIT-1782A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>80 ºF	B11-TAL-1782A	Continuous	Set point matrix	1	
						<160 ºF	B11-TAH-1782A	Continuous	Set point matrix	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
						<170 ºF	B11-TAHH-1782A	Continuous	Set point matrix	2	
					Relative humidity – off-gas	0-60%	B11-MT-1782A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
					Pressure – carbon exhaust	0-2 psig	B11-PIT-1749A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						>0	B11-PAL-1749A	Continuous	Set point matrix	1	
						<3.2	B11-PAH-1749A	Continuous	Set point matrix	1	
					Temperature – carbon exhaust	0-114 ºF	B11-TIT-1755A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	
						<125 ºF	B11-TAH-1755A	Continuous	Set point matrix	1	
6.5 System Startup Batch Mode 2	Confirm water levels in ICBs	Top off water in all ICBs - compartments 2 and 3 with process water if necessary	BTS Operator – field operations	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICB	Level - ICB	Approximately 63 inches	Visual observation through side port sampling location	Once as part of startup	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
	Make second batch of surrogate in ICB feed tank	Start agitator Add surrogate to ICB feed tank	Test director CRO	MT-B09-0101 ICB Feed Tank	Feed dilution ratio	See note d	B09-HIC-1309A	Continuous	24852-SYS-STP-W0135	1	
					Flow, Process Water	23-127 gpm	B09-FIC-1301A	Continuous	24852-SYS-STP-W0135 - Appendix 08	1	
					Flow, surrogate to ICB feed tank	3.1-16.9 gpm	B09-FIC-1309A	Continuous	24852-SYS-STP-W0135 - Appendix 08	1	
					Level - ICB feed tank	2.1-7.9 ft	B09-LIC-1303A	Continuous	24852-SYS-STP-W0135 - Appendix 08	1	
						>2.5 ft	B09-LAL-1303A	Continuous	Set point matrix	1	
						<7.5 ft	B09-LAH-1303A	Continuous	Set point matrix	1	
						<8.5 ft	B09-LSHH-1311A	Continuous	Permit – III.A.2 (Table III.A.2-1) Set point matrix	2	
						>1.5 ft	B09-LSLL-1313A	Continuous	Set point matrix	1	
					Agitator Speed	≤212 rpm	B09-XI-1305A	Continuous	24852-SYS-STP-W0135	1	
6.5 System Startup Batch Mode 2	Make second batch of surrogate in ICB feed tank	Add nutrients to ICB feed tank	BTS Operator	MT-B09-0101 ICB Feed Tank MP-B09-0104 and 0105, Nutrient pumps	Nitrogen nutrient flow	< 16 gpm	B09-FIC-1317A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
					Phosphate nutrient flow	< 16 gpm	B09-FIC-1321A	Continuous	24852-SYS-STP-W0135	1	
		Align valves for recirculation Start feed pump Observe pH reading Adjust pH as needed[f] by adding sulfuric acid	CRO BTS Operator	MT-B09-0101 ICB Feed Tank MP-B09-0101 ICB Feed Pump	pH - recycled surrogate	7.5 – 8.5 (after acid addition and mixing)[f]	B09-AIT-1325A	Continuous	24852-SYS-STP-W0135 Permit – III.B.3.d[6]	1	
						>7.0	B09-AAL-1325A	Continuous	Set point matrix	1	
						<13.0	B09-AAH-1325A	Continuous	Set point matrix	1	
		Read ICB feed tank temperature	CRO	MT-B09-0101 ICB Feed Tank	Temperature	>70ºF	B09-TIC-1347A	Continuous	24852-SYS-STP-W0135	1	
6.5	Transfer	Align valves for transfer	CRO	MT-B09-0101	Low level (ICB Feed Tank)	2.5 ft	B09-LIC-1303A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
System Startup Batch Mode 2	contents of ICB feed tank to ICBs	Start ICB feed pump When ICB Feed Tank approaches low level alarm stop feed.		ICB Feed Tank MP-B09-0101 ICB feed pump							
				MW-B09-0101 ICB	Level – ICB 0101 - compartment 3	< 9.5 ft	B09-LI-1408A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	B09-LAH-1408A	Continuous	Set point matrix	1	
						<10 ft	B09-LSHH-1406A	Continuous	Set point matrix	2	
				MW-B09-0102 ICB	Level – ICB 0102 - compartment 3	< 9.5 ft	B09-LI-1438A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	B09-LAH-1438A	Continuous	Set point matrix	1	
						<10 ft	B09-LSHH-1436A	Continuous	Set point matrix	2	
				MW-B09-0103 ICB	Level – ICB 0103 - compartment 3	< 9.5 ft	B09-LI-1468A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	B09-LAH-1468A	Continuous	Set point matrix	1	
						<10 ft	B09-LSHH-1466A	Continuous	Set point matrix	2	
				MW-B09-0104 ICB	Level – ICB 0104 - compartment 3	< 9.5 ft	B09-LI-1498A	Continuous	24852-SYS-STP-W0135	1	
						<9.5 ft	B09-LAH-1498A	Continuous	Set point matrix	1	
						<10 ft	B09-LSHH-1496A	Continuous	Set point matrix	2	
6.5 System Startup Batch Mode 2	Perform sampling and analysis for Appendix 05 Until the concentration of TDG has been reduced 75-85%	Conduct sampling and analyses listed in Appendix 04	Laboratory technician	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICBs	pH	7.5-8.5	Determination of pH 24852-GPP-GGL-NP005	Weekly	24852-SYS-STP-W0135 – Appendix 05 LSAP	1	Laboratory technician – eye protection and gloves
					Dissolved oxygen (DO)	1.51-8.49 mg/l	Field Analysis Procedures 24852-GPP-GGL-NP005	Continuous	24852-SYS-STP-W0135 – Appendix 05	1	
					~~Oxygen Uptake Rate (OUR)~~	~~TBD during pilot test~~	~~This is a standard test. The procedure will be selected prior to the surrogate test.~~	~~TBD during pilot test~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					~~Total organic carbon (TOC)~~	~~TBD during pilot test~~	~~Determination of organic carbon in a hydrolysate matrix 24852-GPP-GGL-00117~~	~~8 hour intervals~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					~~Thiodiglycol (TDG)~~	~~TBD during pilot test~~	~~Determination of TDG, T-OH and Q-OH in Hydrolysate Matrix 24852-GPP-GGL-00114~~	~~8 hour intervals~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					NH_3 - Nitrogen	>5 mg/l	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	8 hour intervals	24852-SYS-STP-W0135 – Appendix 05	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
					PO_4 - Phosphorus	>1 mg/l	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	8 hour intervals	24852-SYS-STP-W0135 – Appendix 05	1	
					~~Total suspended solids (TSS)~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix 24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					~~Volatile suspended solids~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix 24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					~~Total Dissolved Solids~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix 24852-GPP-GGL-00106~~		~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
6.6 System Startup **Continuous flow mode[g]**	Operate Module 1 at 12.5% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%	Set ICB Effluent tank and pump in auto Set ICB Feed tank and pump in auto Set feed ratio controller to 12.5% normal TDG feed concentration	CRO - control room operations BTS Operator – field operations	MT-B09-0101 ICB Effluent Tank MP-B09-0101 ICB Effluent Pump	Level – ICB effluent tank	2-3.5 ft	B09-LIC-1512A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
						>2.0 ft	B09-LAL-1512A	Continuous	Set point matrix	1	
						<5 ft	B09-LAH-1512A	Continuous	Set point matrix	1	
						<7.3 ft	B09-LSHH – 1513A	Continuous	Permit III.F.3.b	2	
						<5.3 ft	B09-LSHH – 1513A	Continuous	Set point matrix	2	
				MT-B09-0101 ICB Feed tank MP-B09-0101 ICB Feed Pump	Level - ICB feed tank	2.1-7.9 ft	B09-LIC-1303A	Continuous	24852-SYS-STP-W0135 - Appendix 08	1	
						>2.5 ft	B09-LAL-1303A	Continuous	Set point matrix	1	
						<7.5 ft	B09-LAH-1303A	Continuous	Set point matrix	1	
						<8.5 ft	B09-LSHH-1311A	Continuous	Permit – III.A.2 (Table III.A.2-1) Set point matrix	2	
						>1.5 ft	B09-LSLL-1313A	Continuous	Set point matrix	1	
6.6 System Startup **Continuous flow mode**	Operate Module 1 at 12.5% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-	Set ICB Effluent tank and pump in auto Set ICB Feed tank and pump in auto Set feed ratio controller to 12.5% normal TDG feed concentration	CRO - control room operations BTS Operator – field operations	MW-B09-0101 ICB	Flow to Bioreactor	Ratio of surrogate to process water to be set by System Engineer	B09-FIC-1350A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
	85%										
						>3.35 gpm	B09-FAL-1350A	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1350A	Continuous	Set point matrix	1	
				MW-B09-0102 ICB	Flow to Bioreactor	Ratio of surrogate to process water to be set by System Engineer	B09-FIC-1351A	Continuous	24852-SYS-STP-W0135	1	
						>3.35 gpm	B09-FAL-1351A	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1351A	Continuous	Set point matrix	1	
6.6 System Startup **Continuous flow mode**	Operate Module 1 at 12.5% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%	Set ICB Effluent tank and pump in auto Set ICB Feed tank and pump in auto Set feed ratio controller to 12.5% normal TDG feed concentration	CRO - control room operations BTS Operator – field operations	MW-B09-0103 ICB	Flow to Bioreactor	Ratio of surrogate to process water to be set by System Engineer	B09-FIC-1352A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
						>3.35 gpm	B09-FAL-1352A	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1352A	Continuous	Set point matrix	1	
				MW-B09-0104 ICB	Flow to Bioreactor	Ratio of surrogate to process water to be set by System Engineer	B09-FIC-1353A	Continuous	24852-SYS-STP-W0135	1	
						>3.35 gpm	B09-FAL-1353A	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1353A	Continuous	Set point matrix	1	
		~~Adjust aeration to maintain dissolved oxygen concentration~~	~~CRO - control room operations~~ ~~BTS Operator – field operations~~	~~MW-B09-0101~~ ~~ICB~~	~~Dissolved Oxygen, Compartment 1~~	~~≥ 2 mg/l~~	~~B09 –AIT-1386A~~	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1386A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
					~~Dissolved Oxygen, Compartment 2~~	~~≥ 2 mg/l~~	B09 –AIT-1392A	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1392A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
					~~Dissolved Oxygen, Compartment 3~~	~~≥ 2 mg/l~~	~~B09 –AIT-1396A~~	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1396A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
6.6 System Startup **Continuous flow mode**	Operate Module 1 at 12.5% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%	Adjust aeration to maintain dissolved oxygen concentration	CRO - control room operations BTS Operator – field operations	MW-B09-0102 ICB	Dissolved Oxygen, Compartment 1	≥ 2 mg/l	B09 –AIT-1316A	Continuous	24852-SYS-STP-W0135	1	CRO-N/A BTS operator– face shield and gloves (leather or heat resistant)
						<1.5 mg/l	B09 –AAL-1316A	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 2	≥ 2 mg/l	B09 –AIT-1322A	Continuous	24852-SYS-STP-W0135	1	
						<1.5 mg/l	B09 –AAL-1322A	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 3	≥ 2 mg/l	B09 –AIT-1326A	Continuous	24852-SYS-STP-W0135	1	
						<1.5 mg/l	B09 –AAL-1326A	Continuous	Set point matrix	1	
				MW-B09-0103 ICB	Dissolved Oxygen, Compartment 1	≥ 2 mg/l	B09 –AIT-1346A	Continuous	24852-SYS-STP-W0135	1	
						<1.5 mg/l	B09 –AAL-1346A	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 2	≥ 2 mg/l	B09 –AIT-1352A	Continuous	24852-SYS-STP-W0135	1	
						<1.5 mg/l	B09 –AAL-1352A	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 3	≥ 2 mg/l	B09 –AIT-1356A	Continuous	24852-SYS-STP-W0135	1	
						<1.5 mg/l	B09 –AAL-1356A	Continuous	Set point matrix	1	
				MW-B09-0104 ICB	Dissolved Oxygen, Compartment 1	≥ 2 mg/l	B09 –AIT-1376A	Continuous	24852-SYS-STP-W0135	1	
						<1.5 mg/l	B09 –AAL-1376A	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 2	≥ 2 mg/l	B09 –AIT-1382A	Continuous	24852-SYS-STP-W0135	1	
						<1.5 mg/l	B09 –AAL-1382A	Continuous	Set point matrix	1	
					~~Dissolved Oxygen, Compartment 3~~	~~≥ 2 mg/l~~	~~B09 –AIT-1386A~~	~~Continuous~~	~~24852-SYS-STP-W0135~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1386A~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
6.6	Operate Module	Set effluent level control to auto	CRO - control	MT-B09-0102	Level – ICB effluent tank	2-3.5 ft	LIC-1512A	Continuous	24852-SYS-STP-W0135 – Appendix 08	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
System Startup **Continuous**	1 at 12.5% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%		room operations	ICB Effluent Tank							
						>2.0 ft	LAL-1512A	Continuous	Set point matrix	1	
						<5. ft	LAH-1512A	Continuous	Set point matrix	1	
		Conduct sampling and analyses listed in Appendix 05	Laboratory technician	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICBs	pH	7.5-8.5	Determination of pH 24852-GPP-GGL-NP005	Weekly	24852-SYS-STP-W0135 – Appendix 05 LSAP	1	
					Dissolved oxygen (DO)	1.51-8.49 mg/l	Field Analysis Procedures 24852-GPP-GGL-NP005	Continuous	24852-SYS-STP-W0135 – Appendix 05	1	
					~~Oxygen Uptake Rate (OUR)~~	~~TBD during pilot test~~	~~This is a standard test. The procedure will be selected prior to the surrogate test.~~	~~TBD during pilot test~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					~~Total organic carbon (TOC)~~	~~TBD during pilot test~~	~~Determination of organic carbon in a hydrolysate matrix~~ ~~24852-GPP-GGL-001~~	~~8 hour intervals~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					~~Thiodiglycol (TDG)~~	~~TBD during pilot test~~	~~Determination of TDG, T-OH and Q-OH in Hydrolysate Matrix~~ ~~24852-GPP-GGL-00114~~	~~8 hour intervals~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
6.6 System Startup **Continuous flow mode**	Operate Module 1 at 12.5% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%	Conduct sampling and analyses listed in Appendix 05	Laboratory technician	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 ICBs	NH_3 - Nitrogen	>5 mg/l	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	8 hour intervals	24852-SYS-STP-W0135 – Appendix 05	1	Laboratory technician – eye protection and gloves
					PO_4 - Phosphorus	>1 mg/l	Determination of Anions and Cations by Ion Chromatography (IC), 24852-GPP-GGL-00104	8 hour intervals	24852-SYS-STP-W0135 – Appendix 05	1	
					~~Total suspended solids (TSS)~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix~~ ~~24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
					~~Volatile suspended solids~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix~~ ~~24852-GPP-GGL-00106~~	~~Every other day~~	~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
					~~Total Dissolved Solids~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix~~ ~~24852-GPP-GGL-00106~~		~~24852-SYS-STP-W0135 – Appendix 05~~	~~1~~	
6.6 System Startup **Continuous flow mode**	Operate Module 1 at 25% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%[g]	Same process steps as Operate Module 1 at 12.5% normal TDG feed concentration	See above	See above	See above	See above	See above	See above	See above	See above	CRO-N/A BTS operator Laboratory Technician – face shield and gloves (leather or heat resistant)
	Operate Module 1 at 50% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%	Same process steps as Operate Module 1 at 12.5% normal TDG feed concentration	See above	See above	See above	See above	See above	See above	See above	See above	CRO-N/A BTS operator Laboratory Technician – face shield and gloves (leather or heat resistant)
6.6 System Startup **Continuous flow mode**	Operate Module 1 at 75% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%	Same process steps as Operate Module 1 at 12.5% normal TDG feed concentration	See above	See above	See above	See above	See above	See above	See above	See above	CRO-N/A BTS operator Laboratory Technician – face shield and gloves (leather or heat resistant)
	Operate Module 1 at 75% normal TDG feed concentration. Until the concentration of TDG has been reduced 75-85%	Same process steps as Operate Module 1 at 12.5% normal TDG feed concentration	See above	See above	See above	See above	See above	See above	See above	See above	CRO-N/A BTS operator Laboratory Technician – face shield and gloves (leather or heat resistant)
				MT-B09-0201 ICB Feed Tank	MODULE 2 – MT-B09-0201 ICB Feed Tank 0201 – Level – High High	<8.5 ft	B09-LAHH-1311B	Continuous	Set point matrix	2	
				MW-B09-0202 Bioreactor 0202	MODULE 2 – MW-B09-0202 Bioreactor 0202 – Level – Chamber 3 – High High	<10 ft	B09-LAHH-1436B	Continuous	Set point matrix	2	

BIOTREATMENT (BTA) AMD BIOREACTOR OFF-GAS TREATMENT – B09/B11

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description[b]	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
				MW-B09-0203 Bioreactor 0203	MODULE 2 – MW-B09-0203 Bioreactor 0203 – Level – Chamber 3 – High High	<10 ft	B09-LAHH-1466B	Continuous	Set point matrix	2	
				MW-B04-0204	MODULE 2 – MW-B09-0204 Bioreactor 0204 – Level – Chamber 3 – High High	<10 ft	B09-LAHH-1496B	Continuous	Set point matrix	2	
				MT-B09-0202 ICB effluent tank	MODULE 2 – MT-B09-0202 ICB Effluent Tank 0202 – Level – High High	<5.3 ft	B09-LAHH-1513B	Continuous	Set point matrix	2	
				ME-B11-0201 ICB Off-gas Heater	MODULE 2 – ME-B11-0201 ICB Off-gas Heater – Temperature – High High	<150 ºF	B11-TAHH-1724B	Continuous	Set point matrix	2	
				ME-B11-0201 ICB Off-gas Heater MK-B11-0201 ICB Off-gas Filter 1 or MK-B11-0202 ICB Off-gas filter 2	MODULE 2 – Between ME-B11-0201 ICB Off-gas heater and MK-B11-0201 ICB Off-gas filter 1 of MK-B11-0202 ICB Off-gas filter 2 – Temperature – High High	<150 ºF	B11-TAHH-1782B	Continuous	Set point matrix	2	

General Notes:

1. ~~Per the PTDP (24852-GPP-GYPM-00006),~~ OTS COPC sampling will be done before, between, and downstream of filter units per the Laboratory Sampling and Analysis Plan ~~for Pilot Test Phase Operations~~ (LSAP), 24852-GPP-GGL-00013. Odor monitoring will be performed in accordance with the Odor Monitoring ~~Plan for Pilot Test Phase Operations~~ (OMP), 24852-GPP-GGG-V0018. The performance criteria is: no odor detections at the action level at the fence line and COPCs within Multiple Pathway Health Risk Assessment (MPHRA) thresholds.
2. ~~Per the PTDP (24852-GPP-GYPM-00006), OTS carbon sampling to occur (baseline and periodic sampling with analysis) per Carbon Sampling Strategy, 24852-30H-000-W0004. Butane activity ≤ 12 corresponds to 50% carbon loading.~~

2~~3~~. Permit, Attachment D, Waste Analysis Plan (WAP), Section D-2b(c) as proposed in Mod #64; the performance goals for the biodegradation process are achieving greater than 95 percent and a target of at least 98 percent removal of the agent hydrolysate product TDG. Sampled twice per week from ICB effluent tank per the WAP.

Notes:

a. The startup of the modules in the BTS and BOTS is performed in accordance with Biotreatment Area Risk Reduction TDG Surrogate Test 3 Biotreatment (B09) and Bioreactor Off-Gas Treatment (B11) Startup – Rev 000 – Feb 1, 2016.
b. This table is written for ICB module 1. The first ICB is numbered as MW-B09-0101, the second as MW-B09-0102, the third as MW-B09-0103 and the fourth as MW-B09-0104. Valves or instruments have identification numbers ending with the letter A, such as PV-1110A and FE-1301A
c. Batch Mode 1 will fill Compartment 1 of the ICB with a mixture of process water, hydrolysate, nutrients, and activated sludge seed to begin biological degradation. Surrogate will be prepared in the ICB feed tank and distributed to all four ICBs. Batch Mode 2 will fill Compartments 2 and 3 of the ICB with process water, hydrolysate and nutrients mixed from the overflow of Compartment 1, when a new mixture from the ICB Feed Tank feeds into Compartment 1 and displaces the original matrix into Compartments 2 and 3. Biomass seeding of Compartments 2 and 3 is not anticipated, as biomass from Compartment 1 will be in the overflow mixture fed into Compartment 2 and then into Compartment 3. Continuous Flow Mode is the transitioning from batch mode to a series of five increasing load regimes to full flow and full strength. The four ICBs in the Module may be started up individually or all simultaneously.
d. Goal is to obtain a 7,000 mg/ l TDG concentration in the ICB Feed Tank. For B09-HIC-1309A, the set-point is set at dilution ratio obtained is established by the Test Coordinator using the 30-Day Tank TDG concentration analytical results. Flows are verified by B09-FIC-1301A and B09-FIC-1309A.
e. The vapor pressure is calculated based on the sum of the vapor pressures from the concentrations of the individual components in the liquid phase. It is initially calculated before hazardous waste is placed in the tank. Thereafter, a new determination will be made whenever changes to the hazardous waste managed in the tank could potentially cause the maximum organic vapor pressure to increase to a level equal to or greater than the vapor pressure corresponding to Level 1 control. This limit applies to all tanks in this system (ICB Feed tanks, ICBs, ICB Effluent tanks); to avoid repetition it is only shown above for the ICB feed Tank (worst case from a vapor pressure standpoint since organic compounds are destroyed downstream) for both start-up and normal operations.
f. The normal operating range for the pH in the feed tanks AIT-1325A/B/C/D is 7.0 to 13.0 as established by the alarm set points in the set point matrix.
g. This mode of the startup procedure transitions out of batch mode to a series of five increasing load regimes (F-1, F-2, F-3, F-4 and F-5), culminating with normal operations at full-flow and full-strength. If the system fails to achieve ≥ 95% TDG removal efficiencies at a given flow regime (loading rate), the feed concentration should be reduced to the last concentration that demonstrated greater than or equal to 95% TDG removal. In addition, the ICB should be placed into a recycle mode using the ICB Effluent Pump to pump the partially treated effluent back to the ICB Feed Tank. The ICB will be kept at the reduced loading rate until TDG removal is greater than or equal to 95% for at least five days. Steady state performance must be established in the unit before returning to the higher loading rate. The dilution ratio (ratio of process water flow and hydrolysate flow fed to ICB feed Tank) is adjusted to accomplish the following load regimes:
    a. F-1 - 50% flow rate, 25% hydrolysate strength equals 12.5% loading strength
    b. F-2 - 50% flow rate, 50% hydrolysate strength equals 25% loading strength
    c. F-3 - 100% flow rate, 50% hydrolysate strength equals 50% loading strength
    d. F-4 - 100% flow rate, 75% hydrolysate strength equals 75% loading strength
    e. F-5 - 100% flow rate, 100% hydrolysate strength equals 100% loading strength

~~During the reduced loading tests the loading is controlled by reducing the concentration of TDG in the feed to the ICBs by varying the ratio of surrogate feed to process water. The volumetric flowrate to ICBs is maintained at the design rate to keep the hydraulic retention time at the design value.~~

BIOTREATMENT AND OFF-GAS TREATMENT – 24852-SOP-B09-W0001

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
2 Normal Operations[b]	Review and record parameters from: Appendix 11 Appendix 12 Appendix 04 Notify CRS of out of range Adjust feed rate, aeration, pH and temperature as required.	CRS review Appendix 11 parameter values Plant operator record Appendix 12 and Appendix 04 parameter values	CRS Plant operator System engineer Plant operator	MT-B09-0101 - 0401 ICB Feed Tanks MW-B09-0101-0104 MW-B09-0201-0204 MW-B09-0301-0304 MW-B09-0401-0404 ICBs MT-B09-0102 - 0402 ICB Effluent Tanks	Flow – to ICB feed tanks	1-4 gpm	B09-FIC-1309A/B/C/D	Continuous	SOP-Appendix 11	1	Control Room personnel (e.g., System Engineer, CRO)– N/A Plant operator – face shield and gloves (leather or heat resistant)
					Flow – steam to the ICB feed tank	0 – 550 lb/hr	B09-FIT-1319A/B/C/D	Continuous	SOP-Appendix 11	1	
					Flow – process water to ICB feed tank	10-27 gpm	B09-FIT-1301A/B/C/D	Continuous	SOP-Appendix 11	1	
					Pressure – ICB feed tank	-0.2 to 0.1 psig	B09-FIT-1307A/B/C/D	Continuous	SOP-Appendix 11	1	
					Level – ICB feed tank	0.5 – 5.5 ft	B09-LIC - 1303A/B/C/D	Continuous	SOP-Appendix 11	1	
					pH – ICB feed tank [c]	7.5 – 9.0	B09-AIC-1325A/B/C/D	Continuous	SOP-Appendix 11	1	
					Flow – steam to the ICB feed tank	0 – 550 lb/hr	B09-FIT-1319A/B/C/D	Continuous	SOP-Appendix 11	1	
					Level – ICB effluent tank	0.5-5.5 ft	B09-LIC-1512A/B/C/D	Continuous	SOP-Appendix 11	1	
					Pressure – ICB effluent tank	-8.3 to 5.5 in wc	B09-PIT-1511A/B/C/D	Continuous	Set point matrix	1	
					Temperature – ICB air blower header	95-210 ºF	B09-TIT-1361A/B/C/D	Continuous	SOP-Appendix 11	1	
					Pressure – ICB air blower header	2-8.7 psig	B09-PIC-1362A/B/C/D	Continuous	SOP-Appendix 11	1	
					Flowrate – Air in MW-B09-0x04 header	180 – 3400 scfm	B09-FIT-1366A/B/C/D	Continuous	SOP-Appendix 11	1	
					Flowrate – Air in MW-B09-0x03 header	180 – 3400 scfm	B09-FIT-1365A/B/C/D	Continuous	SOP-Appendix 11	1	
					Flowrate – Air in MW-B09-0x02 header	180 – 3400 scfm	B09-FIT-1364A/B/C/D	Continuous	SOP-Appendix 11	1	
					Flowrate – Air in MW-B09-0x01header	180 – 3400 scfm	B09-FIT-1363A/B/C/D	Continuous	SOP-Appendix 11	1	
					Pressure – ICB 0x01, compartment 1	-8 to 6 in w.c.	B09-PIT-1405A/B/C/D	Continuous	SOP-Appendix 11	1	
					~~Dissolved oxygen - ICB 0x01, compartment 1~~	~~2-4 mg/l~~	~~B09-AIT-1386A/B/C/D~~	~~Continuous~~	~~SOP-Appendix 11~~	~~1~~	
					Temperature – ICB 0x01, compartment 2	80-100 ºF	B09-TIT-1391A/B/C/D	Continuous	SOP-Appendix 11	1	
					Temperature – ICB 0x01, compartment 3	80-100 ºF	B09-TIT-1395A/B/C/D	Continuous	SOP-Appendix 11	1	
2 - Normal Operations	Record readings	CRO record readings on Control	CRS	ICB 0403 - Chamber 2	pH – probe 1 - high	<8.5	B04-AIT-1467D-A	Continuous	Set point matrix	1	Control room – N/A

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
	on form	Room Reading Sheets									
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0403- Chamber 2	Temperature – probe 1 – low/high	>80 ºF /<100ºF	B04-TIT-1467D-A	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0403 - Chamber 2	pH – probe 2 - low	>6.5	B04-AIT-1467D-B	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0403 - Chamber 2	pH – probe 2 - high	<8.5	B04-AIT-1467D-B	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0403 - Chamber 2	Temperature – probe 2 – low/high	>80 ºF /<100ºF	B04-TIT-1467D-B	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404 - Chamber 1	Temperature – probe 1 – low/high	>80 ºF /<100ºF	B04-TIT-1471D-A	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404 - Chamber 1	Temperature – probe 2 – low/high	>80 ºF /<100ºF	B04-TIT-1471D-B	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404 - Chamber 2	pH – probe 1 - low	>6.5	B04-AIT-1497D-A	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404 - Chamber 2	pH – probe 1 - high	<8.5	B04-AIT-1497D-A	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404- Chamber 2	Temperature – probe 1 – low/high	>80 ºF /<100ºF	B04-TIT-1497D-A	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404 - Chamber 2	pH – probe 2 - low	>6.5	B04-AIT-1497D-B	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404 - Chamber 2	pH – probe 2 - high	<8.5	B04-AIT-1497D-B	Continuous	Set point matrix	1	Control room – N/A
2 - Normal Operations	Record readings on form	CRO record readings on Control Room Reading Sheets	CRS	ICB 0404 - Chamber 2	Temperature – probe 2 – low/high	>80 ºF /<100ºF	B04-TIT-1497D-B	Continuous	Set point matrix	1	Control room – N/A
2 Normal Operations[b]	Review and record parameters from: Appendix 11 Appendix 12 Appendix 04 Notify CRS of out of range Adjust feed rate, aeration, pH and temperature as required.	CRS review Appendix 11 parameter values Plant operator record Appendix 12 and Appendix 04 parameter values	CRS Plant operator System engineer Plant operator	MT-B09-0101 - 0401 ICB Feed Tanks MW-B09-0101-0104 MW-B09-0201-0204 MW-B09-0301-0304 MW-B09-0401-0404 ICBs MT-B09-0102 - 0402 ICB Effluent Tanks	Pressure – ICB 0x02, compartment 1	-8 to 6 in w.c.	B09-PIT-1435A/B/C/D	Continuous	SOP-Appendix 11	1	Control Room personnel (e.g., System Engineer, CRO)– N/A Plant operator – face shield and gloves (leather or heat resistant)
					~~Dissolved oxygen - ICB 0x02, compartment 2~~	~~2-4 mg/l~~	~~B09-AIT-1416A/B/C/D~~	~~Continuous~~	~~SOP-Appendix 11~~	~~1~~	
					Temperature – ICB 0x02, compartment 2	80-100 ºF	B09-TIT-1421A/B/C/D	Continuous	SOP-Appendix 11	1	
					Temperature – ICB 0x02, compartment 3	80-100 ºF	B09-TIT-1425A/B/C/D	Continuous	SOP-Appendix 11	1	
					Pressure – ICB 0x03, compartment 1	-8 to 6 in w.c.	B09-PIT-1465A/B/C/D	Continuous	SOP-Appendix 11	1	
					~~Dissolved oxygen - ICB 0x03,~~	~~2-4 mg/l~~	~~B09-AIT-1446A/B/C/D~~	~~Continuous~~	~~SOP-Appendix 11~~	~~1~~	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
					~~compartment 2~~						
					Temperature – ICB 0x03, compartment 2	80-100 ºF	B09-TIT-1451A/B/C/D	Continuous	SOP-Appendix 11	1	
					Temperature – ICB 0x03, compartment 3	80-100 ºF	B09-TIT-1455A/B/C/D	Continuous	SOP-Appendix 11	1	
					Pressure – ICB 0x04, compartment 1	-8 to 6 in w.c.	B09-PIT-1495A/B/C/D	Continuous	SOP-Appendix 11	1	
					~~Dissolved oxygen - ICB 0x04, compartment 2~~	~~2-4 mg/l~~	~~B09-AIT-1476A/B/C/D~~	~~Continuous~~	~~SOP-Appendix 11~~	~~1~~	
					Temperature – ICB 0x04, compartment 2	80-100 ºF	B09-TIT-1481A/B/C/D	Continuous	SOP-Appendix 11	1	
					Temperature – ICB 0x04, compartment 3	80-100 ºF	B09-TIT-1485A/B/C/D	Continuous	SOP-Appendix 11	1	
					Concentration – hydrogen sulfide	0-5 ppm	B11-AIT-1722A/B/C/D	Continuous	SOP-Appendix 11	1	
					Temperature – inlet gas stream to the ICB offgas carbon filters	80-170 ºF	B11-TIC-1782A/B/C/D	Continuous	SOP-Appendix 11	1	
					Relative humidity – off-gas	<60%	B11-MT-1782A/B/C/D	Continuous	SOP-Appendix 11	1	
					High high level, ICB (measured in compartment 3)	10 ft	B09-LAHH-1406	Continuous	Permit – III.A.2 (Table III.A.2-1)	2	
2 Normal Operations[b]	Review and record parameters from: Appendix 11 Appendix 12 Appendix 04 Notify CRS of out of range Adjust feed rate, aeration, pH and temperature as required.	CRS review Appendix 11 parameter values Plant operator record Appendix 12 and Appendix 04 parameter values	CRS Plant operator System engineer Plant operator	MT-B09-0101 - 0401 ICB Feed Tanks MW-B09-0101-0104 MW-B09-0201-0204 MW-B09-0301-0304 MW-B09-0401-0404 ICBs MT-B09-0102 - 0402 ICB Effluent Tanks	Pressure – inlet to moisture separator	5-6 in w.c.	B09-PI-1530A/B/C/D	Every 4 hrs	SOP-Appendix 12	1	Control Room personnel (e.g., System Engineer, CRO)– N/A Plant operator – face shield and gloves (leather or heat resistant)
					Pressure drop across carbon filter 0x01	6-12 in w.c.	B11-PI-1751A/B/C/D	Every 4 hrs	SOP-Appendix 12	1	
					Pressure drop across carbon filter 0x02	6-12 in w.c.	B11-PI-1752A/B/C/D	Every 4 hrs	SOP-Appendix 12	1	
					~~Thiodiglycol (TDG)~~	~~TBD during pilot test~~	~~Determination of TDG, T-OH and Q-OH in Hydrolysate Matrix 24852-GPP-GGL-00114~~	~~Daily~~	~~SOP – Appendix 04~~	~~1~~	
					~~Dissolved oxygen concentration (DOC)~~	~~TBD during pilot test~~	~~Field Analysis Procedures 24852-GPP-GGL-NP005~~	~~Daily~~	~~SOP – Appendix 04~~	~~1~~	
					~~Total suspended solids (TSS)~~	~~TBD during pilot test~~	~~Determination of TSS, TDS and VSS in a Hydrolysate Matrix 24852-GPP-GGL-00106~~	~~Weekly~~	~~SOP – Appendix 04~~	~~1~~	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
					pH	7.5-8.5	Determination of pH 24852-GPP-GGL-NP005	Continuous	SOP – Appendix 04	1	
					Dissolved oxygen (DO)	1.51-8.49 mg/l	See above for instruments	Continuous	SOP – Appendix 04	1	
					~~Oxygen Uptake Rate (OUR)~~	~~TBD during pilot test~~	~~This is a standard test. The procedure will be selected prior to the surrogate test.~~	~~TBD during pilot test~~	~~SOP – Appendix 04~~	~~1~~	
					~~Total organic carbon (TOC)~~	~~TBD during pilot test~~	~~Determination of organic carbon in a hydrolysate matrix~~ ~~24852-GPP-GGL-00117~~	~~Daily~~	~~24852-SYS-STP-W0135 – Appendix 04~~	~~1~~	
					Flowrate – to ICB 0101-0104	Per System Engineer[d]	B09-FT-1350A/B/C/D	Continuous	SOP	1	
						>3.35 gpm	B09-FAL-1350A/B/C/D	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1350A/B/C/D	Continuous	Set point matrix	1	
2 Normal Operations[b]	Review and record parameters from: Appendix 11 Appendix 12 Appendix 04 Notify CRS of out of range Adjust feed rate, aeration, pH and temperature as required.	CRS review Appendix 11 parameter values Plant operator record Appendix 12 and Appendix 04 parameter values	CRS Plant operator System engineer Plant operator	MT-B09-0101 - 0401 ICB Feed Tanks MW-B09-0101-0104 MW-B09-0201-0204 MW-B09-0301-0304 MW-B09-0401-0404 ICBs MT-B09-0102 - 0402 ICB Effluent Tanks	Flowrate – to ICB 0201-0204	Per System Engineer[d]	B09-FAL-1351A/B/C/D	Continuous	SOP	1	BTS operator– face shield and gloves (leather or heat resistant)
						>3.35 gpm	B09-FAL-1351A/B/C/D	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1351A/B/C/D	Continuous	Set point matrix	1	
					Flowrate – to ICB 0301-0304	Per System Engineer[d]	B09-FAH-1352A/B/C/D	Continuous	SOP	1	
						>3.35 gpm	B09-FAL-1352A/B/C/D	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1352A/B/C/D	Continuous	Set point matrix	1	
					Flowrate – to ICB 0401-0404	Per System Engineer[d]	B09-FAH-1353A/B/C/D	Continuous	SOP	1	
						>3.35 gpm	B09-FAL-1353A/B/C/D	Continuous	Set point matrix	1	
						<6.7 gpm	B09-FAH-1353A/B/C/D	Continuous	Set point matrix	1	
2 Normal Operations[b]	**B.** Adjust air	Adjust aeration to maintain dissolved oxygen concentration	Plant Operator	~~MW-B09-0101 - 0401 ICB~~	~~Dissolved Oxygen, Compartment 1~~	~~≥ 2 mg/l~~	~~B09 –AIT-1386A/B/C/D~~	~~Continuous~~	~~SOP~~	~~1~~	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
						~~<1.5 mg/l~~	~~B09 –AAL-1386A/B/C/D~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
					~~Dissolved Oxygen, Compartment 2~~	~~≥ 2 mg/l~~	~~B09 –AIT-1392A/B/C/D~~	~~Continuous~~	~~SOP~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1392A/B/C/D~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
					~~Dissolved Oxygen, Compartment 3~~	~~≥ 2 mg/l~~	~~B09 –AIT-1396A/B/C/D~~	~~Continuous~~	~~SOP~~	~~1~~	
						~~<1.5 mg/l~~	~~B09 –AAL-1396A/B/C/D~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
				MW-B09-0102 - 0402 ICB	Dissolved Oxygen, Compartment 1	≥ 2 mg/l	B09 –AIT-1316A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1316A/B/C/D	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 2	≥ 2 mg/l	B09 –AIT-1322A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1322A/B/C/D	Continuous	Set point matrix	1	
2 Normal Operations[b]	**B.** Adjust air	Adjust aeration to maintain dissolved oxygen concentration	Plant Operator	MW-B09-0102 - 0402 ICB	Dissolved Oxygen, Compartment 3	≥ 2 mg/l	B09 –AIT-1326A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1326A/B/C/D	Continuous	Set point matrix	1	
				MW-B09-0103 - 0403 ICB	Dissolved Oxygen, Compartment 1	≥ 2 mg/l	B09 –AIT-1346A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1346A/B/C/D	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 2	≥ 2 mg/l	B09 –AIT-1352A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1352A/B/C/D	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 3	≥ 2 mg/l	B09 –AIT-1356A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1356A/B/C/D	Continuous	Set point matrix	1	
				MW-B09-0104 - 0404 ICB	Dissolved Oxygen, Compartment 1	≥ 2 mg/l	B09 –AIT-1376A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1376A/B/C/D	Continuous	Set point matrix	1	
					Dissolved Oxygen, Compartment 2	≥ 2 mg/l	B09 –AIT-1382A/B/C/D	Continuous	SOP	1	
						<1.5 mg/l	B09 –AAL-1382A/B/C/D	Continuous	Set point matrix	1	
					~~Dissolved Oxygen, Compartment 3~~	~~≥ 2 mg/l~~	~~B09 –AIT-1386A/B/C/D~~	~~Continuous~~	~~SOP~~	~~1~~	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
						~~<1.5 mg/l~~	~~B09 –AAL-1386A/B/C/D~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
2 Normal Operations(b)	**D.** Maintain temperature	Heating ICB contents (If required)	Plant Operator	MW-B09- ICB	ICB temperature	80-100ºF	B09-TIT-1491A/B/C/D	Continuous	SOP	1	
						80-100ºF	B09-TIT-1495A/B/C/D	Continuous	SOP	1	
				MW-B09-0x02 – 0x02 ICB	ICB temperature	80-100ºF	B09-TIT-1421A/B/C/D	Continuous	SOP	1	
						80-100ºF	B09-TIT-1451A/B/C/D	Continuous	SOP	1	
				MW-B09-0x03 – 0x03 ICB	ICB temperature	80-100ºF	B09-TIT-1451A/B/C/D	Continuous	SOP	1	
						80-100ºF	B09-TIT-1455A/B/C/D	Continuous	SOP	1	
				MW-B09-0x04 – 0x04 ICB	ICB temperature	80-100ºF	B09-TIT-1481A/B/C/D	Continuous	SOP	1	
						80-100ºF	B09-TIT-1485A/B/C/D	Continuous	SOP	1	
~~Operations in addition to SOP~~	~~**E.** Pilot test performance~~	~~Perform demonstrations required by the Pilot-Test Demonstration Test Plan (PTDP), 24852-GPP-GYPM-00006.~~	~~As specified in PTDP, LSAP, OMP, and Carbon Sampling Strategy – see Notes (e), (f), and (g)~~	~~Biotreatment System and Off-gas Treatment stem~~	~~TDG removal as measured by TDG concentration in BTA effluent~~	~~<0.1 wt% TDG[e]~~	~~N/A TDG laboratory analysis~~	~~Per 24852-GPP-GYPM-00006~~	~~24852-GPP-GYPM-00006~~	~~3~~	~~Control Room personnel (e.g., System Engineer, CRO) N/A~~ ~~Plant operator – face shield and gloves (leather or heat resistant)~~
					Butane activity	≤ 12	(g)	(g)	24852-GPP-GYPM-00006	1	
Operations in addition to SOP	Hydrogen sulfide concentration	N/A	CRO monitors	N/A	Hydrogen sulfide concentration	< 5 ppm	AIT-1722A/B/C/D	Continuous	Set point matrix	2	CRO – N/A
3 (SOP, Recirculation Mode)	**A**. Recirculation mode	Align valves Stop nutrient pumps Ensure pumps are running Record readings Maintain dissolved oxygen levels Maintain temperature ≥ 80 °F Control pH With direction from System Engineer stop recirculation mode	Plant Operator	MA-B09-0x01/0x02 ICB Air Blowers MT-B09-0101 – 0401 ICB Feed Tank MP-B09-0101 - 0401 ICB Feed Pump MW-B09-0x01 – 0x04 ICB MT-B09-0102 - 0402 ICB Effluent Tank MP-B09-0102 - 0402 ICB Effluent Pump MP-B09-0x04 and 0x05, Nutrient pumps	Dissolved oxygen	See above	See above	Continuous	SOP	See above	Plant operator – face shield and gloves (leather or heat resistant)

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Requirements	Response Level	Required PPE
					pH, Compartment 1	See above	See above	Continuous	SOP Permit – III.B.3.d	See above	
					High high level, ICB Feed Tank	See above	See above	Continuous	Permit – III.A.2 (Table III.A.2-1)	See above	
					High high level, ICB (measured in compartment 3)	See above	See above	Continuous	Permit – III.A.2 (Table III.A.2-1)	See above	
					High high level, ICB Effluent Tank	See above	See above	Continuous	Permit – III.A.2 (Table III.A.2-1)	See above	
5 (SOP, Off-Gas Filter Carbon Replacement)	**A.** Isolate lead filter while maintaining flow to lag filter and change carbon in isolated filter	Align valves Verify pressure differential acceptable on filter receiving off-gas flow Open hatches - direct vendor to replace carbon Close hatches Align valves for new lead-lag configuration Verify pressure differential	Plant Operator	MK-B11-0101/0102 ICB Off-gas Carbon Filter 1 and 2	Pressure differential across filter	6-12 in w.c.	B11-PDI-1751A B11-PDI-1752A	Every 4 hours	SOP – Appendix 12	1	Plant operator – gloves (leather)
6 (SOP, ICB Air Scouring)	**A.** Scour ICB compartment(s) to remove excessive solids build-up on packing	Stop recycle pump Align valves Adjust each diffuser (< 900 scfm) to each header for Compartment 1 Scour for ≈ 30 minutes Repeat for other two compartments as necessary Return to pre-scour air flow to each compartment Start recycle pump Monitor dissolved oxygen Record readings (Appendix 06) Repeat if directed by System Engineer	CRO Plant Operator System Engineer	MP-B09-0111 – 0114 MP-B09-0211 – 0214 MP-B09-0311 – 0314 MP-B09-0411 – 0414 ICB Recycle Pumps MW-B09-0101 – 0104 MW-B09-0201 - 0204 MW-B09-0301 - 0304 MW-B09-0401 - 0404 ICBs	ICB pressure	-8.0 to +6.0 in WC	See above	Continuous	SOP – Appendix 12	1	Control Room personnel (e.g., System Engineer, CRO) – N/A Plant operator – gloves (leather)
					Vent header pressure	-0.3 to 0.2 psig	B11-PIC-1505A/B/C/D	Continuous	24852-SOP-B09-W0001	1	

~~General Notes:~~

1. ~~Per the PTDP (24852-GPP-GYPM-00006), OTS COPC sampling will be done before, between, and downstream of filter units per the *Laboratory Sampling and Analysis Plan for Pilot Test Phase Operations* (LSAP), 24852-GPP-GGL-00013. Odor monitoring will be performed in accordance with the Odor Monitoring Plan for Pilot Test Phase Operations (OMP), 24852-GPP-GGG-V0018. The performance criteria is: no odor detections at the action level at the fence line and COPCs within Multiple Pathway Health Risk Assessment (MPHRA) thresholds.~~
2. ~~Per the PTDP (24852-GPP-GYPM-00006), OTS carbon sampling to occur (baseline and periodic sampling with analysis) per Carbon Sampling Strategy, 24852-30H-000-W0004. Butane activity ≤ 12 corresponds to 50% carbon loading.~~
3. ~~Permit, Attachment D, Waste Analysis Plan (WAP), Section D-2b(c) as proposed in Mod #64; the performance goals for the biodegradation process are achieving greater than 95 percent and a target of at least 98 percent removal of the agent hydrolysate product TDG. Sampled twice per week from ICB effluent tank per the WAP.~~

BIOTREATMENT (BTA) AMD BIOREACTOR OFF-GAS TREATMENT – B09/B11

Notes:

a. The startup of the modules in the BTS and BOTS is performed in accordance with Biotreatment Area Risk Reduction TDG Surrogate Test 3 Biotreatment (B09) and Bioreactor Off-Gas Treatment (B11) Startup - Rev 000 – Feb 1, 2016 and is a prerequisite to implementation of 24852-SOP-B09-W0001, Biotreatment and Off-gas Treatment, Rev A-001, 11/5/2015. Current plans are to convert Biotreatment Area Risk Reduction TDG Surrogate Test 3 Biotreatment (B09) and Bioreactor Off-Gas Treatment (B11) Startup to a SOP after the surrogate test is completed. The operation numbers presented above correspond to the operation numbers in these documents. The PPE listed is that identified in the SOP (i.e., PPE was not specifically identified in the STP, so that PPE listed in the SOP is presented in the Startup rows). The appendices referenced above correspond to those incorporated in 24852-SYS-STP-W0135 or 24852-SOP-B09-W0001.

b. For the purpose of this compliance table, it is assumed that the module has been started and is operating based on procedure 24852-SYS-STP-W0135, at a hydrolysate feed rate of ≤ 1,481 lb. TDG/module/day ~~approximately 6 gpm~~ and an acceptable rate of TDG removal.

c. In Mod #48, PCAPP has proposed changes to Permit Condition III.B.3.d. The normal pH for the hydrolysate entering the ICB feed tanks is greater than or equal to 10. The normal operating range for the pH in the feed tanks AIT-1325A/B/C/D is 7 to 9.5 as established by the alarm set points in the set point matrix with a proposed permit range of 5 to 12 to allow for temporary process excursions. The normal operating range in the ICBs is 6.5 to 8.5 as established by the alarm set points in the set point matrix with a proposed permit range of 5 to 10 to allow for temporary process excursions. ~~The values in the table will be finalized after the pilot test.~~

d. Hydrolysate dilution ratio at normal rate is 1:8 (1 part raw hydrolysate: 7 parts process water) and normal feed flow is 6.0 gpm. Actual dilution ratio and feed rate will be directed by the System Engineer.

~~e. The target for TDG removal is ≥ 95%. However, as described in the PTDP (24852-GPP-GYPM-00006), if the system is demonstrating stable operations with TDG removal resulting in maximum effluent concentrations of 0.1 wt% (corresponding to ≥ 86% removal at a feed concentration of 7000 mg/L), BTA effluent satisfies permit requirements for transfer to the brine concentrator feed tanks, and if the Joint Test Group (JTG) determines operational enhancements are not available to improve performance, pilot testing will proceed. Stability will be demonstrated with daily TDG sampling of the feed and effluent streams.~~

~~f. Per the PTDP (24852-GPP-GYPM-00006), OTS COPC sampling will be done before, between, and downstream of filter units per the *Laboratory Sampling and Analysis Plan for Pilot Test Phase Operations* (LSAP), 24852-GPP-GGL-00013. Odor monitoring will be performed in accordance with the Odor Monitoring Plan for Pilot Test Phase Operations (OMP), 24852-GPP-GGG-V0018. The performance criteria is: no odor detections at the action level at the fence line and COPCs within Multiple Pathway Health Risk Assessment (MPHRA) thresholds.~~

~~g. Butane activity will be monitored as described in the White Paper on Carbon Sampling Strategy – 24852-30H-000-W0004~~

~~h.~~e. TDG removal will be monitored daily based on the results of the TDG testing listed in Appendix 04.

L – 10 - BRINE REDUCTION SYSTEM COMPLIANCE TABLE (B12)

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MP-B12-0001 BC Evaporator Feed Pump	Seal water reservoir pressure	75-100 psig	B12-PAL-2154	Continuous	SOP-Operation 2, P&ID 24852-RD-M6-B12-M0023	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
					Seal water reservoir pressure	>40 psig	B12-PAL-2154	Continuous	Set point matrix	1	
					Seal Water reservoir level	Greater than contact	B12-LAL-2156	Continuous	SOP-Operation 2	1	
				MP-B12-0002 BC Evaporator Recirculation Pump	Seal water reservoir pressure	75-100 psig	B12-PAL-2158	Continuous	SOP-Operation 2, P&ID 24852-RD-M6-B12-M0023	1	
					Seal water reservoir pressure	>40 psig	B12-PAL-2158	Continuous	Set point matrix	1	
					Seal Water reservoir level	Greater than contact	B12-LAL-2160	Continuous	SOP-Operation 2	1	
					Recirculation pump motor current	25-95% FLA	B12-IT-1898	Continuous	SOP-Appendix 3	1	
						>25% FLA	B12-IAL-1898	Continuous	Set Point Matrix~~PTDP Table A4B-2~~	1	
						<95% FLA	B12-IAH-1898	Continuous	Set Point Matrix ~~PTDP Table A4B-2~~	1	
				MP-B12-0004 BC Vapor Washer Recirculation Pump	Seal water reservoir pressure	75-100 psig	B12-PAL-2162	Continuous	SOP-Operation 2, P&ID 24852-RD-M6-B12-M0023	1	
					Seal water reservoir pressure	>40 psig	B12-PAL-2162	Continuous	Set point matrix	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
					Seal Water reservoir level	Greater than contact	B12-LAL-2164	Continuous	SOP-Operation 2	1	
				MP-B12-0005 Crystallizer Feed Pump	Seal water reservoir pressure	75-100 psig	B12-PAL-2166	Continuous	SOP-Operation 2, P&ID 24852-RD-M6-B12-M0023	1	
					Seal water reservoir pressure	>40 psig	B12-PAL-2166	Continuous	Set point matrix	1	
					Seal Water reservoir level	Greater than contact	B12-LAL-2168	Continuous	SOP-Operation 2	1	
				MP-B12-0006 Crystallizer Recirculation Pump	Seal water reservoir pressure	75-100 psig	B12-PAL-2170	Continuous	SOP-Operation 2, P&ID 24852-RD-M6-B12-M0023	1	
					Seal water reservoir pressure	>40 psig	B12-PAL-2170	Continuous	Set point matrix	1	
					Seal Water reservoir level	Greater than contact	B12-LAL-2172	Continuous	SOP-Operation 2	1	
				MP-B12-0008A Belt Filter Feed Pump	Seal water reservoir pressure	~~75-100~~ >40 psig	B12-PAL-2174	Continuous	Set Point Matrix~~SOP-Operation 2, P&ID 24852-RD-M6-B12-M0023~~	1	
					~~Seal water reservoir pressure~~	~~>40 psig~~	~~B12-PAL-2173~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
					Seal Water reservoir level	Greater than contact	B12-LAL-2176	Continuous	SOP-Operation 2	1	
				MP-B12-0008B Belt Filter Feed Pump	Seal water reservoir pressure	>40 psig	B12-PAL-2178	Continuous	Set Point Matrix	1	
					Seal Water reservoir level	Greater than contact	B12-LAL-2180	Continuous	SOP-Operation 2	1	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MT-B12-0001 BC Evaporator Feed Tank	Level	45-65%	B12-LIC-1801	4 hour intervals	SOP - Appendix 4	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
					Low low level alarm	>2.19 ft	B12-LALL-1801	Continuous	SOP – Operation 2	2	
						>1.25 ft 23%	B12-LIT-1801	Continuous	Setpoint matrix	2	
					Low level alarm	>3.70 ft	B12-LAL-1801	Continuous	SOP – Operation 2	1	
						>2.8 ft 45%	B12-LIT-1801	Continuous	Setpoint matrix	1	
					High level alarm	<5.22 ft	B12-LAH-1801	Continuous	SOP – Operation 2	1	
						<4.35 ft 65%	B12-LIT-1801	Continuous	Setpoint matrix	1	
					High high level alarm	<6.35 ft	B12-LAHH-1801	Continuous	SOP – Operation 2	2	
						<5.52 ft 80%	B12-LIT-1801	Continuous	Setpoint matrix	2	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
					pH	4.5-6	B12-AIT-1803	Continuous	Set Point Matrix~~PTDP-Table A4B-2~~	1	
					Low low pH alarm	>4.0	B12-ASLL-1803	Continuous	Set Point Matrix~~PTDP-Table A4B-2~~	2	
					Low pH alarm	>4.5	B12-ASL-1803	Continuous	Set Point Matrix~~PTDP-Table A4B-2~~	1	
					High pH alarm	<6	B12-ASH-1803	Continuous	Set Point Matrix~~PTDP-Table A4B-2~~	1	
					High high pH alarm	<7	B12-ASHH-1803	Continuous	Set Point Matrix~~PTDP-Table A4B-2~~	2	
					Organic vapor pressure	76.6 kPa	Calculation[b]	Permit Condition III.M.1.b.i. ~~Annual calculation~~[b]	Permit condition II~~V~~.M.1.a.i	1	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MP-B12-0010A/B BC Evaporator Acid metering pump	Flow – acid to BC evaporator feed tank	Set by pH controller AIC-1803	B12-FFIC-1800	N/A[c]	SOP-Operation 2	1	
				~~MP-B12-0014A/B~~ ~~BC Evaporator Anti-scalant metering pump~~	~~Flow - antiscalant~~	~~Anti-scalant/feed ratio TBD during pilot test~~[d]	~~B12-SIT-1806A/B~~	~~N/A~~[e]	~~PTDP-Table A4B-2~~	~~1~~	
				MV-B12-0002 BC Evaporator	Level	28-78%	B12-LIC-1816A/B	Continuous	SOP – Appendix 4	1	
					Level	28-78%	B12-LIC-1816	Continuous	SOP – Appendix 4	1	
					Low low level alarm	>11%	B12-LALL-1816	Continuous	SOP – Operation 2	2	
						>-63.76 in H_2O 11%	B12-LIT-1816	Continuous	Set point matrix	2	
					Low level alarm	>28%	B12-LAL-1816	Continuous	SOP – Operation 2	1	
						>-49.48 in H_2O 28%	B12-LIT-1816	Continuous	Set point matrix	1	
					High level alarm	<78%	B12-LAH-1816	Continuous	SOP – Operation 2	2	
						<-7.48 in H_2O 78%	B12-LIT-1816	Continuous	Set point matrix	2	
					High high level alarm	<89%	B12-LAHH-1816	Continuous	SOP – Operation 2	2	
						<1.76 in H_2O 89%	B12-LIT-1816	Continuous	Set point matrix	2	
					Recirculation loop temperature	203-230ºF	B12-TI-1893	Continuous	SOP-Appendix 4		
						>203ºF	B12-AL-1893	Continuous	Set Point Matrix~~PTDP-Table A4B-2~~	1	
						<230ºF	B12-TAH-1893	Continuous	Set Point Matrix~~PTDP-Table A4B-2~~	1	
					Pressure - BC Evaporator	-12.4 to 15 psig	B12-PIT-1890	Continuous	~~PTDP-Table A4B-2~~ Permit condition III.F.9	1	
~~2~~	~~System Startup~~	~~Start flow to pump seals~~ ~~Start pumps~~ ~~Fill BC Evaporator~~ ~~Fill Crystallizer~~ ~~Fill Vapor Washer~~ ~~Start BRS OTS~~ ~~Heat Evaporator and Crystallizer~~ ~~Prepare sumps~~ ~~Start Distillate Carbon~~ ~~Start BC Evaporator Compressor~~ ~~Control Evaporator and Crystallizer pressures~~ ~~Set condenser cooling water outlet temperatures~~ ~~Start BRS Belt Filter~~	~~Plant Operator-open valves, take readings~~ ~~BRS-CRO-follow steps~~	~~MP-B12-0015A/B~~ ~~BC Evaporator caustic metering pump~~	~~Flow~~	~~Caustic/feed ratio TBD during pilot test~~[f]	~~B12-FFIC-1807~~	~~N/A~~[g]	~~SOP-Operation 2~~	~~1~~	~~Operator - Leather Gloves, Safety Glasses, and Hearing Protection~~ ~~CRO – N/A control room~~
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon	Plant Operator-open valves, take readings BRS-CRO-follow steps	MV-B12-0002 BC Evaporator	Rate of foam generation	Under control	Visual	4 hours	SOP-Operation 2	2	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter									
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	ME-B12-0001A/B/C/D/E/F/G/H/I/J BC Feed Preheaters	Flow rate from preheaters to BRS Distillate Cooler	75-180 gpm	B12-FIT-1814	Continuous	Set Point Matrix	1	
					~~Flow rate to preheaters from BC Evaporator feed tank~~	~~TBD during pilot testing~~	~~B12-FIT-1806~~	~~Continuous~~	~~PTDP Table A4B-2~~	~~1~~	
					Preheater outlet low low flow rate	>75 gpm	B12-FALL-1814	Continuous	Set Point Matrix	1~~2~~	
					Preheater outlet low flow rate	>80 gpm	B12-FAL-1814	Continuous	Set Point Matrix	1	
					Preheater outlet high flow rate	<180 gpm	B12-FAH-1814	Continuous	Set Point Matrix	1	
					Preheater outlet Inlet temperature	<148ºF	B12-TIT-1813	Continuous	SOP - Appendix 4	1	
					Preheater outlet Inlet high temperature	<148°F	B12-TSH-1813	Continuous	Set point matrix	1	
					Temperature of preheater feed	30-170°F	B12-TIT-1813	Continuous	SOP – Appendix 3	1	
					Feed low low temperature	>20°F	B12-TSLL-1810	Continuous	SOP – Appendix 3, 4	2	
					Feed low temperature	>30°F	B12-TSL-1810	Continuous	Set Point matrix	1	
					Feed high temperature	<170°F	B12-TSH-1810	Continuous	Set Point matrix	1	
					Feed high high temperature	<180°F	B12-TSHH-1810	Continuous	Set Point matrix	2	
					Temperature of preheater discharge	177-217°F	B12-TIT-1811	Continuous	SOP – Appendix 3	1	
					Outlet low temperature	>177°F	B12-TSL-1811	Continuous	Set Point matrix	1	
					Outlet high temperature	<217°F	B12-TSH-1811	Continuous	Set Point matrix	1	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MV-B12-0005 Crystallizer	Rate of foam generation	Under control	Visual	4 hours	SOP-Operation 2	2	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MT-B12-0004 Crystallizer Feed Tank	Level	39-72%	B12-LIT-1946	Continuous	SOP - Appendix 3	1	
					Low low level alarm	>52.4 in H_2O 22%	B12-LALL-1946	Continuous	Set point matrix	2	
					Low level alarm	>89.8 in H_2O 39%	B12-LAL-1946	Continuous	Set point matrix	1	
					High level alarm	<162.4 in H_2O 72%	B12-LAH-1946	Continuous	Set point matrix	1	
					High high level alarm	<171.2 in w.c. <76%	B12-LAHH-1946	Continuous	Set point matrix	2	
					~~Recirc Pump motor high current~~	~~<90% FLA~~	~~B12-ISH-1971~~	~~Continuous~~	~~PTDP Table A4B-2~~	~~1~~	
					~~Flow rate – feed to crystallizer feed tank~~	~~TBD during pilot test~~	~~B12-FIT-1945~~	~~Continuous~~	~~PTDP Table A4B-2~~	~~1~~	

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	~~MP-B12-0016A/B Crystallizer caustic metering pump~~	~~Flow – caustic to crystallizer~~	~~Caustic/feed ratio~~ ~~TBD during pilot test[(i)]~~	~~B12-FFIC-1945~~	~~N/A[(j)]~~	~~SOP-Operation 2~~	~~1~~	~~Operator - Leather Gloves, Safety Glasses, and Hearing Protection~~ ~~CRO – N/A control room~~
				MV-B12-0005 Crystallizer	Level	35-84%	B12-LIC-1960A/B	Continuous	Permit condition III.F.9	1	
					Level	46-76%	B12-LIC-1960	Continuous	SOP - Appendix 4	1	
					Low low level alarm	>35%	B12-LSLL-1960	Continuous	Set Point Matrix~~PTDP Table A4B-2~~	2	
					Low level alarm	>46%	B12-LSL-1960	Continuous	Set Point Matrix~~PTDP Table A4B-2~~	1	
					High level alarm	<76%	B12-LSH-1960	Continuous	Set Point Matrix~~PTDP Table A4B-2~~	1	
					High high level alarm	<84%	B12-LSHH-1960	Continuous	Set Point Matrix~~PTDP Table A4B-2~~	2	
					Crystallizer pressure	-12.4 to 15 psig	B12-PIT-1962	Continuous	Permit condition III.F.9 ~~PTDP Table A4B-2~~	1	
					Crystallizer discharge temp	212-230.5ºF	B12-TIT-1961	Continuous	Permit condition III.F.9 ~~PTDP Table A4B-2~~	1(h~~k~~)	
				MV-B12-0004 BC Evaporator Vapor Washer	Level	83%	B12-LIT-1902	Continuous	Set point matrix	1	
					Low low level alarm	>-33.40 in H_2O 8%	B12-LALL-1902	Continuous	Set point matrix	2	
					Low level alarm	>-29.90 in H_2O 21%	B12-LAL-1902	Continuous	Set point matrix	1	
					High level alarm	<-19.95 in H_2O 58%	B12-LAH-1902	Continuous	Set point matrix	1	
					High high level alarm	<-13.22 in H_2O 83%	B12-LAHH-1902	Continuous	Set point matrix	2	
					Conductivity	<15,000 µS/cm	B12-CAH-1901	Continuous	Set Point Matrix~~PTDP Table A4B-2~~	1	
					Mesh pad differential pressure	<2 in w.c.	B12-PDIT-1900	Continuous	SOP-Appendix 4	1	
						<2 in w.c.	B12-PDAH-1900	Continuous	Set point matrix	1	
						<4 in w.c.	B12-PDAHH-1900	Continuous	Set point matrix	1	
				MA-B12-0001 BRS OTS Fan	~~Pressure~~	~~TBD during pilot testing[(l)]~~	~~B12-PIC-2045~~	~~Continuous~~	~~PTDP Table A4B-2~~	~~1~~	
					Motor current	<95%	B12-IT-2045	Continuous	SOP - Appendix 4	1	
						<95%	B12-ISH-2045	Continuous	SOP - Appendix 4	1	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	ME-B12-0005 Crystallizer surface condenser	BRS - crystallizer surface condenser discharge – temperature – high high	<140ºF	B12-TIT-1987	Continuous	Set point matrix	3	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	ME-B12-0005 Crystallizer surface condenser	Temperature	95-125ºF	B12-TIC-1987	Continuous	SOP - Appendix 4	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
						~~>80ºF~~	~~B12-TALL-1987~~	~~Continuous~~	~~SOP – Operation 2~~	~~1~~	
						~~>95ºF~~	~~B12-TAL-1987~~	~~Continuous~~	~~SOP – Operation 2~~	~~1~~	
						<125ºF	B12-TAH-1987	Continuous	SOP – Operation 2	1	
						<140ºF	B12-TAHH-1987	Continuous	SOP – Operation 2	3	
				MT-B12-0003 BC Evaporator Distillate Tank	Level	21-64%	B12-LIT-1880	Continuous	SOP - Appendix 4	1	
					Low low level alarm	>-4.90 ft	B12-LALL-1880	Continuous	SOP – Operation 2	1	
						>-51.89 in H_2O 0%	B12-LIT-1880	Continuous	Set point matrix	1	
					Low level alarm	>-3.97 ft	B12-LAL-1880	Continuous	SOP – Operation 2	1	
						>-40.74 in H_2O 21%	B12-LIT-1880	Continuous	Set point matrix	1	
					High level alarm	<-2.06 ft	B12-LAH-1880	Continuous	SOP – Operation 2	1	
						<-17.90 in H_2O 64%	B12-LIT-1880	Continuous	Set point matrix	1	
					High high level alarm	<-1.13 ft	B12-LAHH-1880	Continuous	SOP – Operation 2	2	
						<-6.75 in H_2O 85%	B12-LIT-1880	Continuous	Set point matrix	2	
					Conductivity	<1500 µS/cm	B12-CIC-1873	Continuous	~~PTDP-Table A4B-2~~ Permit Condition III.F.9	1	
						<1500 µS/cm	B12-CAHH -1873	Continuous	~~PTDP-Table A4B-2~~Set Point Matrix	2	
				MT-B12-0009 BRS Distillate Carbon Filter Feed Tank	Level	20-71%	B12-LIT-2020	Continuous	SOP - Appendix 4	1	
					Low low level alarm	>1.18 ft	B12-LALL-2020	Continuous	SOP – Operation 2	1	
					Low level alarm	>14.04 in H_2O 15%	B12-LIT-2020	Continuous	Set point matrix		
						>1.58 ft	B12-LAL-2020	Continuous	SOP – Operation 2	1	
					High level alarm	>18.72 in H_2O 20%	B12-LIT-2020	Continuous	Set point matrix		
						<5.59 ft	B12-LAH-2020	Continuous	SOP – Operation 2	1	
						<66.46 in H_2O 71%	B12-LIT-2020	Continuous	Set point matrix		
					High high level alarm	<6.78 ft	B12-LAHH-2020	Continuous	SOP – Operation 2	2	
					pH	<80.5 in H_2O 86%	B12-LIT-2020	Continuous	Set point matrix	2	
						6.0-8.8	B12-AIC-2025A/B	Continuous	Permit condition III.F.9	1	
					pH – low low	>5.5	B12-AALL-2025	Continuous	~~PTDP-Table A4B-2~~Set Point Matrix	2	
					pH - low	>6.0	B12-AAL-2025	Continuous	~~PTDP-Table A4B-2~~Set Point Matrix	1	
					pH-high	<8.8	B12-AAH-2025	Continuous	~~PTDP-Table A4B-2~~Set Point Matrix	1	
					pH-high high	<9.1	B12-AAHH-2025	Continuous	~~PTDP-Table A4B-2~~Set Point Matrix	2	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling	Plant Operator-open valves, take readings BRS-CRO-follow steps	MC-B12-0001 BC Evaporator Vapor Compressor	Lube oil temperature	70-130ºF	B12-TI-1929	Prior to starting compressor	SOP-operation 2	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		water outlet temperatures Start BRS Belt Filter									
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MC-B12-0001 BC Evaporator Vapor Compressor	Lube oil pressure	>17 psig	B12-PI-1954	Prior to starting compressor	SOP-operation 2	1	
					Lube oil filter pressure dropp	<20 psig	B12-PDSH-1953	Prior to starting compressor	SOP-operation 2	1	
					Lube oil cooler outlet temperature	<130°F	B12-TI-1934	Continuous	SOP – Appendix 4	1	
					Lube oil cooler outlet high high temp	<180°F	B12-TSHH-1934	Continuous	Set Point Matrix	1	
					Impeller side bearing temperature	58-176°F	B12-TI-1936	Continuous	SOP – Appendix 4	1	
					Impeller side bearing low temperature	>58°F	B12-TSL-1936	Continuous	Set Point Matrix	1	
					Impeller side bearing low temperature	>58°F	B12-TSL-1936	Continuous	Set Point Matrix	1	
					Impeller side bearing high temperature	<176°F	B12-TSH-1936	Continuous	Set Point Matrix	1	
					Impeller side bearing high high temp	<194°F	B12-TSHH-1936	Continuous	Set Point Matrix	1	
					Radial bearing temperature	58-176°F	B12-TI-1937	Continuous	SOP – Appendix 4	1	
					Radial bearing low temperature	>58°F	B12-TSL-1937	Continuous	Set Point Matrix	1	
					Radial bearing high temperature	<176°F	B12-TSH-1937	Continuous	Set Point Matrix	1	
					Radial bearing high high temperature	<194°F	B12-TSHH-1937	Continuous	Set Point Matrix	1	
					Axial bearing temperature	58-176°F	B12-TSL-1938	Continuous	SOP – Appendix 4	1	
					Axial bearing low temperature	>58°F	B12-TSL-1938	Continuous	Set Point Matrix	1	
					Axial bearing high temperature	<176°F	B12-TSH-1938	Continuous	Set Point Matrix	1	
					Axial bearing high high temperature	<194°F	B12-TSHH-1938	Continuous	Set Point Matrix	1	
					Vapor compressor current	<95% FLA	B12-IT-1917	Continuous	SOP - Appendix 4	1	
					Vapor compressor fan outlet temp.	<285°F	B12-TI-1913	Continuous	SOP - Appendix 4	1	
					Fan outlet high temperature	<285°F	B12-TSH-1913	Continuous	SOP - Appendix 4	1	
					Fan outlet high high temperature	<302°F	B12-TSHH-1913	Continuous	Set point matrix	1	
				MV-B12-0002 BC Evaporator	BC evaporator heater (shell side) pressure	0-8 psig	B12-PIC-1897	Continuous	Permit condition III.F.9	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
						>0 psig	B12-PALL-1897	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
						>1.8 psig	B12-PAL-1897	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
						<5.8 psig	B12-PAH-1897	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
						<8. psig	B12-PAHH-1897	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	2	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MV-B12-0002 BC Evaporator	Evaporator degrees of superheat	5-18ºF	B12-TIC-1896	Continuous	SOP-Appendix 4	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MV-B12-0002 BC Evaporator	Evaporator degrees of superheat	>2ºF	B12-TALL-1896	Continuous	Set point matrix	1	
						>5ºF	B12-TAL-1896	Continuous	Set point matrix	1	
						<18ºF	B12-TAH-1896	Continuous	Set point matrix	1	
						<25ºF	B12-TAHH-1896	Continuous	Set point matrix	1	
					Conductivity	<15,000 µS/cm	B12-CAH-1901	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	2	
					TSS	<1%	Grab sample 24852-GPP-GGL-00106	Initially – hourly, decrease frequency based on experience	~~PTDP – Appendix A4B – Section 2.5~~ LSAP – Appendix B – Sampling and Analyses for the BTA	1	
					TDS	<13%[p]	Grab sample 24852-GPP-GGL-00106	Initially – hourly, decrease frequency based on experience	LSAP – Appendix B – Sampling and Analyses for the BTA	1	
				ME-B12-0005 Crystallizer surface condenser	Temperature	95-125ºF	B12-TIC-1990	Continuous	SOP-Appendix 4	1	
						~~>80ºF~~	~~B12-TALL-1990~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
						~~>95ºF~~	~~B12-TAL-1990~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
						<125ºF	B12-TAH-1990	Continuous	Set point matrix	1	
						<140ºF	B12-TAHH-1990	Continuous	Set point matrix	2	
				MV-B12-0005 Crystallizer	Total suspended solids	15-27%	Grab sample 24852-GPP-GGL-00106	Initially – every 4 hours, decrease frequency to once per shift	~~PTDP – Appendix A4B – Section 2.5~~ LSAP – Appendix B – Sampling and Analyses for the BTA	1	
						25%	Grab samples	Initial – 4 hours Later – once per shift	SOP-Operation 2	1	
				MV-B12-0001 BC Evaporator Feed Dearator	Pressure	0.6 to 3.5 psig	B12-PIC-1884	Continuous	Permit condition III.F.9	1	
					Deaerator low low pressure	>0.6 psig	B12-PALL-1884	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
					Deaerator low pressure	>1.5 psig	B12-PAL-1884	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
					Deaerator high pressure	<3.0 psig	B12-PAH-1884	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
					Deaerator high high pressure	<3.5 psig	B12-PAHH-1884	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	2	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MT-B12-0007 BRS Sulfuric Acid Tank	Level	21-89%	B12-LIT-02074	Continuous	SOP – Appendix 3	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS	Plant Operator-open valves, take readings BRS-CRO-follow steps	MT-B12-0007 BRS Sulfuric Acid Tank	Low level alarm	>1.48 ft	B12-LAL-2074	Continuous	Set point matrix	1	
					High level alarm	<4.66 ft	B12-LAH-2074	Continuous	Set point matrix	1	
					High high level alarm	<4.89 ft	B12-LAHH-2074	Continuous	Set point matrix	1	
					~~Feed Flow~~	~~TBD during pilot testing~~	~~B12-FIT-1945~~	~~Continuous~~	~~PTDP Table A4B-2~~	~~1~~	
				ME-B12-0007	Relative humidity – feed to BRS OTS	35-55%	B12-MIC-2046	Continuous	Permit condition III.F.9	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter		BRS OTS Heater	carbon						
					Relative Humidity low alarm	>35%	B12-MAL-2046C	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
					Relative Humidity high alarm	<55%	B12-MAH-2046C	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	1	
				ME-B12-0003 BRS Distillate Cooler	Distillate cooler outlet temperature	80-120ºF	B12-TIC-1871	Continuous	Permit condition III.F.9 ~~PTDP Table A4B-2~~	1	
					Distillate cooler outlet conductivity	<1500 µS/cm	B12-CAHH-1873	Continuous	~~PTDP Table A4B-2~~Set Point Matrix	2	
				MK-B12-0002A/B/C BRS Distillate Carbon Filters	Flowrate to individual filters	80-450 gpm	B12-FIT-2030A/B/C	Continuous	Set Point Matrix	1	
					Flowrate to filters low	>80 gpm	B12-FAL-2030 A/B/C	Continuous	Set Point Matrix	1	
					Flowrate to filters high	<450 gpm	B12-FAH-2030 A/B/C	Continuous	Set Point Matrix	1	
					Differential pressure across individual filters	<6 psid	B12-PDIT-2033 A/B/C	Continuous	Permit condition III.F.11 Set Point Matrix	1	
						<6 psid	B12-PDAH-2033 A/B/C	Continuous	Permit condition III.F.11 Set Point Matrix	1	
					Pressure of feed to all distillate carbon filters	5-120 psig	B12-PIT-2041	Continuous	SOP – Appendix 4	1	
					Pressure of feed to all distillate carbon filters - low	>5 psi	B12-PAL-2041	Continuous	SOP – Appendix 4	1	
					Pressure of feed to all distillate carbon filters – low	<120 psi	B12-PAH-2041	Continuous	SOP – Appendix 4	1	
					Flow rate	Bump = 385 gpm	B12-FIC-2038	Continuous	Permit condition III.F.9	1	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	ML-B12-0001 BRS Belt Filter	BRS belt filter pressure transmitter	<75 psig	B12-PIT-2001	Continuous	SOP – Appendix 4	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
					BRS belt filter pressure low	>75 psig	B12-PSL-2001	Continuous	Set point matrix	1	
					BRS belt filter pressure low low	>40 psig	B12-PSLL-2001	Continuous	Set point matrix	1	
					BRS belt filter pressure transmitter	<40 psig	B12-PIT-2002	Continuous	SOP – Appendix 4	1	
					Pressure transmitter high	<40 psig	B12-PSH-2002	Continuous	SOP – Appendix 4	1	
					Instrument air pressure for BRS filter	>55 psig	B12-PIT-2003		SOP – Appendix 4	1	
					Instrument air to pressure filter low	>55 psig	B12-PSL-2003	Continuous	SOP – Appendix 4	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
				MK-B12-0001A/B/C BRS OTS carbon filters	~~Inlet pressure to BRS OTS entrainment separator~~	~~TBD during pilot testing~~	~~B12-PIT-2045~~	~~Continuous~~	~~PTDP Table A4B-2~~	~~1~~	
					Filter differential high pressure	<1 psid	B12-PDSH-2053 A/B/C	Continuous	Permit condition III.F.9 ~~PTDP Table A4B-2~~	1	
					Butane number for deepest bed	≥12	Carbon samplers	30 on-line days first 120 on-line days, 90 days thereafter	White Paper on Carbon Sampling	1	
				MT-B12-0018 BRS Belt Filter Area Sump	Belt filter area sump level	19-98%	B12-LT-2120	Continuous	Permit condition III.F.9	1	
					~~Sump low low level~~	~~>1.18 ft~~	~~B12-LSLL-2120~~	~~Continuous~~	~~Permit Condition Table III.F.9~~	~~1~~	
					~~Sump low level~~	~~>1.38 ft~~	~~B12-LSL-2120~~	~~Continuous~~	~~Permit Condition Table III.F.9~~	~~1~~	
					Sump high level	<3.48 ft	B12-SH-2120	Continuous	Permit Condition Table III.F.9	1	
					Sump high high level	<3.65 ft	B12-LSHH-2120	Continuous	Permit Condition Table III.F.9	2	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MT-B12-0018 BRS Belt Filter Area Sump	BRS - belt filter area sump - leak detection - high	No signal	B12-LAH-2121	Continuous	Set point matrix	3	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter	Plant Operator-open valves, take readings BRS-CRO-follow steps	MT-B12-0018 BRS Area Sump	BRS area sump level	7-90%	B12-LI-2123	Continuous	Permit condition III.F.9	1	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room
					~~Sump low low level~~	~~>0.96 ft~~	~~B12-LALL-2123~~	~~Continuous~~	~~Permit Condition Table III.F.9~~	~~1~~	
						~~>0.96 ft~~	~~B12-LALL-2123~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
					~~Sump low level~~	~~>1.87 ft~~	~~B12-LAL-2123~~	~~Continuous~~	~~Permit Condition Table III.F.9~~	~~1~~	
						~~>1.87 ft~~	~~B12-LAL-2123~~	~~Continuous~~	~~Set point matrix~~	~~1~~	
					Sump high level	<5.12 ft	B12-LAH-2123	Continuous	Permit Condition Table III.F.9	1	
						<5.12 ft	B12-LAH-2123	Continuous	Set point matrix	1	
					Sump high high level	<6.30 ft	B12-LAHH-2123	Continuous	Permit Condition Table III.A.4-1	2	
						<6.30 ft	B12-LAHH-2123	Continuous	Set point matrix	2	
2	System Startup	Start flow to pump seals Start pumps Fill BC Evaporator Fill Crystallizer Fill Vapor Washer Start BRS OTS Heat Evaporator and Crystallizer Prepare sumps Start Distillate Carbon Start BC Evaporator Compressor	Plant Operator-open valves, take readings BRS-CRO-follow steps	MT-B12-0018 BRS Area Sump	BRS - area sump liner - leak detection - high	No signal	B12-LAH-2128	Continuous	Set point matrix	3	Operator - Leather Gloves, Safety Glasses, and Hearing Protection CRO – N/A control room

Operation Number(a)	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		Control Evaporator and Crystallizer pressures Set condenser cooling water outlet temperatures Start BRS Belt Filter									
3	Normal Operations	Read instruments listed in the CON Reading Sheet	BRS-CRO-take readings in the CON Plant operation – take field readings	See above	See above	See above	See above	See above	See above	See above	See above
		Sample and analyze BRS distillate	Lab Technician	MK-B12-0002A/B/C BRS Distillate Carbon Filters	Concentrations of analytes listed in WAP Table D-13	Below concentration in WAP Table D-13	Grab sample from valve PV-0793	Initially weekly, then monthly(i~~m~~)	Permit – III.F.6	See note n	
4	Hot Standby	Set BC evaporator pressure to 0.5 psig	CRO	MV-B12-0002 BC Evaporator	Pressure - BC Evaporator	-12.4 to 15 psig	B12-PIT-1890	Continuous	~~PTDP Table A4B-2~~ Permit condition III.F.9	1	See above
		Stop evaporator purge Stop transfer pumps Stop BRS filter Stop vapor washer purge		MT-B12-0004 Crystallizer Feed Tank	Level - Crystallizer feed tank	39-72%	B12-LIT-1946	Continuous	SOP - Appendix 3	1	

Notes:

a. The operating steps are from the Brine Reduction System SOP 24852-SOP-B12-W0001, Rev A-002, 17 Nov, 2015
b. The vapor pressure is calculated based on the sum of the vapor pressures from the concentrations of the individual components in the liquid phase.
c. Metering pump stroke length is set manually and adjusted manually based on the ratio of acid flowrate to brine flowrate to the BC evaporator feed tank.
~~d. During pilot testing, the the ratio of anti scalant to the evaporator will be established based on vendor experience and refined based on visual observation of scale build up on the evaporator internal components.~~
d~~e~~. Pump speed is set manually and adjusted manually based on the ratio of anti-scalant flowrate to brine flowrate.
~~f. During pilot testing, the the ratio of caustic to evaporator feed will be established based on the pH of grab samples collected from the evaporator.~~
e~~g~~. Pump speed is set manually and adjusted manually based on the ratio of caustic flowrate to evaporator feed flowrate.
f~~h~~. Pump speed is set manually and adjusted manually based on the ratio of anti-foam flowrate to brine flowrate. It is initially set 100% then reduced as the foam subsides.
~~if. During pilot testing, the ratio of caustic to crystallizer feed will be established based on the pH of grab samples collected from the crystallizer.~~
g~~j~~. Pump speed is set manually and adjusted manually based on the ratio of caustic flowrate to crystallizer feed flowrate.
h~~k~~. Crystallizer discharge temperature “out of range” is a level 1 response because it is monitored for equipment protection and “out of range” operation will not impact distillate quality.
~~l. Alarm setpoints will be determined during pilot testing per the set point matrix.~~
i~~m~~. Sampling frequency from the Brine Reduction System (BRS) Recovered Water Sampling and Analysis Plan - 24852-GPP-GGL-00011.
k~~n~~. The response to the concentration of any analyte listed in WAP Table D-13exceeding the concentration limit in WAP Table D-13 is level 2 when the distillate is being transferred to the Brine Concentrator Feed Tanks. The response is level 3 when the distillate is being transferred to the Process Water Tank.
l~~o~~. The response level to the presence of foam is level 1 response except in the case where foaming cannot be controlled with the addition of anti-foam. This is an upset condition requiring a level 3 notification to CDPHE response.
m~~p~~. BC evaporator TDS from BRS Process Flow Diagram Material Balance – 24852-RD-M5-B12-B0003

Line Number	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Response Level
15	MX-B14-BC feed tank OTS skid	B14 - BC feed tank OTS skid - between carbon filters & off-gas blowers – pressure – low	>-1.6 psig	B14-PAL-2292	Continuous	1
16	MT-B14-0002A BC feed tank A	B14 - BC feed tank 0002A – level – high high	<583.8 inches above tank bottom	B14-LAHH-2257	Continuous	2
17	MT-B14-0002B BC feed tank B	B14 - BC feed tank 0002B – level -high high	<583.8 inches Above tank bottom	B14-LAHH-2277	Continuous	2
18	MT-B14-0002C BC feed tank C	B14 - BC feed tank 0002C – level – high high	<583.8 inches above tank bottom	B14-LAHH-2287	Continuous	2
19	MT-B14-0002A BC feed tank A	B14 - BC feed tank 0002A – level – low low	>48 inches Above tank bottom	B14-LALL-2257	Continuous	1
20	MT-B14-0002B BC feed tank B	B14 - BC feed tank 0002B – level - low low	>48 inches Above tank bottom	B14-LALL-2277	Continuous	1
21	MT-B14-0002C BC feed tank C	B14 - BC feed tank 0002C – level – low low	>48 inches Above tank bottom	B14-LALL-2287	Continuous	1
22	MT-B14-0002A BC feed tank A	B14 - BC feed tank 0002A - level - high high	Not in alarm with level <583.8 inches from tank bottom	B14-LSHH-2252	Continuous	2
23	MT-B14-0002B BC feed tank B	B14 - BC feed tank 0002B - level - high high	Not in alarm with level <583.8 inches from tank bottom	B14-LSHH-2273	Continous	2
24	MT-B14-0002C BC feed tank C	B14 - BC feed tank 0002B - level - high high	Not in alarm with level <583.8 inches from tank bottom	B14-LSHH-2283	Continuous	2
25	MT-B14-0002A BC feed tank A MT-B14-0002B BC feed tank B MT-B14-0002C BC feed tank C	Brine density (specific gravity)	≤1.09	Grab sample Determination of Specific Gravity in a Hydrolysate Matrix 24852-GPP-GGL-00113	~~During Pilot Test &~~ Annually or Campaign Change	1
26	MT-B14-0002A BC feed tank A MT-B14-0002B BC feed tank B MT-B14-0002C BC feed tank C	Organic vapor pressure	<5.2 kPa	Calculation(a)	Permit Condition IV.L.3.b.i ~~Annual calculation~~(2)	1
27	MT-B14-0002A BC feed tank A	B14 - BC feed tank 0002A – temperature - low	>75ºF	B14-TAL-2253	Continuous	1

L – 12 - OFF-GAS TREATMENT SYSTEM COMPLIANCE TABLE (B20)

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
2	System Startup – establish scrubber liquid flow	Fill scrubber sump with process water Select spent decon tank that has available capacity, align valves Place Conductivity Indicator Controller (CIC) in auto[(c)] Place pH controller, temperature controller, and flow controllers in auto Establish initial venturi scrubber throat vain position Open caustic addition valve Start scrubber recirculation pump and verify controllers control to set points	CRO	MK-B20-0002 OTS Venturi/Scrubber Tower MP-B20-0001A/B Scrubber Recirculation Pump,	Scrubber sump liquid level	35-85%	B20-LIC-2556A/B	Continuous[(b)] 4 hours	SOP – Appendix 03 SOP – Appendix 04	1	CRO-N/A control room
						9.9 inches H_20	B20-LALL-2556A/B	Continuous	Set Point Matrix	1	
						16.45 inches H_20	B20-LAL-2556A/B	Continuous	Set Point Matrix	1	
						49.5 inches H_20	B20-LAH-2556A/B	Continuous	Set Point Matrix	1	
						52.54 inches H_20	B20-LAHH-2556A/B	Continuous	Set Point Matrix	2	
					Conductivity, recirculation pump discharge	< 170 mS/cm	B20-CIC-2493	Continuous 4 hours	SOP – Appendix 03 SOP - Appendix 04 ~~PTDP-Table A6-3~~	1	
					pH, recirculation pump discharge	6.5-10.5~~TBD~~[(g)]~~h~~	B20-AIC-2592A/B/C	Continuous	Set Point Matrix~~PTDP – Table A6-3~~	1[(h~~i~~)]	
						>6.5	B20-AALL-2592	Continuous	~~PTDP – Table A6-3,~~ Set Point Matrix	3[(e~~f~~)]	
						~~<TBD[(h)]~~	~~B20-AAHH-2592~~	~~Continuous~~	~~PTDP – Table A6-3, Set Point Matrix~~	~~2~~	
						<6.5	B20-KQAH-2592	Continuous	Set Point Matrix	3	
					Recirculation cooler temperature	42-70°F	B20-TIC-2558	Continuous	SOP – Appendix 03	1	
					Flow, cooled recirculation to scrubber	200 – 240 gpm	B20-FIC-2557	Continuous	SOP – Appendix 03	1	
					Flow, cooled recirculation to venturi	65-85 gpm	B20-FIC-2564	Continuous	SOP – Appendix 03	1	
2	System Startup – establish scrubber liquid flow	Fill scrubber sump with process water Select spent decon tank that has available capacity, align valves Place Conductivity Indicator Controller (CIC) in auto[(c)] Place pH controller, temperature controller, and flow controllers in auto Establish initial venturi scrubber throat vain position Open caustic addition valve Start scrubber recirculation pump and verify controllers control to set points	CRO	MK-B20-0002 OTS Venturi/Scrubber Tower MP-B20-0001A/B Scrubber Recirculation Pump,	OTS - venturi/scrubber - differential – pressure - high	<35 in w.c.	B20-PDIT-2487	Continuous	Set point matrix	3	CRO-N/A control room
2	System Startup – start OTS blower	Place pressure controllers in auto Start OTS blower Confirm damper positions and blower speed is within range		MA-B20-0001A/B OTS Blower	Pressure – venturi inlet	≤11.4 psia	B20-PIC-2533A/B	Continuous	Permit – Table IV.D.6	1	CRO-N/A control room Plant Operator (cut rated gloves)

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
						10.3-12 psia	B20-PIC-2533A/B	Continuous	~~PTDP – Table – A6-3~~Set Point Matrix	2	
						-1.80 to -0.7 psig	B20-PIC-2533A/B	Continuous 4 hours	SOP – Appendix 03 SOP – Appendix 04	2	
						>-2.11 psig	B20-PAL-2533A/B		Set Point Matrix	1	
						<-0.71 psig	B20-PAH-2533A/B		Set Point Matrix	1	
						<-0.41 psig	B20-PAHH-2533A/B		Set Point Matrix	2	
					Blower speed	2000 to 3000 rpm	B20-SI-2590A/B	Continuous	SOP – Operation 2	1	
	System Start-up – start off-gas reheater	Place analyzer indicator controller in auto and temperature indicator controller in cascade Start reheater and monitor temperature increase	CRO	ME-B20-0002 Off-Gas Reheater	Relative humidity, off-gas downstream of reheater	< 85% RH	B20-AIC-2588	Continuous	~~PTDP – Table – A6-3~~ SOP – Appendix 03	1	
					Temperature, reheater	50-107ºF	B20-TIC-2599	Continuous 4 hours	SOP – Appendix 03 SOP – Appendix 04	1	
						>50ºF	B20-TAL-2599	Continuous	Set Point Matrix	2	
						<107ºF	B20-TAH-2599	Continuous	Set Point Matrix	1	
						<110ºF	B20-TAHH-2599	Continuous	Set Point Matrix	1	
					Temperature, reheater (heating element)	100-600ºF	B20-TI-2594A/B	Continuous 4 hours	SOP – Appendix 03 SOP – Appendix 04	1	
						<1175ºF	B20-TAH-2594A/B	Continuous	Set Point Matrix	1	
						<1200ºF	B20-TAHH-2594A/B	Continuous	Set Point Matrix	2	
2	System Start-up – start oxidizer preheater and establish venturi scrubber differential pressure control, start MWS blower	Start oxidizer preheater and use temperature controller to bring the preheater to temperature Establish venturi scrubber differential pressure control Start MWS vent blower	CRO	ME-B20-0003 Oxidizer Preheater MK-B20-0002OTS Venturi/Scrubber Tower MA-B20-0002A/B MWS Vent Blower	OTS - bulk oxidizer - inlet - temperature – low low - DEFAULT TO VENT TO SCRUBBER	>1050ºF (w/ SDU vent to scrubber)	B20-TIC-2483A	Continuous	Set point matrix Permit – Table IV.D.6	3	CRO-N/A control room
2	System Start-up – start oxidizer preheater and establish venturi scrubber differential pressure control, start MWS blower	Start oxidizer preheater and use temperature controller to bring the preheater to temperature Establish venturi scrubber differential pressure control Start MWS vent blower	CRO	ME-B20-0003 Oxidizer Preheater MK-B20-0002OTS Venturi/Scrubber Tower MA-B20-0002A/B MWS Vent Blower	OTS - oxidizer preheater -02- temperature – high high	<1385ºF	B20-TIT-2483E	Continuous	Set point matrix	3	CRO-N/A control room
2	System Start-up – start oxidizer preheater and establish venturi scrubber differential pressure control, start MWS blower	Start oxidizer preheater and use temperature controller to bring the preheater to temperature Establish venturi scrubber differential pressure control Start MWS vent blower	CRO	ME-B20-0003 Oxidizer Preheater MK-B20-0002OTS Venturi/Scrubber Tower MA-B20-0002A/B MWS Vent Blower	OTS - oxidizer preheater -04- temperature – high high	<1385ºF	B20-TIT-2483G	Continuous	Set point matrix	3	CRO-N/A control room
2	System Start-up – start oxidizer preheater and establish venturi scrubber differential pressure control, start MWS	Start oxidizer preheater and use temperature controller to bring the preheater to temperature Establish venturi scrubber differential pressure control Start MWS vent blower	CRO	ME-B20-0003 Oxidizer Preheater MK-B20-0002OTS Venturi/Scrubber Tower MA-B20-0002A/B MWS Vent Blower	OTS - oxidizer preheater -06- temperature – high high	<1385ºF	B20-TIT-2483J	Continuous	Set point matrix	3	CRO-N/A control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
	blower										
2	System Start-up – start oxidizer preheater and establish venturi scrubber differential pressure control, start MWS blower	Start oxidizer preheater and use temperature controller to bring the preheater to temperature Establish venturi scrubber differential pressure control Start MWS vent blower	CRO	ME-B20-0003 Oxidizer Preheater MK-B20-0002OTS Venturi/Scrubber Tower MA-B20-0002A/B MWS Vent Blower	OTS - oxidizer preheater -08 – temperature – high high	<1385ºF	B20-TIT-2483L	Continuous	Set point matrix	3	CRO-N/A control room
2	System Start-up – start oxidizer preheater and establish venturi scrubber differential pressure control, start MWS blower	Start oxidizer preheater and use temperature controller to bring the preheater to temperature Establish venturi scrubber differential pressure control Start MWS vent blower	CRO	ME-B20-0003 Oxidizer Preheater MK-B20-0002OTS Venturi/Scrubber Tower MA-B20-0002A/B MWS Vent Blower	OTS - oxidizer preheater -10- temperature – high high	<1385ºF	B20-TIT-2483N	Continuous	Set point matrix	3	CRO-N/A control room
3	Normal Operations	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer	OTS - venturi differential – pressure - high	<35 in w.c.	B20-PDIT-2487	Continuous	Set point matrix ~~PTDP – Table A6-3~~	3	CRO-N/A control room
3	Normal Operations	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer	Inlet flow – Oxidizer Preheater	1000 – 4000 acfm	B20-FI-2482	Continuous	SOP-Appendix 03	1	Inlet flow – Oxidizer Preheater
					OTS - bulk oxidizer - packing - differential pressure - high	<3 in w.c.	B20-PDIT-2486	Continuous	Set point matrix	3	CRO-N/A control room
					Flow – process water supply	0-22 gpm	B20-FI-2534	Continuous	SOP-Appendix 03 SOP-Appendix 04	1	
						<22.5 gpm	B20-FAH-2534	Continuous	Set Point Matrix	1	
					Flow - process water to sump	0-5 gpm	B20-FI-2542	Continuous	SOP-Appendix 03	1	
						<4.5 gpm	B20-FAH-2542	Continuous	Set Point Matrix	1	
					Temperature - venturi outlet	50-130ºF	B20-TI-2545	Continuous 4 hours	SOP-Appendix 03 SOP-Appendix 04	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
						<130°F	B20-TAH-2545	Continuous	~~PTDP – Table A6-3,~~ Set Point Matrix	1	
						<140°F	B20-TAHH-2545	Continuous	~~PTDP – Table A6-3~~ Set Point Matrix	1	
						< 200°F	B20-TI-2545	Continuous	Permit - IV.A.5.a.4, Permit - Table IV.D.6(e~~f~~)	2	
					Temperature - SDU to Scrubber	50-130°F	B20-TI-2548	Continuous	SOP-Appendix 03	1	
						50-130°F	B20-TIT-2548	4 hours	SOP-Appendix 04	1	
						<130°F	B20-TAH-2548	Continuous	Set Point Matrix	1	
3	Normal Operations	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer	OTS - scrubber off gas – temperature – high high	<100°F	B20-TIT-2550	Continuous	Set Point Matrix	3	CRO-N/A control room
					Pressure – Reheater inlet	< 12 psia	B20-PI-2586	Continuous	Set Point Matrix	1	
							B20-PAH-2586	Continuous	Set Point Matrix	1	
3	Normal Operations	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer	OTS - scrubber tower overall differential pressure - high	<9 inches w.c.	B20-PDIT-2549	Continuous	Set Point Matrix	3	CRO-N/A control room
3	Normal Operations	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber	OTS - top scrubber pad - differential pressure - high	<1.7 inches w.c.	B20-PDIT-2547	Continuous	Set Point Matrix	3	CRO-N/A control room

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		proper alignment of dampers		Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer							
3	Normal Operations[8]	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer	Differential pressure, scrubber tower packed bed	<8.5 in w.c.	B20-PDAH-2554	Continuous 4 hours	SOP-Appendix 03[d~~e~~] SOP-Appendix 04[d~~e~~]	1	CRO-N/A control room Plant Operator (cut rated gloves)
						≤8.5 in w.c.	B20-PDAH-2554	Continuous	Permit – Table IV.D.6[d~~e~~]	2	
						<8.5 in w.c.	B20-PDAH-2554	Continuous 4 hours	SOP-Appendix 03[d~~e~~] SOP-Appendix 04	2	
					Discharge pressure, scrubber recirculation pump	50 - 90 psig	B20-PI-2582	Continuous 4 hours	SOP-Appendix 03 SOP-Appendix 04	1	
						>20 psig	B20-PALL-2582	Continuous	Set point matrix	1	
						>25 psig	B20-PAL-2582	Continuous	Set point matrix	1	
						<90 psig	B20-PAH-2582	Continuous	Set point matrix	1	
3	Normal Operations[8]	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers,	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B	Discharge flow, scrubber recirculation pump	≥ 175 gpm	B20-FI-2576	Continuous	Permit - IV.D.6	1	CRO-N/A control room Plant Operator (cut rated gloves)
						200 – 315 gpm	B20-FI-2576	Continuous 4 hours	~~PTDP – Table A6-3~~ SOP-Appendix 03 SOP-Appendix 04	1	
						>200 gpm	B20-FAL-2576	Continuous	~~PTDP – Table A6-3,~~ Set point matrix	1[i~~j~~]	

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers		MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer		<315 gpm	B20-FAH-2576	Continuous	~~PTDP – Table A6-3,~~ Set point matrix	1	
3	Normal Operations[(8)3]	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer	Flow – spent decon tanks	≤5 gpm	B20-FI-2570	Continuous	SOP-Appendix 03	1	
						<6 gpm	B20-FAH-2570	Continuous	Set point matrix	1	
					Pressure drop – recirculation pump inlet strainer	< 30 in w.c.	B20-PDI-2578	Continuous 4 hours	SOP-Appendix 03 SOP-Appendix 04	1	
						13.84 in w.c.	B20-PDAH-2578	Continuous	Set point matrix	1	
3	Normal Operations[(8)]	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower	Temperature – cooler chilled water outlet	42-70ºF	B20-TI-2569	Continuous	SOP-Appendix 03	1	CRO-N/A control room Plant Operator (cut rated gloves)
					Pressure – chilled water outlet	60-90 psig	B20-PI-2560	4 hours	SOP - Appendix 04	1	
					Pressure – OTS blower outlet	-0.40 to 0.3 psig	B20-PI-2598	4 hours	SOP - Appendix 04	1	
					Pressure – cooler outlet	40-80 psig	B20-PI-2559	4 hours	SOP - Appendix 04	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
		proper alignment of dampers		ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer MK-B20-0002 OTS Venturi/Scrubber Tower	Temperature – Air from scrubber	65-100ºF	B20-TIT-2550	Continuous 4 hours	SOP - Appendix 03 SOP - Appendix 04	1	
						>60ºF	B20-TAH-2569	Continuous	Set point matrix	1	
					Flow - cooled recirculation to venturi	65-85 gpm	B20-FIC-2564	Continuous	SOP-Appendix 03 SOP-Appendix 04	1	
						<85 gpm	B20-FAH-2564	Continuous	Set point matrix	1	
					Temperature - Blower outlet	90-190ºF	B20-TI-2591	Continuous	SOP-Appendix 03	1	
						>138ºF	B20-TAL-2591	Continuous	Set point matrix	1	
						<190ºF	B20-TAH-2591	Continuous	Set point matrix	1	
					Pressure – Blower outlet	-0.40 to 0.3 psig	B20-PI-2596	Continuous	SOP - Appendix 03	1	
						>-0.71 psig	B20-PALL-2596	Continuous	Set point matrix	1	
						>-0.41 psig	B20-PAL-2596	Continuous	Set point matrix	1	
						<0.29 psig	B20-PAH-2596	Continuous	Set point matrix	1	
					Temperature, venturi inlet	< 1175ºF	B20-TI-2555	Continuous	~~PTDP – Table A6-3~~Set Point Matrix	1	
						1050-1175ºF	B20-TI-2555	4 hours	SOP - Appendix 04	1	
						< 1175ºF	B20-TAH-2555	Continuous	Set point matrix	1	
					Pressure - Recirculation Pump Discharge	50-90 psig	B20-PI-2581A/B	4 hours	SOP - Appendix 04	1	
					Temperature – to cooler	60-80ºF	B20-TI-2568	4 hours	SOP - Appendix 04	1	
					Density, scrubber recirculation	<1.1 sg	B20-DIT-2584	4 hours	SOP - Appendix 04	1	
						< 1.075 sg	B20-DAH-2584	Continuous	Set point matrix	1	
						< 1.1 sg	B20-DAHH-2584	Continuous	Set point matrix	2	
					Temperature – Chilled water supply	42-46ºF	B20-TI-2566	4 hours	SOP - Appendix 04	1	
					Pressure – Chilled water supply	60-90 psig	B20-PI-2565	4 hours	SOP - Appendix 04	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
3	Normal Operations[d]	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer MK-B20-0002 OTS Venturi/Scrubber Tower	Pressure drop – Chilled water across cooler	>2.5 psid	B20-PDIT-2501	4 hours	SOP - Appendix 04	3[g]	CRO-N/A control room Plant Operator (cut rated gloves)
3	Normal Operations[d]	Perform rounds and readings (Appendices 03 and 04) Swap out scrubber recirculation pump as desired; afterwards verify discharge pressure and flow Swap out OTS blowers as desired; afterward verify proper alignment of dampers, blower speed, and draft pressure Swap out MWS vent blower as desired; afterward verify proper alignment of dampers	Plant Operator CRO	MP-B20-0001A/B Scrubber Recirculation Pump MA-B20-0001A/B OTS Blower MA-B20-0002A/B MWS Vent Blower MK-B20-0002 OTS Venturi/Scrubber Tower ME-B20-0003 Oxidizer Preheater MK-B20-0003 Bulk Oxidizer MK-B20-0002 OTS Venturi/Scrubber Tower	Temperature – chilled water from cooler	42-70ºF	B20-TIT-2569	4 hours	SOP - Appendix 04	1	
					Temperature – Air from scrubber	65-75ºF	B20-TIT-2550	Continuous 4 hours	SOP - Appendix 03 SOP - Appendix 04	1	
					Flow – to scrubber tower	200-240 gpm	B20-FIT-2557	Continuous 4 hours	SOP - Appendix 03 SOP - Appendix 04	1	
					Pressure – Inlet to reheater	-3.41 to -0.41 psig	B20-PIT-2586	Continuous 4 hours	SOP - Appendix 03 SOP - Appendix 04	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE
						-3.41 to -0.41 psig	B20-PIT-2597	4 hours	SOP - Appendix 04	1	
					Pressure drop – upper oxidizer	<18.5 in w.c.	B20-PDIT-2561	4 hours	SOP - Appendix 04	1	
						<18.5 in w.c.	B20-PDAH-2561	Continuous	Set point matrix	1	
					Flow to AFA exhaust header	>2100 acfm	M03-FAL-4221	Continuous	~~PTDP – Table A6-3~~Set Point Matrix	1	
						>400 acfm	M03-FAL-4221	Continuous	Set point matrix	2	
						< 2400 acfm	M03-FAH-4221	Continuous	~~PTDP – Table A6-3~~Set Point Matrix	1	
						<2,400 acfm	M03-FAH-4221	Continuous	Set point matrix	1	
3~~Pilot Testing~~	Intermediate Sampling	Collect grab sample and analyze for agent	Plant Operator	ME-B20-0003 Oxidizer Preheater MK-B20-0002 OTS Venturi/Scrubber Tower	~~Agent concentration upstream of preheater~~	~~TBD during pilot testing~~	~~Grab sample~~	~~Daily during demos per LSAP~~	~~Permit – Table IV.D.6~~	~~1~~	Plant Operator as determined during pre job planning
					~~Agent concentration prior to venturi~~	~~TBD during pilot testing~~	~~Grab sample~~	~~Daily during demos per LSAP~~	~~LSAP – 24852-GPP-GGL-00013~~	~~1~~	
					~~Agent concentration downstream of reheater~~	~~TBD during pilot testing~~	~~Grab sample~~	~~Daily during demos per LSAP~~	~~LSAP – 24852-GPP-GGL-00013~~	~~1~~	
					Destruction and removal efficiency (DRE)	≥97%	Calculation See note g	Once per sample	Permit – Table IV.D.6	3	

General Note:

a. Values for the low, low alarm, low alarm, high alarm and high high alarm are from the set point matrix.

Notes:

a. The above operation numbers correspond to those listed in 24852-SOP-B20-W0001, Off-Gas Treatment System (OTS). The version used for this table is Rev A-008 dated November 5, 2015. The PPE listed is that identified in the SOP; however additional PPE may be required per other procedures (e.g., 24852-SAF-SAP-W0011, Toxic Chemical Agent Safety Program). The appendices referenced above correspond to those incorporated in the SOP.

b. Continuous monitoring is used to describe instruments that can be displayed in the facility control system screens in the control room. The value of the operating parameter can be displayed at any time by control room personnel but are not displayed continuously. A request has been made to Engineering for a list of instruments recorded on PDARS.

c. Conductivity is controlled using B20-CIC-2493 to modulate Spent Decon tank receipt valves CV-2493A and CV-2493B as solids content increases.

~~d. During pilot testing, OTS operations may deviate from that specified in 24852-SOP-B20-W0001, but will be done in accordance with the PTDP. As described in Appendix A6 of the PTDP, agent and non-agent sampling and analysis will be performed during demonstration periods when the bulk oxidizer is not operated to understand the potential impact of the bulk oxidizer on agent and organic emissions.~~

de. The minimum bulk oxidizer temperature when the SDU vent is flowing directly to the scrubber in permit table IV.D.5 is 1050°F. The low low alarm is set to 1075°F. The difference is to allow adjustments to process conditions at the low low temperature alarm prior to reaching the permit limit.

ef. A Level 3 response to this parameter (B20-AALL-2592) will be required, but will not involve the shut down of the OTS or OTS components. If a low-low pH triggers a Level 3 response, PCAPP shall stop the introduction of munition bodies into the MWS processing lines and suspend introduction of additional waste to the SDU and autoclave until the pH condition is corrected (treatment of waste or munition bodies already in process in the MWS, MTUs, SDU, or autoclave will not be suspended upon a low-low pH). An excursion below the pH limit exceeding 30 minutes in duration will cause an evaluation to be conducted that will consider the duration, amount of deviation, and potential impacts to any carbon steel components of the system that manage the recirculation liquid (refer to Attachment M for additional details).

fg. Destruction and removal efficiency (DRE) is calculated from the following equation:

$$DRE = \left(1 - \frac{W_{out}}{W_{in}}\right) \times 100$$

Win = Mass feed rate of agent in the feed upstream of the oxidizer preheater
Wout = Mass discharge rate of agent in the exhaust from the off-gas reheater

~~gh. The control setpoint and low and high alarm limits will be adjusted during testing per the Test Plan for B20 Off Gas Treatment System Control Loop Tuning, 24852-3TS-B20-L0001, to identify a series of system parameters that best respond to the range of processing conditions/rates observed during munitions processing activities. Per temp mod 24852-RD-TPMD-B20-SW0010, the high-high alarm will be inactive during testing. Once testing is complete, the results will be submitted to CDPHE and, as necessary, new alarm limits proposed.~~

gi. A Level 3 response to this parameter (low-low pressure on B20-PDIT-2501) will not involve the shut down of the OTS or OTS components. In the event of a low-low pressure that triggers a Level 3 response, PCAPP shall stop the introduction of munition bodies into the MWS processing lines and suspend introduction of additional waste to the SDU and autoclave until the condition is assessed and necessary corrective actions implemented (treatment of waste or munition bodies already in process in the MWS, MTUs, SDU, or autoclave will not be suspended upon a low-low pressure).

hj. If flow in the stainless steel piping associated with the scrubber recirculation liquid becomes stagnant and the pH of recirculation liquid is less than seven, PCAPP will notify CDPHE and stop the introduction of munition bodies into the MWS processing lines and suspend introduction of additional waste to the SDU and autoclave until the condition is assessed and necessary corrective actions implemented (treatment of waste or munition bodies already in process in the MWS, MTUs, SDU, or autoclave will not be suspended).

AGENT MONITORING SYSTEM COMPLIANCE TABLE (J02) – 11.9.2015

(Note: Monitors associated with processes or systems (e.g., B03, M07, etc.) are addressed in the corresponding system compliance tables. Likewise, monitors used to monitor rooms, buildings, and corridors are included in the Building and Corridor Compliance Table.)

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities	Equipment Number and/or Description	Operating Parameter	Normal Operating Range	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level	Required PPE[(b)]
NA	Perimeter Monitoring	If a major event occurs, the mobile trailers will be moved downwind of the spill or exceedance point. The trailers will be placed at two of the twelve sites adjacent to the direction of the wind. (The pre-determined locations are approximately 30 degrees apart around the perimeter of the PCAPP facility.) If agent is detected above the GPL, prompt investigation will be conducted. Monitoring and modeling results shall be recorded, reviewed, and reported.	CON – provides wind direction information Lab/Monitoring personnel – move and locate trailers, analyze DAAMS tubes, record, review, and report results	Performed using DAAMS tubes via trailer-based sampling platform.	Agent Concentration	< GPL (<0.00002mg/m^3)	DAAM-4015 DAAM-4016 DAAM-4017 ~~DAAM-1018~~	As needed for a major event e.g.,, - - agent spill at MAV dock - stack release - confirmed Category C agent alarm - loss of cascade ventilation	LAMP – Section 2.5.16	3	Hard hat, safety glasses or goggles, safety boots, gloves
NA	Headspace Monitoring	Bag or containerize material to be monitored in agent tight barrier of sufficient volume. Perform one complete sampling cycle. (Historical monitoring may be substituted for MINICAMS® monitoring in accordance with the LAMP.)	Operations/waste management personnel bag or containerize material Lab/Monitoring personnel perform monitoring	MINICAMS®	Agent Concentration	NA. Used to determine if material is at or below threshold being evaluated (e.g., 1 VSL (0.7 VSL assumes 95% confidence limit))	Various	As needed	WAP - Section D-2a LAMP – Sections 2.5.18, 3.1.1, and 3.3	1	As required by 24852-SAF-SAP-W0011[(2)]
Operation Number[(a)]	**Operation Description**	**Description of Process Steps**	**Roles and Responsibilities**	**Equipment Number and/or Description**	**Operating Parameter**	**Normal Operating Range**	**Method for Monitoring**	**Frequency of Monitoring**	**Source of Requirements**	**Response Level**	**Required PPE[(b)]**
NA	MTU Bins Sampling	Collect munition bodies in bins and cover Bins. Bins to be sampled are allowed to cool down to 120 ^{o}F or less. Perform MINICAMS® sampling	Operations – collect munitions and cover bins Laboratory responsible for monitoring	~~Portable~~ MINICAMS®	Agent Concentration	< 0.003 mg/m3	MINICAMS®	As required ~~by PTDP and LSAP~~	WAP – Section D-5d(2) ~~PTDP – Table 2-1 (ref A2B), Appendix A2B~~ ~~LSAP – Section 5.9.1, Appendix A~~	2	As required by 24852-SAF-SAP-W0011[(2)]

Notes:
a. "NA" indicated for Operation Number because, unlike other compliance tables, these operations do not correlate to one SOP and an Operation Number in this context has no meaning.
b. PPE selection is performed in accordance with 24852-SAF-SAP-W0011, Toxic Chemical Agent Safety Program. At a minimum, Level D is required, which correlates to:
1. NIOSH-certified Chemical, Biological, Radiological, and Nuclear (CBRN) or DA-approved military mask slung or readily available;
2. Coveralls, fatigues, or equivalent government-issued clothing; or laboratory coat within the Lab;
3. Boots/shoes, chemical resistant, steel toe and shank (situational);
4. Boots, outer, chemical resistant (situational);
5. Safety glasses or chemical splash goggles (situational);
6. Gloves (optional); and
7. Hard hat (optional) with face shield (situational).

AFA FILTRATION SYSTEM COMPLIANCE TABLE – 11/13/2015

CASCADE VENTILATION SYSTEM – 24852-SOP-M07-W0001

Previous versions of the Ops Plan included a section for the J03 Stack Sampling System. PCAPP has combined the J03 system with the J02 Agent Monitoring System. AFA stack monitoring operating parameters previously addressed in the J03 table are included in this table.

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[(b)]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[(c)]	Required PPE
2	Remote System Startup	Start 8 AFA's Start 2 AHU's in the APB Start 1 AHU in the ERB Verify Alignment of dampers	Plant Operator – Verify startup of system from the field CRO – Start equipment remotely and verify dampers	None – Common duct from APB and ERB	AFA - inlet duct pressure relative to atmosphere - tag 4722A - high	<-2 inches w.c.	M07-PDIT-4722A	Continuous	Set point matrix	3	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
2	Remote System Startup	Start 8 AFA's Start 2 AHU's in the APB Start 1 AHU in the ERB Verify Alignment of dampers	Plant Operator – Verify startup of system from the field CRO – Start equipment remotely and verify dampers	None – Common duct from APB and ERB	AFA - inlet duct pressure relative to atmosphere - tag 4722B - high	<-2 inches w.c.	M07-PDIT-4722B	Continuous	Set point matrix	3	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	None – exhaust flow from ERB	Flowrate	40,000 – 50,000 acfm	M07-FIT-4738	Continuous	SOP-CON Reading Sheet	1	
						<40,000 acfm	M07-FAL4738	Continuous	Set point matrix	1	
						>50,000 acfm	M07-FAH-4738	Continuous	Set point matrix	1	
				None – exhaust flow from APB	Flowrate	70,000 – 85,500 acfm	M07-FIT-4730	Continuous	SOP-CON Reading Sheet	1	
						<70,000 acfm	M07-FAL4730	Continuous	Set point matrix	1	
						>85,000 acfm	M07-FAH-4730	Continuous	Set point matrix	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0007 AFA Unit - 0007	AFA - unit 0007 - pre filter differential pressure - low	>0.25 in H2O	M07-PDAL-4726G	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0007 AFA Unit - 0007	AFA - unit 0007 - pre filter differential pressure - low	<3.5 in H2O	M07-PDAH-4726G	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4727G	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727G	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727G	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	M07-PDIT-4731G	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731G	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731G	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	M07-PDIT-4732G	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732G	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732G	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734G	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734G	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734G	Continuous	Set point matrix	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0007 AFA Unit - 0007	Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733G	Continuous	SOP-CON Reading Sheet	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung

AFA FILTRATION SYSTEM – M07

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0007 AFA Unit - 0007	Agent concentration between carbon banks #1 and #2	<0.~~2~~ 7 VSL	J02-AE-4728G-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0007 AFA Unit - 0007	AMS - AFA unit 0007 - between carbon banks #2 and #3 - agent concentration - high	<0.~~2~~ 7 VSL	J02-AI-4728G-B	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	3	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	
					Agent concentration - vestibule	<0.2 VSL	J02-AE-4728G-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739G	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738G	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746G	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747G	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 - 16,000 acfm	M07-FIT-4734G	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731G	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732G	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726G	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	M07-0008 AFA Unit - 0008	AFA - unit 0008 - pre filter differential pressure - low	>0.25 in H2O	M07-PDAL-4726H	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap Plant Operator/CRO – Perform steps		M07-0008 AFA Unit - 0008	AFA - unit 0008 - pre filter differential pressure - high	<3.5 in H2O	M07-PDAH-4726H	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726H	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727H	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727H	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	PDIT-4731H	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731H	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731H	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	PDIT-4732H	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732H	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732H	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734H	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734H	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734H	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733H	Continuous	SOP-CON Reading Sheet	1	

AFA FILTRATION SYSTEM – M07

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0008 AFA Unit - 0008	Agent concentration between carbon banks #1 and #2	< 0.~~2~~ 7 VSL	J02-AE-4728H-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	Hard hat, safety glasses, steel-toe boots, gloves, mask slung
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0008 AFA Unit - 0008	AMS - AFA unit 0008 - between carbon banks #2 and #3 - agent concentration - high	< 0.~~2~~ 7 VSL	J02-AI-4728H-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	
					Agent concentration - vestibule	<0.2 VSL	J02-AE-4728H-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739H	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738H	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746H	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747H	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 - 16,000 acfm	M07-FIT-4734H	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731H	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732H	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726H	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter differential pressure	0.4 – 1.7 in w.c.	M07-DIT-4731H	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0009 AFA Unit - 0009	AFA - unit 0009 - pre filter differential pressure - low	>0.25 in H2O	M07-PDAL-4726J	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0009 AFA Unit - 0009	AFA - unit 0009 - pre filter differential pressure - high	<3.5 in H2O	M07-PDAH-4726J	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726J	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727J	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727J	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	PDIT-4731J	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731J	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731J	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	M07-PDIT-4732J	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732J	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732J	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734J	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734J	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734J	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733J	Continuous	SOP-CON Reading Sheet	1	
					Agent concentration between carbon banks #1 and #2	≤ 0.~~2~~ 7 VSL	J02-AE-4728J-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0009 AFA Unit - 0009	AMS - AFA unit 0009 - between carbon banks #2 and #3 - agent concentration - high	< 0.~~2~~ 7 VSL	J02-AI-4728J-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	
					Agent concentration - vestibule	< 0.2 VSL	J02-AE-4728J-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739J	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738J	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746J	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747J	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 - 16,000 acfm	M07-FIT-4734J	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731J	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732J	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726J	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0010 AFA Unit - 0010	AFA - unit 0010 - pre filter differential pressure - low	>0.25 in H_2O	M07-PDAL-4726K	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0010 AFA Unit - 0010	AFA - unit 0010 - pre filter differential pressure - high	<3.5 in H_2O	M07-PDAH-4726K	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726K	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4727K	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727K	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	M07-PDIT-4731K	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731K	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731K	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	PDIT-4732K	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732K	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732K	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734K	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734K	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734K	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733K	Continuous	SOP-CON Reading Sheet	1	
					Agent concentration between carbon banks #1 and #2	<0.~~2~~ 7 VSL	J02-AE-4728K-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0010 AFA Unit - 0010	AMS - AFA unit 0010 - between carbon banks #2 and #3 - agent concentration - high	<0.~~2~~ 7 VSL	J02-AI-4728K-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	Hard hat, safety glasses, steel-toe boots, gloves,

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
											mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0010 AFA Unit - 0010	1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	Hard hat, safety glasses, steel-toe boots, gloves, mask slung
					Agent concentration - vestibule	< 0.2 VSL	J02-AE-4728K-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739K	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738K	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746K	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747K	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 -16,000 acfm	M07-FIT-4734K	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731K	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732K	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726K	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0011 AFA Unit - 0011	AFA - unit 0011 - pre filter differential pressure - low	>0.25 in H_2O	M07-PDAL-4726L	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0011 AFA Unit - 0011	AFA - unit 0011 - pre filter differential pressure - high	<3.5 in H_2O	M07-PDAH-4726L	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726L	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727L	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727L	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	M07-PDIT-4731L	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731L	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731L	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	M07-PDIT-4732L	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732L	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732L	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734L	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734L	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734L	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733L	Continuous	SOP-CON Reading Sheet	1	
					Agent concentration between carbon banks #1 and #2	< 0.~~2~~ 7 VSL	J02-AE-4728L-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0011 AFA Unit - 0011	AMS - AFA unit 0011 - between carbon banks #2 and #3 - agent concentration - high	< 0.~~2~~ 7 VSL	J02-AI-4728L-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP.	Plant Operator/CRO – Perform steps	MK-M07-0011 AFA Unit - 0011	1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	Hard hat, safety glasses, steel-toe boots, gloves,

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
		AFA Filter SWAP AHU Swap									mask slung.
					Agent concentration - vestibule	< 0.2 VSL	J02-AE-4728L-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739L	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738L	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746L	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747L	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 -16,000 acfm	M07-FIT-4734L	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731L	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732L	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726L	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0012 AFA Unit - 0012	AFA - unit 0012 - pre filter differential pressure - low	>0.25 in H_2O	M07-PDAL-4726M	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0012 AFA Unit - 0012	AFA - unit 0012 - pre filter differential pressure - high	<3.5 in H_2O	M07-PDAH-4726M	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	PDIT-4726M	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727M	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727M	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	M07-PDIT-4731M	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731M	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731M	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	M07-PDIT-4732M	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732M	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732M	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	FIC-4734M	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734M	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734M	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733M	Continuous	SOP-CON Reading Sheet	1	
					Agent concentration between carbon banks #1 and #2	< 0.~~2~~7 VSL	J02-AE-4728M-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0012 AFA Unit - 0012	AMS - AFA unit 0012 - between carbon banks #2 and #3 - agent concentration – high	< 0.~~2~~7 VSL	J02-AI-4728M-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP	Plant Operator/CRO – Perform steps	MK-M07-0012 AFA Unit - 0012	1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
		AHU Swap			Agent concentration - vestibule	< 0.2 VSL	J02-AE-4728M-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739M	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738M	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746M	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747M	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0012 AFA Unit - 0012	Flowrate from filter	13,500 - 16,000 acfm	M07-FIT-4734M	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731M	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732M	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726M	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0013 AFA Unit - 0013	AFA - unit 0013 - pre filter differential pressure - low	>0.25 in H_2O	M07-PDAL-4726N	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0013 AFA Unit - 0013	AFA - unit 0013 - pre filter differential pressure - high	<3.5 in H_2O	M07-PDAH-4726N	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726N	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727N	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727N	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	M07-PDIT-4731N	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731N	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731N	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	M07-PDIT-4732N	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732N	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732N	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734N	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734N	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734N	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733N	Continuous	SOP-CON Reading Sheet	1	
					Agent concentration between carbon banks #1 and #2	< 0.~~2~~ 7 VSL	J01-AE-4728N-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0013 AFA Unit - 0013	AMS - AFA unit 0013 - between carbon banks #2 and #3 - agent concentration – high	< 0.~~2~~ 7 VSL	J02-AI-4728N-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP	Plant Operator/CRO – Perform steps	MK-M07-0013 AFA Unit - 0013	1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.

Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[(b)]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[(c)]	Required PPE
		AHU Swap			Agent concentration - vestibule	< 0.2 VSL	J01-AE-4728N-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739N	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738N	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746N	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747N	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 - 16,000 acfm	M07-FIT-4734N	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731N	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732N	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726N	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0014 AFA Unit - 0014	AFA - unit 0014 - pre filter differential pressure - low	>0.25 in H_2O	M07-PDAL-4726P	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0014 AFA Unit - 0014	AFA - unit 0014 - pre filter differential pressure - high	<3.5 in H_2O	M07-PDAH-4726P	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726P	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727P	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727P	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	M07-PDIT-4731P	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731P	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731P	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	PDIT-4732P	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732P	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732P	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734P	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734P	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734P	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733P	Continuous	SOP-CON Reading Sheet	1	
					Agent concentration between carbon banks #1 and #2	< 0.~~2~~ 7 VSL	J02-AE-4728P-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0014 AFA Unit - 0014	AMS - AFA unit 0014 - between carbon banks #2 and #3 - agent concentration - high	< 0.~~2~~ 7 VSL	J02-AI-4728P-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0014 AFA Unit - 0014	1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Agent concentration - vestibule	< 0.2 VSL	J02-AE-4728P-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739P	Every four hours	SOP-Operator Reading Sheet	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738P	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746P	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747P	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 - 16,000 acfm	M07-FIT-4734P	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731P	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732P	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726P	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0015 AFA Unit - 0015	AFA - unit 0015 - pre filter differential pressure - low	>0.25 in H_2O	M07-PDAL-4726Q	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0015 AFA Unit - 0015	AFA - unit 0015 - pre filter differential pressure - high	<3.5 in H_2O	M07-PDAH-4726Q	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726Q	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727Q	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727Q	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	M07-PDIT-4731Q	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731Q	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731Q	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	M07-PDIT-4732Q	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732Q	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732Q	Continuous	Set point matrix	1	
					Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734Q	Continuous	SOP-CON Reading Sheet	1	
						>8,500 acfm	M07-FAL-4734Q	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734Q	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤ 1750 rpm	M07-SI-4733Q	Continuous	SOP-CON Reading Sheet	1	
					Agent concentration between carbon banks #1 and #2	< 0.~~2~~ 7 VSL	J02-AE-4728Q-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0015 AFA Unit - 0015	AMS - AFA unit 0015 - between carbon banks #2 and #3 - agent concentration – high	< 0.~~2~~ 7 VSL	J02-AI-4728Q-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0015 AFA Unit - 0015	1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Agent concentration - vestibule	< 0.2 VSL	J02-AE-4728Q-D	Continuous	SOP	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4739Q	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738Q	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746Q	Every four hours	SOP-Operator Reading Sheet	1	

Operation Number[a]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[b]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[c]	Required PPE
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4747Q	Every four hours	SOP-Operator Reading Sheet	1	
					Flowrate from filter	13,500 to 16,000 acfm	M07-FIT-4734Q	Every four hours	SOP-Operator Reading Sheet	1	
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731Q	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732Q	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726Q	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0016 AFA Unit - 0016	AFA - unit 0016 - pre filter differential pressure - low	>0.25 in H_2O	M07-PDAL-4726R	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0016 AFA Unit - 0016	AFA - unit 0016 - pre filter differential pressure - high	<3.5 in H_2O	M07-PDAH-4726R	Continuous	Set point matrix	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726R	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_20	M07-PDAL-4727R	Continuous	Set point matrix	1	
						<3.7 in H_2O	M07-PDAH-4727R	Continuous	Set point matrix	1	
					Pressure downstream of HEPA filter	0.7 – 2.2 in w.c.	PDIT-4731R	Continuous	SOP-CON Reading Sheet	1	
						>0.6 in H_2O	M07-PDAL-4731R	Continuous	Set point matrix	1	
						<2.2 in H_2O	M07-PDAH-4731R	Continuous	Set point matrix	1	
					Pressure drop across filter unit	7.5 – 16 in w.c.	M07-PDIT-4732R	Continuous	SOP-CON Reading Sheet	1	
						>5 in H_2O	M07-PDAL-4732R	Continuous	Set point matrix	1	
						>16 in H_2O	M07-PDAH-4732R	Continuous	Set point matrix	1	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0016 AFA Unit - 0016	Discharge flowrate	13,500 – 16,000 acfm	M07-FIC-4734R	Continuous	SOP-CON Reading Sheet	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung.
						>8,500 acfm	M07-FAL-4734R	Continuous	Set point matrix	1	
						<15,900 acfm	M07-FAH-4734R	Continuous	Set point matrix	1	
					Exhaust filter motor speed	≤1750 rpm	M07-SI-4733R	Continuous	SOP-CON Reading Sheets	1	
					Agent concentration between carbon banks #1 and #2	< 0.~~2~~ 7 VSL	J02-AE-4728R-A	Continuous	Table IV.D.6 ~~PTDP- Appendix A6 – Section 2.3.1~~ LAMP (see Section 2.5.9)	2	
4	Normal Operations	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP, AHU Swap	Plant Operator/CRO – Perform steps	MK-M07-0016 AFA Unit - 0016	AMS - AFA unit 0016 - between carbon banks #2 and #3 - agent concentration - high	< 0.~~2~~ 7 VSL	J02-AI-4728R-B	Continuous	Table IV.D.6 Set point matrix LAMP (see Section 2.5.9)	3	
					1,2-dichloroethane concentration	Note (d)	Grab(e)	Grab	Permit condition IV.D.6, Table IV.D.6-PCAPP Pollution Control Operating Conditions - Table section AFA	2	
					Agent concentration - vestibule	< 0.2 VSL	J02-AE-4728R-D	Continuous	SOP LAMP (see Section 2.5.9)	1	
					HEPA to vestibule differential pressure	0-1.2 in w.c.	M07-DI-4739R	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4738R	Every four hours	SOP-Operator Reading Sheet	1	
					Pre-filter to vestibule differential pressure	0-1.2 in w.c.	M07-PDI-4746R	Every four hours	SOP-Operator Reading Sheet	1	
					HEPA to vestibule differential	0-1.2 in w.c.	M07-PDI-4747R	Every four	SOP-Operator Reading Sheet	1	

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Operation Number[(a)]	Operation Description	Description of Process Steps	Roles and Responsibilities of Ops Staff	Equipment Number and Description	Operating Parameter	Normal Operating Range[(b)]	Method for Monitoring	Frequency of Monitoring	Source of Operating Parameter or Permit Condition	Response Level[(c)]	Required PPE
					pressure			hours			
4	Normal Operations (continued)	Record readings per Appendix 5 and 6 of the SOP. AFA Filter SWAP AHU Swap (continued)	Plant Operator/CRO – Perform steps (continued)	MK-M07-0016 AFA Unit - 0016	Flowrate from filter	13,500 - 16,000 acfm	M07-FIT-4734R	Every four hours	SOP-Operator Reading Sheet	1	Hard hat, safety glasses, steel-toe boots, gloves, mask slung
					Downstream of HEPA differential pressure	0.7 – 2.2 in w.c.	M07-PDIT-4731R	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure drop across filter unit	7.5-16 in w.c.	M07-PDIT-4732R	Every four hours	SOP-Operator Reading Sheet	1	
					Pressure upstream of HEPA filter	0.7 – 3.7 in w.c.	M07-PDIT-4726R	Every four hours	SOP-Operator Reading Sheet	1	
4	Normal Operations	Monitor process parameters	Plant Operator/CRO – Perform steps	AFA Stack[(f)]	AMS - AFA stack - Agent concentration - tag 4748A – high high	< 0.7 VSL	J02-ASHH-4748A	Continuous	Set point matrix LAMP (see Section 2.5.9)	3	
4	Normal Operations	Monitor process parameters	Plant Operator/CRO – Perform steps	AFA Stack[(f)]	AMS - AFA stack - Agent concentration - tag 4748B – high high	< 0.7 VSL	J02-ASHH-4748B	Continuous	Set point matrix LAMP (see Section 2.5.9)	3	
4	Normal Operations (continued)	Monitor process parameters	Plant Operator/CRO – Perform steps	AFA Stack[(f)]	AMS - AFA stack - Agent concentration - tag 4748A – high	< 0.2 VSL	J02-AIT-4748A	Continuous	Set point matrix LAMP (see Section 2.5.9)	2	N/A – operations performed from control room
4	Normal Operations (continued)	Monitor process parameters	Plant Operator/CRO – Perform steps	AFA Stack[(f)]	AMS - AFA stack - Agent concentration - tag 4748A – high	< 0.2 VSL	J02-ASH-4748B	Continuous	Set point matrix LAMP (see Section 2.5.9)	2	
4	Normal Operations (continued)	Monitor process parameters	Plant management/technical support review for process knowledge~~Operator/CRO – Perform steps~~	MK-M07-~~0007, 0008, 0009, 0010,~~ 0011, ~~0012, 0013, 0014, 0015~~0016, ~~0017~~ AFA Filters	Concentration of ~~total hydrocarbons~~ vinyl chloride	0-10 ppm	Photoacoustic Spectrometry Analyzer	Continuous	~~**PLACE HOLDER**~~ 25852-3TS-000-L0030 Pilot Test Final Report	1	N/A – operations performed from control room
8	Contingency Operations	Operating conditions that will cause an AFA filter to shut down[(c)]	CRO notify CRS CRO-Plant Operator start alternate AFA filter	MK-M07-0007, 0008, 0009, 0010, 0011, 0012, 0013, 0014, 0015, 0016~~7~~ AFA Filters	Vibration	< 1 in/sec	VSHH-4736 G/H/J/K/L/M/N/P/Q/R	Continuous	SOP-Operation 8	1	N/A – operations performed from control room
					Temperature	<190°F	TSHH-4749 G/H/J/K/L/M/N/P/Q/R	Continuous	SOP-Operation 8	1	
					Temperature	<190°F	TSHH-4724 G/H/J/K/L/M/N/P/Q/R	Continuous	SOP-Operation 8	1	

General Notes:

a. Limiting Conditions of Operations (CDRL D003), 24852-OPS-OAP-W0006 – LCO 004 – requires that “A minimum of eight filter units are operating and in automatic and a minimum of one filter unit is in standby and automatic.”

Notes:

a. The operating steps are from the Cascade Ventilation System SOP 24852-SOP-M07-W0001, Rev 00A, 02 Apr 2015.
b. The normal operating range shown is during filter operation. Normal operation is to have 8 filters on-line, 1 filter on stand-by and one filter available for maintenance. Flowrates and pressure drops for the stand-by off-line filters will be zero.
c. Level 3 responses identified as 3u (corresponding to a single AFA unit) are for values of the operating parameter outside of the normal operating range for the individual filter unit. Level 3 responses identified as 3s (corresponding to the entire AFA system) are for values of the operating parameter outside of the normal operating range for the combined output of all of the operating filter units and correspond to the exhaust to the stack.
d. Post-carbon-bed 5 sampling for 1,2-dichloroethane in operating (on-line) AFA filter units, and carbon replacement shall be performed in accordance with Table IV.D.6.
e. For the AFA stack monitors:
   1. Level 2 responses correspond to agent concentrations ≥ 0.2 VSL but < 0.7 VSL
   2. Level 3 responses correspond to agent concentrations ≥ 0.7 VSL.
   3. For agent concentrations ≥ 0.2 VSL and < 0.7 VSL, the plant can continue to operate under the control of Operations.
f. The AFA inlet duct pressure relative to atmosphere is the operating parameter used to demonstrate operation of the cascade ventilation system. If the duct pressure exceeds the high pressure alarm setpoint, loss of cascade ventilation is assumed and process feeds are stopped.

LIST OF REFERENCE DOCUMENTS

List Number	Document Number	Document Title	Rev Number	Issue Date	Doc Type	System Number
1	24852-RD-M5-B23-W0011	Material Flow Diagram Munitions Transport & Storage Munitions / Energetic Transport	000	7/24/07	pfd	B23
2	24852-RD-M5-B01-W0011	Material Flow Diagram Munitions Unpack and PMD ERB Receiving and Traveling Area	001	5/4/11	pfd	B01
3	24852-RD-M5-B01-W0012	Material Flow Diagram Munitions Unpack and PMD ERB Receiving and Traveling Area	001	5/4/11	pfd	B01
4	24852-RD-M5-B01-W0021	Material Flow Diagram Munitions Unpack & PMD Reconfiguration Room 1	000	7/24/07	pfd	B01
5	24852-RD-M5-B01-W0023	Material Flow Diagram Munitions Unpack & PMD Reconfiguration Room 2	000	7/24/07	pfd	B01
6	24852-RD-M5-B01-W0031	Material Flow Diagram Munitions Unpack and PMD Projectile Disassembly	002	11/16/11	pfd	B01
7	24852-RD-M5-B01-W0041	Material Flow Diagram Munitions Unpack and PMD Agent Monitoring and Packaging	002	5/4/11	pfd	B01
8	24852-RD-M6-B01-W0031	P&ID ERB ECR Feed Conveyors to PMD (1)	008	8/8/19	P&ID	B01
9	24852-RD-M6-B01-W0041	P&ID ERB PMD Parts Conveyors (1)	008	8/7/19	P&ID	B01
10	24852-RD-M6-B01-W0044	P&ID ERB PMD ECR Exit Conveyors (1)	009	8/7/19	P&ID	B01
11	24852-RD-M6-B01-W0047	P&ID ERB PMD Parts Conveyors and Monitor (1)	~~007~~ 008	~~4/5/17~~ 12/18/19	P&ID	B01
12	24852-RD-M6-B01-W0071	P&ID ERB PMD Robot (1)	008	8/16/19	P&ID	B01
13	24852-RD-M6-B01-W0072	P&ID ERB PMD Nose Closure Removal (1)	008	8/7/19	P&ID	B01
14	24852-RD-M6-B01-W0073	P&ID ERB PMD Misc. Parts Removal (1)	007	8/7/19	P&ID	B01
15	24852-RD-M6-B01-W0074	P&ID ERB PMD Burster Removal (1)	008	8/7/19	P&ID	B01
16	24852-RD-M6-B01-W0111	P&ID ERB Munitions Unpack Reconfiguration Room (1)	006	3/17/17	P&ID	B01
17	24852-RD-M6-B01-W0112	P&ID ERB Vapor Containment Room Reconfiguration Room (1)	009	2/4/19	P&ID	B01
18	24852-RD-M6-B01-W0113	P&ID ERB Munition Reconfiguration - Reconfiguration Room (1)	008	2/4/19	P&ID	B01
19	24852-RD-M6-B01-W0124	P&ID ERB PMD Burster Detection (1)	006	8/7/19	P&ID	B01
20	24852-RD-M6-B01-W0131	P&ID ERB PMD MME Station 1 (1)	~~004~~ 005	~~1/4/19~~ 12/26/19	P&ID	B01
21	24852-RD-M6-B01-W0134	P&ID ERB PMD - PME Station 1 (1)	~~003~~ 004	~~1/4/19~~ 12/26/19	P&ID	B01
22	24852-RD-M6-B01-W0154	P&ID ERB PMD PME Station 1 (3)	~~003~~ 004	~~1/4/19~~ 12/26/19	P&ID	B01
23	24852-RD-M6-B01-W0160	P&ID ERB PMD - Munitions Monitoring Enclosures	~~003~~ 004	~~8/13/18~~ 12/18/19	P&ID	B01
24	24852-RD-M6-B01-W0170	P&ID ERB PMD - Parts Monitoring Enclosures	~~003~~ 004	~~8/13/18~~ 12/18/19	P&ID	B01
25	24852-RD-M5-B02-R0001	Agent Processing Building MWS Lines 155mm Munitions Process Flow Diagram	00U	1/25/07	pfd	B02
26	24852-RD-M6-B02-M0001	P&ID Munitions Washout Sys MWS Loading and Airlock - Conveyor Line 1	006	8/21/19	P&ID	B02
27	24852-RD-M6-B02-M0002	P&ID Munitions Washout System MWS Feed Conveyor Line 1	004	3/2/15	P&ID	B02
28	24852-RD-M6-B02-M0012	P&ID Munitions Washout Sys MWS High Pressure Washout Water	010	7/10/18	P&ID	B02
29	24852-RD-M6-B02-M0017	P&ID Munitions Washout Sys MWS HP Water CAM Valve Station- Line 1	~~006~~ 008	~~3/25/14~~ 1/14/20	P&ID	B02
30	24852-RD-M6-B02-M0018	P&ID Munitions Washout Sys MWS HP Water CAM Valve Station- Line 2	~~008~~ 010	~~11/29/17~~ 1/14/20	P&ID	B02
31	24852-RD-M6-B02-M0020	P&ID Munitions Washout Sys MWS High Pressure Washout Water	003	3/28/14	P&ID	B02
32	24852-RD-M6-B02-M0021	P&ID Munitions Washout Sys MWS High Pressure Pump Skid A	~~006~~ 007	~~5/25/16~~ 12/21/19	P&ID	B02
33	24852-RD-M6-B02-M0024	P&ID Munitions Washout Sys MWS Line 1 - CAM 1 and 2 Utility Stations	006	8/21/19	P&ID	B02
34	24852-RD-M6-B02-M0062	P&ID Munitions Washout SYS (MWS) Line 1-155 MM CAM #5 Detail	004	9/10/19	P&ID	B02
35	24852-RD-M6-B02-R0009	P&ID Munitions Washout Sys MWS Line 1 - MHR	008	11/15/19	P&ID	B02
36	24852-RD-M6-B02-R0010	P&ID Munitions Washout Sys MWS Line 1 - 155 MM CAM No. 1 Details	~~007~~ 008	~~9/10/19~~ 2/6/20	P&ID	B02
37	24852-RD-M6-B02-R0011	P&ID Munitions Washout Sys MWS Line 1 - Washed AGT-WTR Booster Pumps	010	2/13/18	P&ID	B02
38	24852-RD-M6-B02-R0064	P&ID Munitions Washout Sys MWS Line 1 - Common Cam Drain Lines	003	2/7/18	P&ID	B02
39	24852-RD-M5-B03-B0001	Process Flow Diagram Munitions Treatment Unit	001	2/3/10	pfd	B03
40	24852-RD-M6-B03-M0001	P&ID Munitions Treatment Unit (MTU) MTU No. 1 (SHT 1 of 4)	~~009~~ 010	~~9/26/19~~ 1/27/20	P&ID	B03
41	24852-RD-M6-B03-M0009	P&ID Munitions Treatment Unit (MTU) MTU No. 1 (Sheet 2 of 4)	011	9/26/19	P&ID	B03
42	24852-RD-M6-B03-M0010	P&ID Munitions Treatment Unit (MTU) MTU No. 1 (Sheet 3 of 4)	~~010~~ 011	~~8/30/19~~ 1/27/20	P&ID	B03
43	24852-RD-M6-B03-M0011	P&ID Munitions Treatment Unit (MTU) MTU No. 1 (Sheet 4 of 4)	011	9/26/19	P&ID	B03

List Number	Document Number	Document Title	Rev Number	Issue Date	Doc Type	System Number
44	24852-RD-M5-B04-B0001	Process Flow Diagram Agent Water Separation	P03	12/3/09	pfd	B04
45	24852-RD-M5-B04-B0002	Process Flow Diagram Agent Neutralization Reactors	P04	4/1/10	pfd	B04
46	24852-RD-M5-B04-B0003	Process Flow Diagram Hydrolysate Hold / Storage	P04	12/3/09	pfd	B04
47	24852-RD-M6-B04-M0001	P&ID Agent Collection and Neutralization MWS Wash Water Collection - 1	~~006~~ 007	~~1/3/17~~ 12/27/19	P&ID	B04
48	24852-RD-M6-B04-M0003	P&ID Agent Collection and Neutralization Spent Decon Feed Supply	~~006~~ 007	~~11/1/16~~ 12/23/19	P&ID	B04
49	24852-RD-M6-B04-M0004	P&ID Agent Collection and Neutralization ANS Vents and MWS Wash Water Supply	~~006~~ 007	~~11/1/16~~ 12/23/19	P&ID	B04
50	24852-RD-M6-B04-M0005	P&ID Agent Collection and Neutralization Agent Hydrolyzer - 1	~~009~~ 010	~~1/29/19~~ 1/7/20	P&ID	B04
51	24852-RD-M6-B04-M0006	P&ID Agent Collection and Neutralization Hydrolyzer Recirc Pump - 1	~~009~~ 010	~~4/4/19~~ 12/23/19	P&ID	B04
52	24852-RD-M6-B04-M0009	P&ID Agent Collection and Neutralization Agent-Water Separators	~~007~~ 008	~~11/1/16~~ 12/23/19	P&ID	B04
53	24852-RD-M6-B04-M0010	P&ID Agent Collection and Neutralization Wash Water Pumps	~~006~~ 007	~~11/21/16~~ 12/23/19	P&ID	B04
54	24852-RD-M6-B04-M0011	P&ID Agent Collection and Neutralization In-Line Mixers	~~010~~ 011	~~4/4/19~~ 12/23/19	P&ID	B04
55	24852-RD-M6-B04-M0012	P&ID Agent Collection and Neutralization In-Line Mixers	~~010~~ 011	~~4/4/19~~ 12/23/19	P&ID	B04
56	24852-RD-M6-B04-M0013	P&ID Agent Collection and Neutralization Hydrolysate Hold Tank - 1	~~009~~ 010	~~4/4/19~~ 12/23/19	P&ID	B04
57	24852-RD-M6-B04-M0015	P&ID Agent Collection and Neutralization Hydrolysate Supply	~~006~~ 007	~~11/1/16~~ 12/23/19	P&ID	B04
58	24852-RD-M6-B04-M0016	P&ID Agent Collection and Neutralization 30-Day Storage Tank - 1	009	10/25/18	P&ID	B04
59	24852-RD-M6-B04-M0019	P&ID Agent Collection and Neutralization Concentrate Supply	~~004~~ 005	~~11/1/16~~ 12/23/19	P&ID	B04
60	24852-RD-M6-B04-M0020	P&ID Agent Collection and Neutralization NaOH Supply	~~008~~ 009	~~8/16/19~~ 12/23/19	P&ID	B04
61	24852-RD-M6-B04-M0021	P&ID Agent Collection and Neutralization Hot Process Water Supply	~~008~~ 009	~~5/9/19~~ 12/23/19	P&ID	B04
62	24852-RD-M6-B04-M0022	P&ID Agent Collection and Neutralization Agent Concentrate Pumps	~~008~~ 009	~~1/29/19~~ 12/23/19	P&ID	B04
63	24852-RD-M6-B04-M0023	P&ID Agent Collection and Neutralization Agent Hydrolysate Sampler - 1	010	5/6/19	P&ID	B04
64	24852-RD-M6-B04-M0025	P&ID Agent Collection & Neutralization Hydrolysate Vent Filtration	005	10/16/17	P&ID	B04
65	24852-RD-M5-B05-B0001	Process Flow Diagram Spent Decon System Spent Decon Hold Tanks	005	12/7/18	pfd	B05
66	24852-RD-M5-B05-B0004	Flow Diagram Spent Decon Storage - APB Spent Decon Sumps	P02	12/7/18	pfd	B05
67	24852-RD-M5-B05-B0005	Flow Diagram Spent Decon Storage - APB Spent Decon Sumps	P02	12/7/18	pfd	B05
68	24852-RD-M5-B05-M0002	Flow Diagram - Toxic Storage and Spent Decon ERB Spent Decon Sumps	00F	4/18/07	pfd	B05
69	24852-RD-M5-B05-M0003	Flow Diagram - Toxic Storage and Spent Decon ERB Spent Decon Sumps	00E	10/16/06	pfd	B05
70	24852-RD-M6-B05-M0001	Piping and Instrument Spent Decon Storage System Spent Decon Holding Tank	007	8/21/19	P&ID	B05
71	24852-RD-M6-B05-M0002	P&ID Spent Decon Storage System Spent Decon Feed Pumps	008	8/21/19	P&ID	B05
72	24852-RD-M6-B05-M0004	P&ID Spent Decon Storage System Spent Decon Feed Pumps	008	8/21/19	P&ID	B05
73	24852-RD-M6-B05-M0005	P&ID Spent Decon Storage System Medical Center Decon	002	7/3/18	P&ID	B05
74	24852-RD-M6-B05-M0021	P&ID Spent Decon Storage System Category B Sump (APB)	008	8/21/19	P&ID	B05
75	24852-RD-M6-B05-M0022	P&ID Spent Decon Storage System Category B Sump (APB)	008	8/21/19	P&ID	B05
76	24852-RD-M6-B05-M0023	P&ID Spent Decon Storage System Category A Sump (APB)	~~008~~ 009	~~8/21/19~~ 1/7/20	P&ID	B05
77	24852-RD-M6-B05-M0024	P&ID Spent Decon Storage System Category A Sump (APB)	008	8/21/19	P&ID	B05
78	24852-RD-M6-B05-M0025	P&ID Spent Decon Storage System Category A Sump (APB)	~~009~~ 010	~~8/21/19~~ 1/7/20	P&ID	B05
79	24852-RD-M6-B05-M0026	P&ID Spent Decon Storage System Category A Sump (APB)	008	8/21/19	P&ID	B05
80	24852-RD-M6-B05-M0027	P&ID Spent Decon Storage System Category A Sump (APB)	007	7/10/18	P&ID	B05
81	24852-RD-M6-B05-M0028	P&ID Spent Decon Storage System Category B Sump (APB)	009	8/21/19	P&ID	B05
82	24852-RD-M6-B05-M0029	P&ID Spent Decon Storage System Category C Sump (APB)	009	8/21/19	P&ID	B05
83	24852-RD-M6-B05-M0030	P&ID Spent Decon Storage System Category C Sump (APB)	007	6/4/18	P&ID	B05
84	24852-RD-M6-B05-M0031	P&ID Spent Decon Storage System Category C Sump (APB)	006	9/18/14	P&ID	B05
85	24852-RD-M6-B05-M0032	P&ID Spent Decon Storage System Category C Sump (APB)	006	9/18/14	P&ID	B05
86	24852-RD-M6-B05-M0033	P&ID Spent Decon Storage System Category C Sump (APB)	007	2/4/19	P&ID	B05

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87	24852-RD-M6-B05-M0034	P&ID Spent Decon Storage System Category C Sump (APB)	006	9/18/14	P&ID	B05
88	24852-RD-M6-B05-M0035	P&ID Spent Decon Storage System Category C Sump (APB)	006	9/18/14	P&ID	B05
89	24852-RD-M6-B05-M0036	P&ID Spent Decon Storage System Category C Sump (APB)	007	2/4/19	P&ID	B05
90	24852-RD-M6-B05-M0110	P&ID Spent Decon Storage System Sprinkler Water Transfer Sumps	008	8/26/19	P&ID	B05
91	24852-RD-M5-B09-B0001	Process Flow Diagram Biotreatment	P01	1/31/11	pfd	B09
92	24852-RD-M6-B09-M0001	P&ID Biotreatment System ICB Feed Tank - Module 1	011	2/20/19	P&ID	B09
93	24852-RD-M6-B09-M0002	P&ID Biotreatment System ICB Feed Pump - Module 1	007	2/7/18	P&ID	B09
94	24852-RD-M6-B09-M0003	P&ID Biotreatment System ICB Air Blower - Module 1	008	11/27/19	P&ID	B09
95	24852-RD-M6-B09-M0004	P&ID Biotreatment System ICB 0101 - Module 1	010	11/27/19	P&ID	B09
96	24852-RD-M6-B09-M0005	P&ID Biotreatment System ICB 0102 - Module 1	010	11/27/19	P&ID	B09
97	24852-RD-M6-B09-M0006	P&ID Biotreatment System ICB 0103 - Module 1	010	11/27/19	P&ID	B09
98	24852-RD-M6-B09-M0007	P&ID Biotreatment System ICB 0104 - Module 1	010	11/27/19	P&ID	B09
99	24852-RD-M6-B09-M0008	P&ID Biotreatment System ICB Offgas Header - Module 1	007	6/15/16	P&ID	B09
100	24852-RD-M6-B09-M0009	P&ID Biotreatment System ICB Effluent Tank - Module 1	006	4/5/16	P&ID	B09
101	24852-RD-M6-B09-M0010	P&ID Biotreatment System ICB Effluent Pump - Module 1	007	2/7/18	P&ID	B09
102	24852-RD-M5-B11-B0001	Process Flow Diagram Bioreactor Offgas Treatment	P02	3/21/11	pfd	B11
103	24852-RD-M6-B11-M0001	P&ID Bioreactor Offgas Treatment ICB Offgas Heater and Fan - Module 1	008	10/31/18	P&ID	B11
104	24852-RD-M6-B11-M0002	P&ID Bioreactor Offgas Treatment ICB Offgas Carbon Filter - Module 1	008	10/31/18	P&ID	B11
105	24852-RD-M5-B14-B0001	Process Flow Diagram Water Recovery System	P01	3/31/11	pfd	B14
106	24852-RD-M6-B14-M0001	P&ID Water Recovery BC Feed Tank	010	7/21/17	P&ID	B14
107	24852-RD-M6-B14-M0005	P&ID Water Recovery BC Feed Tank Offgas System	009	8/11/16	P&ID	B14
108	24852-RD-M6-B14-M0006	P&ID Water Recovery Brine Conc. Feed Pumps	006	7/1/19	P&ID	B14
109	24852-RD-M6-B14-M0007	P&ID Water Recovery BC Feed Tank Air Compressors	005	7/10/18	P&ID	B14
110	24852-RD-M5-B12-B0001	Process Flow Diagram Evaporator	P00	4/7/11	pfd	B12
111	24852-RD-M5-B12-B0002	Process Flow Diagram Crystallizer	P00	4/7/11	pfd	B12
112	24852-RD-M6-B12-M0001	P&ID Brine Reduction System Utilities Support	003	2/11/19	P&ID	B12
113	24852-RD-M6-B12-M0002	P&ID Brine Reduction System BC Evaporator Feed Tank	009	10/15/19	P&ID	B12
114	24852-RD-M6-B12-M0003	P&ID Brine Reduction System BC Feed Preheater	005	10/15/19	P&ID	B12
115	24852-RD-M6-B12-M0004	P&ID Brine Reduction System BRS Distillate Cooler	004	10/15/19	P&ID	B12
116	24852-RD-M6-B12-M0005	P&ID Brine Reduction System BC Evaporator Feed Deaerator and Dist. Tank	005	10/15/19	P&ID	B12
117	24852-RD-M6-B12-M0006	P&ID Brine Reduction System BC Evaporator	~~008~~ 009	~~10/15/19~~ 1/16/20	P&ID	B12
118	24852-RD-M6-B12-M0007	P&ID Brine Reduction System BC Evaporator Vapor Washer	006	10/15/19	P&ID	B12
119	24852-RD-M6-B12-M0008	P&ID Brine Reduction System BC Evaporator Vapor Compressor	~~008~~ 009	~~10/15/19~~ 12/11/19	P&ID	B12
120	24852-RD-M6-B12-M0009	P&ID Brine Reduction System Crystallizer Steam Condensate Tank	008	10/15/19	P&ID	B12
121	24852-RD-M6-B12-M0010	P&ID Brine Reduction System Crystallizer Feed Tank	008	10/15/19	P&ID	B12
122	24852-RD-M6-B12-M0011	P&ID Brine Reduction System Cryst. and Cryst. Heater	~~008~~ 009	~~10/15/19~~ 1/16/20	P&ID	B12
123	24852-RD-M6-B12-M0012	P&ID Brine Reduction System BRS Vent and Crystallizer Condensers	007	10/15/19	P&ID	B12
124	24852-RD-M6-B12-M0013	P&ID Brine Reduction System BRS Belt Filter	009	10/15/19	P&ID	B12
125	24852-RD-M6-B12-M0014	P&ID Brine Reduction System Distillate Carbon Filter Feed Tank	008	10/15/19	P&ID	B12
126	24852-RD-M6-B12-M0015	P&ID Brine Reduction System Distillate Carbon Filters	008	10/15/19	P&ID	B12
127	24852-RD-M6-B12-M0016	P&ID Brine Reduction System Off-Gas Carbon Treatment	009	11/22/19	P&ID	B12
128	24852-RD-M6-B12-M0017	P&ID Brine Reduction System Sulfuric Acid Feed System	008	3/6/18	P&ID	B12
129	24852-RD-M6-B12-M0018	P&ID Brine Reduction System Antifoam and Anti Scale Addition	~~007~~ 008	~~5/22/17~~ 1/16/20	P&ID	B12

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130	24852-RD-M6-B12-M0019	P&ID Brine Reduction System Caustic Addition	007	3/6/18	P&ID	B12
131	24852-RD-M6-B12-M0020	P&ID Brine Reduction System Process Drain Header and Area Sumps	009	3/8/18	P&ID	B12
132	24852-RD-M6-B12-M0021	P&ID Brine Reduction System Utility Headers	006	2/4/19	P&ID	B12
133	24852-RD-M6-B12-M0022	P&ID Brine Reduction System Piping Interface	006	2/4/19	P&ID	B12
134	24852-RD-M6-B12-M0023	P&ID Brine Reduction System Seal Water System	007	2/4/19	P&ID	B12
135	24852-RD-M5-B24-B0001	APB SDU Unit Process Flow Diagram	001	1/21/10	pfd	B24
136	24852-RD-M6-B24-M0001	P&ID Secondary Waste Treatment APB SDU Unit #1 (Process)	010	11/29/18	P&ID	B24
137	24852-RD-M6-B24-M0003	P&ID Secondary Waste Treatment Autoclave Unit (Sketch)	~~008~~ 009	~~11/29/18~~ 1/24/20	P&ID	B24
138	24852-RD-M6-B24-M0004	P&ID Secondary Waste Treatment Autoclave Condensate (Sketch)	007	2/9/18	P&ID	B24
139	24852-RD-M5-B24-B0006	PCAPP SDU Autoclave Waste Sorting Guide	002	5/3/19	pfd	B24
140	24852-RD-M5-B20-B0001	Process Flow Diagram Off-gas Treatment System	P01	6/10/10	pfd	B20
141	24852-RD-M6-B20-M0001	P&ID Off-gas Treatment Venturi-Scrubber Tower	~~010~~ 011	~~1/16/19~~ 12/23/19	P&ID	B24
142	24852-RD-M6-B20-M0002	P&ID Off-gas Treatment OTS Recirc Pumps	~~009~~ 010	~~1/16/19~~ 12/23/19	P&ID	B24
143	24852-RD-M6-B20-M0003	P&ID Off-gas Treatment Reheaters and Blowers	~~007~~ 008	~~4/20/17~~ 12/23/19	P&ID	B24
144	24852-RD-M6-B20-M0004	P&ID Off-gas Treatment Scrubber - Recirc Cooler	~~009~~ 010	~~1/16/19~~ 12/23/19	P&ID	B24
145	24852-RD-M6-B20-M0005	P&ID Off-gas Treatment Bulk Oxidizer	~~009~~ 010	~~4/20/17~~ 12/23/19	P&ID	B24
146	24852-RD-M6-B20-M0006	P&ID Off-gas Treatment MWS Vent Blowers	~~006~~ 008	~~4/20/17~~ 1/16/20	P&ID	B24
147	24852-RD-M5-M02-M0001	Air Flow Diagram ERB Ventilation System HVAC Cascade System Sheet 1 of 5	003	7/9/12	pfd	M02
148	24852-RD-M5-M02-M0002	Air Flow Diagram ERB Ventilation System HVAC Cascade System Sheet 2 of 5	005	5/1/17	pfd	M02
149	24852-RD-M5-M02-M0003	Air Flow Diagram ERB Ventilation System HVAC Cascade System Sheet 3 of 5	003	7/9/12	pfd	M02
150	24852-RD-M5-M02-M0004	Air Flow Diagram ERB Ventilation System HVAC Cascade System Sheet 4 of 5	003	7/9/12	pfd	M02
151	24852-RD-M5-M02-M0005	Air Flow Diagram ERB Ventilation System HVAC Cascade System Sheet 5 of 5	003	7/9/12	pfd	M02
152	24852-RD-M5-M02-M0006	Air Flow Diagram ERB Ventilation System Electrical Rooms - MAV Vestibules	003	8/19/10	pfd	M02
153	24852-RD-M5-M02-M0010	Air Flow Diagram ERB Ventilation System MSM and ESM HVAC System	005	9/12/13	pfd	M02
154	24852-RD-M6-M02-M0001	P&ID ERB Ventilation System Distribution Header	002	6/24/14	P&ID	M02
155	24852-RD-M6-M02-M0002	P&ID ERB Ventilation System HVAC Cascade System	~~003~~ 004	~~2/10/16~~ 12/23/19	P&ID	M02
156	24852-RD-M6-M02-M0003	P&ID ERB Ventilation System HVAC Cascade System	~~004~~ 005	~~2/10/16~~ 12/23/19	P&ID	M02
157	24852-RD-M6-M02-M0004	P&ID ERB Ventilation System HVAC Cascade System	~~003~~ 004	~~2/10/16~~ 12/23/19	P&ID	M02
158	24852-RD-M6-M02-M0005	P&ID ERB Ventilation System Equipment Airlock	~~006~~ 007	~~8/8/19~~ 12/20/19	P&ID	M02
159	24852-RD-M6-M02-M0006	P&ID ERB Ventilation System Equipment Airlock	~~006~~ 007	~~8/8/19~~ 12/20/19	P&ID	M02
160	24852-RD-M6-M02-M0007	P&ID ERB Ventilation System HVAC Cascade System	007	8/13/18	P&ID	M02
161	24852-RD-M6-M02-M0008	P&ID ERB Ventilation System HVAC Cascade System	~~005~~ 006	~~3/8/18~~ 12/23/19	P&ID	M02
162	24852-RD-M6-M02-M0009	P&ID ERB Ventilation System HVAC Cascade System	~~004~~ 005	~~11/15/18~~ 12/23/19	P&ID	M02
163	24852-RD-M6-M02-M0014	P&ID ERB Ventilation System Air Handling Unit	006	11/15/18	P&ID	M02
164	24852-RD-M6-M02-M0017	P&ID ERB Ventilation System Air Handling Unit	006	11/15/18	P&ID	M02
165	24852-RD-M6-M02-M0022	P&ID ERB Ventilation System Transfer Duct Details	~~003~~ 004	~~2/10/16~~ 12/23/19	P&ID	M02
166	24852-RD-M6-M02-M0027	P&ID ERB Ventilation System Transfer Duct Details	~~003~~ 004	~~2/10/16~~ 12/23/19	P&ID	M02
167	24852-RD-M6-M02-M0033	P&ID ERB Ventilation System - Vest Vent. System	~~005~~ 006	~~4/21/16~~ 12/23/19	P&ID	M02
168	24852-RD-M6-M02-M0040	P&ID ERB Ventilation System Atmospheric Pressure Ref.	~~004~~ 005	~~2/10/16~~ 12/23/19	P&ID	M02
169	24852-RD-M6-M02-M0041	P&ID ERB Ventilation System MSM HVAC System	006	4/21/16	P&ID	M02
170	24852-RD-M6-M02-M0042	P&ID ERB Ventilation System ESM HVAC System	007	10/20/17	P&ID	M02
171	24852-RD-M6-M02-M0043	P&ID ERB Ventilation System ESM-MSM Exhaust Filtration System	005	8/8/19	P&ID	M02
172	24852-RD-M6-M02-M0044	P&ID ERB Ventilation System MSM Exhaust Filtration System	004	8/8/19	P&ID	M02

List Number	Document Number	Document Title	Rev Number	Issue Date	Doc Type	System Number
173	24852-RD-M6-M02-M0045	P&ID ERB Ventilation System ESM Monitoring House Number 1 HVAC	003	8/13/18	P&ID	M02
174	24852-RD-M6-M02-M0046	P&ID ERB Ventilation System ESM Monitoring House Number 2 HVAC	003	8/13/18	P&ID	M02
175	24852-RD-M6-M02-M0047	P&ID ERB Ventilation System ERB Monitoring House HVAC	001	6/24/14	P&ID	M02
176	24852-RD-M6-M02-M0048	P&ID ERB Ventilation System MSM Monitoring House Number 1 HVAC	002	2/11/16	P&ID	M02
177	24852-RD-M6-M02-M0049	P&ID ERB Ventilation System MSM Monitoring House Number 2 HVAC	002	2/10/16	P&ID	M02
178	24852-RD-M6-M02-M0050	P&ID ERB Ventilation System MSM Monitoring House Number 3 HVAC	002	2/10/16	P&ID	M02
179	24852-RD-M6-M02-M0051	P&ID ERB Ventilation System MSM Monitoring House Number 4 HVAC	002	2/10/16	P&ID	M02
180	24852-RD-M6-M02-M0056	P&ID ERB Ventilation System Spare Ventilation System	003	10/18/19	P&ID	M02
181	24852-RD-M5-M03-M0001	Air Flow Diagram APB Ventilation System HVAC Cascade System Sheet 1 of 5	003	4/23/14	pfd	M03
182	24852-RD-M5-M03-M0002	Air Flow Diagram APB Ventilation System HVAC Cascade System Sheet 2 of 5	003	4/23/14	pfd	M03
183	24852-RD-M5-M03-M0003	Air Flow Diagram APB Ventilation System HVAC Cascade System Sheet 3 of 5	003	4/23/14	pfd	M03
184	24852-RD-M5-M03-M0004	Air Flow Diagram APB Ventilation System HVAC Cascade System Sheet 4 of 5	005	5/1/17	pfd	M03
185	24852-RD-M5-M03-M0005	Air Flow Diagram APB Ventilation System HVAC Cascade System Sheet 5 of 5	004	4/23/14	pfd	M03
186	24852-RD-M5-M03-M0007	Air Flow Diagram APB Ventilation System Electrical Rooms H and V System	003	9/27/10	pfd	M03
187	24852-RD-M5-M03-M0009	Air Flow Diagram APB Ventilation System ESA Ventilation System	002	9/27/10	pfd	M03
188	24852-RD-M5-M03-M0010	Air Flow Diagram APB BLDG HVAC	003	4/23/14	pfd	M03
189	24852-RD-M5-M03-M0012	Air Flow Diagram APB Ventilation System Ventilation Analysis	001	9/27/10	pfd	M03
190	24852-RD-M6-M03-M0001	P&ID APB Ventilation System Distribution Header	003	5/11/18	P&ID	M03
191	24852-RD-M6-M03-M0002	P&ID APB Ventilation System HVAC Cascade System	006	1/18/17	P&ID	M03
192	24852-RD-M6-M03-M0003	P&ID APB Ventilation System HVAC Cascade System	006	1/18/17	P&ID	M03
193	24852-RD-M6-M03-M0004	P&ID APB Ventilation System HVAC Cascade System	~~006~~ 007	~~12/29/16~~ 12/23/19	P&ID	M03
194	24852-RD-M6-M03-M0005	P&ID APB Ventilation System HVAC Cascade System	008	5/6/19	P&ID	M03
195	24852-RD-M6-M03-M0006	P&ID APB Ventilation System HVAC Cascade System	~~005~~ 006	~~12/29/16~~ 12/23/19	P&ID	M03
196	24852-RD-M6-M03-M0007	P&ID APB Ventilation System HVAC Cascade System	~~005~~ 006	~~2/19/16~~ 12/23/19	P&ID	M03
197	24852-RD-M6-M03-M0008	P&ID APB Ventilation System HVAC Cascade System	~~008~~ 009	~~2/7/18~~ 12/23/19	P&ID	M03
198	24852-RD-M6-M03-M0009	P&ID APB Ventilation System HVAC Cascade System	~~008~~ 009	~~3/28/18~~ 12/23/19	P&ID	M03
199	24852-RD-M6-M03-M0010	P&ID APB Ventilation System HVAC Cascade System	~~008~~ 009	~~2/6/19~~ 12/23/19	P&ID	M03
200	24852-RD-M6-M03-M0015	P&ID APB Ventilation System Air Handling Unit	008	2/6/19	P&ID	M03
201	24852-RD-M6-M03-M0016	P&ID APB Ventilation System Air Handling Unit	008	11/15/18	P&ID	M03
202	24852-RD-M6-M03-M0017	P&ID APB Ventilation System Air Handling Unit	008	2/6/19	P&ID	M03
203	24852-RD-M6-M03-M0021	P&ID APB Ventilation System Recirculation Air Handling Unit	~~006~~ 007	~~5/26/16~~ 12/23/19	P&ID	M03
204	24852-RD-M6-M03-M0024	P&ID APB Ventilation System Transfer Duct Details	~~003~~ 004	~~2/19/16~~ 12/23/19	P&ID	M03
205	24852-RD-M6-M03-M0026	P&ID APB Ventilation System Transfer Duct Details	~~003~~ 004	~~2/19/16~~ 12/23/19	P&ID	M03
206	24852-RD-M6-M03-M0027	P&ID APB Ventilation System Transfer Duct Details	~~003~~ 004	~~2/19/16~~ 12/23/19	P&ID	M03
207	24852-RD-M6-M03-M0029	P&ID APB Ventilation System Transfer Duct Details	~~003~~ 004	~~2/19/16~~ 12/23/19	P&ID	M03
208	24852-RD-M6-M03-M0032	P&ID APB Ventilation System APB Building HVAC System	004	1/20/17	P&ID	M03
209	24852-RD-M6-M03-M0033	P&ID APB Ventilation System Entry Support Area HVAC System	007	1/20/17	P&ID	M03
210	24852-RD-M6-M03-M0034	P&ID APB Ventilation System Entry Support Area HVAC System	007	2/6/19	P&ID	M03
211	24852-RD-M6-M03-M0035	P&ID APB Ventilation System ESA HVAC System	006	2/6/19	P&ID	M03
212	24852-RD-M6-M03-M0036	P&ID APB Ventilation System Battery Room HVAC	~~008~~ 009	~~1/30/17~~ 12/23/19	P&ID	M03
213	24852-RD-M6-M03-M0037	P&ID APB Ventilation System HVAC Cascade System	006	12/29/16	P&ID	M03
214	24852-RD-M6-M03-M0040	P&ID APB Ventilation System Atmospheric Pressure Ref.	~~007~~ 008	~~1/30/17~~ 12/23/19	P&ID	M03
215	24852-RD-M6-M03-M0041	P&ID APB Ventilation System Recirculation Air Handling Unit	003	2/19/16	P&ID	M03

LIST OF REFERENCE DOCUMENTS

List Number	Document Number	Document Title	Rev Number	Issue Date	Doc Type	System Number
216	24852-RD-M5-M07-M0001	Air Flow Diagram Filtration Systems HVAC Exhaust Sheet 1 of 5	003	11/12/14	pfd	M07
217	24852-RD-M5-M07-M0002	Air Flow Diagram Filtration Systems HVAC Exhaust Sheet 2 of 5	003	11/12/14	pfd	M07
218	24852-RD-M5-M07-M0003	Air Flow Diagram Filtration Systems HVAC Exhaust Sheet 3 of 5	003	11/12/14	pfd	M07
219	24852-RD-M5-M07-M0004	Air Flow Diagram Filtration Systems HVAC Exhaust Sheet 4 of 5	003	11/12/14	pfd	M07
220	24852-RD-M5-M07-M0005	Air Flow Diagram Filtration Systems HVAC Exhaust Sheet 5 of 5	P03	12/14/10	pfd	M07
221	24852-RD-M6-M07-M0002	P&ID Filtration Systems AFA Exhaust Air Filtration System	~~009~~ 010	~~1/4/19~~ 12/2019	P&ID	M07
222	24852-RD-M6-M07-M0003	P&ID Filtration Systems AFA Exhaust Air Monitoring House 7	008	2/4/16	P&ID	M07
223	24852-RD-M6-M07-M0013	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~013~~ 015	~~1/11/19~~ 1/24/20	P&ID	M07
224	24852-RD-M6-M07-M0014	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~011~~ 013	~~7/12/18~~ 1/24/20	P&ID	M07
225	24852-RD-M6-M07-M0015	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~011~~ 013	~~7/12/18~~ 1/24/20	P&ID	M07
226	24852-RD-M6-M07-M0016	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~011~~ 013	~~7/12/18~~ 1/24/20	P&ID	M07
227	24852-RD-M6-M07-M0017	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~010~~ 012	~~7/12/18~~ 1/24/20	P&ID	M07
228	24852-RD-M6-M07-M0018	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~010~~ 012	~~7/12/18~~ 1/24/20	P&ID	M07
229	24852-RD-M6-M07-M0019	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~010~~ 012	~~7/12/18~~ 1/24/20	P&ID	M07
230	24852-RD-M6-M07-M0020	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~011~~ 013	~~7/12/18~~ 1/24/20	P&ID	M07
231	24852-RD-M6-M07-M0021	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~010~~ 012	~~7/12/18~~ 1/24/20	P&ID	M07
232	24852-RD-M6-M07-M0022	P&ID Filtration Systems AFA Exhaust Air Filtration Unit	~~011~~ 013	~~5/17/19~~ 1/24/20	P&ID	M07
233	24852-RD-M6-M07-M0024	P&ID Filtration Systems AFA Exhaust Air Monitoring House 5	007	9/4/15	P&ID	M07
234	24852-RD-M6-M07-M0025	P&ID Filtration Systems AFA Exhaust Air Monitoring House 5	007	9/4/15	P&ID	M07
235	24852-RD-M6-M07-M0026	P&ID Filtration Systems AFA Exhaust Air Monitoring House 12	~~007~~ 008	~~9/4/15~~ 1/27/20	P&ID	M07
236	24852-RD-M6-M07-M0027	P&ID Filtration Systems AFA Exhaust Air Monitoring House 8	007	9/4/15	P&ID	M07
237	24852-RD-M6-J02-J0001	Piping and Instrument Diagram Plant Area Agent Monitors Agent Processing Building	~~007~~ 008	~~1/18/18~~ 1/31/20	P&ID	J02
238	24852-RD-M6-J02-J0002	Piping and Instrument Diagram Plant Area Agent Monitors Agent Processing Building	008	11/6/19	P&ID	J02
239	24852-RD-M6-J02-J0003	Piping and Instrument Diagram Plant Area Agent Monitors Enhanced Reconfiguration Building	009	8/27/19	P&ID	J02
240	24852-RD-M6-J02-J0004	Piping and Instrument Diagram Plant Area Agent Monitors Agent Filter Area	~~004~~ 005	~~11/10/15~~ 1/24/20	P&ID	J02
241	24852-RD-M6-J02-J0005	Piping and Instrument Diagram Plant Area Agent Monitors MSM and ESM Corridors	~~006~~ 007	~~11/7/19~~ 1/24/20	P&ID	J02
242	24852-RD-M6-J02-J0006	Piping and Instrument Diagram Plant Area Agent Monitors MINICAMS and DAAMS Detail	003	1/8/18	P&ID	J02

LIST OF REFERENCE DOCUMENTS

List Number	Document Number	Document Title	Rev Number	Issue Date	Doc Type	System Number
1	24852-RD-3YD-B23-W0001	Munitions Transport and Storage System	003	10/13/17	SDD	B23
2	24852-RD-3YD-B01-W0001	Munitions Unpacking and Projectile Disassembly	006	3/6/18	SDD	B01
3	24852-RD-3YD-B02-R0001	Munitions Washout System (MWS)	006	3/29/18	SDD	B02
4	24852-RD-3YD-B03-B0001	Munitions Treatment Unit (MTU)	005	9/24/18	SDD	B03
5	24852-RD-3YD-B04-B0001	Agent Collection and Neutralization (ANS)	005	4/24/19	SDD	B04
6	24852-RD-3YD-B05-B0001	Toxic Storage and Spent Decon	003	10/01/14	SDD	B05
7	24852-RD-3YD-B09-B0001	Biotreatment (ICB)	004	6/27/17	SDD	B09
8	24852-RD-3YD-B11-B0001	Bioreactor Off-Gas Treatment	002	01/23/13	SDD	B11
9	24852-RD-3YD-B14-B0001	Water Recovery System (WRS)	003	10/2/18	SDD	B14
10	24852-RD-3YD-B12-B0001	Brine Reduction System (BRS)	005	10/1/19	SDD	B12
11	24852-RD-3YD-B24-B0001	Supplemental Decontamination Unit	004	4/13/18	SDD	B24
12	24852-RD-3YD-B24-B0002	Autoclave	002	6/12/15	SDD	B24
13	24852-RD-3YD-B15-B0001	Residue Handling System (RHS)	005	3/17/19	SDD	B15
14	24852-RD-3YD-B20-B0001	Off-gas Treatment (OTS)	003	04/20/15	SDD	B20
15	24852-RD-3YD-M02-M0001	ERB Ventilation System	004	5/25/17	SDD	M02
16	24852-RD-3YD-M03-M0001	APB Ventilation System	006	10/22/19	SDD	M03
17	24852-RD-3YD-M07-M0001	AFA Exhaust Filtration Systems	005	5/16/16	SDD	M07
18	24852-RD-3YD-J01-J0001	Facility Control System (FCS)	002	11/21/19	SDD	J01
19	24852-RD-3YD-J02-J0001	Agent Monitoring System (AMS)	003	3/23/16	SDD	J02
20	24852-SOP-B23-W0001	Munitions Transport and Storage Operations	009	11/19/19	SOP	B23
21	24852-SOP-B01-W0001	Munitions Unpacking	021	11/19/19	SOP	B01
22	24852-SOP-B01-W0002	Projectile/Mortar Disassembly Machine (PMD)	~~017~~ 018	~~11/19/19~~ 1/29/20	SOP	B01
23	24852-SOP-B02-W0001	Munitions Washout System	~~007~~ 008	~~8/22/19~~ 1/14/20	SOP	B02
24	24852-SOP-B02-W0002	Munitions Washout Station Treaty Sampling	006	1/24/19	SOP	B02
25	24852-SOP-B03-W0001	Munitions Treatment Unit	~~008~~ 009	~~7/11/19~~ 1/22/20	SOP	B03
26	24852-SOP-B04-W0001	Agent Collection and Neutralization	009	8/27/19	SOP	B04
27	24852-SOP-B05-W0001	Spent Decon Storage System	005	3/27/19	SOP	B05
28	24852-SOP-B09-W0001	Biotreatment and Off-gas Treatment	009	11/26/19	SOP	B09
29	24852-SOP-B14-W0001	Water Recovery System	007	8/15/19	SOP	B14
30	24852-SOP-B12-W0001	Brine Reduction System	008	~~10/22/19~~ 12/31/19	SOP	B12
31	24852-SOP-B24-W0003	Secondary Waste Processing	006	9/17/19	SOP	B24
32	24852-SOP-B15-W0002	Energetics Service Magazine	008	7/18/19	SOP	B15
33	24852-SOP-B20-W0001	Off-Gas Treatment System	008	6/3/19	SOP	B20
34	24852-SOP-M07-W0001	Cascade Ventilation System	004	6/4/19	SOP	M07
35	24852-SOP-M07-W0002	AFA Filter Change Out	011	~~10/8/19~~ 12/20/19	SOP	M07
36	24852-SOP-B00-W0001	Leaker and Reject Management Procedure	011	11/18/19	SOP	Multiple
37	24852-SOP-B00-W0002	Toxic Area Entries	~~016~~ 017	~~10/28/19~~ 1/15/20	SOP	Multiple
38	24852-SOP-B00-W0039	Exclusion Area Waste Management	~~009~~ 010	~~6/13/19~~ 12/12/19	SOP	Multiple
39	24852-SOP-B00-W0037	Equipment and Building Decontamination	008	5/28/19	SOP	Multiple
40	24852-SOP-PT-W0001	Pilot Test Evolutions	006	5/1/19	SOP	Multiple
41	24852-SOP-M02-W0001	ERB Non-Toxic Area Ventilation	006	4/4/19	SOP	M02
42	24852-SOP-M03-W0001	APB Non-Toxic Area Ventilation	004	6/13/19	SOP	M03

List Number	Document Number	Document Title	Rev Number	Issue Date	Doc Type	System Number
1	24852-GPP-GGL-00104	Determination of Anions and Cations by Ion Chromatography (IC)	005	10/15/19	Analytical	Multiple
2	24852-GPP-GGL-00106	Determination of TSS, TDS, and VSS in Hydrolysate	005	10/27/16	Analytical	B12
3	24852-GPP-GGL-00113	Determination of Specific Gravity in a Hydrolysate Matrix	004	9/29/17	Analytical	Multiple
4	24852-GPP-GGL-00114	Determination of TDG, T-OH, and Q-OH in a Hydrolysate Matrix	006	6/29/18	Analytical	N/A
5	24852-GPP-GGL-00204	Mustard agent in HD/HT Water Hydrolysate	004	5/18/17	Analytical	Multiple
6	24852-30E-J02-00002	Additional MINICAMS for Operational Efficiency-Risk Reduction	001	1/13/15	ECP	J02
7	24852-RD-30X-000-J0004	Instrument Set Point Matrix	014	5/25/17	ENG	All
8	24852-OPS-OAP-W0006	Limiting Conditions of Operations	009	7/11/19	Ops	All
9	24852-SOP-B00-W0038	Waste Management Procedure	~~009~~ 010	~~9/17/19~~ 12/18/19	Ops	N/A
10	24852-OPS-OAP-W0036	Rounds and Readings	011	9/4/19	Ops	All
11	24852-OST-SAP-W0002	Waste Shipment Documentation Procedure	005	4/12/19	Ops	N/A
12	24852-30H-000-T0001	Technical Position Paper on Airborne Exposure Limit (AEL) Guidance	000	6/20/05	Paper	Multiple
13	24852-30L-H01-~~V~~00017v01	PCAPP RD&D Permit	~~077~~ 079	~~3/14/19~~ 1/9/20	Permit	N/A
14	24852-30G-GGWM-00002	Hazardous Waste Management and Hazardous Waste Material Environmental Reporting Plan	~~001~~ 002	~~2/6/19~~ 1/15/20	Plan	N/A
15	24852-GPP-GGL-00002	Laboratory Analysis and Monitoring Plan	007	9/9/19	Plan	Multiple
16	24852-GPP-GYPM-00006	Pilot Test Demonstration Plan	006	5/14/19	Plan	N/A
17	24852-SAF-SAP-W0011	Toxic Chemical Agent Safety Program	008	~~11/5/19~~ 2/4/20	Safety	All
18	24852-SAF-SAP-W0022	Personal Protective Equipment	009	10/31/19	Safety	All
19	24852-GPP-GGL-00011	Brine Reduction System (BRS) Recovered Water Sampling and Analysis Plan	006	3/22/18	SAP	B12
20	24852-GPP-GGL-00013	Laboratory Sampling and Analysis Plan (LSAP) for Pilot Test Phase Operations	006	4/13/18	SAP	N/A
21	24852-30H-000-V0003	White Paper on Total Hydrocarbon Monitoring During Pilot Test Demonstration	001	4/27/16	WP	M07
22	24852-30H-000-W0004	White Paper on Carbon Sampling Strategy	001	6/8/16	WP	Multiple
	24852-OPS-OAP-W0038	Plant Contingency Procedure	005	8/15/19	OPS	Multiple

Enclosure 20

Corrosion Monitoring Plan, Attachment M

Pueblo Chemical Agent-
Destruction Pilot Plant

PCAPP

PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT
PROJECT

24852-RD-30G-000-V0001
Revision 009~~8~~

~~January~~March 2020

Corrosion Monitoring Plan for Resource Conservation and Recovery Act (RCRA) Tank Systems

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Contract No. W52P1J-09-C-0012

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Revision History

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00C	Incorporating Government Comments	09/13/2012
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004	Re-Issued to Incorporate White Paper on Off-Gas Treatment System (B20) Corrosion Assessment	01/02/2018
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007	Re-Issued to Incorporate backup monitoring plan for Permasense, disposition of NCR 384038, and comment resolution from Rev. 6	6/19/2019
008	Re-issued to include BRS-OTS Piping UT testing requirements	01/21/2020
009	Re-Issued to incorporate non-metallic specific language, removed UT examination locations, provided wording to clarify requirements.	02/XX/2020

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ACRONYMS

APB	Agent Processing Building
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials International
BRS	Brine Reduction System
BTA	Biotreatment Area
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
FCC	Facility Construction Certification
ICB	immobilized cell bioreactor
in	inch
mm	millimeter
NDE	nondestructive examination
PCAPP	Pueblo Chemical Agent-Destruction Pilot Plant
PM	preventative maintenance
PTFE	polytetrafluoroethylene
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
TAR	(RCRA) Tank Assessment Report
UT	Ultrasonic Testing

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1.0 PURPOSE

This Corrosion Monitoring Plan has been prepared to meet the requirements of the Resource Conservation and Recovery Act (RCRA) permit for the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP). In accordance with these requirements, this plan presents a monitoring program and schedule to ensure that each RCRA hazardous waste tank system at the facility retains its structural integrity during operation and will not collapse, rupture, or fail as a result of corrosion.

The purpose of corrosion monitoring is to detect corrosion and/or deterioration of the hazardous waste tank systems and to perform correctiveon actions, if required, to prevent the collapse, rupture, or failure that could result in an unacceptable release of RCRA hazardous waste.

The RCRA hazardous waste tank systems included in the corrosion monitoring program are listed in Table 1 and described in 24852-RD-30H-000-V0001*, RCRA Tank Assessment Report*. The TAR shows that the foundations, structural supports, seams, connections, and pressure controls (if applicable) for the tank systems are adequately designed and that the tank systems have sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection for the storage and treatment of hazardous waste.

2.0 TANK QUALITY PROGRAMS, CORROSION PROTECTION FEATURES, AND AREA CLASSIFICATIONS

PCAPP has RCRA hazardous waste tank systems designed and installed in accordance with Colorado Code of Regulations 6 CCR 1007-3, Section 264.192. Section 2.1 presents information on quality programs to assure tank systems were fabricated and installed in accordance with the RCRA permit requirements and project design documents. Sections 2.2 and 2.3 describe the tank system corrosion protection features to mitigate corrosion and area classifications for the tank system locations, which affect the accessibility of tanks, piping, pumps, and ancillary equipment for conducting corrosion monitoring program activities.

2.1 Quality Programs

This section summarizes the quality programs that applied to the fabrication and installation of tank systems. The results of these programs are used in conjunction with the pre-operational measurements to establish the nondestructive examination (NDE) baseline conditions of the RCRA hazardous waste tank systems.

2.1.1 Fabrication and Field Installation Quality Programs

The fabrication and installation of tank systems are governed by project-issued design documents and quality control installation procedures including, but not limited to, the following:

- 24852-RD-3PS-000-A0180, Engineering Specification for Internal Lining of Tanks
- 24852-RD-3PS-000-J0014, Engineering Specification for Control Valves
- 24852-RD-3PS-000-M0030, Engineering Specification for Shop Fabricated Steel Tanks
- 24852-RD-3PS-000-M0052, Engineering Specification for Pressure Relief Valves
- 24852-RD-3PS-000-M0073, Engineering Specification for Pressure Vessels
- 24852-RD-3PS-000-M0074, Engineering Specification for Pumps
- 24852-RD-3PS-000-M0078, Engineering Specification for Titanium Materials
- 24852-RD-3PS-000-P0001, Engineering Specification for Piping Materials
- 24852-RD-3PS-000-P0002, Engineering Specification for Piping Installation and Testing
- 24852-RD-3PS-000-P0004, Engineering Specification for Shop Fabricated Pipe Supports
- 24852-RD-3PS-000-P0005, Engineering Specification for General Welding
- 24852-RD-3PS-000-P0006, Engineering Specification for Shop Fabricated Piping
- 24852-RD-3PS-000-S0008, Engineering Specification for Field Erected Tanks
- 24852-RD-3PS-000-T0002, Engineering Specification for General Project Requirements
- 24852-RD-3DR-000-B0001, Design Criteria for Plant Process
- 24852-RD-3DR-000-V0002, Design Criteria for Environmental Compliance
- 24852-RD-N1-000-B0001, Material Selection Guide
- 24852-RD-30R-000-M0007, Corrosion Evaluation of Process and Mechanical Systems at the PCAPP Project

The overall supplier quality program is described in 24852-RD-3PS-000-T0001, *Engineering Specification for Supplier Quality Assurance Program Requirements*, and supplier submitted quality assurance manuals. Quality program activities performed by suppliers of tank systems include material tests and verifications; cleaning, painting, and coating verifications; welding qualification verifications; code compliance verifications; weld seam examinations (e.g., NDE); and leak tests.

Before the installation of a tank system, a TAR was prepared by project personnel and reviewed and certified by an independent registered professional engineer, attesting that the design of the tank system provides sufficient structural integrity and is acceptable for the storage and treatment of hazardous waste. This written assessment showed that the foundations, structural supports, seams, connections, and pressure controls (if applicable) for the tank system are adequately designed, and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail. The TAR was used by the Colorado Department of Public Health and Environment (CDPHE) to review and approve the acceptability of the tank system design as required by 6 CCR 1007-3 Section 264.192(a).

During installation, proper handling procedures are adhered to in order to prevent damage to the tank systems. As specified in 6 CCR 1007-3 Section 264.192(b) and in the RCRA permit for PCAPP, prior to covering, enclosing, or placing a new tank system in use, an independent registered professional engineer or independent inspector inspects the tank system for the presence of the following as part of the Facility Construction Certification (FCC) program:

- Weld breaks
- Punctures
- Scrapes
- Cracks
- Corrosion
- Other structural damage or inadequate construction/installation

The independent registered professional engineer or independent inspector inspects ancillary equipment such as piping, valves, and pumps to verify they are supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction. Final hydrostatic/pressure test records of the piping for the tank systems are reviewed by the engineer or inspector.

2.1.2 Facility Construction Certification (FCC) Program

The independent registered professional engineer or independent inspector performs and documents inspections of the tank systems to provide FCCs as required by 6 CCR 1007-3, Part 100.42(l)(1)(i) and Contract Data Requirements List C002, *Facilities Construction Certification*. The independent registered professional engineer certifies that tank system constructions and installations are consistent with the design information as provided in the RCRA permit, TAR, project-issued design documents, and other design information required by the RCRA permit conditions or as required by the independent registered professional engineer.

The independent registered professional engineer or independent inspector prepares FCC matrices that establish the RCRA-related design and construction work process requirements and associated objective evidence required to support the construction certifications for the tank systems. These matrices are submitted to the CDPHE for approval. After the construction and installation of a tank system, the independent registered professional engineer or independent inspector prepares the FCC packages by compiling and verifying the objective evidence specified by the FCC matrices. In certifying proper construction and installation of tank systems, project documentation reviewed by the independent registered professional engineer includes, but is not limited to, the following:

- Approved welding procedure specifications
- Welder performance qualifications and certifications
- Material certifications and test reports
- Manufacturer's data reports
- Code compliance reports
- Inspections reports and NDE test records
- Field installation reports
- Approved drawings and design changes
- Photographs
- Tightness test reports in accordance with the codes specified by design
- Field waiver reports (e.g., nonconformance reports, deficiency reports, field change requests)
- Corrective actions and repair reports

The completed FCC packages are certified by the independent registered professional engineer and reviewed and approved by the CDPHE before the start of hazardous waste operations. Additionally, following major repairs to correct deficiencies noted during corrosion monitoring activities, FCC packages will be completed, certified by the independent registered professional engineer and reviewed and approved by the CDPHE before resuming hazardous waste operations. The definition of major repairs will be discussed and agreed with the CDPHE prior to hazardous waste operations.

2.2 Tank System Corrosion Protection Features

Corrosion is a degradation process affected by many parameters, including material of construction, temperature, chemistry, flow rate, stress, vibration, fluid velocity, particle size, and solids concentration. The underlying process of corrosion may be electrochemical, chemical, mechanical, biological, or a combination of these mechanisms. Combinations of parameters can act synergistically, sometimes reducing the corrosion rate, accelerating the corrosion rate, or changing the corrosion mechanism.

The evaluation, selection, and establishment of corrosion control measures begin with the design of the tank systems, are implemented during construction, and are maintained during operations. The corrosion protection features and material selection for the PCAPP RCRA tank systems were selected based on corrosion studies (e.g., studies performed by Stone and Webster Engineering Corporation, J. S. Grauman of TIMET-Henderson Technical Laboratory; refer to 24852-RD-N1-000-B0001, *Material Selection Guide*) and corrosion analyses of Aberdeen Chemical Agent Disposal Facility tank and neutralization reactor samples. Periodic corrosion monitoring is performed to ensure that tank systems continue to be acceptable for the storage and treatment of hazardous waste during the operations phase. *Corrosion Evaluation of Process and Mechanical Systems at the PCAPP Project* (24852-RD-30R-000-M0007) documents the corrosion mechanisms evaluated and mitigating features recommended to ensure PCAPP's mechanical and process systems have appropriate material compatibility to maintain solution containment.

In order to ensure PCAPP tank systems last for their design lives, tank systems were designed using robust design codes (e.g., American Society of Mechanical Engineers [ASME] Boiler and Pressure Vessel Code, Section VIII, Division 1; ASME B31.3; ASME B73.1; ASME B73.2; American Petroleum Institute [API] Standards 620 and 650). The tank systems were fabricated with sufficient corrosion allowances that were identified based on expected operating conditions and waste chemistries. Table 1 presents the materials of construction and corrosion allowances for the tank systems included in the corrosion monitoring program. Additional information on the materials of construction and corrosion allowances, as well as the design codes and features for the tank systems, is provided in the TAR.

In addition to corrosion allowance thicknesses, tank systems have extra corrosion protection features such as paints and coatings. Tank systems are isolated from the corrosion effects resulting from contact with soils and groundwater. Most tank systems are located aboveground on concrete pads. Tank systems that are recessed below grade, such as the washed agent and water surge drum and the Brine Reduction System (BRS) area sump liner tank systems, are located inside subgrade lined concrete vaults.

Tank systems such as the washed agent and water surge drum, agent-water separator tank, munitions washout system wash water collection tank, agent hydrolyzer tank, and agent hydrolysate hold tank, are located inside the Agent Processing Building (APB) and not susceptible to external corrosion due to outdoor climatic conditions and environmental exposures.

2.3 Area Classifications

During the operations phase, the RCRA hazardous waste tank locations are accessible in varying degrees from readily accessible to limitedly accessible due to health and safety concerns. Table 2 provides the Area~~access~~ classifications for each RCRA hazardous waste tank located at PCAPP.

As proposed in Section 6.0, periodic corrosion monitoring program activities are performed continuous / semi-continuous, semiannual and annual throughout the life of the facility. Continuous/semi-continuous is defined as one reading every 12 hours and applies to the Permasense Corrosion Monitors. In addition, internal tank inspections will be performed on select tank systems following campaign changeovers after processing a specific size of artillery and mortar shell (i.e., transition from processing 155-millimeter [mm] projectiles to 105-mm projectiles and transition from processing 105-mm projectiles to 4.2-inch [in] mortars). See Table 1 for tanks to be inspected and periodicity of inspection.

3.0 SELECTED CORROSION MONITORING METHOD

There are several methods for measuring the change in wall thickness and determining the rate of corrosion, with the corrosion coupon method the most widely used form of corrosion measurement. For the RCRA hazardous waste tank systems at PCAPP, an evaluation of the corrosion coupon method and an NDE method (ultrasonic testing thickness measurement, UT-thickness or UT) was performed. The UT method was selected over the corrosion coupon method for the following reasons:

- UT is a fast and reliable method of NDE. Electronic and automated equipment provides instantaneous results. Based on the rapid turnaround of results, additional locations may be examined, if necessary, on the same examination date without additional mobilization of personnel and equipment.

- UT is non-intrusive. Only single-sided access is needed. Minimal surface preparation is required before performing UT examinations. Since the external surface is generally used, personnel are not exposed to tank system contents (e.g., hazardous wastes stored in PCAPP tanks).

- Several tanks at PCAPP (e.g., agent hydrolysate hold tanks, immobilized cell bioreactors [ICBs], and BRS distillate carbon filters) do not have spare nozzles to attach the corrosion coupon holding rods/racks.

- Several tanks at PCAPP have internal mixing components such as agitators and recirculation inlet nozzles. Corrosion coupons may become detached from the holding rods/racks due to the mixing action and pose problems to the downstream piping and pumps. Loss of corrosion coupons would result in loss of information (i.e., comparisons of the differences in weight and thickness measurements taken at different times from the same coupon would not be possible if the coupon is lost). Piping and internal pump parts may also be damaged, which require suspension of operations for repair or replacement of piping and parts.

- Permasense UT monitoring system provides continuous / semi-continuous NDE wall thickness measurements.

4.0 ESTABLISHING PRE-OPERATIONAL BASELINE CONDITIONS

The objective of the pre-operational NDE baseline measurements is to provide data representative of the initial thicknesses of the tanks, piping, and sumps in known locations. The weld and NDE inspection records and associated quality control documents provided by the suppliers may also be used to supplement the NDE measurements to establish the condition of the tanks, piping, and sumps prior to start-up and operations. The results of future measurements during the operations phase will be compared to these ~~pre-operational~~ baseline measurements and measurements taken during the previous reporting period to calculate the corrosion rates and remaining service lives, and to determine whether the schedule of future measurements should be adjusted.

Prior to the start of hazardous waste operations, NDE measurements using the UT method will be performed on tanks, piping, and sumps made of metallic materials (carbon steel, stainless steel and titanium).

Non-metallic materials are corrosion resistant due to their inert properties. These materials include, but are not limited to, fiberglass reinforced plastic, polyvinyl chloride (PVC), polytetrafluoroethylene (PTFE), ethylene propylene diene monomer (EPDM), Viton™, and Garlock® 3400™. Non-metallic components are inspected visually and not subject to NDE. Measurements will not be performed on any of the following (non-metallic or otherwise):
~~Measurements will not be performed on the following:~~

- Tanks made of fiberglass reinforced plastic. These tanks are unlikely to have corrosion damage during the operations phase due to the material of construction.

- Piping made of polyvinyl chloride. These piping sections are unlikely to have corrosion damage during the operations phase due to the material of construction.

- Pumps. The wetted parts of pumps are enclosed inside external containment housings. These wetted parts are made of appropriate materials of construction (e.g., titanium, hastelloy, ~~polytetrafluoroethylene~~PTFE, stainless steel, and CD4MCu), have very robust wall thickness, and are unlikely to have corrosion damage during the operations phase.

- In-line mixers made of titanium. These mixers are unlikely to have corrosion damage during the operations phase due to the material of construction.

- Samplers made of stainless steel. These samplers are unlikely to have corrosion damage during the operations phase.
- Sumps are constructed with coated steel liners within coated concrete. The liners are unlikely to have corrosion damage due to the coating on the liner.
- BRS area sump liner made of 6 percent molybdenum super-austenitic stainless steel. The sump is unlikely to have corrosion damage due to the material of construction.

Baseline and subsequent thickness measurements will be made in accordance with written preventative maintenance (PM) and job plans implementing the requirements of ASME Section V, *Nondestructive Examination*, and ASTM International (ASTM) E797/E797M-10, *Standard Practice for Measuring Thickness by Manual Ultrasonic Pulse-Echo Contact Method*. <u>If p</u>~~P~~itting corrosion ~~will be assessed~~~~<u>was</u>~~<u>is to be identified, it</u> ~~would~~<u>will be evaluated</u> using ASTM G46-94 (Standard Guide for Examination and Evaluation of Pitting Corrosion)~~ and also using Radiographic Testing (RT) for stainless steel~~. Detailed PMs and job plans for performing NDE measurements will be made available prior to the start of agent operations. Additionally, baseline NDE measurements will be performed prior to agent operations.

The locations summarized below are considered more susceptible areas of tanks, piping, and sumps where pre-operational baseline NDE thickness measurements are to be performed. In consultation with a corrosion specialist or engineer, final NDE measurement locations are selected after the installation of the tank, piping, and sumps and before the start of hazardous waste operations.

Tanks

At least one accessible external location for thickness monitoring is selected at each of the following major sections of a tank:

- Top head (e.g., an area where a connection or attachment is directly welded to the head) for vertical tanks
- Bottom head for vertical tanks
- Shell (e.g., an area where a connection or attachment is directly welded to the shell, longitudinal weld attaching the head to the shell, region of the normal operating liquid-vapor interface or high-liquid level, vertical strip along the height of the tank, or horizontal arc along the circumference of the tank)

The number of thickness measurements for a given section of a tank will vary depending on its size. For tanks with heating insulation materials, windows in the insulation materials will be cut to install inspection ports/plugs. During NDE thickness measurements, the inspection ports/plugs are opened to allow access to the tank walls.

For tank bottom heads that are not accessible (e.g., tanks with flat bottom heads), an area that is accessible as close to the bottom of the tank as feasible will be selected. To prevent unnecessary hazards, NDE measurements are performed from the outside of the tanks, and personnel are not required to perform confined space entries inside the tanks to collect measurements.

Due to piping, support steel, equipment platforms, etc., access to the full circumference of tanks may not be possible at the major sections identified. In this case, every attempt will be made to achieve a reading as close to the section of interest as possible and as much of the circumference monitored as possible. These locations will be included in Appendix B.

Piping

For piping, at least one accessible location for thickness monitoring is selected at each of the following:

- An area along the straight section of the pipe
- An area near a connecting fitting where flow direction or velocity changes (e.g., elbow, mixing tee, wye or "Y" fitting, cross, reducer, flange, or valve)
- An area near the insulation, if applicable, where operating temperatures cause frequent or continuous condensation and re-evaporation of moisture

The number of thickness measurements for a given area will vary depending on the pipe diameter and condition and on the professional judgment of the inspector. It is good practice to collect multiple measurements at a location; one measurement may yield a result that does not accurately represent the condition of the pipe at that location. Small diameter piping (2.5 inches and smaller) may only require two measurements that are 180 degrees apart, while larger sizes may require a minimum of four measurements that are 90 degrees apart.

Sumps

For sumps, at least one accessible location for thickness monitoring is selected at each of the following:

- Bottom, especially at the lowest point of a sloped bottom
- Sidewall (e.g., an area where a pipe, connection, or attachment is directly welded, or a vertical weld attaching the sidewalls)

Specific NDE measurement locations are tabulated in Appendix B. Final NDE measurement locations will also be marked visibly on the equipment to allow repetitive measurements at the same locations. Repeating measurements at the same locations improves accuracy of the calculations of the expected remaining corrosion allowances of the tanks, piping, and sumps.

5.0 OPERATIONS CORROSION MONITORING PROGRAM APPROACH

This section presents information on activities to be performed during the operations phase to monitor corrosion to assure the tank systems retain their structural integrity to store and treat hazardous waste. The previous section, Section 4.0, describes the pre-operational program for establishing baseline measurements. These operations phase activities include visual inspections, operations and maintenance document reviews, and NDEs. The activities will be initiated by PMs which will execute Job Plans that are managed through the computerized maintenance management system (i.e. MAXIMO). MAXIMO will initiate the semiannual or annual NDE through the work order process. Execution of that work order will generate a report (described in Section 7.0). Follow-on evaluations will be performed to determine if field activities are required, which will be documented in the report. Necessary field activities will also be managed through the MAXIMO process and the execution of work orders.

5.1 Visual Inspections

During PCAPP operations, routine inspections such as external visual inspections and closed-circuit camera inspections are performed to detect equipment malfunctions, equipment and facility deteriorations, and discharges of wastes that have the potential to result in a release of hazardous wastes. Routine external visual inspections are a part of normal plant operations and contribute to an understanding of the current operating conditions. The routine external visual inspections are performed and recorded in accordance with the 24852-G01-GBL-V0004, *PCAPP RCRA Inspection Plan*. Indications of corrosion as a result of inspections performed in accordance with the *PCAPP RCRA Inspection Plan* will be provided to Engineering to investigate in accordance with this *Corrosion Monitoring Plan for RCRA Tank Systems*. Periodic internal visual inspections are planned to be performed on selected equipment identified in Table 1. Internal visual inspections may be performed on equipment that shows signs of accelerated corrosion or leaking. Evaluations of these conditions and direction of inspections will be by Engineering as part of system health reviews. Internal visual inspections will not be performed on tanks in the MWS or Toxic Room of the APB due to concerns of personnel safety regarding performing Level A Demilitarization Protective Ensemble (DPE) entries in these toxic areas.

Two types of visual inspection are performed on non-metallic materials for deterioration. First, informal walkdowns with a visual inspection of soft parts are performed by system to check for leaks. Generally, soft parts (gaskets, valve seals, flexible connections) are not replaced preemptively unless the materials are known to deteriorate when exposed to the process fluid and no other suitable material is available for the service. In these cases, should the joint be broken, the gasket will be formally assessed and documented by Engineering. This is the second type of visual inspection. If the gasket shows no deterioration, the gasket will be replaced in kind. If deterioration is noted, Engineering will perform an assessment to select an alternate material or gasket type. Sealing of new piping materials that have not been exposed to process fluids has a higher likelihood of success than re-sealing used piping.

An internal corrosion evaluation/material selection of the equipment, piping and gaskets/O-rings used in each process system, was conducted by PCAPP Process and Mechanical Design with Bechtel's Material Engineering Technology (MET) assistance and captured in 24852-RD-30R-000-M0007, *Corrosion Evaluation of Process and Mechanical Systems at the PCAPP Project .*

Army report No. ARCSL-TR-80069, Compatibility of Plastics with Mustard (HD), Thiodiglycol, VX Hydrolysis Products, DS-2, HTH, and Tetrachloroethylene was used to further reinforce the selection of certain non-metallics in certain critical applications. It conducted immersion tests exposing among others PTFE (Teflon) and concluded it was not visibly affected.

An exception to these guidelines is the one year change out frequency of flanged EPDM flexible connections known as Isolators in the toxic area. This is in response to the BB discharge of double diaphragm pump MP-B04-0002B failure. The EPDM material failed and had excessive time documented in service well beyond a recently established one-year scheduled replacement. Documented assessment of this failure can be found in 24852-30H-B04-P00001, *White Paper on Inspection Report of Failed Isolator*. In response to the findings, annual replacements for isolators in the toxic area have been designated in PMs.

External visual inspections of aboveground tank systems located outside are performed daily by physical walk-downs of the system locations. External visual inspections for corrosion monitoring will be integrated into the daily routine inspections (reference 24852-G01-GBL-V0004, *PCAPP RCRA Inspection Plan*). These inspections include the visible portions of the tank systems, surrounding areas, structural supports, and secondary containment systems.

To prevent unnecessary hazards to inspectors during operations, tank systems located in the APB (see Table 2) are monitored ~~inspected~~ to the extent possible. C~~using c~~losed-circuit cameras and self-diagnostic instrumentation (e.g., leak detection system alarms and MINICAMS) ~~in place of physical walk-downs~~are available devices that allow for visual inspections~~s~~ and detection. Physical walk-downs and corrosion inspections of tank and system components located in the APB will only be performed when conditions allow them.

For the washed agent and water surge drums and BRS area sump liner tank systems located below grade, visual inspections are limited to the visible top portion of the tank systems and concrete vaults.

The schedule of these external visual corrosion inspections are provided in Section 6.0. Examinations for corrosion include:

- Visual evidence of corrosion on the exterior of tank and system components such as rust spots, cracks, gaps, pitting, swelling, and blistering
- Cracks or evidence of leaks at connections, seams, joints, and welds

Evidence of possible structural damage on the tank systems and leaks around the equipment

The schedule of internal visual corrosion inspections are provided in Section 6.0. Examinations for corrosion include:

- Evidence of corrosion on the interior of tank and system components such as rust spots, cracks, gaps, pitting, swelling, and blistering
- Cracks or evidence of leaks at connections, seams, joints, and welds
- Delamination of tank coatings or evidence that suggests the coating may be failing
- ~~Digital photos will be taken to document the inspection activities and support the findings and recommendations~~ When possible, and when there is evidence of corrosion as listed above, a digital photo will be taken.

5.2 Document Reviews

The operating and maintenance history of tank systems are evaluated when required as part of the corrosion monitoring program to verify that these systems have been operated and maintained properly. ~~For example, Permasense UT NDE reports, routine inspection reports, instrument leak detection alarm notifications, and maintenance records are reviewed to identify leaks, structural damage, repairs, and alterations of each tank system.~~ Operation, maintenance histories, and alarm notifications are reviewed by engineering, environmental reviews the routine inspection reports, in accordance with procedures.

5.3 Permasense – Ultrasonic Testing Examinations

Permasense sensors are battery-operated ultrasonic thickness measurement devices that wirelessly transmit data through gateways connected to the PCAPP network. Threaded studs for mounting the devices are welded to the external surface of the tank or pipe wall to be monitored. These devices provide continuous / semi-continuous wall thickness measurements in near real-time which will be downloaded and issued as reports on a semiannual period. The reports will be analyzed to determine the rate of corrosion experienced for the tank systems and piping being monitored. Tanks and piping selected to receive these devices are shown in Table 1.

Measurements from the Permasense Data Manager are exported to the PCAPP SPLUNK Database for tracking and visibility to project personnel. The SPLUNK system actively monitors all the Permasense sensors for functionality. If a sensor fails to report for a period of seven days to the Data Manager and therefore to SPLUNK, an email alert is sent to Engineering to notify the system engineer that a sensor has failed.

Furthermore, the batteries for each sensor will be replaced every 5 years, at the vendors recommendation.

Should data be unavailable from a Permasense sensor, when the system is queried quarterly, manual UT shall be performed in the vicinity of the Permasense sensor and steps shall be taken to restore the sensor to operation. For tank wall mounted Permasense locations four manual UT measurements shall be taken around the Permasense sensor and averaged. For pipe mounted Permasense sensors four measurements shall be taken around the pipe and recorded. However, the measurement at 180 degrees (bottom of the pipe) shall be used for comparison to historic Permasense data as the Permasense sensors are located on the bottom of the piping in all cases. The manual UT measurements described above may be reported as the material thickness, for that sensor location, for purposes of the semi-annual report.

5.3 NDE – UltrasonicTesting Examinations

Pre-operational baseline NDE measurements using the UT method are performed on steel tanks, piping, and sumps before the start of hazardous waste operations as described in Section 4.0. Subsequent NDE measurements during the operations phase are conducted as part of the corrosion monitoring program. Tanks and piping do not have to be emptied during the UT examinations. Remaining liquids in the sumps must be removed before the UT examinations of the sump bottoms.

The objective of the NDE measurements is to determine wall thicknesses and remaining corrosion allowances of the tanks, piping, and sumps and perform corrective actions, if required. Results of subsequent NDE measurements during scheduled corrosion monitoring activities will be compared to the baseline NDE measurements to calculate the corrosion rates and remaining service lives, and to determine whether the schedule of future measurements should be adjusted. Thickness measurements allow for confirmation that the expected corrosion rates at the operating conditions have not been exceeded, and that the wall thicknesses of the tanks, piping, and sumps continue to be adequate for the remaining operating life of the tank, piping, and sump.

Thickness measurements performed during the operations phase are to be conducted at the same locations and using the same techniques as the ~~pre-operational~~ baseline thickness measurements. By taking repeated measurements at the same points, the expected remaining corrosion allowances of the tanks, piping, and sumps can be more accurately calculated. NDE measurement locations for wall thicknesses are tabulated in Appendix B.

Similar to the baseline thickness measurements, thickness measurements will be performed during the operations phase in accordance with written procedures implementing the requirements of ASME Section V and ASTM E797/E797M-10. Detailed procedures for performing NDE measurements, along with a set of drawings showing final NDE locations and a list of acceptable NDE equipment, will be made available no later than three months prior to the start of agent operations. Procedures shall include both point measurements and scanning. Scans shall be performed on the

B20 piping as noted in Appendix B and shall include the entire circumference of the pipe for a length of one foot when possible. The scan area for tanks shall be determined based on an engineering assessment.

The work steps involved in taking UT measurements is as follows:

1. Match the measurement location identified in the UT Measurement Locations table (Appendix B) with the equipment or piping location marker.

2. Remove the insulation plug (if exists)

3. Place UT instrument head on marker

4. Record value in log for equipment or piping measured

5. Repeat steps 3 and 4 two more times for a total of three measurements (to ensure accuracy, repeatability and avoid false readings)

    a. Additional readings may be required if there is trouble achieving repeatability of values. A deviation of ±15% between repeated readings will require additional readings until three repeated values are obtained.

5.4 Corrosion Rate, Remaining Service Life, and Measurement Interval Calculations

At a minimum, NDE measurements will be taken prior to the start of hazardous waste operations as stated in Section 4.0 and semiannually / annually during agent operations as indicated in Table 1. After the NDE measurements are taken, the corrosion rate, remaining service life will be calculated as indicated below:

Corrosion Rate = ($t_{previous} - t_{actual}$) / (time in years between $t_{previous}$ and t_{actual})

where:
t_{actual} = the actual thickness measured at the time of inspection for a given location, in inches or mils
$t_{previous}$ = the actual thickness at the same location as t_{actual} measured during previous inspection, in inches or mils

Remaining Service Life = (t_{actual} - t_{min}) / Corrosion Rate

where:
t_{actual} = the actual thickness measured at the time of inspection for a given location, in inches or mils
t_{min} = The minimum thickness is determined by different methods as documented in the different corrosion monitoring reports.~~the minimum required thickness at the same location as t_{actual} calculated based on design conditions, in inches or mils~~

Each monitored location will receive a calculated corrosion rate. Each component (pipe, tank, etc.) will have multiple locations measured. The worst case (greatest) corrosion rate will be reported and utilized for determining the need for contingency action (see Section 8.0).

After several measurements are conducted and if the measured corrosion rates are less than or equal to the design rates and the expected service life of the measured surface remains within the needed life of the system, with the CDPHE Director's approval, the monitoring frequency may be lengthened to support operations.

6.0 CORROSION MONITORING SCHEDULE

Three intervals (also referred to as "campaigns") for the treatment of hydrolysate produced during the destruction of three sizes of artillery and mortar shells (155-mm projectiles, 105-mm projectiles, and 4.2-in mortars) are scheduled. ~~The total durations of operations for the three campaigns are approximately 22 months, 18 months, and 7 months, respectively.~~ After each campaign, the production of hydrolysate is stopped for approximately 3 months. Equipment changeovers and preventative maintenance are scheduled during these planned outages or campaign changeovers. Corrosion monitoring program activities are also scheduled during these campaign changeovers, as much as possible, for safety reasons.

Tank systems are categorized into different groups based on materials of construction and likelihood of exposure to liquid waste (see Section 4.0). This classification system allows extra assessment efforts to be focused on equipment that may have the higher probability of suffering from corrosion damage. Corrosion monitoring program activities described in Section 5.0 are performed continuously / semi-continuously, semiannually, annually, or following campaign completion as summarized in Table 1 (note: external visual inspections are performed daily during the operations phase). At a minimum, visual inspections and document reviews are to be performed for tank system components. Based on the rationale provided in Section 4.0, UT examinations and corrosion rate calculations are to be performed only for tanks, piping, and sumps made of metallic materials. Based on the rationale provided in Section 5.1, non-metallic examinations are performed visually.

After several measurements are conducted and if the measured corrosion rates are less than or equal to the design rates and the expected service life of the measured surface remains within the needed life of the system, with the CDPHE Director's approval, the monitoring frequency may be lengthened to support operations (see Section 5.5).

7.0 REPORTING

Upon completion of corrosion monitoring program activities, which are initiated by MAXIMO, a report of assessment results is prepared. The report includes: a purpose and background section that describe the ~~n introduction describing the~~ scope, ~~and~~ objectives, and history of the corrosion monitoring program~~;~~ along with the methods used to conduct the assessment; the data and evaluation section presenting the results of the assessment and an analysis on corrosion rate and service life; and the conclusions of the assessment including recommendations regarding the time interval before the next assessment. The semiannual report (Permasense and B20) data periods will be from January through June and from July through December of each year. The semiannual report will be compiled, reviewed, signed, and submitted to CDPHE within 45 days of the end of the report data period.

The reports of results of external visual inspections (conducted with or without the use of closed-circuit cameras) include observations made during the daily visual inspections conducted to date.

The reports of results of internal visual inspections include but are not limited to, the following:

- Date of the inspection
- Inspection Job Plan/Work Order
- Personnel performing inspection
- Tank~~-~~/Equipment Inspected
- Observations (discoloration, pitting, corrosion by products, etc.)
- Digital photographs to support observations when identifying corrosion concerns
- Recommendations/follow-on actions if applicable.

When required ~~R~~reports may be generated by the responsible person(s) (as designated by engineering) and shall~~of~~ contain the results of document reviews. The report shall include, but ~~are~~ not limited to, the following information:

- Date of the review
- Results of the review, summarizing the following values for process chemistry data and operating parameters, if needed:
  - Minimum
  - Maximum
  - Average
  - Standard deviation
- Related design conditions

Reviewer's identity ~~and qualifications~~

Reports of the results of UT examinations (including Permasense) include, but are not limited to, the following information:

- Date of the examination
- Examination procedure
- Type of instrument
- Standardization blocks, size, and material type
- Size, frequency, and type of search unit
- Scanning method
- Results
- ~~Maximum and~~ M~~m~~inimum thickness measurements
- Location of measurements
- Associated baseline measurements and conditions
- Examination personnel identity, qualifications, and certification level (as required)
- Actions taken in response to identification of corrosion.

Reports are considered operating records, which are to be generated, collected, and maintained during PCAPP operations. Operating records are transmitted to the Document Control Center in accordance with 24852-K10B-00150, *Records and Information Management.* The enterprise content management system (ECMS) is accessible to users to retrieve previously stored operating records and to accommodate printing copies. All records are readily retrievable and made available for inspection by project personnel and regulatory agency personnel.

8.0 CONTINGENCY ACTION

When an unplanned release of RCRA hazardous waste from a tank system is detected, the RCRA permit reporting, response, and corrective action requirements are followed. If the corrosion monitoring program detects significant problems with a component of a tank system (e.g., the tank or piping wall thickness is below the minimum design thickness value and considered unfit for use), the component will be removed from service. The component may be repaired and altered or replaced if needed.

Notification to CDPHE describing any significant problems discovered during corrosion monitoring and initial actions taken to correct these problems will be made within 5 calendar days from date of problem discovery. If it is determined that the problem cannot be corrected within 30 calendar days (or in accordance with a required time period established elsewhere in the permit), then within 15 days from the date of problem discovery, a written report describing the planned corrective action and the schedule for problem resolution will be submitted to CDPHE. PCAPP acknowledges that any resulting design or operational changes may require CDPHE approval.

Additionally, following major repairs to correct deficiencies noted during corrosion monitoring activities, FCC packages will be completed, certified by the independent registered professional engineer and reviewed and approved by the CDPHE before resuming hazardous waste operations (see Section 1.1.2).

If the corrosion rate is discovered to be greater than the design rate (confirmed through additional inspections) or if the projected service life of the vessel is found to be shorter than the remaining life of the project, that the frequency of measurements will be shortened to collect and evaluate additional information.

9.0 REFERENCES

9.1 DOCUMENTS CITED

24852-30H-B04-P00001, White Paper on Inspection Report of Failed Isolator

24852-G01-GBL-V0004, PCAPP RCRA Inspection Plan

24852-K10B-00150, Records and Information Management

24852-RD-30H-000-V0001, Resource Conservation and Recovery Act (RCRA) Tank Assessment Report

24852-RD-30H-B20-00001, White Paper on Off-Gas Treatment System (B20) Corrosion Assessment

24852-RD-30R-000-M0007, Corrosion Evaluation of Process and Mechanical Systems at the PCAPP Project

24852-RD-3DR-000-B0001, Design Criteria for Plant Process

24852-RD-3DR-000-V0002, Design Criteria for Environmental Compliance

24852-RD-3PS-000-A0180, Engineering Specification for Internal Lining of Tanks

24852-RD-3PS-000-J0014, Engineering Specification for Control Valves

24852-RD-3PS-000-M0030, Engineering Specification for Shop Fabricated Steel Tanks

24852-RD-3PS-000-M0052, Engineering Specification for Pressure Relief Valves

24852-RD-3PS-000-M0073, Engineering Specification for Pressure Vessels

24852-RD-3PS-000-M0074, Engineering Specification for Pumps

24852-RD-3PS-000-M0078, Engineering Specification for Titanium Materials

24852-RD-3PS-000-P0001, Engineering Specification for Piping Materials

24852-RD-3PS-000-P0002, Engineering Specification for Piping Installation and Testing

24852-RD-3PS-000-P0004, Engineering Specification for Shop Fabricated Pipe Supports

24852-RD-3PS-000-P0005, Engineering Specification for General Welding

24852-RD-3PS-000-P0006, Engineering Specification for Shop Fabricated Piping

24852-RD-3PS-000-S0008, Engineering Specification for Field Erected Tanks

24852-RD-3PS-000-T0001, Engineering Specification for Supplier Quality Assurance Program Requirements

24852-RD-3PS-000-T0002, Engineering Specification for General Project Requirements

24852-RD-N1-000-B0001, Material Selection Guide

Contract Data Requirements List C002, *Facilities Construction Certification, Modification of P00002*. 2005. Chron04-05718. July 25

Grauman, J.S. TIMET-Henderson Technical Laboratory. 2000, *Report on Corrosion Evaluation of Titanium in Surrogate Hydrolysate*. July 26

Stone and Webster Engineering Corporation. 1996. Materials of Construction, Corrosion Testing – Final Report, *Chemical Demilitarization Program*. September 20

Stone and Webster Engineering Corporation. 1997. Chemical Demilitarization Program, Addendum to Materials of Construction, *Corrosion Testing*, Final Report (Revision 1). March 28

9.2 CODES, STANDARDS, REGULATIONS, AND PROCEDURES

API 570, Piping Inspection Code: In-Service Inspection, Rating, Repair, and Alteration of Piping Systems

API 620, Design and Construction of Large, Welded, Low-Pressure Storage Tanks

API 650, Welded Tanks for Oil Storage

API 653, Tank Inspection, Repair, Alteration, and Reconstruction

ARCSL-TR-80069, Compatibility of Plastics with Mustard (HD), Thiodiglycol, VX Hydrolysis Products, DS-2, HTH, and Tetrachloroethylene

ASME B31.3, Process Piping

ASME B73.1, Specification for Horizontal End Suction Centrifugal Pumps for Chemical Process

ASME B73.2, Specification for Vertical In-Line Centrifugal Pumps for Chemical Process

ASME Boiler and Pressure Vessel Code, Section V, *Nondestructive Examination*

ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, *Pressure Vessels*

ASTM E797/E797M-10, Standard Practice for Measuring Thickness by Manual Ultrasonic Pulse-Echo Contact Method

ASTM G46-94, Standard Guide for Examination and Evaluation of Pitting Corrosion

10.0 APPENDICES

A. Permasense Monitoring Locations

B. UT Measurement Locations

C. Corrosion Mechanism Discussion

D. Tank Inspection Form

E. Ultrasonic Monitoring Locations

Table 1 Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities

Equipment	Equipment Tag No.	Material of Construction[2]	Corrosion Allowance[2]	Total Anticipated Corrosion[3]	Remaining Wall Following Agent Operations[3]	Corrosion Concern (yes/no)	Corrosion Monitoring Program Activities and Interval				
							External Visual Inspection[1]	Internal Visual Inspection	Document Review	NDE – UT and Corrosion Rate Calculations	NDE – Permasense UT and Corrosion Rate Calculations
Washed Agent and Water Surge Drum Tank System											
Washed agent and water surge drums	MV-B02-0101 MV-B02-0201	Titanium, grade 2	None	0.000275 inch	0.0629 inch	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
Piping		Titanium, grade 2	0.0625 inch	0.000275 inch	0.1329 inch (worst case, 1" pipe)	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
Washed agent and water booster pumps	MP-B02-0101A/B MP-B02-0201A/B	Wetted parts: Hastelloy C and Santoprene diaphragm	None	0.000275 inch	0.1329 inch	No	X, routine CCTV	N/A	X	N/A	N/A
Agent-Water Separator Tank System											
Agent-water separator tanks	MV-B04-0001 MV-B04-0002	Titanium, grade 7	None	0.00396 inch	0.2496 inch	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
Piping		Titanium, grade 2	0.0625 inch	0.00396 inch	0.1326 inch (worst case, 1" pipe)	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
MWS Wash Water Collection Tank System											
MWS wash water collection tanks	MV-B04-0104 MV-B04-0204	Titanium, grade 2	None	0.000275 inch	0.31297 inch	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
Piping		Titanium, grade 2	0.0625 inch	0.000275 inch	0.1329 inch (worst case, 1" pipe)	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
Wash water pumps	MP-B04-0001A/B	Wetted parts: Hastelloy C and Santoprene diaphragm	None	0.000275 inch	0.1329 inch	No	X, routine CCTV	N/A	X	N/A	N/A
Collected wash water pumps	MP-B04-0105A/B MP-B04-0205A/B	Wetted parts: Titanium, grade 2	None	0.000275 inch	0.1329 inch	No	X, routine CCTV	N/A	X	N/A	N/A
Agent Hydrolyzer Tank System											
Agent hydrolyzer tanks	MV-B04-0102 MV-B04-0202	Titanium, grade 7	None	0.00396 inch	0.3466 inch	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
Piping		Titanium, grade 2 or grade 7	0.0625 inch	0.00396 inch	0.1326 inch (worst case, 1" pipe)	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A
Agent concentrate pumps	MP-B04-0002A/B	Wetted parts: Titanium, grade 2	None	0.00396 inch	0.1326 inch	No	X, routine CCTV	N/A	X	N/A	N/A
Agent hydrolyzer recirculation pumps	MP-B04-0103A/B MP-B04-0203A/B	Wetted parts: Titanium, grade 7	None	0.00396 inch	0.1326 inch	No	X, routine CCTV	N/A	X	N/A	N/A
In-line static mixers	MF-B04-0102 MF-B04-0202 MF-B04-0302 MF-B04-0402	Titanium, grade 7	None	0.00396 inch	0.1326 inch (worst case)	No	X, routine CCTV	N/A	X	N/A	N/A
In-line steam mixers	MF-B04-0105 MF-B04-0205	Titanium, grade 7	None	0.00396 inch	0.1326 inch	No	X, routine CCTV	N/A	X	N/A	N/A

Table 1 Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities (cont'd)

Equipment	Equipment Tag No.	Material of Construction[2]	Corrosion Allowance[2]	Total Anticipated Corrosion[3]	Remaining Wall Following Agent Operations[3]	Corrosion Concern (yes/no)	Corrosion Monitoring Program Activities and Interval				
							External Visual Inspection[1]	Internal Visual Inspection	Document Review	NDE – UT and Corrosion Rate Calculations	NDE – Permasense UT and Corrosion Rate Calculations
Agent Hydrolysate Hold Tank System											
Agent hydrolysate hold tanks	MV-B04-0103 MV-B04-0203	Carbon steel	0.125 inch	0.143 inch	0.607 inch	No	X, routine personnel walkdown	N/A	X	N/A	X, continuous / semi-continuous
Piping		Carbon steel	0.125 inch	0.143 inch	0.036 inch (worst case, 1" pipe)	Yes	X, routine personnel walkdown	N/A	X	N/A	X, continuous / semi-continuous
Agent hydrolysate pumps	MP-B04-0104A/B MP-B04-0204A/B	Wetted parts: Stainless steel	None	0.076 inch	0.102 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Agent hydrolysate samplers	ML-B04-0101 ML-B04-0201	Piping and valves: Stainless steel	None	0.076 inch	0.102 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Agent Hydrolysate 30-Day Storage Tank System											
30-day storage tanks	MT-B04-0101 MT-B04-0201 MT-B04-0301	Carbon steel	0.125 inch	0.143 inch	0.107 inch	Yes	X, routine personnel walkdown	N/A	X	N/A	X, continuous / semi-continuous
Piping		Carbon steel	0.125 inch	0.143 inch	0.036 inch (worst case, 1" pipe)	Yes	X, routine personnel walkdown	N/A	X	N/A	X, continuous / semi-continuous
Bioreactor transfer pumps	MP-B04-0106A/B MP-B04-0206A/B MP-B04-0306A/B	Wetted parts: Stainless steel 316L	None	0.076 inch	0.102 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Agent hydrolysate air cooler	ME-B04-0004	Carbon steel	0.125 inch	0.143 inch	-0.036 inch (1" tube cooling coils)	Yes	X, routine personnel walkdown	N/A	X	X, Annual	N/A
Spent Decon Storage Tank System											
Spent decon holding tanks	MV-B05-0101 MV-B05-0201	Stainless steel 316L	None	0.0 inch	0.25 inch	No	X, routine CCTV	N/A	X	X, following campaigns	N/A
Piping		Carbon steel	0.125 inch	0.0 inch	0.179 inch	No	X, routine CCTV	N/A	X	X, following campaigns	N/A
Spent decon feed pumps	MP-B05-0101A/B MP-B05-0201A/B	Wetted parts: Stainless steel 316L	None	0.0 inch	0.179 inch	No	X, routine CCTV	N/A	X	N/A	N/A
Sumps (lined)	MT-B05-0040 MT-B05-0041 MT-B05-0042 MT-B05-0044 MT-B05-0045 MT-B05-0046 MT-B05-0047 MT-B05-0048 MT-B05-0050 MT-B05-0051 MT-B05-0052 MT-B05-0061 MT-B05-0066	Carbon steel (coated)	None	0.0 inch	0.1875 inch	No	X, routine CCTV	N/A	X	~~X, following campaigns~~N/A	N/A

Table 1 Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities (cont'd)

Equipment	Equipment Tag No.	Material of Construction[2]	Corrosion Allowance[2]	Total Anticipated Corrosion[3]	Remaining Wall Following Agent Operations[3]	Corrosion Concern (yes/no)	Corrosion Monitoring Program Activities and Interval: External Visual Inspection[1]	Internal Visual Inspection	Document Review	NDE – UT and Corrosion Rate Calculations	NDE – Permasense UT and Corrosion Rate Calculations
Spent Decon Storage Tank System (cont.)											
Pumps for lined sumps	MP-B05-0040 MP-B05-0041 MP-B05-0042 MP-B05-0044 MP-B05-0045 MP-B05-0046 MP-B05-0047 MP-B05-0048 MP-B05-0050 MP-B05-0051 MP-B05-0052 MP-B05-0061 MP-B05-0066	Carbon steel/ cast iron	None	0.0 inch	0.25 inch	No	X, routine CCTV	N/A	X	N/A	N/A
Sumps (unlined)	MT-B05-0049 MT-B05-0053 MT-B05-0054 MT-B05-0055 MT-B05-0056 MT-B05-0057 MT-B05-0058 MT-B05-0059 MT-B05-0060 MT-B05-0062 MT-B05-0063 MT-B05-0064 MT-B05-0065 MT-B05-0069 MT-B05-0070 MT-B05-0074 MT-B05-0075	Concrete (coated)	None	0.0 inch	N/A (concrete)	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Pumps for unlined sumps	MP-B05-0049 MP-B05-0053 MP-B05-0054 MP-B05-0055 MP-B05-0056 MP-B05-0057 MP-B05-0058 MP-B05-0059 MP-B05-0060 MP-B05-0062 MP-B05-0063 MP-B05-0064 MP-B05-0065 MP-B05-0069 MP-B05-0070 MP-B05-0074 MP-B05-0075	Carbon steel/ cast iron	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A

Table 1 Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities (cont'd)

Equipment	Equipment Tag No.	Material of Construction[2]	Corrosion Allowance[2]	Total Anticipated Corrosion[3]	Remaining Wall Following Agent Operations[3]	Corrosion Concern (yes/no)	Corrosion Monitoring Program Activities and Interval				
							External Visual Inspection[1]	Internal Visual Inspection	Document Review	NDE – UT and Corrosion Rate Calculations	NDE – Permasense UT and Corrosion Rate Calculations
ICB Feed Tank System											
ICB feed tanks	MT-B09-0101 MT-B09-0201 MT-B09-0301 MT-B09-0401*	Carbon steel (coated)	0.188 inch	0.0 inch	0.25 inch	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A
Piping		Carbon steel or PVC	Carbon steel: 0.125 inch PVC: None	0.143 inch	0.036 inch (worst case, 1" pipe)	Yes	X, routine personnel walkdown	N/A	X	X, annual	N/A
ICB feed pumps	MP-B09-0101 MP-B09-0201 MP-B09-0301 MP-B09-0401	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
ICB Tank System											
ICBs	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 MW-B09-0201 MW-B09-0202 MW-B09-0203 MW-B09-0204 MW-B09-0301 MW-B09-0302 MW-B09-0303 MW-B09-0304 MW-B09-0401* MW-B09-0402* MW-B09-0403* MW-B09-0404*	Carbon steel (coated)	None	0.0 inch	0.1875 inch	No	X, routine personnel walkdown	N/A	X	X, annual	N/A
Piping		PVC	None	0.0 inch	0.133 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
ICB recycle pumps	MP-B09-0111 MP-B09-0112 MP-B09-0113 MP-B09-0114 MP-B09-0211 MP-B09-0212 MP-B09-0213 MP-B09-0214 MP-B09-0311 MP-B09-0312 MP-B09-0313 MP-B09-0314 MP-B09-0411 MP-B09-0412 MP-B09-0413 MP-B09-0414	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A

*Module 4 is removed from Corrosion Monitoring activities per NCR 384038. Module 4 is not in operation and isolated from the system.

Table 1 Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities (cont'd)

Equipment	Equipment Tag No.	Material of Construction[2]	Corrosion Allowance[2]	Total Anticipated Corrosion[3]	Remaining Wall Following Agent Operations[3]	Corrosion Concern (yes/no)	Corrosion Monitoring Program Activities and Interval				
							External Visual Inspection[1]	Internal Visual Inspection	Document Review	NDE – UT and Corrosion Rate Calculations	NDE – Permasense UT and Corrosion Rate Calculations
ICB Effluent Tank System											
ICB effluent tanks	MT-B09-0102 MT-B09-0202 MT-B09-0302 MT-B09-0402*	Carbon steel (coated)	0.188 inch	0.0 inch	0.25 inch	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A
Piping		PVC	None	0.0 inch	0.133 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
ICB effluent pumps	MP-B09-0102 MP-B09-0202 MP-B09-0302 MP-B09-0402	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Brine Concentrator Feed Tank System											
Brine concentrator feed tanks	MT-B14-0002A/B/C	Carbon steel (coated)	0.125 inch; coating applied internally	0.0 inch	0.25 inch	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A
Piping		Carbon steel	0.125 inch	0.143 inch	0.036 inch (worst case, 1" pipe)	Yes	X, routine personnel walkdown	N/A	X	N/A	X, continuous / semi-continuous
Brine concentrator feed pumps	MP-B14-0002A/B	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Brine Concentrator Evaporator Feed Tank System											
Brine concentrator evaporator feed tank	MT-B12-0001	Fiberglass reinforced plastic	Not applicable	0.0 inch	0.24 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Piping		Stainless steel 316L or duplex stainless steel 2205	None	0.0825 inch (316L stainless) 0.0 inch (duplex stainless)	0.505 inch (316L stainless) 0.133 inch (duplex stainless)	No	X, routine personnel walkdown	N/A	X	X, annual	N/A
Brine concentrator evaporator feed pump	MP-B12-0001	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch		X, routine personnel walkdown	N/A	X	N/A	N/A
Brine concentrator feed preheaters	ME-B12-0001A/B/C/D/E/F/G/H/I/J	Shell: 316L SS Shell Head: Duplex 2205 Tube: Titanium Grade 2	None	0.0 inch	0.25 inch (shell) 0.035 inch (tube)	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A
Brine concentrator evaporator	MV-B12-0002	6% Moly stainless steel Tube: Titanium Grade 2	None	0.0 inch	0.375 inch (shell) 0.028 inch (tube)	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A

*Module 4 is removed from Corrosion Monitoring activities per NCR 384038. Module 4 is not in operation and isolated from the system.

Table 1 Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities (cont'd)

Equipment	Equipment Tag No.	Material of Construction[2]	Corrosion Allowance[2]	Total Anticipated Corrosion[3]	Remaining Wall Following Agent Operations[3]	Corrosion Concern (yes/no)	Corrosion Monitoring Program Activities and Interval				
							External Visual Inspection[1]	Internal Visual Inspection	Document Review	NDE – UT and Corrosion Rate Calculations	NDE – Permasense UT and Corrosion Rate Calculations
Crystallizer Feed Tank System											
Crystallizer feed tank	MT-B12-0004	Alloy 625	None	0.011 inch	0.239 inch	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A
Piping		6 percent molybdenum super-austenitic stainless steel or Alloy 625	None	0.011 inch	0.122 inch	No	X, routine personnel walkdown	N/A	X	X, annual	N/A
Crystallizer feed pump	MP-B12-0005	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Crystallizer	MV-B12-0006	Alloy 625	None	0.011 inch	0.3015 inch	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A
Crystallizer Heater	ME-B12-0004	Tubes: Titanium Gr 16 Shell: 316L Stainless Steel	None	0.0 inch	0.028 inch (tube) 0.25 inch (shell)	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	N/A	N/A
BRS Off-Gas Treatment System											
B12 BRS OTS Piping	MK-B12-0001A/B/C	Carbon Steel	0.125 inch	0.200 inch	0.165 inch	yes, .165" minimum wall thickness requires replacement	X, routine personnel walkdown	N/A	X	X, monthly UT scans, Semi Annual Report	N/A
BRS Distillate Carbon Filter Feed Tank System											
BRS distillate carbon filter feed tank	MT-B12-0009	Stainless steel 316L	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Piping		Stainless steel 316L	None	0.0 inch	0.133 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
BRS distillate carbon filter feed pumps	MP-B12-0009A/B	Wetted parts: Stainless steel 316L	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
BRS Distillate Carbon Filter System											
BRS distillate carbon filters	MK-B12-0002A/B/C	Carbon steel	0.057 inch	0.0 inch	0.2929 inch		X, routine personnel walkdown	N/A	X	N/A	N/A
Brine Concentrator Evaporator Distillate Tank System											
Brine concentrator evaporator distillate tank	MT-B12-0003	Stainless steel, grade 316L	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Piping		Stainless steel 316L	None	0.0 inch	0.133 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Brine concentrator evaporator distillate pump	MP-B12-0003	Wetted parts: Stainless steel 316L	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A

Table 1 Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities (cont'd)

Equipment	Equipment Tag No.	Material of Construction[2]	Corrosion Allowance[2]	Total Anticipated Corrosion[3]	Remaining Wall Following Agent Operations[3]	Corrosion Concern (yes/no)	Corrosion Monitoring Program Activities and Interval				
							External Visual Inspection[1]	Internal Visual Inspection	Document Review	NDE – UT and Corrosion Rate Calculations	NDE – Permasense UT and Corrosion Rate Calculations
BRS Area Sump Liner Tank System											
BRS area sump liner tank	MT-B12-0018	6 percent molybdenum super-austenitic stainless steel	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Piping		Stainless steel 316L	None	0.0 inch	0.133 inch	No	X, routine personnel walkdown	N/A	X	N/A	X, continuous / semi-continuous
BRS area sump liner tank pumps	MP-B12-0018A/B	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
BRS Filter Press Sump System											
BRS filter area sump	MT-B12-0019	Stainless steel 316L	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	X, annual	N/A
BRS filter area sump pump	MP-B12-0019	Wetted parts: CD4MCu	None	0.0 inch	0.25 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Off-gas Treatment Tank System											
OTS venturi / scrubber tower	MK-B20-0002	Hastelloy C276	None	0.0 inch	0.25 inch (venturi) 0.188 inch (scrubber)	No	X, routine personnel walkdown	N/A	X	N/A	N/A
Piping		Stainless steel 316L	0.063 inch	0.10 inch	0.033 inch (worst case, 1" pipe)	Yes	X, routine personnel walkdown	N/A	X	X, quarterly UT Scans Corrosion Rate Calculations	N/A
Piping		Carbon Steel	0.125 inch	.043 inch	.136 Inch (worst case, 1" Schedule 80)	Yes	X, routine personnel walkdown	N/A	X	X, quarterly, UT Scans Corrosion Rate Calculations	N/A
Bellows		Stainless Steel 304L Stainless Steel 316L	None None	0.10 inch		Yes No	X, routine personnel walkdown	N/A	X	Replace 304L after 3 months of operations. Replace 316L if 316L Piping shows wastage	N/A
OTS scrubber recirc pumps	MP-B20-0018A/B	Wetted parts: 316 Stainless Steel	None	0.10 inch	0.150 inch	No	X, routine personnel walkdown	N/A	X	N/A	N/A
OTS Recirculation Cooler	ME-B20-0001	Tubes: ASME SB-111 C71500 70/30 Copper/Nickel Shell: Carbon Steel	Tubes: None Shell: 1/16"	0.0 inch (tube) 0.063 inch (shell)	0.049 inch (tube) 0.249 inch (shell)	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns Also following operation at pH of 6.5 for 30 minutes	X	X, quarterly, UT Scans Corrosion Rate Calculations	N/A
OTS Recirculation Cooler[4]	ME-B20-0001	Tubes: AL6XN Shell: Carbon Steel	Tubes: None Shell: 1/16"	0.0 inch (tube) 0.0 inch (shell)	N/A	No	X, routine personnel walkdown	X, Following 155 and 105 campaigns	X	X, annual	N/A

Notes:

1 External visual inspections may be performed via CCTV or personnel walkdowns.

2 Information taken from 24852-RD-30H-000-V0001, *Resource Conservation and Recovery Act (RCRA) Tank Assessment Report* and equipment data sheets.

3 Information taken from 24852-RD-30R-000-M0007, *Corrosion Evaluation of Process and Mechanical Systems at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) Project*

[4] Monitoring will begin when this heat exchanger is put into service.

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Table 2 Summary of Area Classifications for Tank Systems

Tank	Location at PCAPP or Area Classification[1]
Washed Agent and Water Surge Drum Tank System	APB – agent contamination category A area
Agent-Water Separator Tank System	APB – agent contamination category A area
MWS Wash Water Collection Tank System	APB – agent contamination category A area
Agent Hydrolyzer Tank System	APB – agent contamination category A area
Agent Hydrolysate Hold Tank System	APB – agent contamination category C area
Agent Hydrolysate 30-Day Storage Tank System	Near BTA
Spent Decon Storage Tank System	APB – agent contamination category A area
Off-gas Treatment Tank System	APB – agent contamination category C area
ICB Feed Tank System	BTA
ICB Tank System	BTA
ICB Effluent Tank System	BTA
Brine Concentrator Feed Tank System	Near BTA
Brine Concentrator Evaporator Feed Tank System	BRS
Crystallizer Feed Tank System	BRS
BRS Distillate Carbon Filter Feed Tank System	BRS
BRS Distillate Carbon Filter System	BRS
Brine Concentrator Evaporator Distillate Tank System	BRS
BRS Area Sump Liner Tank System	BRS
BRS Filter Press Sump System	BRS

~~Table 2 Summary of Area Classifications (cont'd)~~

~~Tank~~	~~Area Classification[1]~~
~~Brine Concentrator Evaporator Distillate Tank System~~	~~BRS~~
~~BRS Area Sump Liner Tank System~~	~~BRS~~
~~BRS Filter Press Sump System~~	~~BRS~~

Notes:

[1] During operations, agent contamination categories for the APB areas are summarized below.

A	Areas that have routine probability of contamination, either liquid agent or vapor
B	Areas with a high probability of agent vapor contamination resulting from routine operations
C	Areas with low probability of agent vapor contamination
D	Areas that are unlikely ever to have agent contamination

The BTA and BRS areas are maintained to be free from agent contamination during operations.

Acronyms:
APB – agent processing building
BRS – brine reduction system
BTA – biotreatment area
ICB – immobilized cell bioreactor
MWS – munitions washout system

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Table 3 Summary of Operational Conditions for RCRA Tank Systems and Potential Operational Changes Impacting Corrosion Rates

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
Washed Agent and Water Surge Drum Tank System				
Washed agent and water surge drums	MV-B02-0101 MV-B02-0201	110 F	If temperature were increased up to 200 F, the impact on the titanium grade 2 tank is negligible.	Increasing or decreasing the agent loading will not impact the titanium grade 2 tank. Changing the near neutral pH is not possible due to the lack of acids or bases added to the tank.
Piping		110 F	Same result as drums	Same result as drums
Washed agent and water booster pumps	MP-B02-0101A/B MP-B02-0201A/B	110 F	Same result as drums, except the pump has Hastelloy parts and a santoprene diaphragm	Same result as drums, except the pump has Hastelloy parts and a santoprene diaphragm
Agent-Water Separator Tank System				
Agent-water separator tanks	MV-B04-0001 MV-B04-0002	102 F	If temperature were increased up to 200 F, the impact on the titanium grade 7 tank is negligible	Increasing or decreasing the agent loading will not impact the titanium grade 7 tank. Changing the near neutral pH is not possible due to the lack of acids or bases added to the tank.
Piping		102 F	Same result as Agent-water Separator	Same result as Agent-water Separator
MWS Wash Water Collection Tank System				
MWS wash water collection tanks	MV-B04-0104 MV-B04-0204	108 F	If temperature were increased up to 200 F, the impact on the titanium grade 2 tank is negligible.	Increasing or decreasing the agent loading will not impact the titanium grade 2 tank. Changing the near neutral pH is not possible due to the lack of acids or bases added to the tank.
Piping		108 F	Same result as Wash Water Tank	Same result as Wash Water Tank
Wash water pumps	MP-B04-0001A/B	108 F	Same result as Wash Water Tank, except the pump has Hastelloy parts and a santoprene diaphragm	Same result as Wash Water Tank, except the pump has Hastelloy parts and a santoprene diaphragm
Collected wash water pumps	MP-B04-0105A/B MP-B04-0205A/B	108 F	Same result as Wash Water Tank	Same result as Wash Water Tank

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
Agent Hydrolyzer Tank System				
Agent hydrolyzer tanks	MV-B04-0102 MV-B04-0202	205 F	The temperature cannot exceed 300 F (equivalent to 50 psig steam), the impact on the titanium grade 7 tank is a potential to see corrosion of <2 mils per year. Normal anticipated corrosion rate is zero mils per year. If this happened, it would be a sever malfunction of process equipment and the anticipated corrosion rate is acceptable.	Increasing or decreasing the agent loading will not impact the titanium grade 7 tank. If the low pH reaction products were not neutralized, the anticipated corrosion rate of <2 mils per year would be met. Titanium grade 7 has excellent corrosion resistance to low pH solutions. The normal process is to raise the pH, however if a pH of >>12 were achieved then there is a concern for hydrogen embrittlement to occur. Calibration of pH instruments that control the neutralization reaction will ensure this does not happen.
Piping		205 F	Same result as Hydrolyzer	Same result as Hydrolyzer
Agent concentrate pumps	MP-B04-0002A/B	102 F	Similar to the Agent-Water Separators. If temperature were increased up to 200 F, the impact on the pump's Hastelloy parts and santoprene diaphragm is negligible.	Similar to the Agent-Water Separators, increasing or decreasing the agent loading will not impact the pump's Hastelloy parts and santoprene diaphragm. Changing the near neutral pH is not possible due to the lack of acids or bases added to the Agent-Water Separator.
Agent hydrolyzer recirculation pumps	MP-B04-0103A/B MP-B04-0203A/B	205 F	Same result as Hydrolyzer	Same result as Hydrolyzer
In-line static mixers	MF-B04-0102 MF-B04-0202 MF-B04-0302 MF-B04-0402	205 F	Same result as Hydrolyzer	Same result as Hydrolyzer
In-line steam mixers	MF-B04-0105 MF-B04-0205	350 F	The in-line steam mixer is supplied with ~120 psig steam (350 F). The boilers can produce a maximum of 140 psig steam (361 F), relief valve set point. Impacts at 361 F are minimal as well, see Hydrolyzer discussion.	Same result as Hydrolyzer

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	**Change in Chemistry (higher or lower pH and higher or lower agent concentration)**
Agent Hydrolysate Hold Tank System				
Agent hydrolysate hold tanks	MV-B04-0103 MV-B04-0203	200 F	If the temperature of the neutralized agent (hydrolysate) were increased much more than current temperature, the transfer pump would have trouble pumping the solution. If temperatures were approximately 212 F, the impact to the hydrolysate hold tank will not be significant enough to increase anticipated corrosion rate of 26 mils per year.	Changes to the hydrolysate loading of the Hydrolysate Hold Tank will not impact the expected corrosion rate. Raising the pH above 12 for the carbon steel Hydrolysate Hold Tank is not anticipated to increase the expected corrosion rate of 26 mils per year. If concentrations of sodium hydroxide are >5%, then Caustic Stress Corrosion Cracking (Reference Corrosion Evaluation of Process and Mechanical Systems at the PCAPP Project, 24852-RD-30R-000-M0007) may occur. Calibration of pH instruments that control the neutralization reaction will ensure this does not happen. Lowering the pH below 5 for the carbon steel Hydrolysate Hold Tank will have a significant effect on the expected corrosion rate. Rates as high as 50 – 100 mils per year may be experienced. Calibration of pH instruments that control the neutralization reaction will ensure this does not happen.
Piping		200 F	Same as Hydrolysate Hold Tank	Same as Hydrolysate Hold Tank
Agent hydrolysate pumps	MP-B04-0104A/B MP-B04-0204A/B	200 F	Similar to Hydrolysate Hold Tank except the stainless-steel pump has an anticipated corrosion rate of 14 mils per year.	Similar to Hydrolysate Hold Tank except the stainless-steel pump will likely experience less corrosion than the tank.
Agent hydrolysate samplers	ML-B04-0101 ML-B04-0201	200 F	The Hastelloy pump and Monel tubing has an anticipated corrosion rate of 0 mils per year normally and 0 mils per year when considering the Hydrolysate Hold Tank scenario described above.	The Hastelloy pump and Monel tubing has an anticipated corrosion rate of 0 mils per year normally and 0 mils per year when considering the Hydrolysate Hold Tank scenario described above.

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
Agent Hydrolysate 30-Day Storage Tank System				
30-day storage tanks	MT-B04-0101 MT-B04-0201 MT-B04-0301	200 F	Same as Agent Hydrolysate Hold Tank	While it is not possible to alter the pH or hydrolysate loading in the 30-day storage tanks, if these parameters were modified in the Agent Hydrolysate Hold Tank, the outcome would be the same in the 30-day storage tank.
Piping		200 F	Same as Agent Hydrolysate Hold Tank	Same as 30-day storage tanks
Bioreactor transfer pumps	MP-B04-0106A/B MP-B04-0206A/B MP-B04-0306A/B	200 F	Same as Agent Hydrolysate Pumps	Same as 30-day storage tanks
Agent hydrolysate air cooler	ME-B04-0004	200 F	Same as Agent Hydrolysate Hold Tank	Same as 30-day storage tanks
Spent Decon Storage Tank System				
Spent decon holding tanks	MV-B05-0101 MV-B05-0201	77-80 F	If the temperature of the sump solutions or B20 scrubber solutions were increased, the impact to the stainless steel is negligible. Warmer water will not change the anticipated corrosion rate (0 mils per year).	The normal condition of the Spent Decon Holding Tanks is to handle fluids from the decontamination during maintenance entries or the B20 scrubber solution. It is very unlikely that the spent decon tanks would ever handle a very low pH or very high pH solution. The incident would have to be a catastrophic failure of an Agent Hydrolyzer. If that happened, the Spent Decon Tanks would be able to convey the contents to the available Hydrolyzer for processing and suffer only minor corrosion, assuming the tank is in contact with the agent/hydrolysate contents for a short period of time. Total anticipated corrosion is 20 mils, which would not affect the tank's overall ability to perform its containment function.
Piping		77-80 F	If the temperature of the sump solutions or B20 scrubber solutions were increased, the impact to the carbon steel piping would be an increased corrosion rate to approx. 14 mils per year. 14 mils per year would not be the continuous corrosion rate and thus	Same as the Spent Decon Holding Tanks.

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
			the overall impact would be negligible.	
Spent decon feed pumps	MP-B05-0101A/B MP-B05-0201A/B	77-80 F	Same as the Spent Decon holding tanks	Same as the Spent Decon Holding Tanks.
Sumps (lined)	MT-B05-0040 MT-B05-0041 MT-B05-0042 MT-B05-0044 MT-B05-0045 MT-B05-0046 MT-B05-0047 MT-B05-0048 MT-B05-0050 MT-B05-0051 MT-B05-0052 MT-B05-0061 MT-B05-0066	77-80 F	Same as the Spent Decon holding tanks	Same as the Spent Decon Holding Tanks.
Pumps for lined sumps	MP-B05-0040 MP-B05-0041 MP-B05-0042 MP-B05-0044 MP-B05-0045 MP-B05-0046 MP-B05-0047 MP-B05-0048 MP-B05-0050 MP-B05-0051 MP-B05-0052 MP-B05-0061 MP-B05-0066	77-80 F	Same as the Spent Decon Piping	Same as the Spent Decon Piping
Sumps (unlined)	MT-B05-0049 MT-B05-0053 MT-B05-0054 MT-B05-0055 MT-B05-0056 MT-B05-0057 MT-B05-0058 MT-B05-0059 MT-B05-0060 MT-B05-0062 MT-B05-0063 MT-B05-0064 MT-B05-0065 MT-B05-0069 MT-B05-0070 MT-B05-0074 MT-B05-0075	77-80 F	The unlined sumps will handle water from safety showers or utility stations. Increasing the temperature is very unlikely. No impact anticipated.	The unlined sumps do not have the potential to be exposed to RCRA solutions except for the APB East Corridor where hydrolysate is routed in piping overhead. It would be a catastrophic failure of the hydrolysate piping to expose the unlined sump to hydrolysate. The pipe contains Permasense corrosion monitors to track the corrosion rate and prevent this event from occurring.

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
Pumps for unlined sumps	MP-B05-0049 MP-B05-0053 MP-B05-0054 MP-B05-0055 MP-B05-0056 MP-B05-0057 MP-B05-0058 MP-B05-0059 MP-B05-0060 MP-B05-0062 MP-B05-0063 MP-B05-0064 MP-B05-0065 MP-B05-0069 MP-B05-0070 MP-B05-0074 MP-B05-0075	77-80 F	Same as the unlined sumps.	Same as the unlined sumps.
ICB Feed Tank System				
ICB feed tanks	MT-B09-0101 MT-B09-0201 MT-B09-0301 MT-B09-0401	90-100 F	Increasing the operating temperature of the hydrolysate will not have an impact on the coated carbon steel tank. Increasing the temperature has a greater impact on the downstream ICB where the increased temperature would adversely impact the biological organisms.	Changing the pH of the hydrolysate in the ICB Feed Tank is performed during ICB startup to ensure the proper pH for biological organisms. The coating on the tank is sensitive to high or low pH, which may cause breakdown of the coating and eventual corrosion of the tank wall. The pH instruments will monitor and alert the operators to pH swings that are unacceptable. Increasing or decreasing the hydrolysate load will not impact the tank; however, it may impact the biological organisms in the downstream ICB.
Piping		90-100 F	Same as Agent Hydrolysate Hold Tank	The uncoated piping will behave similarly to the coated ICB Feed Tank only pH swings outside the accepted range will have an immediate impact on the carbon steel pipe. An increased corrosion rate of 50 – 100 mils per year may be experienced as seen in the discussion for the Agent Hydrolysate Tank.
ICB feed pumps	MP-B09-0101 MP-B09-0201 MP-B09-0301 MP-B09-0401	90-100 F	Same as ICB Feed Tanks	No impact considering the discussion for the ICB Feed Tank based on the alloy construction.

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
ICB Tank System				
ICBs	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 MW-B09-0201 MW-B09-0202 MW-B09-0203 MW-B09-0204 MW-B09-0301 MW-B09-0302 MW-B09-0303 MW-B09-0304 MW-B09-0401 MW-B09-0402 MW-B09-0403 MW-B09-0404	90-100 F	Same as ICB Feed Tanks	Same as ICB Feed Tanks
Piping		90-100 F	Same as ICB Feed Tank Piping	Same as ICB Feed Tank Piping
ICB recycle pumps	MP-B09-0111 MP-B09-0112 MP-B09-0113 MP-B09-0114 MP-B09-0211 MP-B09-0212 MP-B09-0213 MP-B09-0214 MP-B09-0311 MP-B09-0312 MP-B09-0313 MP-B09-0314 MP-B09-0411 MP-B09-0412 MP-B09-0413 MP-B09-0414	90-100 F	Same as ICB Feed Tank Pump	Same as ICB Feed Tank Pump
ICB Effluent Tank System				
ICB effluent tanks	MT-B09-0102 MT-B09-0202 MT-B09-0302 MT-B09-0402	90-100 F	Same as ICB Feed Tanks, except no impact to biological organisms.	Same as ICB Feed Tanks, except no impact to biological organisms.
Piping		90-100 F	Same as ICB Feed Tank Piping, except no impact to biological organisms.	Same as ICB Feed Tank Piping, except no impact to biological organisms.
ICB effluent pumps	MP-B09-0102 MP-B09-0202 MP-B09-0302 MP-B09-0402	90-100 F	Same as ICB Feed Tank Pump, except no impact to biological organisms.	Same as ICB Feed Tank Pump, except no impact to biological organisms.

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
Brine Concentrator Feed Tank System				
Brine concentrator feed tanks	MT-B14-0002A/B/C	80-100 F	Same as ICB Feed Tanks, except no impact to biological organisms.	Same as ICB Feed Tanks, except no impact to biological organisms.
Piping		80-100 F	Same as ICB Feed Tank Piping, except no impact to biological organisms.	Same as ICB Feed Tank Piping, except no impact to biological organisms.
Brine concentrator feed pumps	MP-B14-0002A/B	80-100 F	Same as ICB Feed Tank Pump, except no impact to biological organisms.	Same as ICB Feed Tank Pump, except no impact to biological organisms.
Brine Concentrator Evaporator Feed Tank System				
Brine concentrator evaporator feed tank	MT-B12-0001	100 F	The Evaporator Feed Tank has a maximum temperature allowable of 150 F. Temperatures above 150 F could cause irreversible damage to the fiberglass construction. Temperature adjustment takes place in the B09 ICB Feed Tank, following the B09 system; it is not possible to raise the temperature of the brine solution. pH adjustment in the Evaporator Feed Tank could raise the temperature, but it is not likely due to the minor pH adjustment. pH controls will ensure adjustment is not significant to cause increased temperature to 150 F.	Increasing brine concentration will not impact the Evaporator Feed Tank. The Evaporator Feed Tank has excellent resistance to high or low pH solutions such as sulfuric acid and sodium hydroxide.
Piping		100 F	The Evaporator Feed Tank piping will not be impacted by increased temperature. The alloy construction will continue to resist corrosion at elevated temperatures.	The Evaporator Feed Tank piping will not be impacted by increased or decreased pH of the brine solutions. The alloy construction will continue to resist corrosion at pH swings.
Brine concentrator evaporator feed pump	MP-B12-0001	100 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.
Brine concentrator feed preheaters	ME-B12-0001A/B/C/D/E/F/G/H/I/J	210 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.
Brine concentrator evaporator	MV-B12-0002	210 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
Crystallizer Feed Tank System				
Crystallizer feed tank	MT-B12-0004	210 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.
Piping		210 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.
Crystallizer feed pump	MP-B12-0005	210 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.
Crystallizer	MV-B12-0006	210 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.
Crystallizer Heater	ME-B12-0004	210 F	Same as the Evaporator Feed Tank piping.	Same as the Evaporator Feed Tank piping.
BRS Distillate Carbon Filter Feed Tank System				
BRS distillate carbon filter feed tank	MT-B12-0009	100 F	Increasing the temperature of the Distillate Carbon Filter Feed Tank will not impact the 316 L stainless steel construction ability to resist corrosion of distilled water.	It is very unlikely that the distilled water would contain brine constituents or high or low pH, but in an upset condition, the 316 L stainless steel construction would not be impacted.
Piping		100 F	Same as Distillate Carbon Filter Feed Tank	Same as Distillate Carbon Filter Feed Tank
BRS distillate carbon filter feed pumps	MP-B12-0009A/B	100 F	Same as Distillate Carbon Filter Feed Tank	Same as Distillate Carbon Filter Feed Tank
BRS Distillate Carbon Filter System				
BRS distillate carbon filters	MK-B12-0002A/B/C	85 F	Same as Distillate Carbon Filter Feed Tank	Same as Distillate Carbon Filter Feed Tank
Brine Concentrator Evaporator Distillate Tank System				
Brine concentrator evaporator distillate tank	MT-B12-0003	85 F	Same as Distillate Carbon Filter Feed Tank	Same as Distillate Carbon Filter Feed Tank
Piping		85 F	Same as Distillate Carbon Filter Feed Tank	Same as Distillate Carbon Filter Feed Tank
Brine concentrator evaporator distillate pump	MP-B12-0003	85 F	Same as Distillate Carbon Filter Feed Tank	Same as Distillate Carbon Filter Feed Tank
BRS Area Sump Liner Tank System				
BRS area sump liner tank	MT-B12-0018	150 F (conservative estimate)	Increased temperature of the contents going to the sump will not impact the BRS Area Sump Liner Tank alloy construction from resisting corrosion.	Increased brine concentration or increased / decreased pH of the solutions collected in the BRS Are Sump Liner Tank alloy construction will not impact the anticipated corrosion rate. The basis is the alloy construction and the intended use of the sump tank is to collect spilled solutions during maintenance events or for containment. The conditions are not long term and are flushed with copious amounts of water.

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	Change in Chemistry (higher or lower pH and higher or lower agent concentration)
Piping		150 F (conservative estimate)	Same as BRS Area Sump Liner Tank	Same as BRS Area Sump Liner Tank
BRS area sump liner tank pumps	MP-B12-0018A/B	150 F (conservative estimate)	Same as BRS Area Sump Liner Tank	Same as BRS Area Sump Liner Tank
BRS Filter Press Sump System				
BRS filter area sump	MT-B12-0019	150 F (conservative estimate)	Same as BRS Area Sump Liner Tank	Same as BRS Area Sump Liner Tank
BRS filter area sump pump	MP-B12-0019	150 F (conservative estimate)	Same as BRS Area Sump Liner Tank	Same as BRS Area Sump Liner Tank
Off-gas Treatment Tank System				
OTS venturi / scrubber tower	MK-B20-0002	1150 F (venturi) 100 F (scrubber)	The venturi has a design temperature limit of 1250 F, so increasing the temperature above the normal operating will not impact the venturi. The scrubber has a design temperature limit of 550 F, so not quenching the incoming hot process exhaust will exceed the design conditions, but the alloy construction will not be impacted. The effect to downstream components like instruments and the blowers may have far greater detrimental effects. Numerous temperature measurements ensure that temperature excursions inside the scrubber do not occur.	The venturi and scrubber are constructed of Hastelloy C276 which has excellent resistance to high or low pH solutions and vapors as well as solutions or gases with high chloride content.
Piping		100 F	Increased temperature in the scrubber piping will increase the anticipated corrosion rate. Temperature controls prevent the solution temperature from rising too much.	The 316 L stainless steel piping is well suited for high or low pH, however increases in the chloride concentration will have a detrimental effect on the piping. Taking steps to improve pH control. More frequent (increasing the frequency) monitoring using Ultrasonic Testing Technology. Carbon Steel piping (Scrubber blow down) will be subject to an increased frequency of UT testing and will be replaced as needed dependent on the UT results. 304 SS and Bronze materials will be replaced with better suited materials. Visual inspections will

Equipment	Equipment Tag No.	Operating Temp	Potential Operational Changes Impacting Corrosion Rates	
			Increased Operating Temperature	**Change in Chemistry (higher or lower pH and higher or lower agent concentration)**
				determine timing of these replacements. See 24852-RD-30H-B20-00001 for more detail regarding these materials. The conductivity measurements will provide necessary information to purge the scrubber solution to the Spent Decon Tanks and refill with water if necessary. Normally the scrubber solution will be gradually transferred to the Spent Decon Tanks and replenished with process water.
OTS scrubber recirc pumps	MP-B20-0018A/B	100 F	Same as the OTS piping	Same as the OTS piping
OTS Recirculation Cooler	ME-B20-0001	100 F	The OTS recirculation cooler is constructed of carbon steel that will not be impacted by increased temperature over anticipated range	The OTS recirculation cooler is constructed of carbon steel that will not be impacted by increased brine concentration or high pH. Must be at or above 6.5. Increased corrosion monitoring of the recirculation cooler until replaced with an alternate/improved material. New Cooler design has the shell composed of Carbon steel (Glycol side), Heads are AL6XN and Tubes are AL6XN.

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APPENDIX A. PERMASENSE MONITORING LOCATIONS

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping

BC Feed Tank System Piping

Baseline and subsequent thickness measurements will be conducted at the same locations. Refer to Table 1 for schedule of NDE measurements.

Permasense locations were added in the following design change notices and the sketches following show the final markups encompassing the changes:

- 24852-RD-M6N-B04-M0057
- 24852-RD-EFN-APB-E0001

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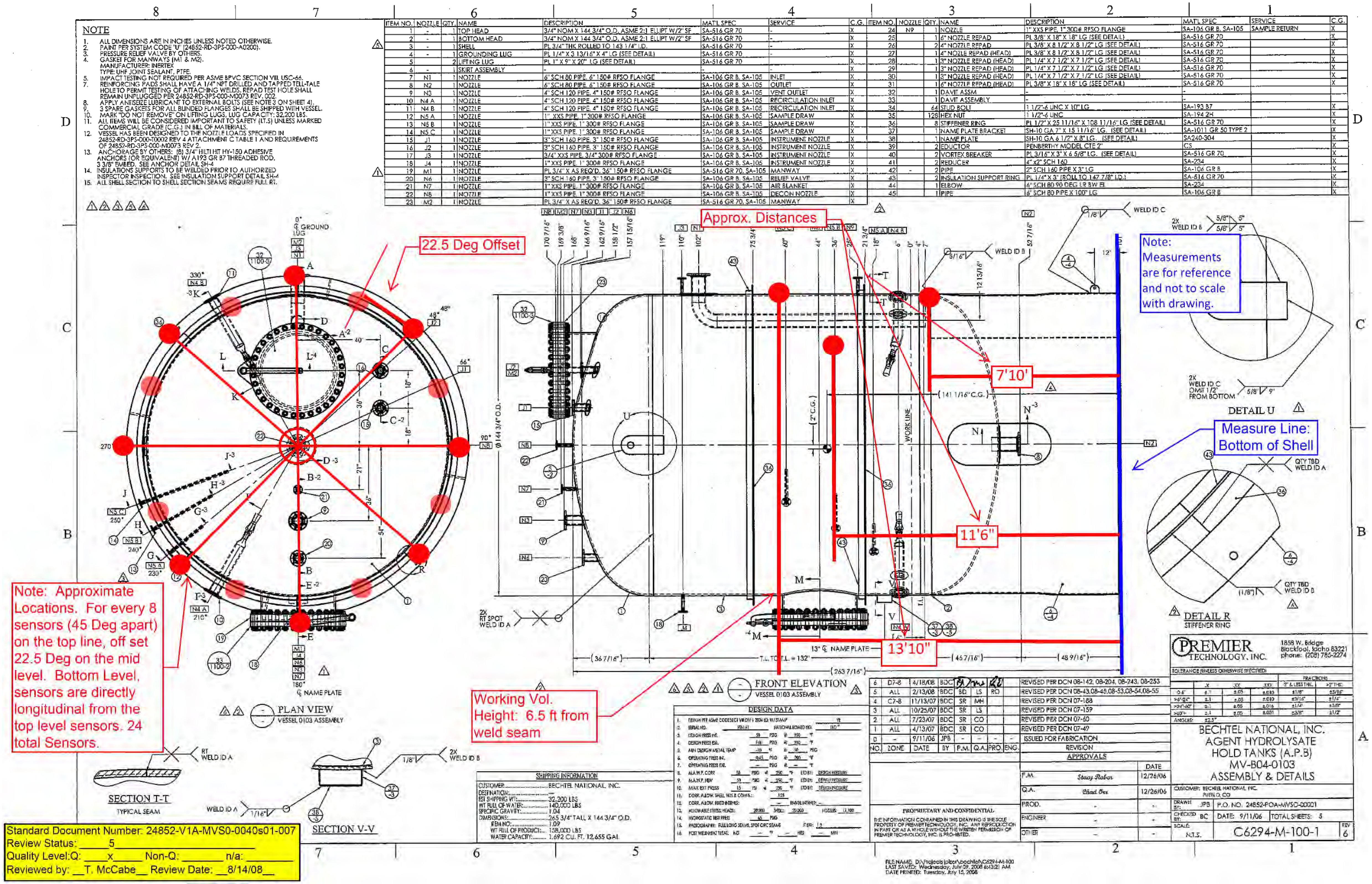
Permasense Monitoring Locations (cont)

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping

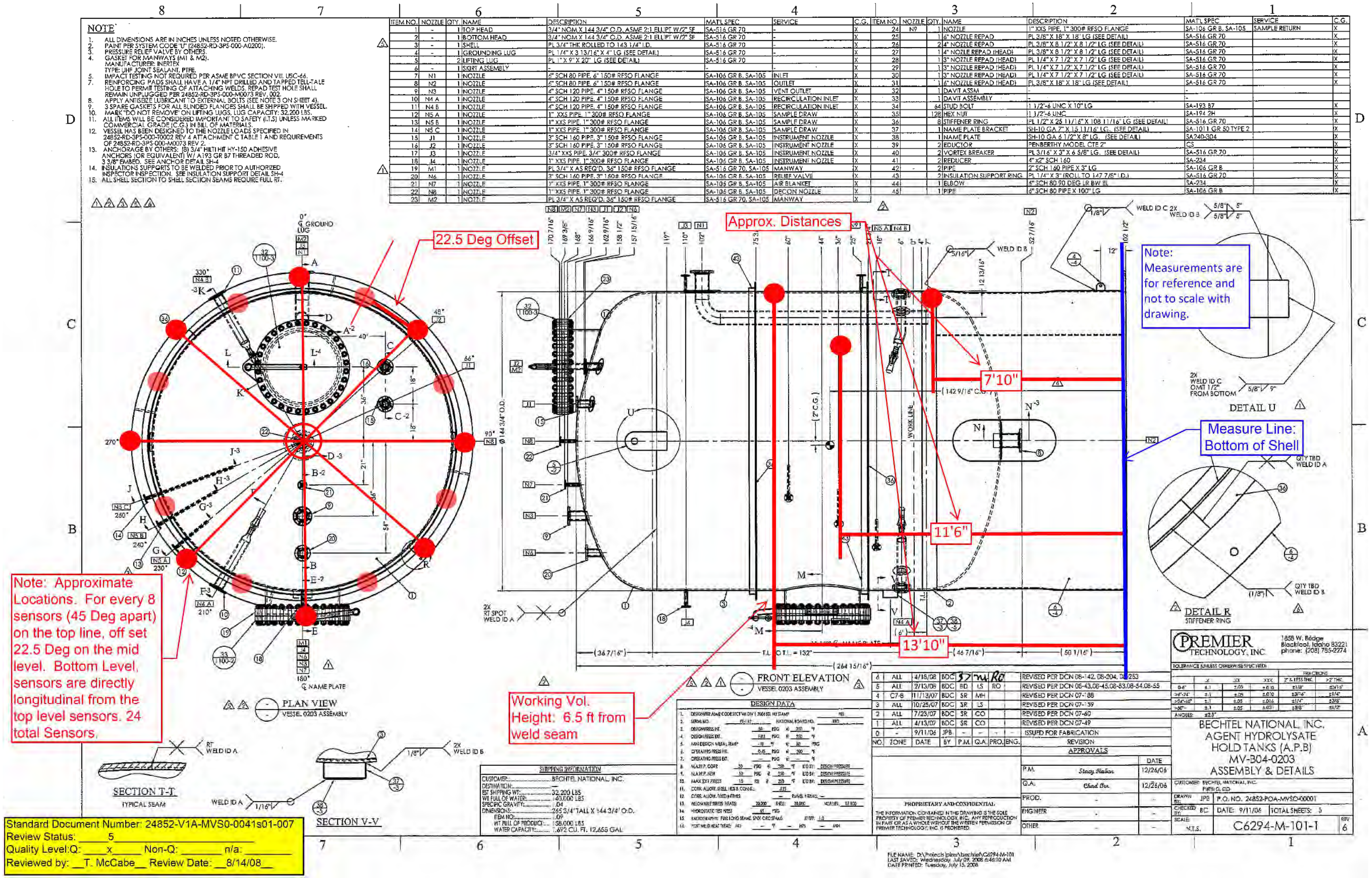
MV-B04-0103



Permasense Monitoring Locations (cont)

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping (cont)

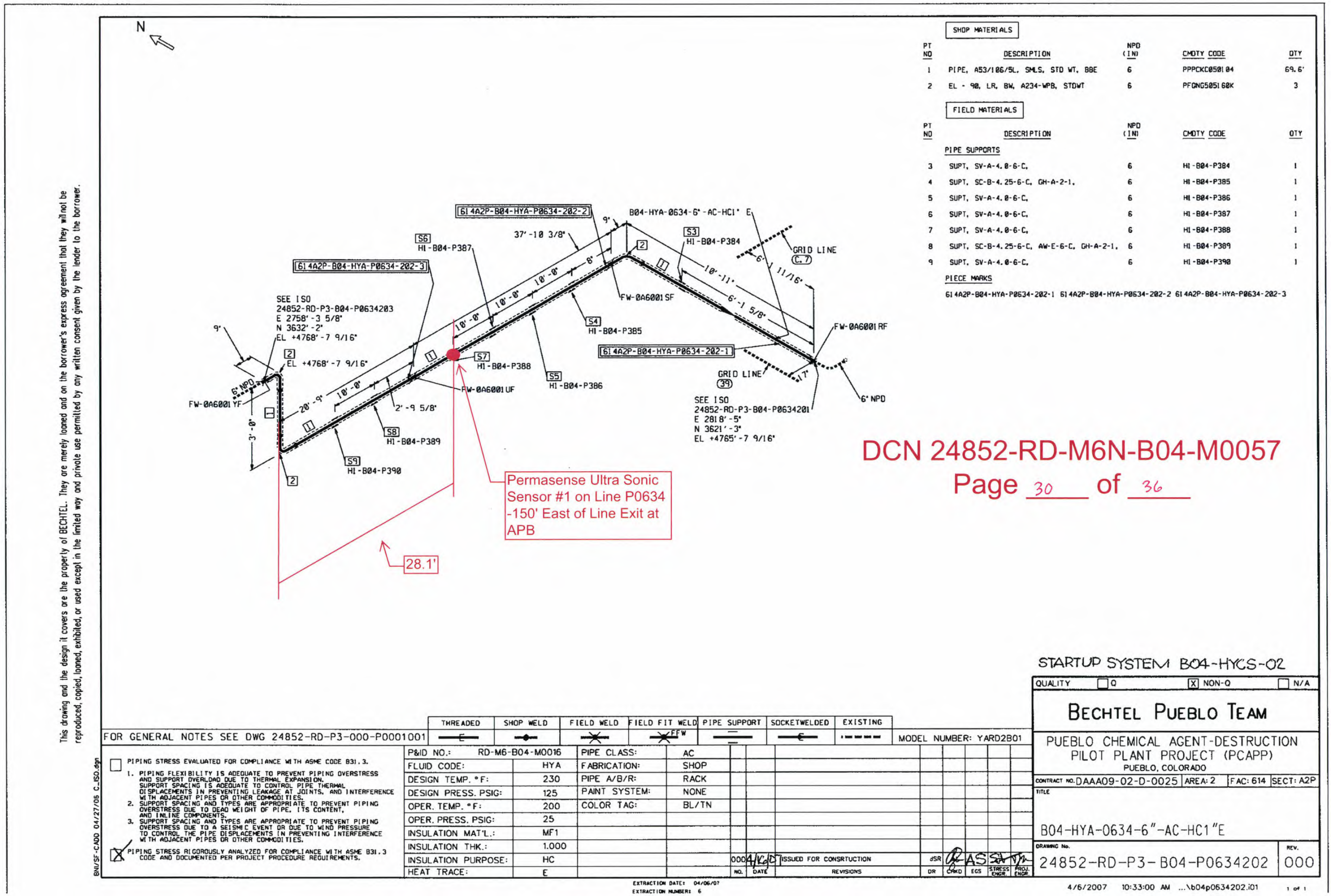
MV-B04-0203



Permasense Monitoring Locations (cont)

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping (cont)

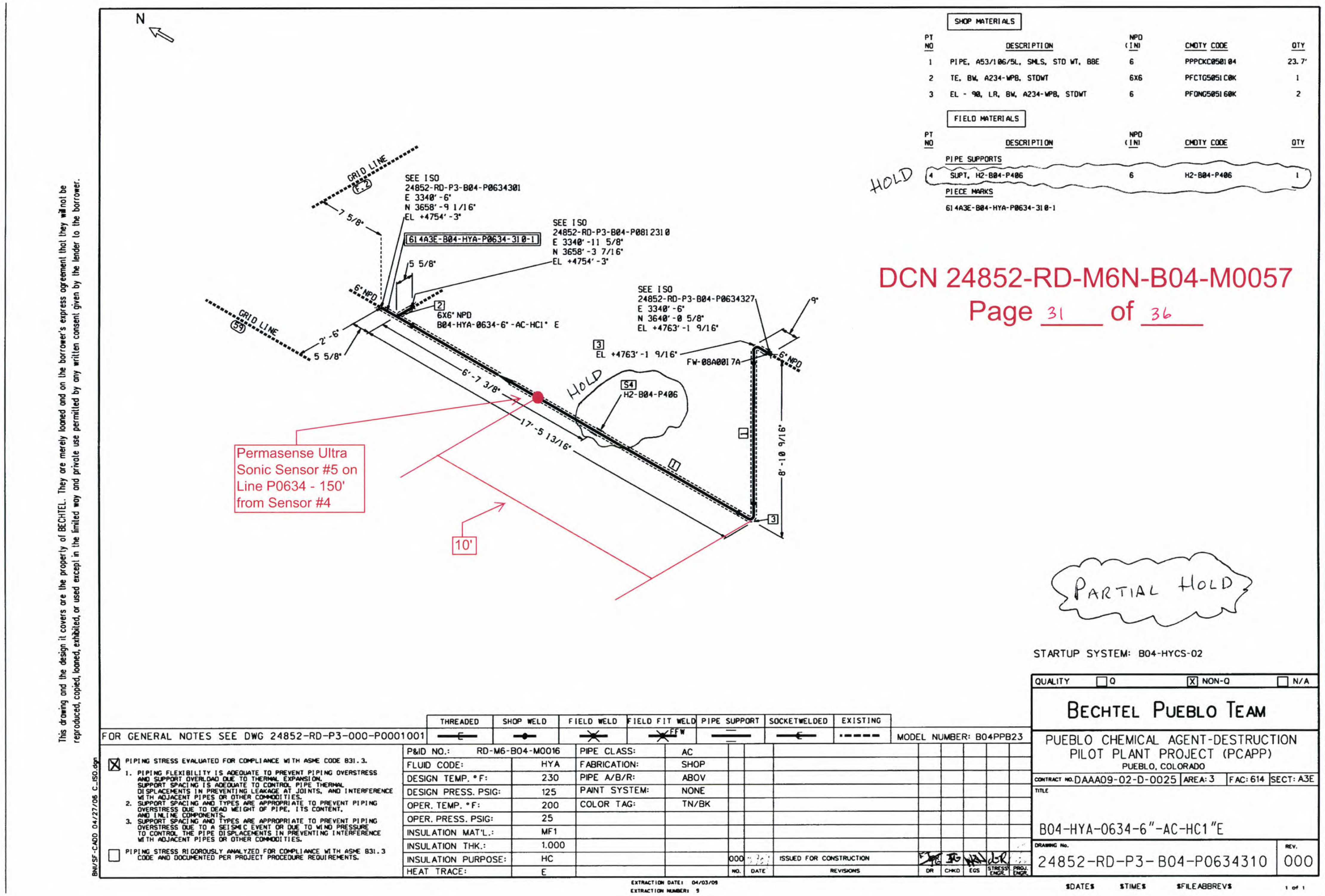
Hydrolysate Piping from Hydrolysate Hold Tanks (B04) to 30 Day Tanks (B04)



Permasense Monitoring Locations (cont)

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping (cont)

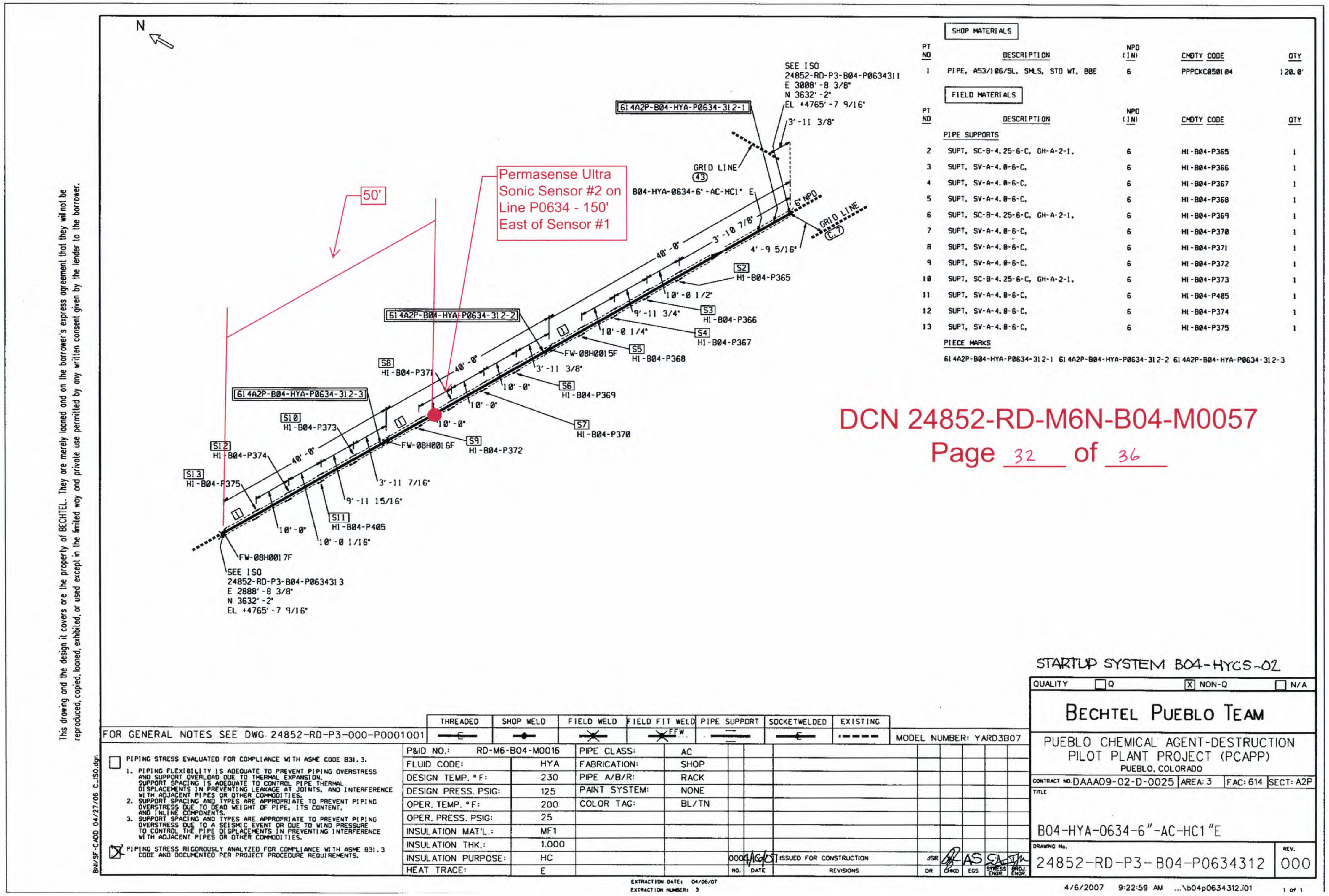
Hydrolysate Piping from Hydrolysate Hold Tanks (B04) to 30 Day Tanks (B04) (cont)



Permasense Monitoring Locations (cont)

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping (cont)

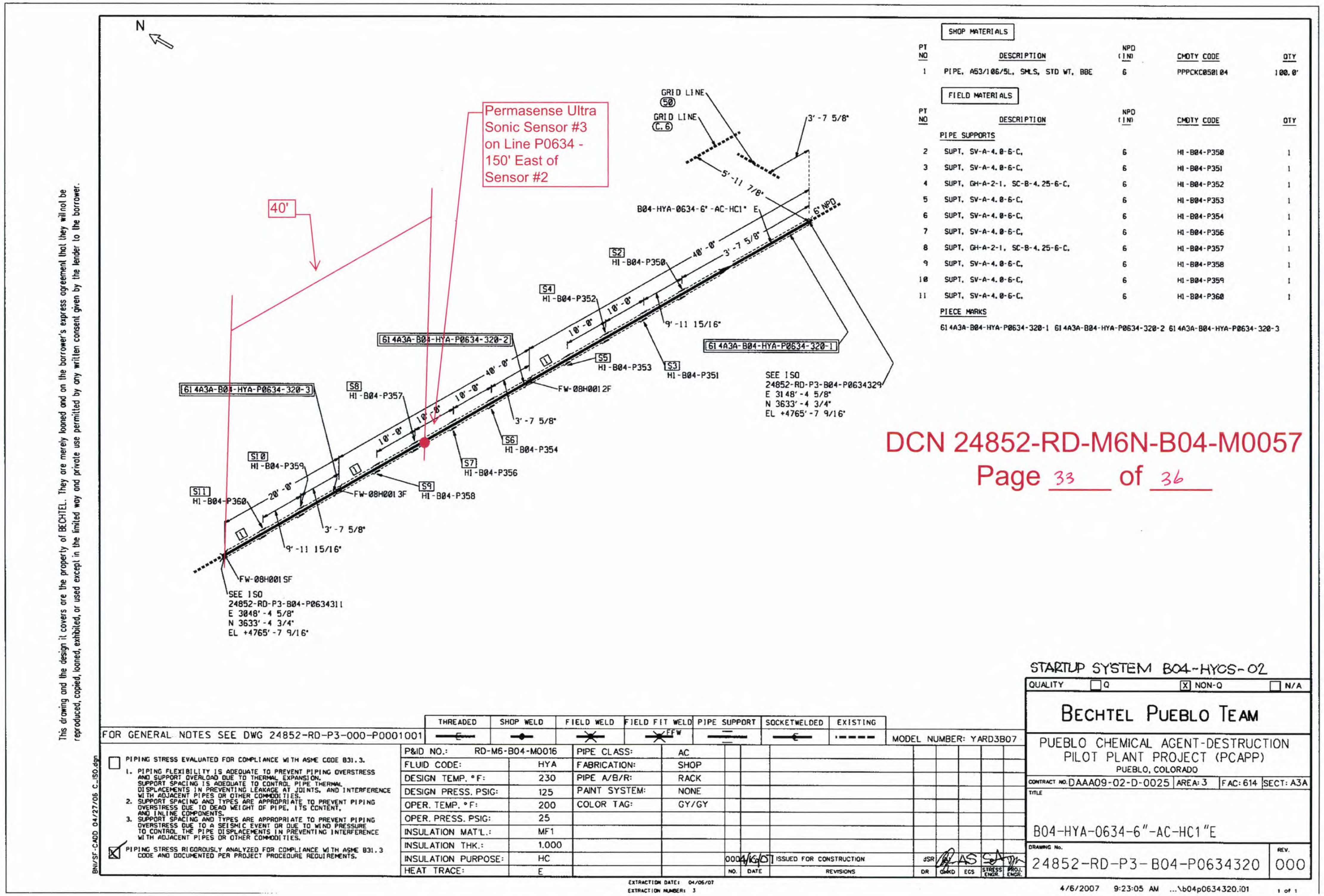
Hydrolysate Piping from Hydrolysate Hold Tanks (B04) to 30 Day Tanks (B04) (cont)



Permasense Monitoring Locations (cont)

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping (cont)

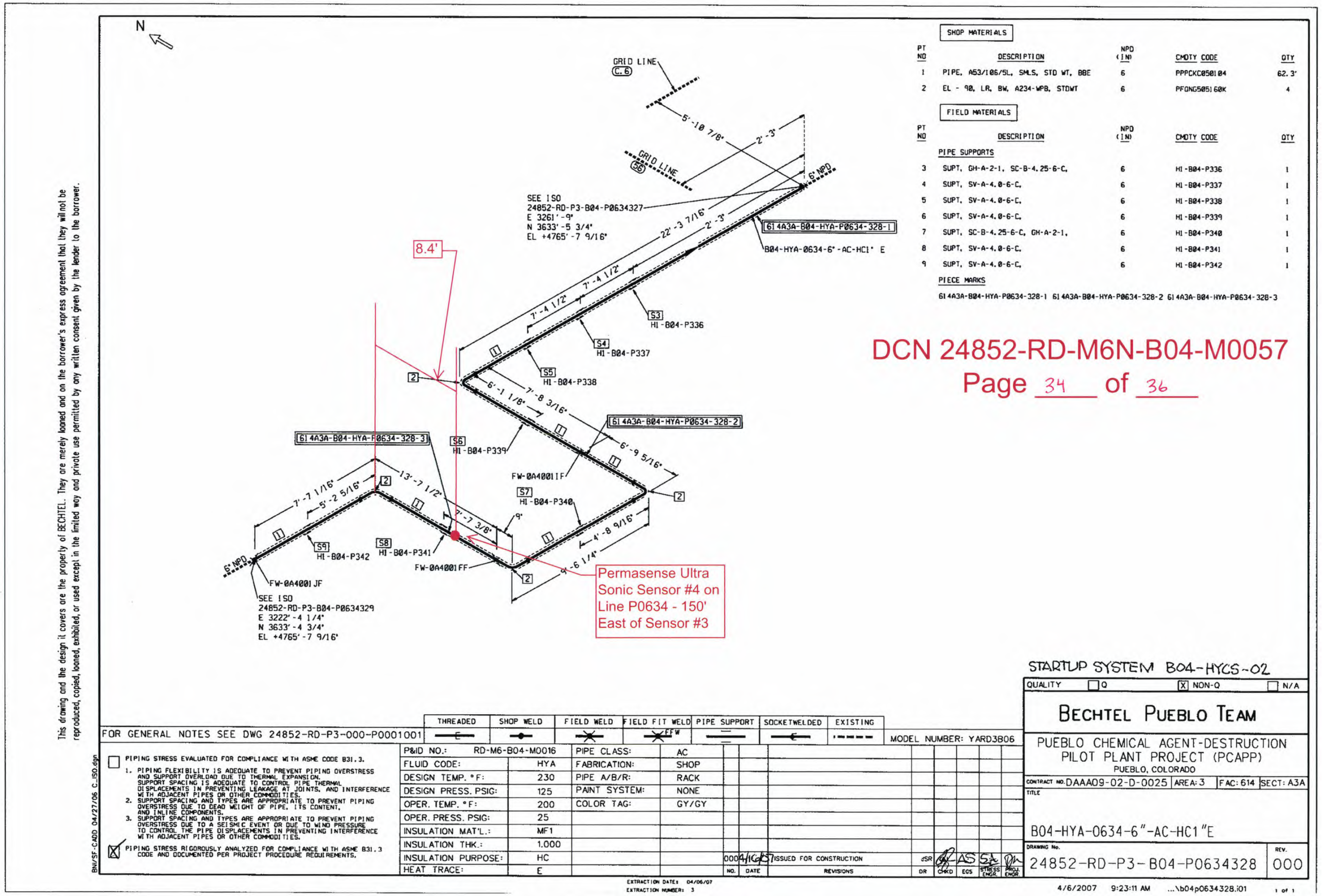
Hydrolysate Piping from Hydrolysate Hold Tanks (B04) to 30 Day Tanks (B04) (cont)



Permasense Monitoring Locations (cont)

Agent Hydrolysate Hold Tank System: Tanks (MV-B04-0103 and -0203) and Piping (cont)

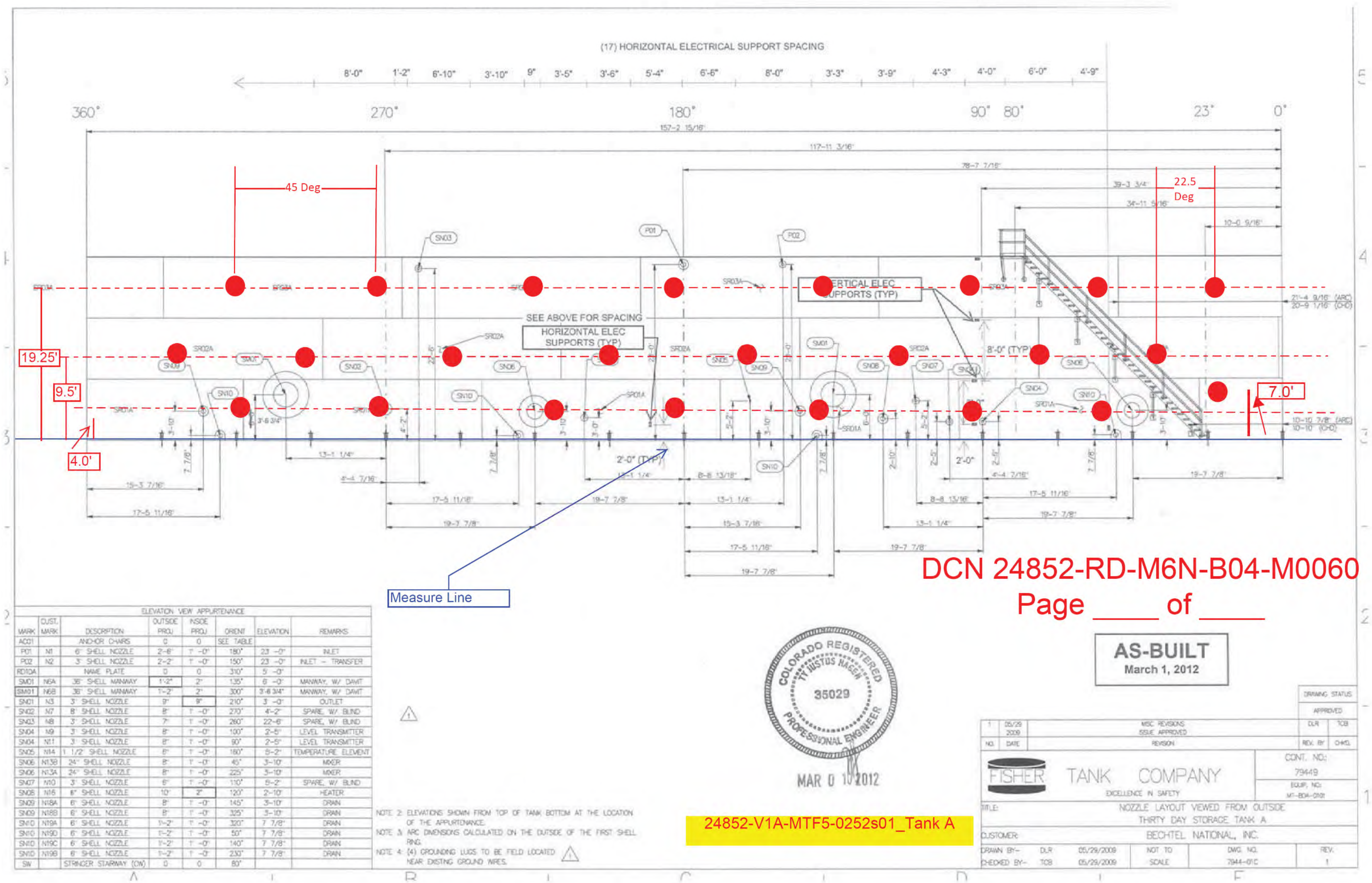
Hydrolysate Piping from Hydrolysate Hold Tanks (B04) to 30 Day Tanks (B04) (cont)



Permasense Monitoring Locations (cont)

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping

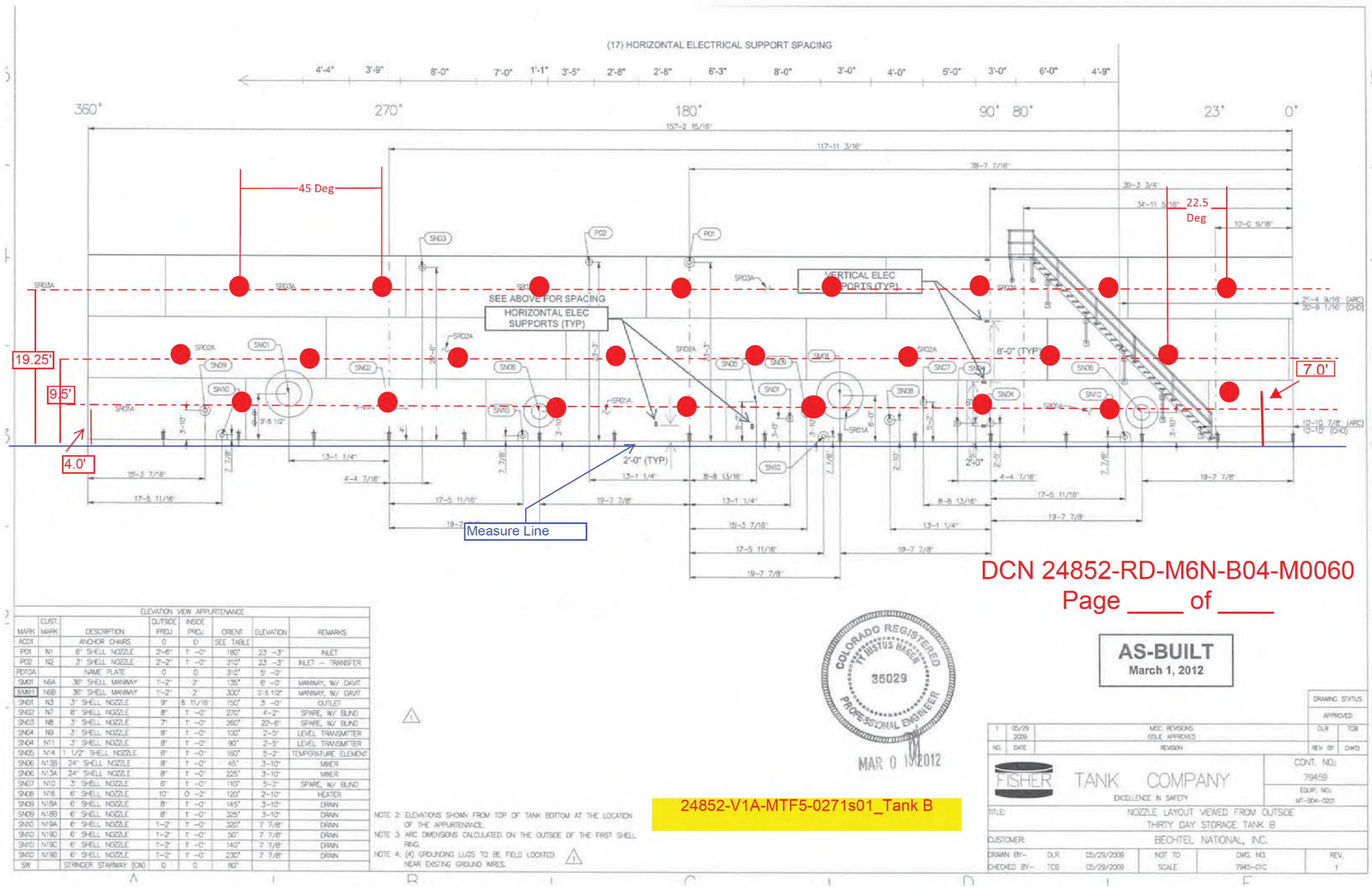
MT-B04-0101



Permasense Monitoring Locations (cont)

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping (Cont)

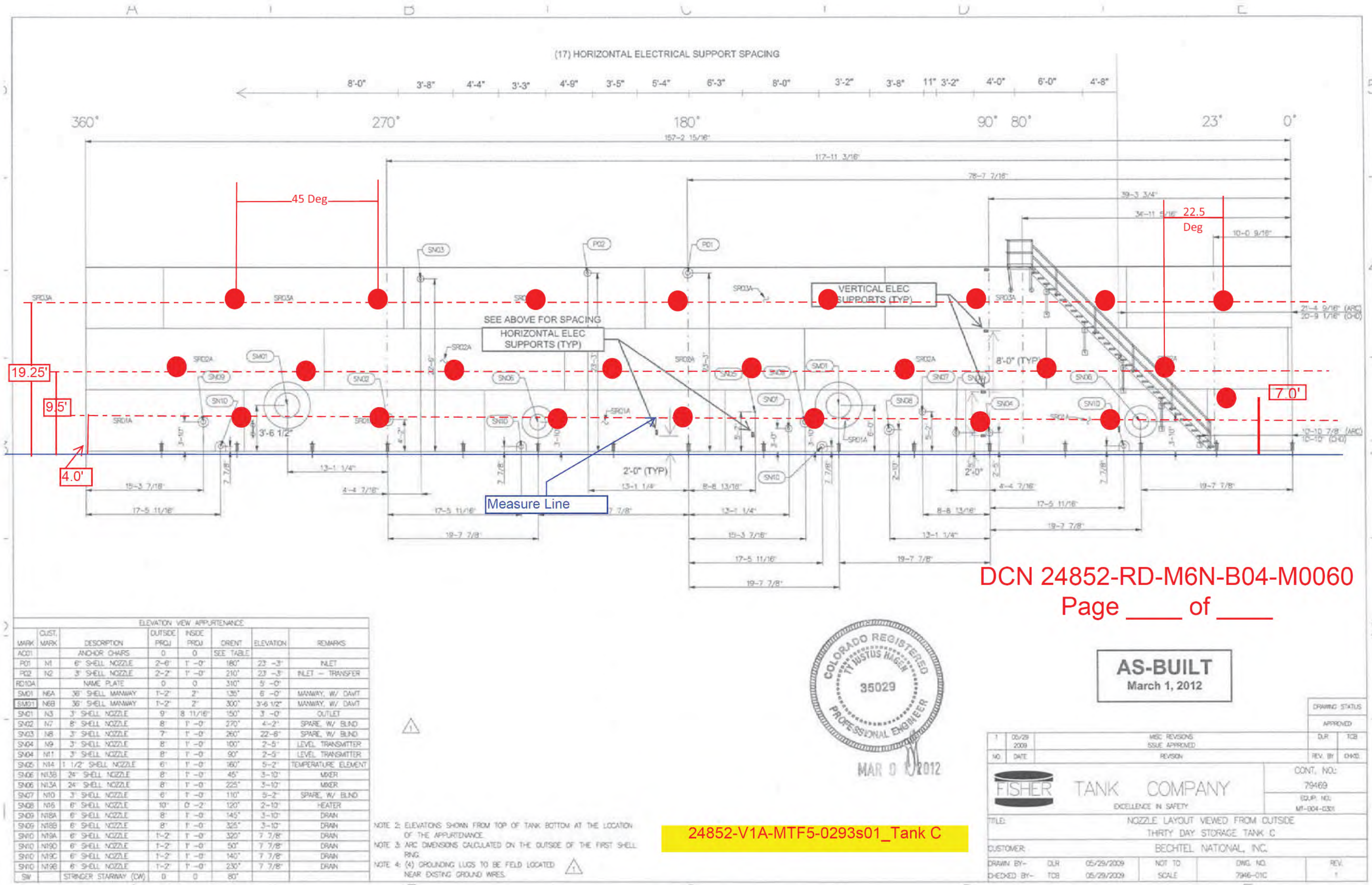
MT-B04-0102



Permasense Monitoring Locations (cont)

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping (Cont)

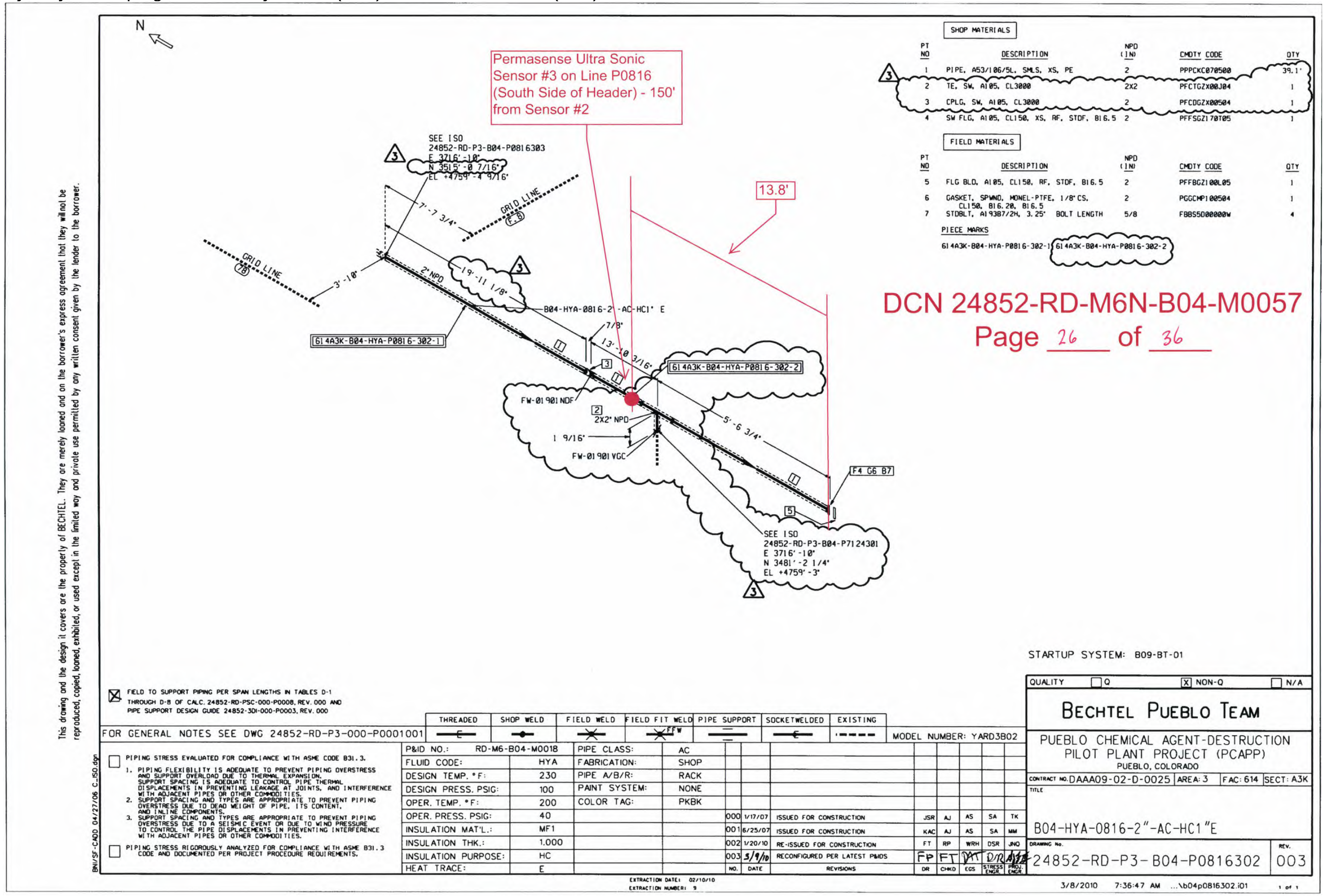
MT-B04-0103



Permasense Monitoring Locations (cont)

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping (Cont)

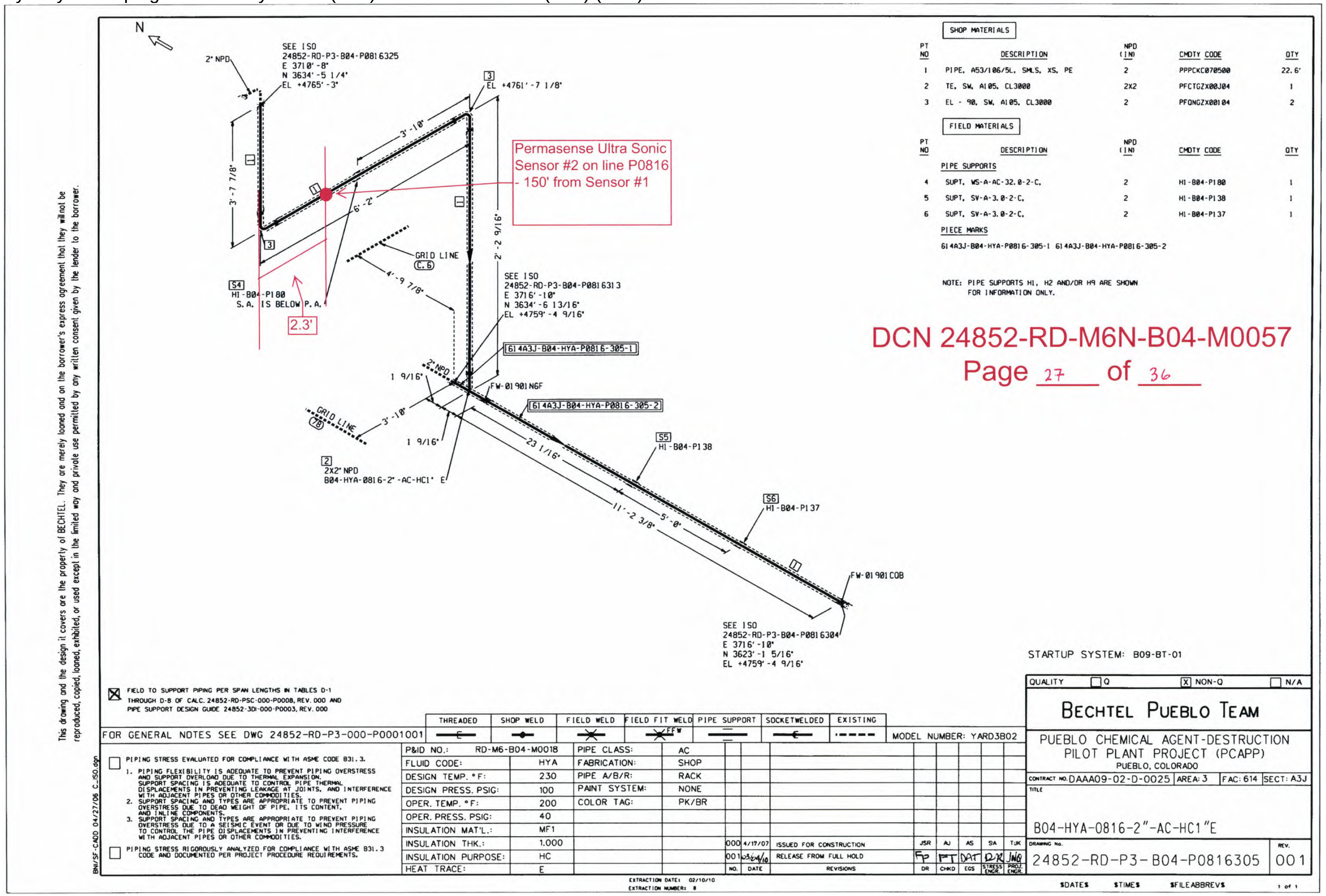
Hydrolysate Piping from 30 Day Tanks (B04) to ICB Feed Tanks (B09)



Permasense Monitoring Locations (cont)

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping (Cont)

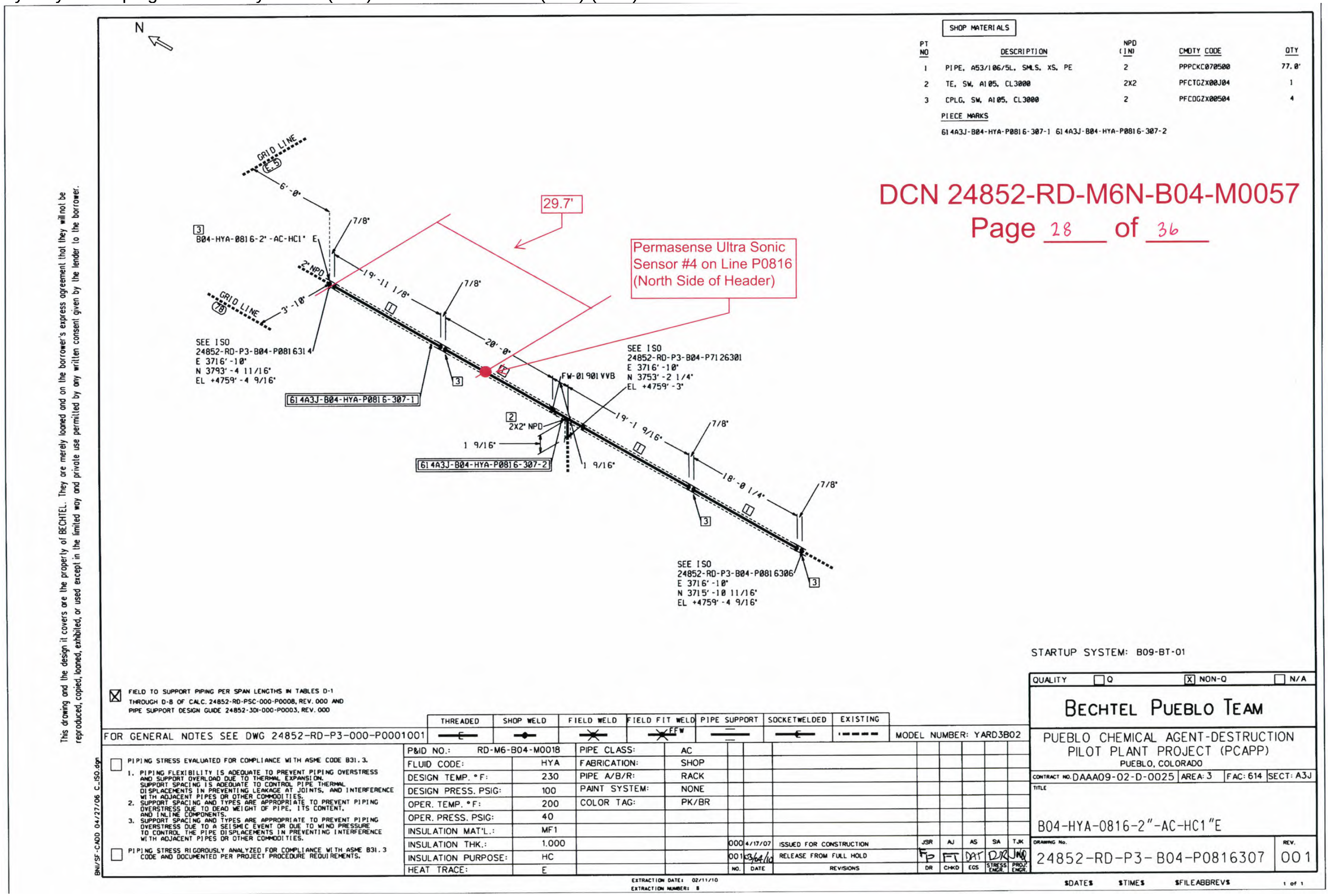
Hydrolysate Piping from 30 Day Tanks (B04) to ICB Feed Tanks (B09) (cont)



Permasense Monitoring Locations (cont)

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping (Cont)

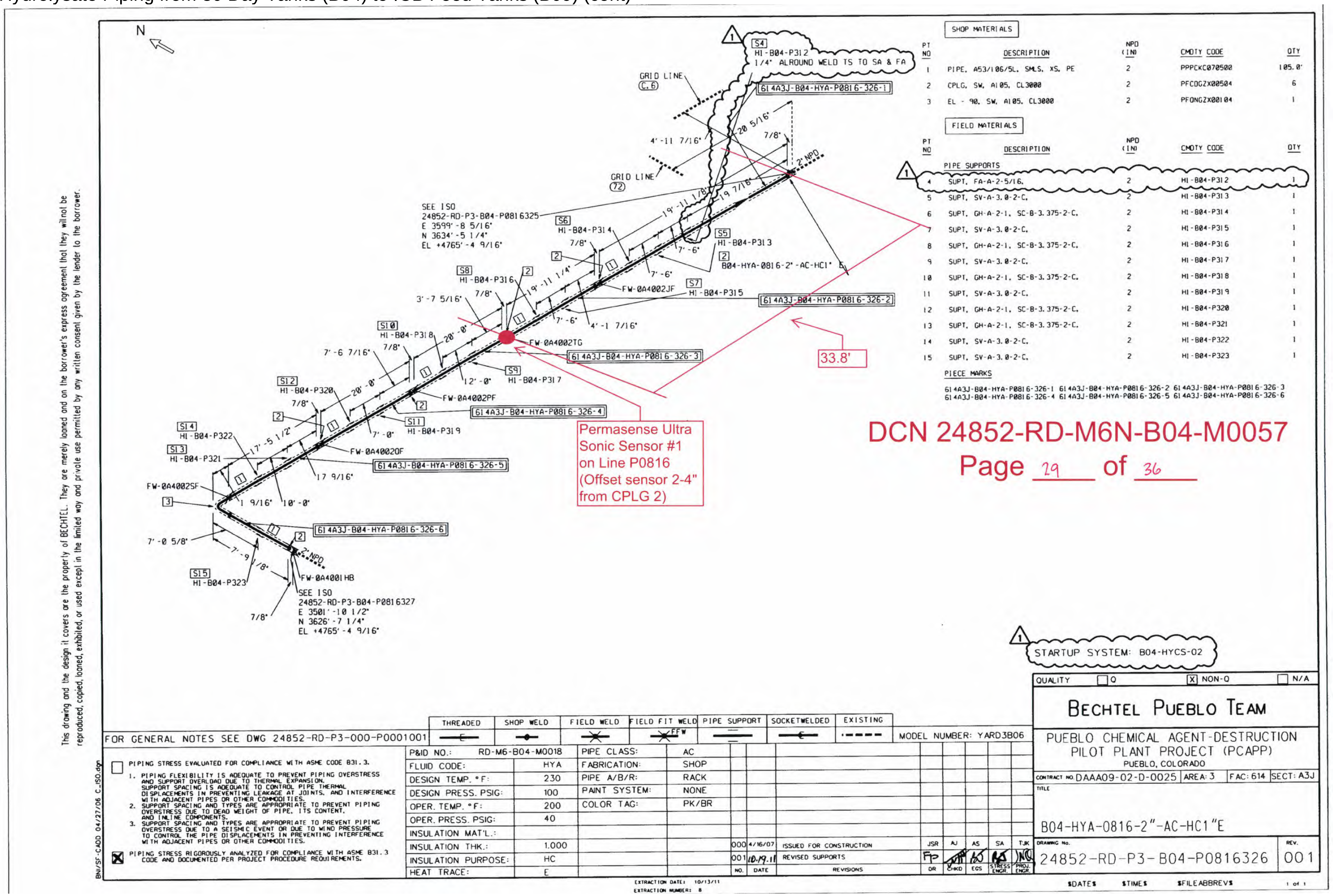
Hydrolysate Piping from 30 Day Tanks (B04) to ICB Feed Tanks (B09) (cont)



Permasense Monitoring Locations (cont)

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping (Cont)

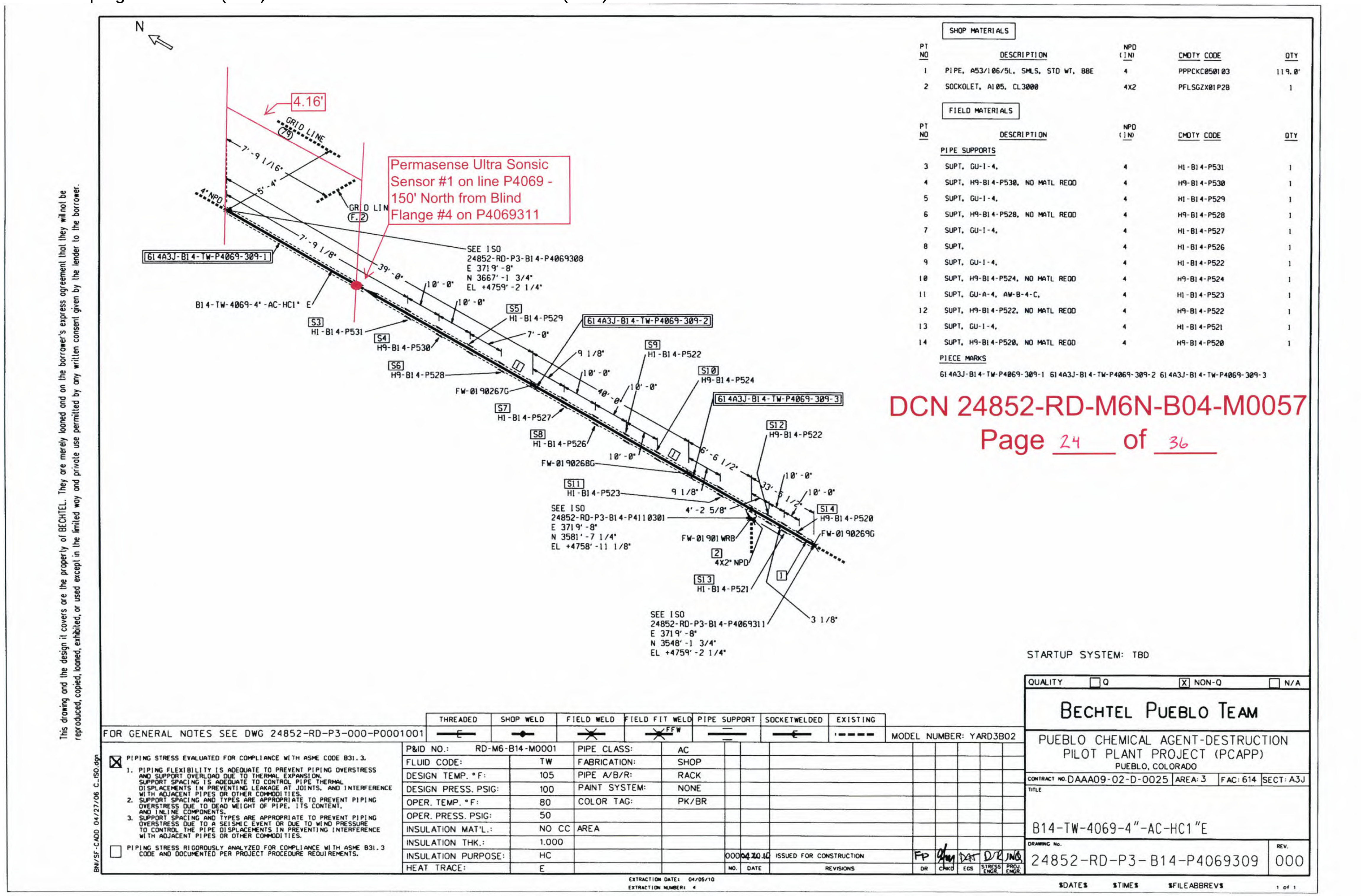
Hydrolysate Piping from 30 Day Tanks (B04) to ICB Feed Tanks (B09) (cont)



Permasense Monitoring Locations (cont)

Brine Concentrator Feed Tank System: Piping

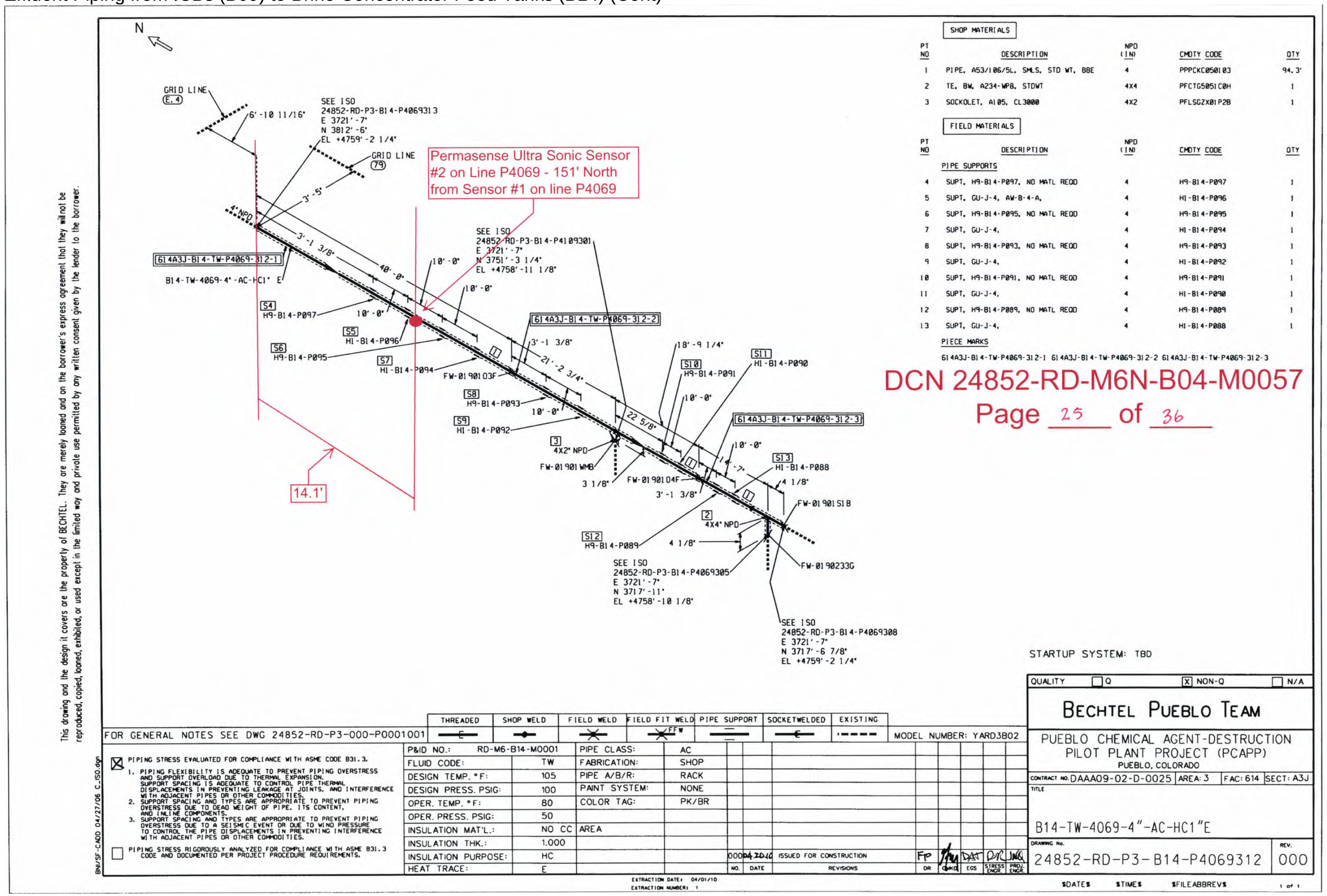
Effluent Piping from ICBs (B09) to Brine Concentrator Feed Tanks (B14)



Permasense Monitoring Locations (cont)

Brine Concentrator Feed Tank System: Piping (Cont)

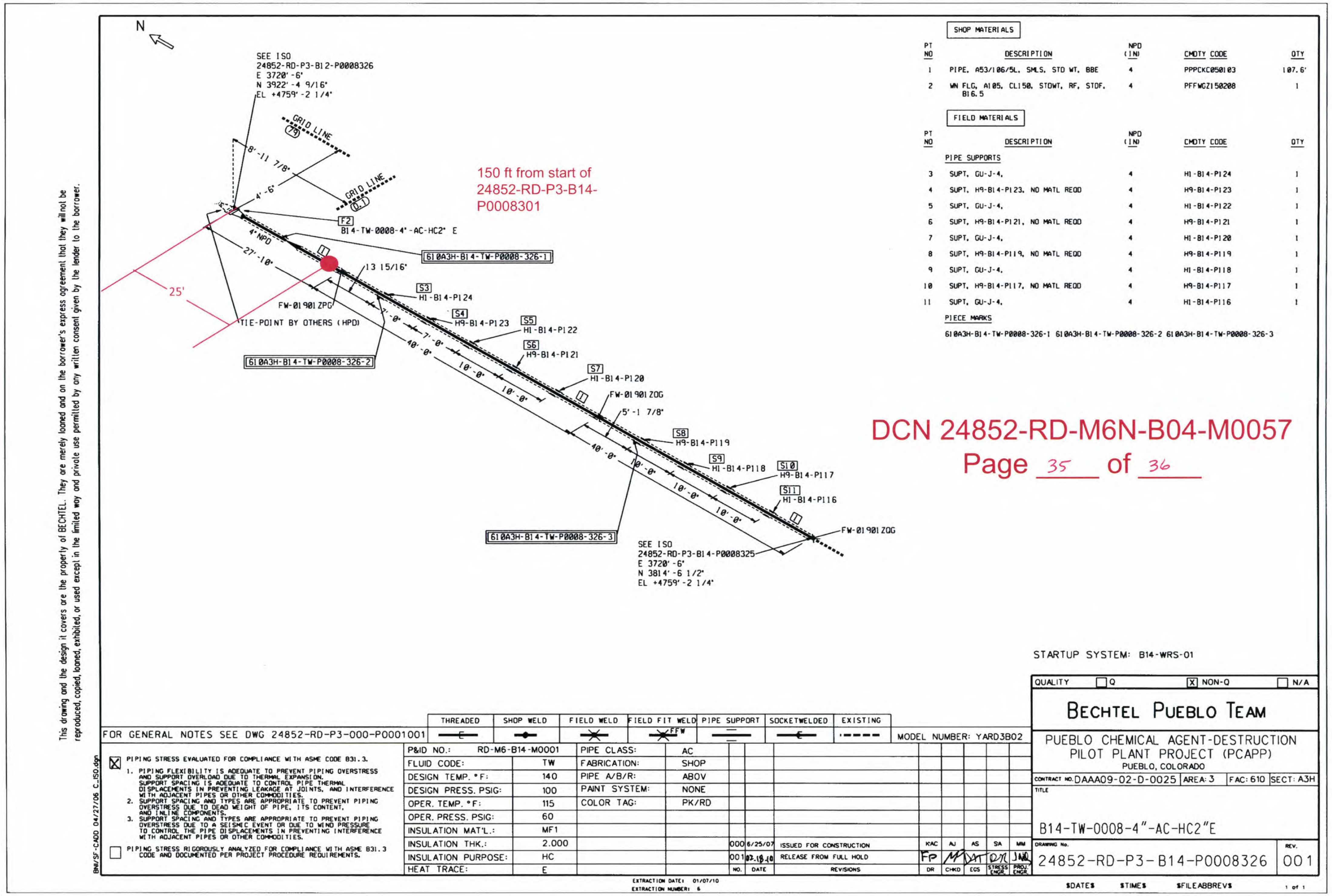
Effluent Piping from ICBs (B09) to Brine Concentrator Feed Tanks (B14) (Cont)



Permasense Monitoring Locations (cont)

Brine Concentrator Feed Tank System: Piping (Cont)

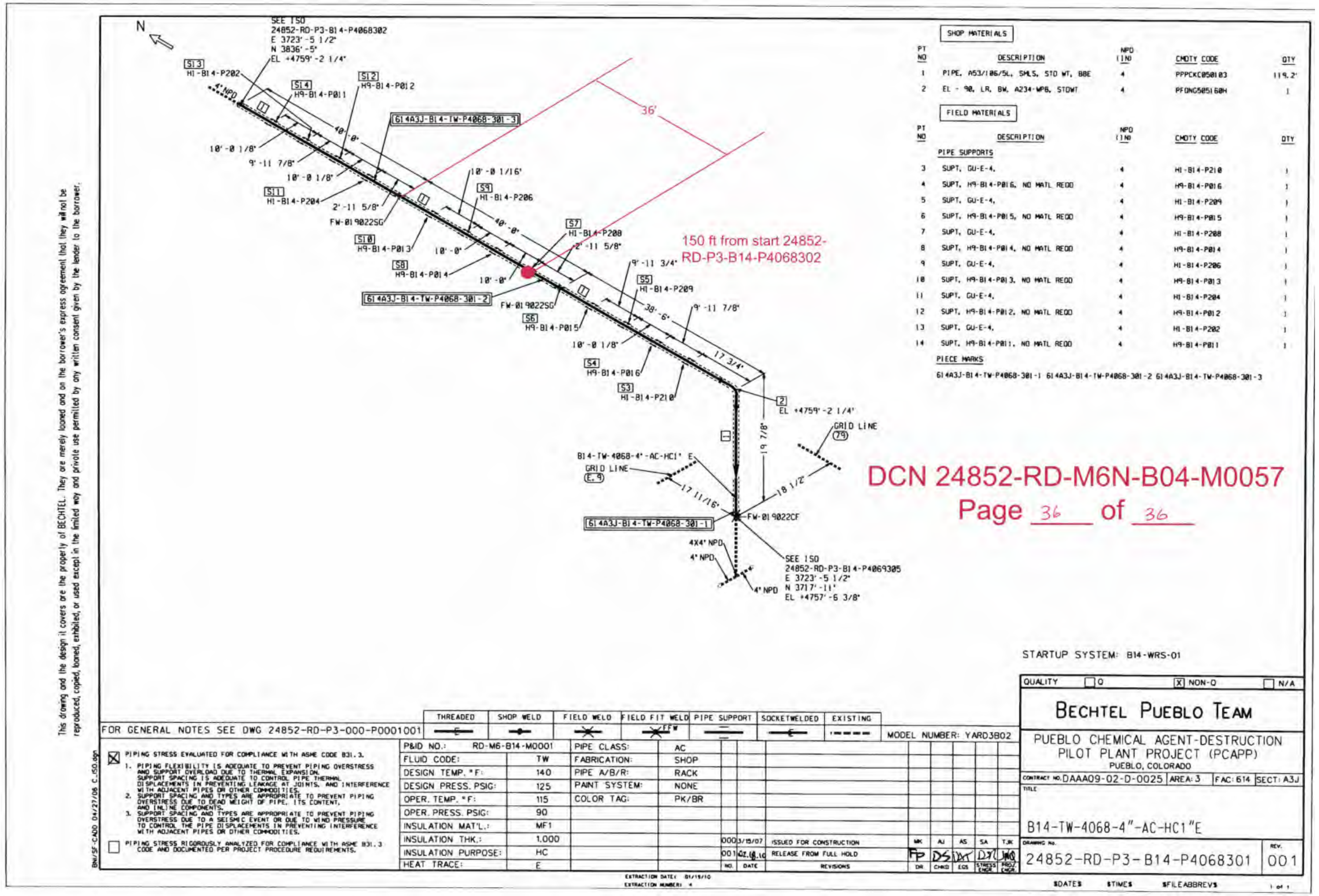
ICB Effluent Piping from Brine Concentrator Feed Tanks (B14) to Brine Concentrator Evaporator Feed Tank (B12)



Permasense Monitoring Locations (cont)

Brine Concentrator Feed Tank System: Piping (Cont)

BRS Brine Recycle Piping from BRS Sump Liner (B12) to Brine Concentrator Feed Tanks (B14)



APPENDIX B. UT MEASUREMENT LOCATIONS

~~Washed Agent and Water Surge Drum Tank System: Tanks (MV-B02-0101 and -0201) and Piping~~

~~Agent-Water Separator Tank System: Tanks (MV-B04-0001 and -0002) and Piping~~

~~MWS Wash Water Collection Tank System: Tanks (MV-B04-0104 and -0204) and Piping~~

~~Agent Hydrolyzer Tank System: Tanks (MV-B04-0102 and -0202) and Piping~~

Agent Hydrolysate 30-Day Storage Tank System: Tanks (MT-B04-0101, -0201, and -0301) and Piping

Spent Decon Storage Tank System: Tanks (MV-B05-0101 and -0201) and Piping

~~Spent Decon Sumps System: Tanks (MT-B05-0040, 0041, 0042, 0044, 0045, 0046, 0047, 0048, 0050,-0051, 0052, 0061 and 0066~~

ICB Feed Tank System: Tanks (MT-B09-0101, -0201, and -0301) and Piping

ICB Tank System: ICBs (MW-B09-0101, -0102, -0103, and -0104; MW-B09-0201, -0202, -0203, and -0204; MW-B09-0301, -0302, -0303, and -0304)

ICB Effluent Tank System: Tanks (MT-B09-0102, -0202, and -0302)

Brine Concentrator Feed Tank System: Tanks (MT-B14-0002A/B/C) and Piping

Brine Concentrator Evaporator Feed Tank System: Piping

Crystallizer Feed Tank System: Tank (MT-B12-0004) and Piping

Off-Gas Treatment System: Piping and Recirculation Cooler ME-B20-0001

Baseline and subsequent thickness measurements will be conducted at the same locations. Refer to Table 1 for schedule of NDE measurements.

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Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Washed Agent and Water Surge Drums					
Washed Agent and Water Surge Drum	MV-B02-0101	~~Test 3 locations on north side of the Washed Agent Drum, at 9 inch level.~~ n/a	~~Test 3 locations on north side of the Washed Agent Drum, at 16 inch level.~~ n/a	n/a	24852-RD-M6-B02-R0011 24852-V1A-MV00-0004s01
Piping	B02-AG1-0111-2"-T2-N	~~Test 4 locations around circumference of pipe where it intersects with PV0006: Top, bottom and sides.~~n/a	n/a	n/a	24852-RD-M6-B02-R0011 24852-RD-P3-B02-P0111202
Washed Agent and Water Surge Drum	MV-B02-0201	~~Test 3 locations on north side of the Washed Agent Drum, at 9 inch level.~~n/a	~~Test 3 locations on north side of the Washed Agent Drum, at 16 inch level~~. n/a	n/a	24852-RD-M6-B02-R0023 24852-V1A-MV00-0004s01
Piping	B02-AG1-0211-2"-T2-N	~~Test 4 locations around circumference of pipe where it intersects with PV0055: Top, bottom and sides.~~n/a	n/a	n/a	24852-RD-M6-B02-R0023 24852-RD-P3-B02-P0211202

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
		Agent-Water Separator Tank System			
Agent-Water Separator Tanks	MV-B04-0001	~~1.5' above shell-cone junction, NW, NE, SW & SE directions~~n/a	~~3' above shell-cone junction, NW, NE, SW & SE directions~~n/a	~~7' above shell-cone junction, NW, NE, SW & SE directions~~n/a	24852-V1A-MV00-0005s01
Pumps	MP-B04-0002A	~~Test 4 locations around circumference of pipe at suction of MP-B04-0002A from line B04-AG1-7026-3"-T1M-N: Top, bottom and sides.~~ n/a	n/a	n/a	24852-RD-M6-B04-M0022 24852-RD-P3-B04-P7026201
Agent-Water Separator Tanks	MV-B04-0002	~~1.5' above shell-cone junction, NW, NE, SW & SE directions~~ n/a	~~3' above shell-cone junction, NW, NE, SW & SE directions~~ n/a	~~7' above shell-cone junction, NW, NE, SW & SE directions~~ n/a	24852-V1A-MV00-0005s01
Pumps	MP-B04-0002B	~~Test 4 locations around circumference of pipe at suction of MP-B04-0002B from line B04-AG1-0005-3"-T1M-N: Top, bottom and sides.~~ n/a	n/a	n/a	24852-RD-M6-B04-M0022 24852-RD-P3-B04-P00005209

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
MWS Wash Water Collection Tank System					
MWS Wash Water Collection Tanks	MV-B04-0104	~~6" above tangent line at N, E, S &W directions~~ n/a	~~7' above tangent line at N, E, S &W directions~~ n/a	~~12' above tangent line at N, E, S &W directions~~ n/a	24852-V1A-MV00-0007s01
Collected Wash Water Pumps Suction Pipe	MP-B04-0105A/B	~~Test 4 locations around circumferences of pipe at suction of MP-B04-0105A from line B04-WW-0152-6"-T2-N: Top, bottom and sides.~~ n/a	~~Test 4 locations around circumferences of pipe at suction of MP-B04-0105B from line B04-WW-0147-6"-T2-N: Top, bottom and sides.~~ n/a	n/a	24852-RD-M6-B04-M0001 24852-RD-P3-B04-P0152201 24852-RD-P3-B04-P0147201
MWS Wash Water Collection Tanks	MV-B04-0204	~~6" above tangent line at N, E, S &W directions~~ n/a	~~7' above tangent line at N, E, S &W directions~~ n/a	~~12' above tangent line at N, E, S &W directions~~ n/a	24852-V1A-MV00-0007s01
Collected Wash Water Pumps Suction Pipe	MP-B04-0205A/B	~~Test 4 locations around circumference of pipe at suction of MP-B04-0205A from line B04-WW-0252-6"-T2-N: Top, bottom and sides.~~ n/a	~~Test 4 locations around circumference of pipe at suction of MP-B04-0205B from line B04-WW-0247-6"-T2-N: Top, bottom and sides.~~ n/a	n/a	24852-RD-M6-B04-M0002 24852-RD-P3-B04-P0252201 24852-RD-P3-B04-P0247201

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Agent Hydrolyzer Tank System					
Agent Hydrolyzer Tanks	MV-B04-0102	~~5" above tangent line at N, E, &W directions~~n/a	~~3' above tangent line at N, E, &W directions~~ n/a	~~6' above tangent line at N, E, &W directions~~ n/a	24852-V1A-MV00-0006s01
Agent Hydrolyzer Recirculation Pumps	MP-B04-0103A/B	~~Test 4 locations around circumference of pipe at suction of MP-B04-0103A from line B04-AG1-0176-4"-T1M-HC1.0": Top, bottom and sides.~~n/a	~~Test 4 locations around circumference of pipe at suction of MP-B04-0103B from line B04-AG1-7208-4"-T1M-HC1.0": Top, bottom and sides.~~n/a	n/a	24852-RD-M6-B04-M0006 24852-RD-P3-B04-P0176206 24852-RD-P3-B04-P7208201
Agent Hydrolyzer Tanks	MV-B04-0202	~~5" above tangent line at N, E, &W directions~~n/a	~~3' above tangent line at N, E, &W directions~~ n/a	~~6' above tangent line at N, E, &W directions~~ n/a	24852-V1A-MV00-0006s01
Agent Hydrolyzer Recirculation Pumps	MP-B04-0203A/B	~~Test 4 locations around circumference of pipe at suction of MP-B04-0203A from line B04-AG1-0276-4"-T1M-HC1.0": Top, bottom and sides.~~n/a	~~Test 4 locations around circumference of pipe at suction of MP-B04-0203B from line B04-AG1-2111-4"-T1M-HC1.0": Top, bottom and sides~~. n/a	n/a	24852-RD-M6-B04-M0008 24852-RD-P3-B04-P0276206 24852-RD-P3-B04-P2111201

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Agent Hydrolysate 30-Day Storage Tank System					
Agent Hydrolysate Air Cooler	ME-B04-0004	Test 4 spots around circumference of outlet pipe near elbow joint: Top, bottom and sides.	Test 4 spots around circumference of inlet pipe near tee: Top, bottom and sides.	n/a	24852-RD-B04-M0016 24852-RD-P3-B04-P2003301 24852-RD-P3-B04-P2001312

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Off-Gas Treatment System					
Piping	MP-B20-0001A/B	Test 4 locations around circumference of pipe at suction of MP-B20-0001A.	Test 4 locations around circumference of pipe at suction of MP-B20-0001B.	n/a	24852-RD-M6-B20-M0002

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Off-Gas Treatment System					
OTS Recirculation Cooler	ME-B20-0001	Test 7~~4~~ locations on north head.	Test 6~~4~~ locations on south head.	n/a	24852-RD-M6-B20-M0002

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Spent Decon Storage Tank System					
Spent Decon Holding Tank	MV-B05-0101	4" above tangent line at NW, NE, SW & SE directions.	~~3' above tangent line at NW, NE, SW & SE directions.~~ n/a	~~6.5' above tangent line at NW, NE, SW & SE directions.~~ n/a	24852-V1A-MVS0-0042s01
Spent Decon Feed Pumps	MP-B05-0101A/B	Test 4 locations around circumference of pipe at suction of MP-B05-0101A from line B05-SD-0106-3"-AB-N: Top, bottom and sides.	Test 4 locations around circumference of pipe at suction of MP-B05-0101B from line B05-SD-0517-3"-AB-N: Top, bottom and sides.	n/a	24852-RD-M6-B05-M0002 24852-RD-P3-B05-P0106207 24852-RD-P3-B05-P0517201
Spent Decon Holding Tank	MV-B05-0201	4" above tangent line at NW, NE, SW & SE directions.	~~3' above tangent line at NW, NE, SW & SE directions.~~ n/a	~~6.5' above tangent line at NW, NE, SW & SE directions.~~ n/a	24852-V1A-MVS0-0043s01
Spent Decon Feed Pumps	MP-B05-0201A/B	Test 4 locations around circumference of pipe at suction of MP-B05-0201A from line B05-SD-0206-3"-AB-N: Top, bottom and sides.	Test 4 locations around circumference of pipe at suction of MP-B05-0201B from line B05-SD-0207-3"-AB-N: Top, bottom and sides.	n/a	24852-RD-M6-B05-M0004 24852-RD-P3-B05-P0206207 24852-RD-P3-B05-P0207201

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Spent Decon Storage Tank System (cont)					
Sumps	MT-B05-0040	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0023 24852-RD-DB-APB-S0034-005(typical sump)
Sumps	MT-B05-0041	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0023 24852-RD-DB-APB-S0034-004
Sumps	MT-B05-0042	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0024 24852-RD-DB-APB-S0034-005(typical sump)
Sumps	MT-B05-0044	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0025 24852-RD-DB-APB-S0034-005 (typical sump)

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Spent Decon Storage Tank System (cont)					
Sumps	MT-B05-0045	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0025 24852-RD-DB-APB-S0034-004
Sumps	MT-B05-0046	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0026 24852-RD-DB-APB-S0034-005(typical sump)
Sumps	MT-B05-0047	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0024 24852-RD-DB-APB-S0034-005(typical sump)
Sumps	MT-B05-0048	~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~ n/a	n/a	n/a	24852-RD-M6-B05-M0027 24852-RD-DB-APB-S0034-005(typical sump)

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Spent Decon Storage Tank System (cont)					
Sumps	MT-B05-0050	n/a~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~	n/a	n/a	24852-RD-M6-B05-M0021 24852-RD-DB-APB-S0034-005 (typical sump)
Sumps	MT-B05-0051	n/a~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~	n/a	n/a	24852-RD-M6-B05-M0029 24852-RD-DB-APB-S0034-005(typical sump)
Sumps	MT-B05-0052	n/a~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~	n/a	n/a	24852-RD-M6-B05-M0021 24852-RD-DB-APB-S0034-005 (typical sump)
Sumps	MT-B05-0061	n/a~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~	n/a	n/a	24852-RD-M6-B05-M0034 24852-RD-DB-APB-S0034-005 (typical sump)

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Spent Decon Storage Tank System (cont)					
Sumps	MT-B05-0066	n/a~~Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.~~	n/a	n/a	24852-RD-M6-B05-M0027 24852-RD-DB-APB-S0034-005 (typical sump)

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
ICB Feed Tanks					
ICB Feed Tank	MT-B09-0101	1.5" above tangent line at NW, NE, SW & SE directions.	6.5' above tangent line at NW, NE, SW & SE directions.	8.5' above tangent line at NW, NE, SW & SE directions.	24852-V1A-MS00-0134s02
ICB Feed Tank	MT-B09-0201	1.5" above tangent line at NW, NE, SW & SE directions.	6.5' above tangent line at NW, NE, SW & SE directions.	8.5' above tangent line at NW, NE, SW & SE directions.	24852-V1A-MS00-0134s02
ICB Feed Tank	MT-B09-0301	1.5" above tangent line at NW, NE, SW & SE directions.	6.5' above tangent line at NW, NE, SW & SE directions.	8.5' above tangent line at NW, NE, SW & SE directions.	24852-V1A-MS00-0134s02
ICB Feed Pumps	MP-B09-0101	Test 4 locations around circumference of pipe at suction of MP-B09-0101 from line B09-BF-0170A-2"-AD-HC1.0"E: Top, bottom and sides.	n/a	n/a	24852-RD-M6-B09-M0002

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
ICB Feed Tanks (cont)					
ICB Feed Pumps	MP-B09-0201	Test 4 locations around circumference of pipe at suction of MP-B09-0201 from line B09-BF-0170B-2"-AD-HC1.0"E: Top, bottom and sides.	n/a	n/a	24852-RD-M6-B09-M0202
ICB Feed Pumps	MP-B09-0301	Test 4 locations around circumference of pipe at suction of MP-B09-0301 from line B09-BF-0170C-2"-AD-HC1.0"E: Top, bottom and sides.	n/a	n/a	24852-RD-M6-B09-M0302

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
ICB Tank System					
ICBs	MW-B09-0101 MW-B09-0102 MW-B09-0103 MW-B09-0104 MW-B09-0201 MW-B09-0202 MW-B09-0203 MW-B09-0204 MW-B09-0301 MW-B09-0302 MW-B09-0303 MW-B09-0304	Test 4 locations across long side of ICBs: 2', 15.5', 29' & 42.5' from west edge at 1', 4' and 8' above baseline of the tanks.	n/a	n/a	24852-V1A-MS000-0072s01
ICB Effluent Tank System					
ICB Effluent Tanks	MT-B09-0102	1' above tangent line at NW, NE, SW & SE directions.	5' above tangent line at NW, NE, SW & SE directions.	7' above tangent line at NW, NE, SW & SE directions.	Refer to drawing 24852-V1A-MS00-0133s02
ICB Effluent Tanks	MT-B09-0202	1' above tangent line at NW, NE, SW & SE directions.	5' above tangent line at NW, NE, SW & SE directions.	7' above tangent line at NW, NE, SW & SE directions.	Refer to drawing 24852-V1A-MS00-0133s02

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
ICB Tank System (cont)					
ICB Effluent Tanks	MT-B09-0302	1' above tangent line at NW, NE, SW & SE directions.	5' above tangent line at NW, NE, SW & SE directions.	7' above tangent line at NW, NE, SW & SE directions.	Refer to drawing 24852-V1A-MS00-0133s02
ICB Effluent Pump	MP-B09-0102	Test 4 locations around circumference of pipe at suction of MP-B09-0102 from line B09-TW-0820A-2"-AC-HC1.0"E: Top, bottom and sides.	n/a	n/a	24852-RD-M6-B09-M0010
ICB Effluent Pump	MP-B09-0202	Test 4 locations around circumference of pipe at suction of MP-B09-0202 from line B09-TW-0820B-2"-AC-HC1.0"E: Top, bottom and sides.	n/a	n/a	24852-RD-M6-B09-M0210

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
ICB Tank System (cont)					
ICB Effluent Pump	MP-B09-0302	Test 4 locations around circumference of pipe at suction of MP-B09-0302 from line B09-TW-0820C-2"-AC-HC1.0"E: Top, bottom and sides.	n/a	n/a	24852-RD-M6-B09-M0310

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Brine Concentrator Feed Tank System					
Brine Concentrator Feed Tanks	MT-B14-0002A	1' above tangent line at N, E, S & W directions.	35’ above tangent line at N, E, and S directions	n/a	24852-V12-MTF5-0127s01
Brine Concentrator Feed Tanks	MT-B14-0002B	1' above tangent line at N, E, S & W directions.	35’ above tangent line at N, E, and S directions	n/a	24852-V12-MTF5-0127s01
Brine Concentrator Feed Tanks	MT-B14-0002C	1' above tangent line at N, E, S & W directions.	35’ above tangent line at N, E, and S directions	n/a	24852-V12-MTF5-0127s01
Brine Concentrator Feed Pumps	MP-B14-0002A	Test 4 locations around circumference of pipe at elbow joint near PV0105A on suction line of MP-B14-0002A from line B14-TW-0007-6"-AC-HC1.0"E: Top, bottom and sides. Note: Do not test on elbow, test where pipe is straight.	n/a	n/a	24852-RD-M6-B14-M0006

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Brine Concentrator Feed Tank System (cont)					
Brine Concentrator Feed Pumps	MP-B14-0002B	Test 4 locations around circumference of pipe at elbow joint near PV0105A on suction line of MP-B14-0002B from line B14-TW-0009-6"-AC-HC1.0"E: Top, bottom and sides. Note: Do not test on elbow, test where pipe is straight.	n/a	n/a	24852-RD-M6-B14-M0006
Brine Concentrator Feed Preheaters	ME-B12-0001A	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Brine Concentrator Feed Tank System (cont)					
Brine Concentrator Feed Preheaters	ME-B12-0001B	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01
Brine Concentrator Feed Preheaters	ME-B12-0001C	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01
Brine Concentrator Feed Preheaters	ME-B12-0001D	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01

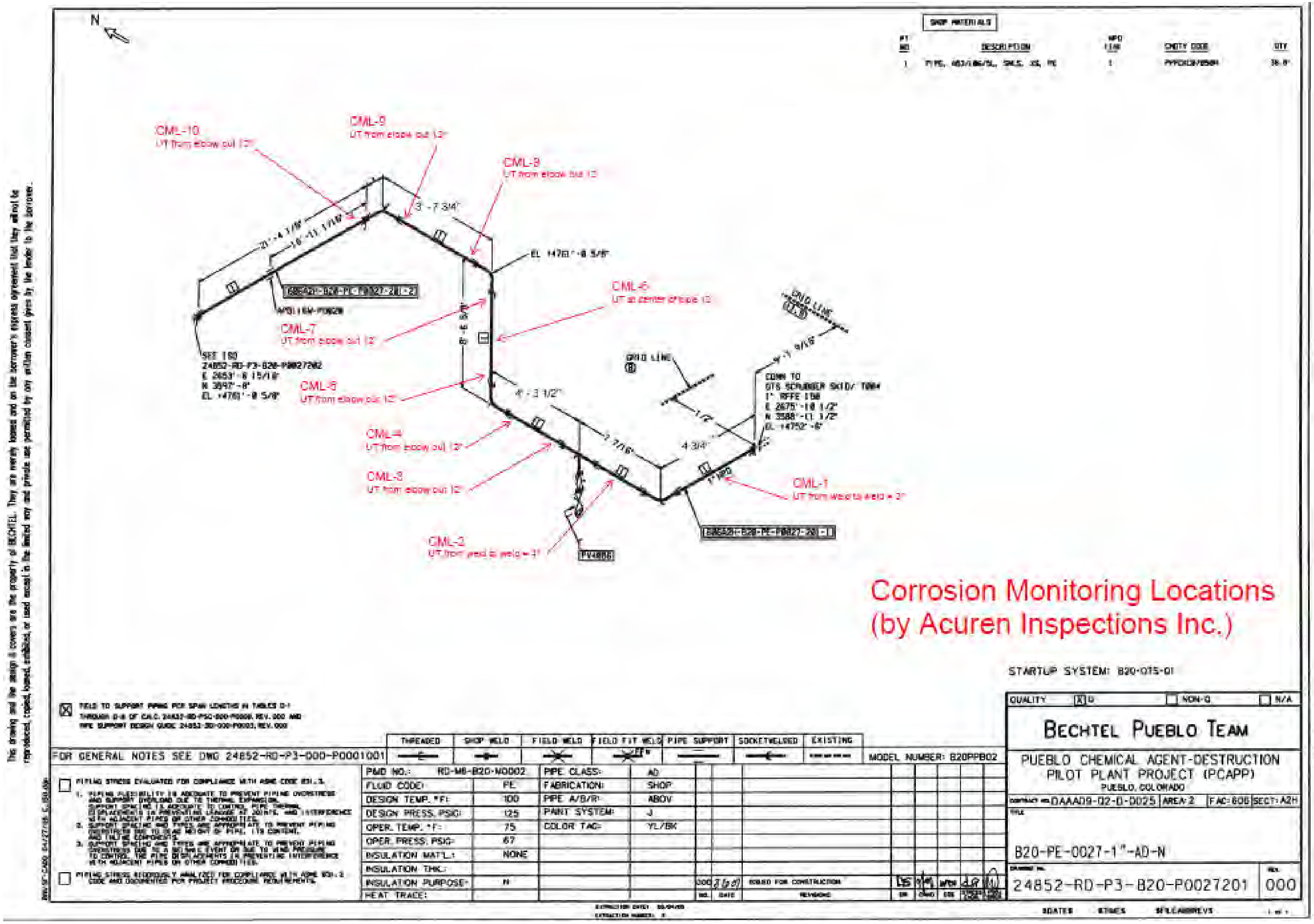
Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Brine Concentrator Feed Tank System (cont)					
Brine Concentrator Feed Preheaters	ME-B12-0001E	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01
Brine Concentrator Feed Preheaters	ME-B12-0001F	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01
Brine Concentrator Feed Preheaters	ME-B12-0001G	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01

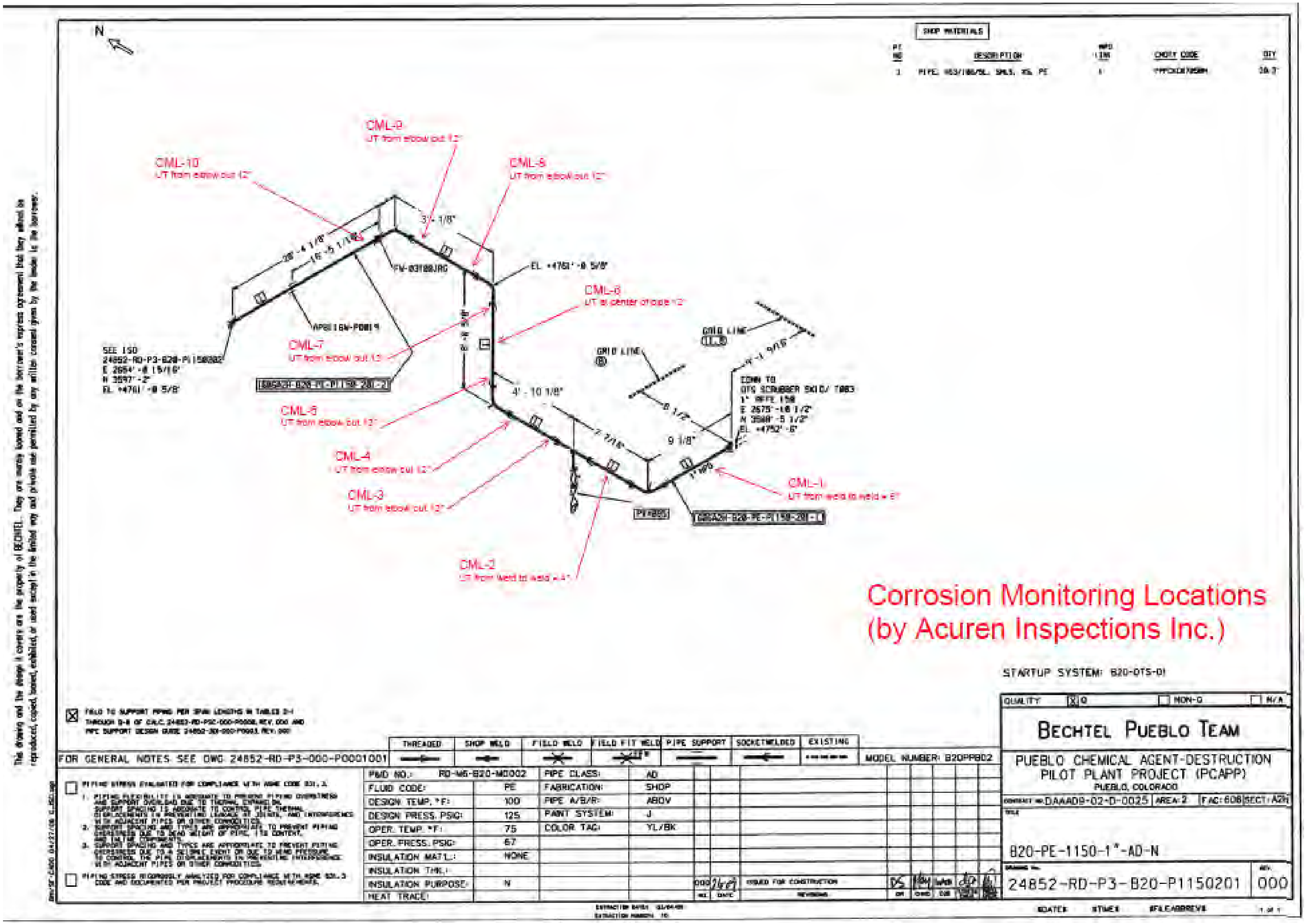
Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Brine Concentrator Feed Tank System (cont)					
Brine Concentrator Feed Preheaters	ME-B12-0001H	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01
Brine Concentrator Feed Preheaters	ME-B12-0001J	Test 6" downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 15' downstream of inlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	Test 6" upstream of outlet piping, 4 locations around circumference of vessel: Top, bottom and sides.	24852-V10A-M000-0199s01
Brine Concentrator Feed Preheater ME-B12-0001I Bypass Piping	ME-B12-0001I	Test top, bottom, and sides of pipe on 45 degree branch line of bypass	Test top, bottom, and sides of pipe on north-south branch line of bypass	N/A	24852-RD-M6N-B12-M0080 Attachment A, Page 1 of 4 (24852-RD-P3-B12-P3381301)

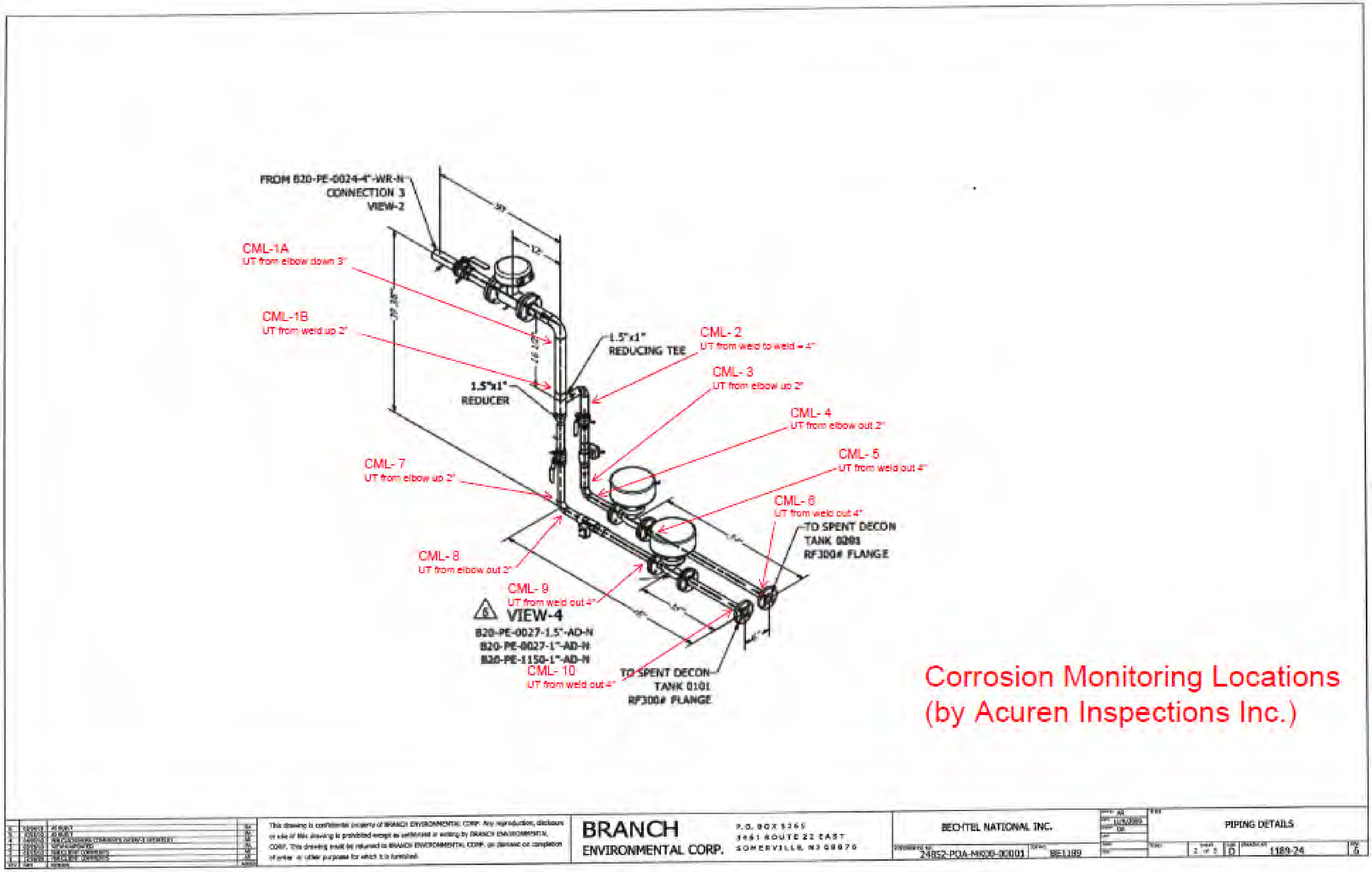
Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Brine Concentrator Evaporator System					
Brine Concentrator Evaporator Feed Pump	MP-B12-0001	Remove insulation blanket from MP-B12-0001 suction pipe at PV0013 to test top, bottom and sides of pipe; on line B12-EF-3314-1/2"-VP6-HC1.0"E	n/a	n/a	24852-RD-M6-B12-M0002
Brine Concentrator Evaporator	ME-B12-0002	On second level off BRS, test 3 locations nearest to the mezzanine platform.	Test 3 locations on center line with PV-0137.	Test 2 locations on center line with TE-1896.	24852-RD-M6-B12-M0006

Equipment	Equipment Tag No.	Testing Location #1	Testing Location #2	Testing Location #3	Drawing Number
Crystallizer Feed Tank System					
Crystallizer Feed Tank	MT-B12-0004	1' above tangent line at NW, NE, SW & SE directions.	10' above tangent line at NW, NE, SW & SE directions.	15' above tangent line at NW, NE, SW & SE directions.	24852-V10A-M000-0222s01
Crystallizer Feed Pump	MP-B12-0005	Test 4 locations around circumference of pipe at suction of MP-B12-0005 from line B12-SL-2001-2"-VP5-HC1.0"E: Top, bottom and sides.	n/a	n/a	24852-RD-M6-B12-M0010
Crystallizer	MV-B12-0006	1' above tangent line at NW, SW & SE directions.	6' above tangent line at NW, SW & SE directions.	9' above tangent line at NW, SW & SE directions.	24852-V10A-M000-0205s01
BRS Filter Area Sump	MP-B12-0019	Test 3 locations that are accessible; every sump has similar dimensions but has different equipment surrounding it.	n/a	n/a	24852-RD-DB-BRS-S0001011
BRS OTS Carbon Filters	MK-B12-0001A/B/C	See pages B-28 to B-33 for locations. Measurements shall be taken at the 0, 90, 180, and 270 positions (as applicable).			24852-V10A-M000-0745s01

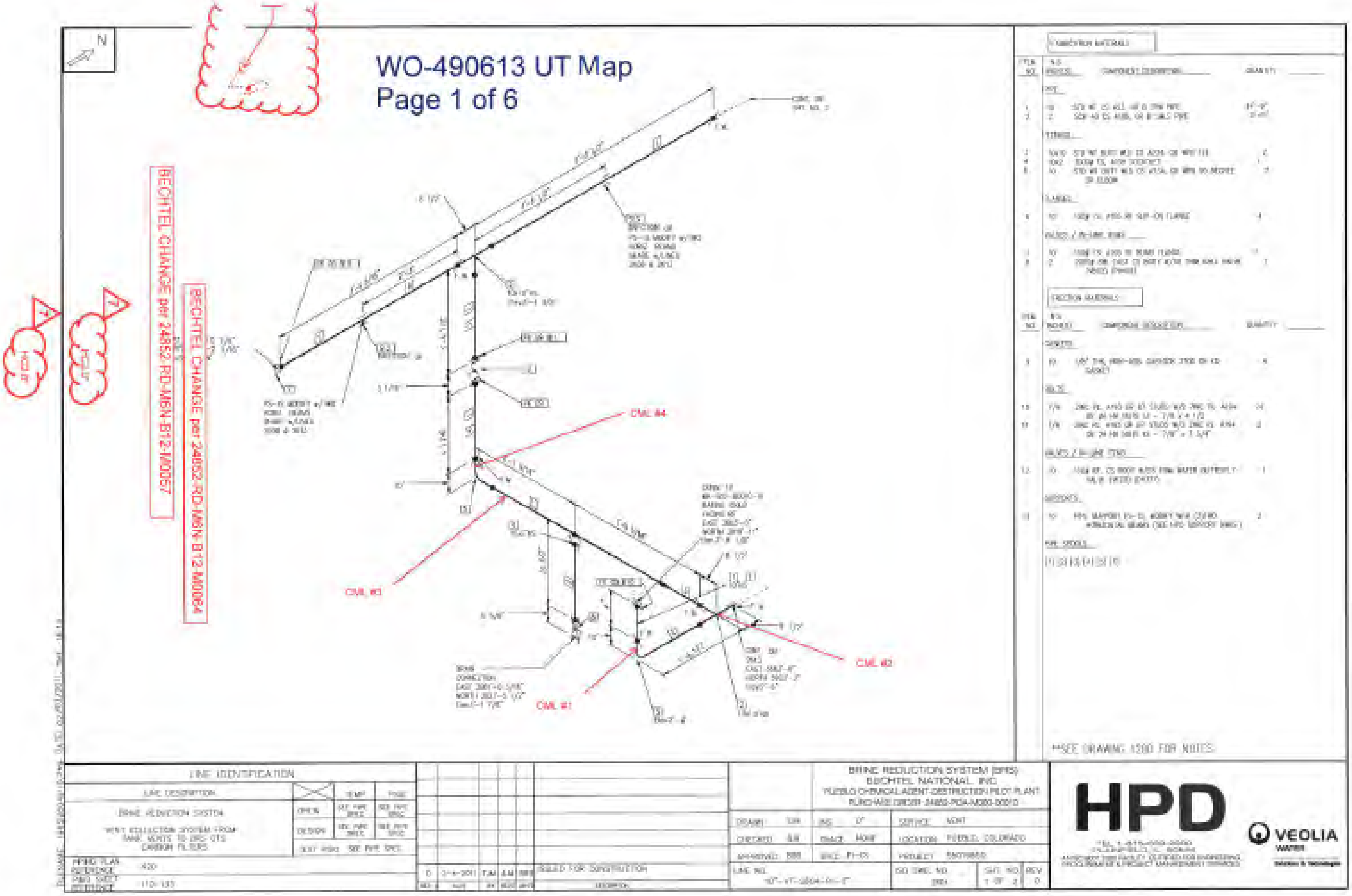
B20 Pipe UT Locations

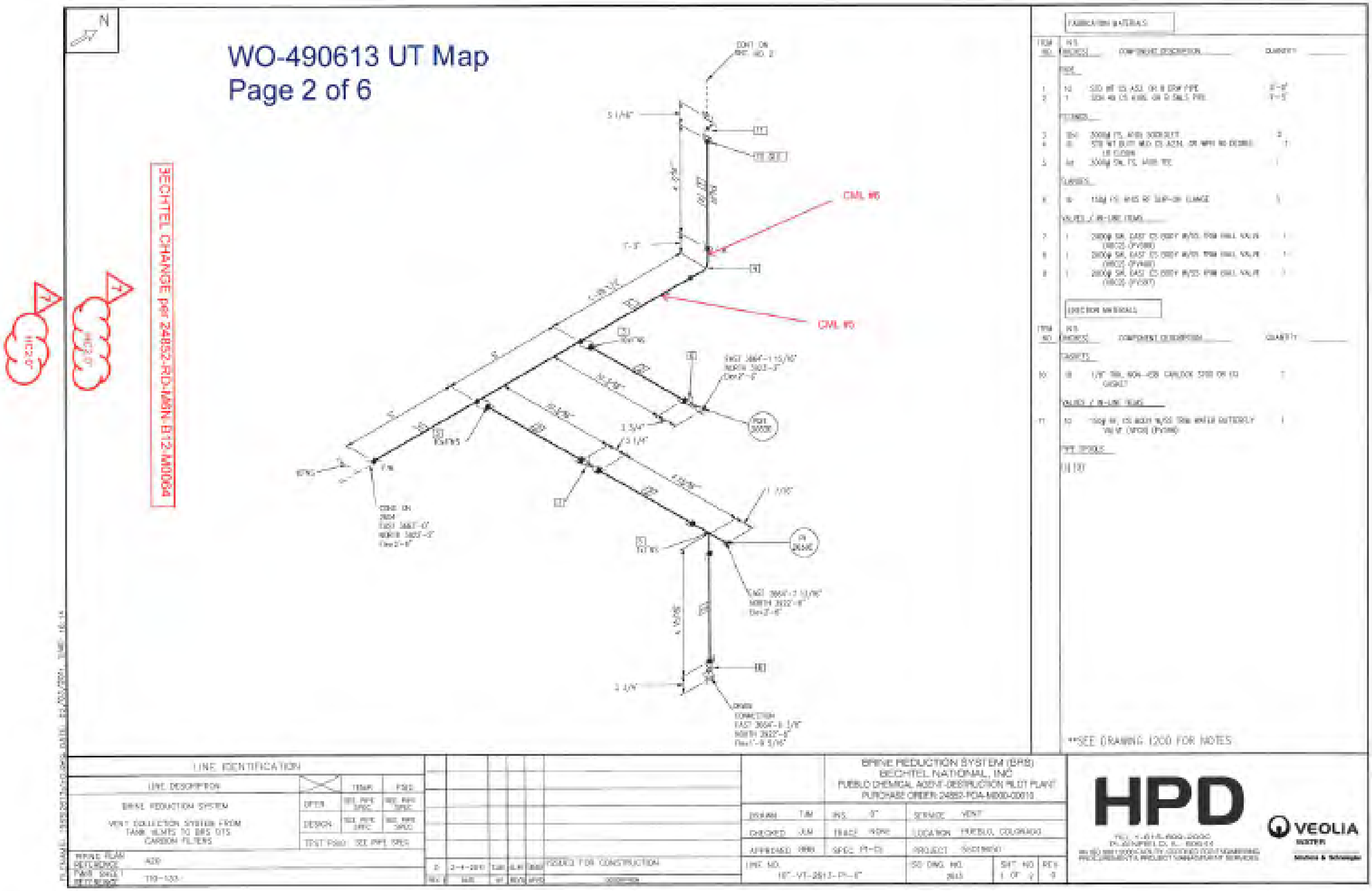


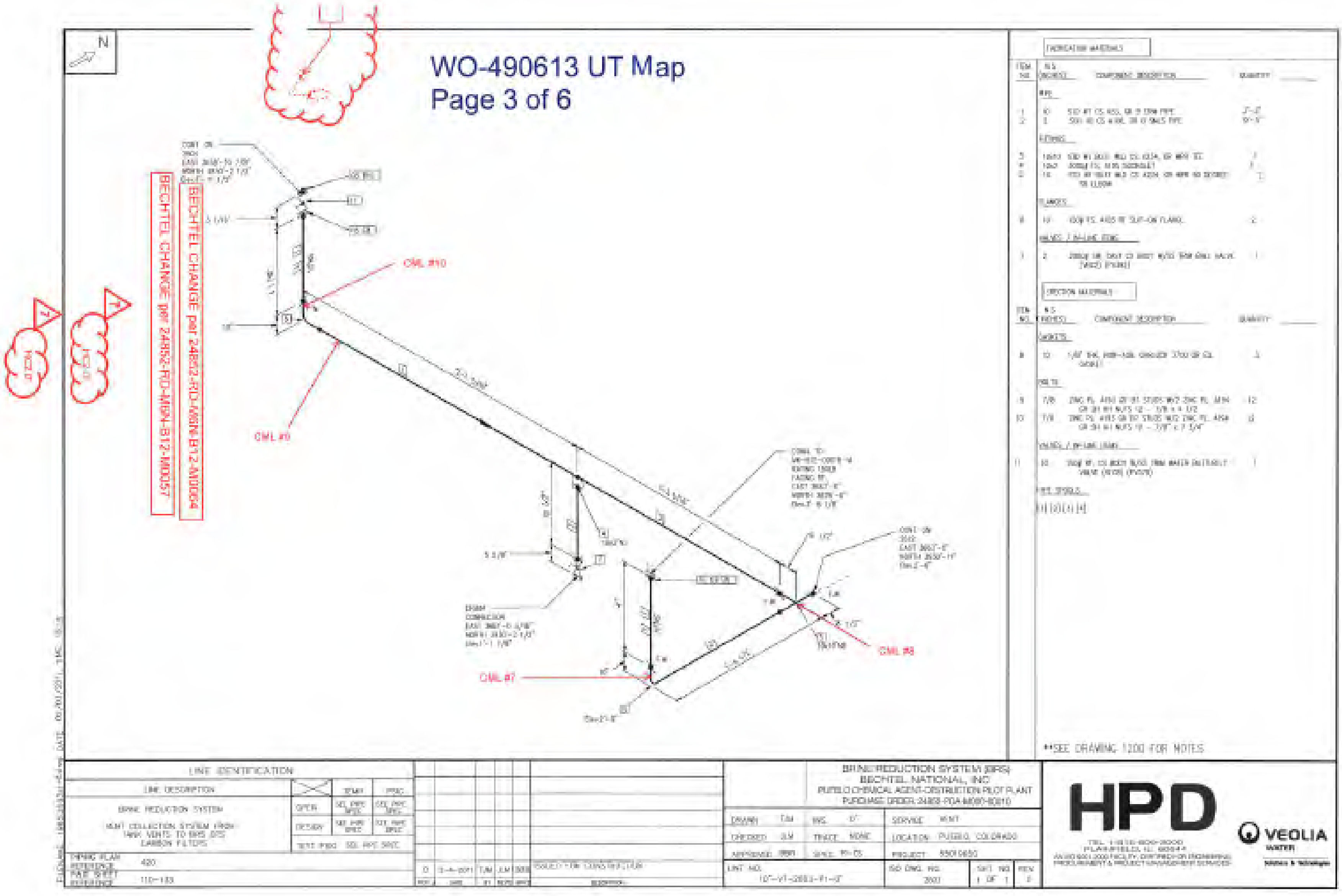

CML-9
UT from elbow out 12"
CML-10
UT from elbow out 12"
CML-8
UT from elbow out 12"
CML-6
UT at center of pipe 12"
CML-7
UT from elbow out 12"
CML-5
UT from elbow out 12"
CML-4
UT from elbow out 12"
CML-3
UT from elbow out 12"
CML-2
UT from weld to weld ≈ 4"
CML-1
UT from weld to weld ≈ 6"
Corrosion Monitoring Locations
(by Acuren Inspections Inc.)
STARTUP SYSTEM: B20-DTS-01
BECHTEL PUEBLO TEAM
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT PROJECT (PCAPP)
PUEBLO, COLORADO
B20-PE-1150-1"-AD-N
24852-RD-P3-B20-P1150201
000
FOR GENERAL NOTES SEE DWG 24852-RD-P3-000-P0001001
MODEL NUMBER: B20PPB02
P&ID NO.: RD-M6-B20-M0002
FLUID CODE: PE
DESIGN TEMP. °F: 100
DESIGN PRESS. PSIG: 125
OPER. TEMP. °F: 75
OPER. PRESS. PSIG: 67
INSULATION MAT'L: NONE
INSULATION PURPOSE: N
PIPE CLASS: AD
FABRICATION: SHOP
PIPE A/B/R: ABOV
PAINT SYSTEM: J
COLOR TAG: YL/BK
EL +4761'-0 5/8"
4'-10 1/8"
9 1/8"
3'-1/8"
GRID LINE
SEE ISO
24852-RD-P3-B20-P1150202
E 2654'-0 15/16"
N 3597'-2"
EL +4761'-0 5/8"
CONN TO
DTS SCRUBBER SKID/ T003
1" RFFE 150
E 2675'-10 1/2"
N 3588'-5 1/2"
EL +4752'-6"
THREADED
SHOP WELD
FIELD WELD
FIELD FIT WELD
PIPE SUPPORT
SOCKETWELDED
EXISTING
ISSUED FOR CONSTRUCTION

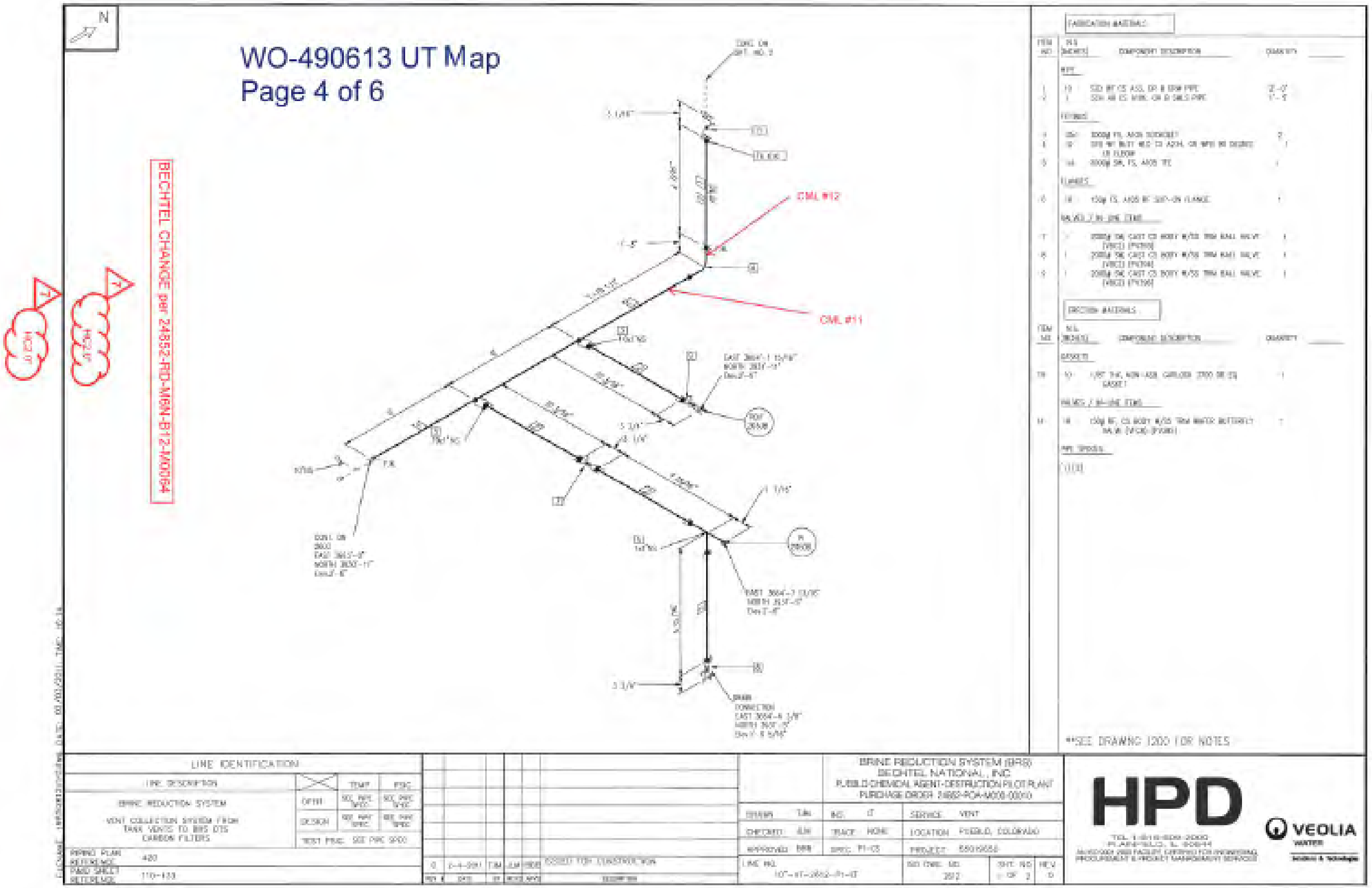


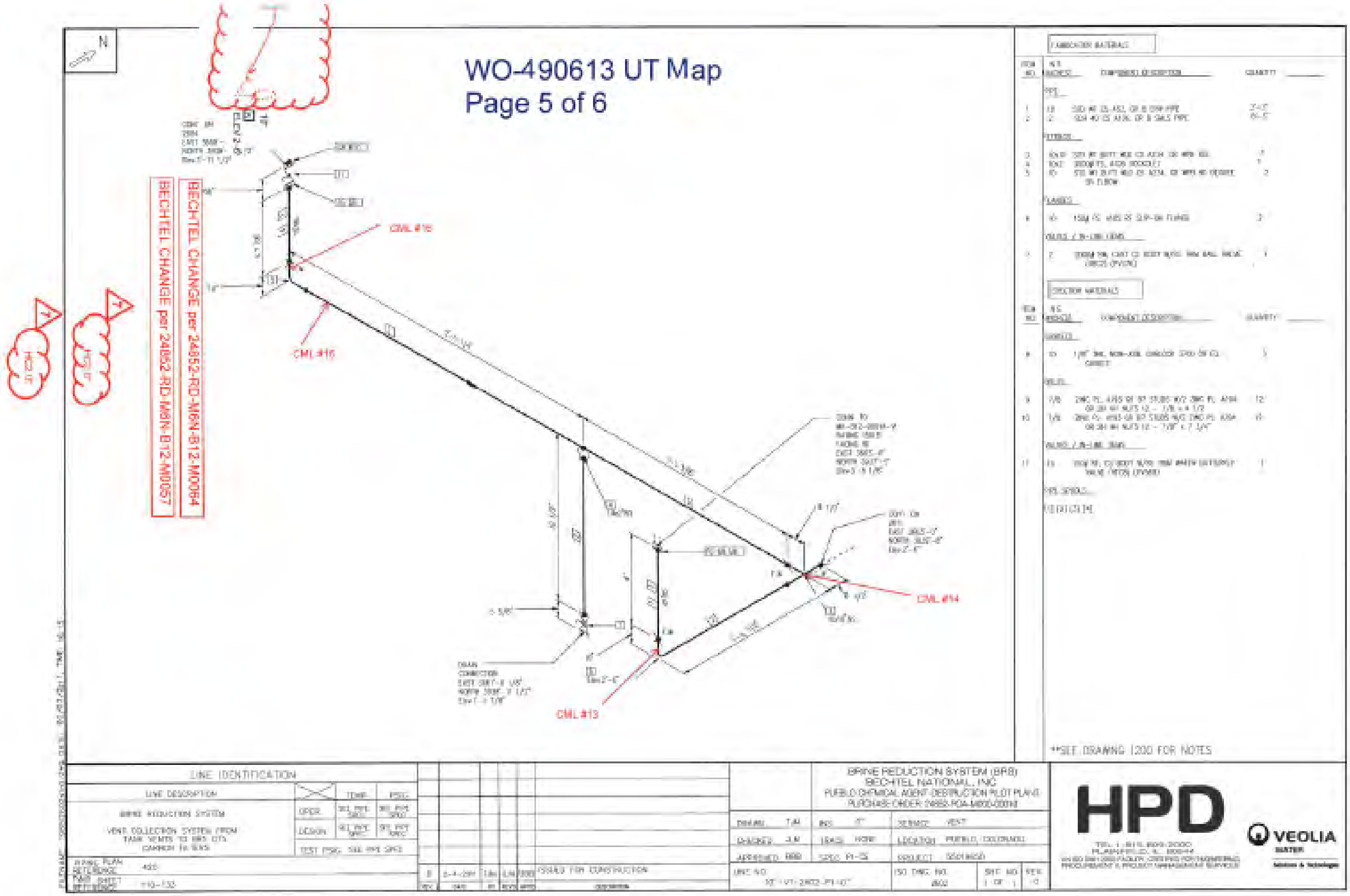
FROM B20-PE-0024-4"-WR-N CONNECTION 3 VIEW-2
CML-1A
UT from elbow down 3"
CML-1B
UT from weld up 2"
1.5"x1" REDUCER
1.5"x1" REDUCING TEE
CML- 2
UT from weld to weld = 4"
CML- 3
UT from elbow up 2"
CML- 4
UT from elbow out 2"
CML- 5
UT from weld out 4"
CML- 6
UT from weld out 4"
TO SPENT DECON TANK 0201 RF300# FLANGE
CML- 7
UT from elbow up 2"
CML- 8
UT from elbow out 2"
CML- 9
UT from weld out 4"
VIEW-4
B20-PE-0027-1.5"-AD-N
B20-PE-0027-1"-AD-N
B20-PE-1150-1"-AD-N
CML- 10
UT from weld out 4"
TO SPENT DECON TANK 0101 RF300# FLANGE
Corrosion Monitoring Locations
(by Acuren Inspections Inc.)
BRANCH
ENVIRONMENTAL CORP.
BECHTEL NATIONAL INC.
PIPING DETAILS

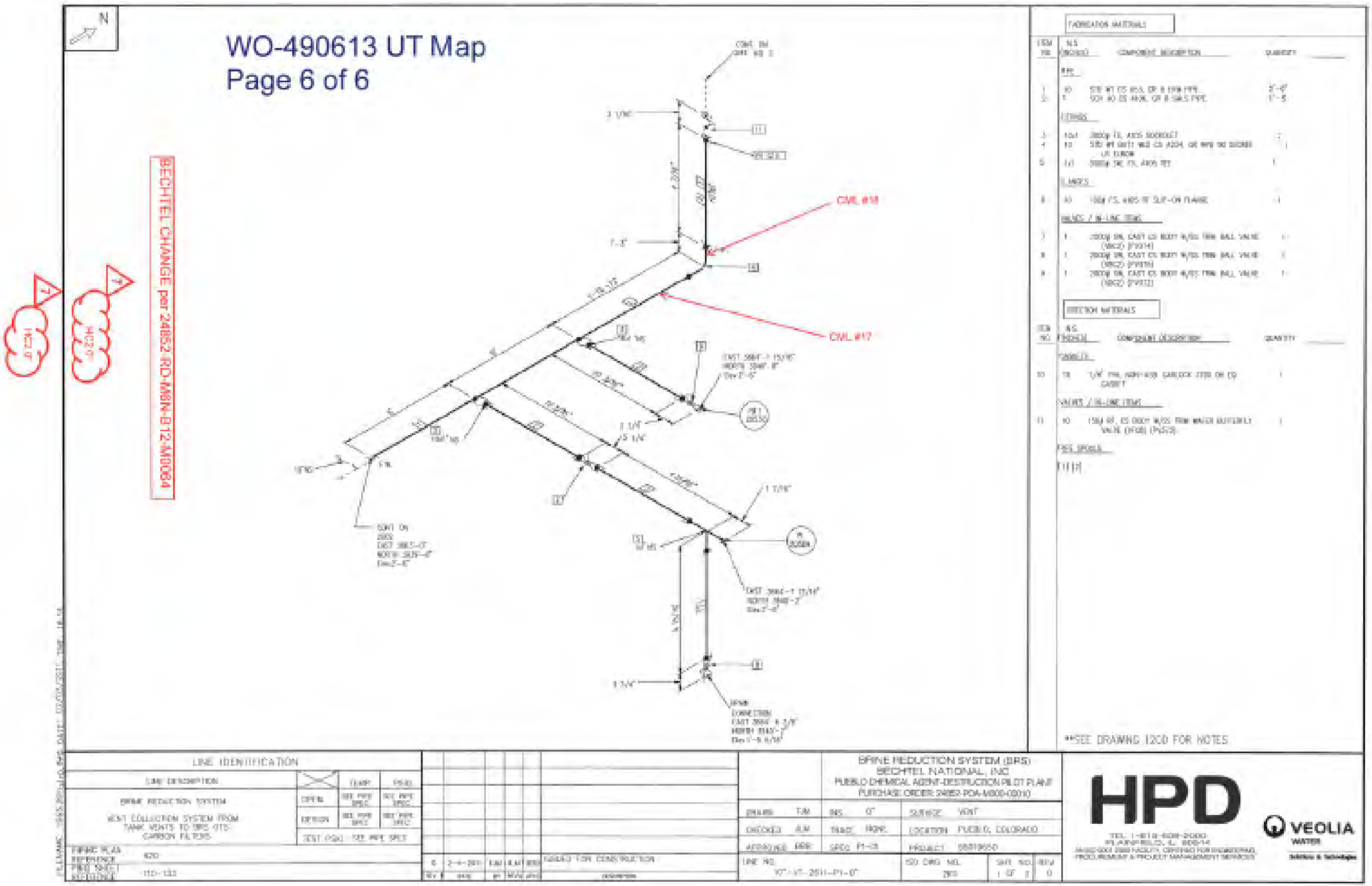

WO-490613 UT Map
Page 1 of 6
BECHTEL CHANGE per 24852-RD-M6N-B12-M0057
BECHTEL CHANGE per 24852-RD-M6N-B12-M0064
CML #1
CML #2
CML #3
CML #4
BRINE REDUCTION SYSTEM (BRS)
BECHTEL NATIONAL, INC.
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT
LINE IDENTIFICATION
**SEE DRAWING 1200 FOR NOTES
HPD
VEOLIA


WO-490613 UT Map
Page 2 of 6
BECHTEL CHANGE per 24852-RD-MEN-B12-M0064
CML #6
CML #5
**SEE DRAWING 1200 FOR NOTES
BRINE REDUCTION SYSTEM (BRS)
BECHTEL NATIONAL, INC
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT
HPD
VEOLIA


WO-490613 UT Map
Page 3 of 6
CML #10
CML #9
CML #8
CML #7
BECHTEL CHANGE per 24852-RD-MGN-B12-M0057
BECHTEL CHANGE per 24852-RD-MGN-B12-M0004
**SEE DRAWING 1200 FOR NOTES
LINE IDENTIFICATION
BRINE REDUCTION SYSTEM (BRS)
BECHTEL NATIONAL, INC
HPD
VEOLIA


WO-490613 UT Map
Page 4 of 6
BECHTEL CHANGE per 24852-RD-M6N-B12-M0064
CML #12
CML #11
N
FABRICATION MATERIALS
ERECTION MATERIALS
**SEE DRAWING 1200 FOR NOTES
LINE IDENTIFICATION
BRINE REDUCTION SYSTEM
BRINE REDUCTION SYSTEM (BRS)
BECHTEL NATIONAL, INC.
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT
ISSUED FOR CONSTRUCTION
SERVICE VENT
LOCATION PUEBLO, COLORADO
HPD
VEOLIA


WO-490613 UT Map
Page 5 of 6
BECHTEL CHANGE per 24852-RD-M6N-B12-M0064
BECHTEL CHANGE per 24852-RD-M6N-B12-M0057
CML #16
CML #16
CML #14
CML #13
BRINE REDUCTION SYSTEM (BRS)
BECHTEL NATIONAL, INC.
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT
HPD
VEOLIA
**SEE DRAWING 1200 FOR NOTES
LINE IDENTIFICATION
ISSUED FOR CONSTRUCTION


WO-490613 UT Map
Page 6 of 6
BECHTEL CHANGE per 24852-RD-M8N-B12-M0064
CML #16
CML #17
BRINE REDUCTION SYSTEM (BRS)
BECHTEL NATIONAL, INC.
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT
LOCATION PUEBLO, COLORADO
**SEE DRAWING 12C0 FOR NOTES
HPD
VEOLIA WATER

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APPENDIX C. CORROSION MECHANISM DISCUSSION

Reference Corrosion Engineering Handbook (2nd Ed) Fundamentals of Metallic Corrosion by Philip A Schweitzer

Corrosion mechanisms fall into the following general categories of concern at PCAPP:

- Pitting Corrosion
- Crevice Corrosion
- Stress Corrosion Cracking
- Hydrogen Embrittlement

Pitting Corrosion

The following is taken from Chapter 1 Fundamentals of Metallic Corrosion of the Corrosion Engineering Handbook (2nd Ed) Fundamentals of Metallic Corrosion by Philip A Schweitzer

Pitting corrosion is characterized by highly localized loss of metal. It may appear as a deep, tiny hole in an otherwise unaffected surface. The initiation of a pit is associated with the breakdown of the protective film on the metal surface.

The depth of the pit (given enough time for attack) eventually leads to a through perforation or a massive undercut in the thickness of the metal part. The width of the pit may increase with time but not to the extent to which the depth increases. Most often the pit opening remains covered with the corrosion product, making it difficult to detect during inspection.

The main factor that causes and accelerates pitting is electrical contact between two dissimilar metals or between what are termed concentration cells (areas of the same metal where oxygen or conductive salt concentrations in water differ). These couples cause a difference of potential that results in an electric current flowing through the water from the metallic anode to a nearby cathode. The cathode may be brass or copper, mill scale or any other portion of the metal surface that is cathodic to the more active metal areas. When the anodic area is relatively large compared with the cathodic area, the damage is spread out and is usually negligible. When the anode area is relatively small, the metal loss is concentrated and may be serious. For example, metal loss may be concentrated and serious when large areas of the surface are generally covered by mill scale, applied coatings, or deposits of various kinds, but breaks exist in the continuity of the protective material.

Pitting corrosion is characterized by the following features:

1. The attack is spread over small discrete areas. Pits are sometimes isolated and sometimes close together, giving the area of attack a rough appearance.

2. Pits usually initiate on the upper surface of the horizontally placed parts and grow in the direction of gravity.

3. Pitting usually requires an extended initiation period before visible pits appear.

4. Conditions prevailing inside the pit make it self-propagating without any external stimulus. Once initiated, the pit grows at an ever-increasing rate.

5. Stagnant solution conditions lead to pitting.

6. Stainless steels and aluminum and its alloys are particularly susceptible to pitting. Carbon steels are more resistant to pitting than stainless steels. Most failure of stainless steels occurs in neutral-to-acid chloride solutions. Aluminum and carbon steels pit in alkaline chloride solutions.

7. Most pitting is associated with halide ions (chlorides, bromides), and hypochlorites are particularly aggressive. Cupric, ferric and mercuric halides are extremely aggressive because their cations are cathodically reduced and sustain the attack.

Crevice Corrosion

The following is taken from Chapter 1 Fundamentals of Metallic Corrosion of the Corrosion Engineering Handbook (2nd Ed) Fundamentals of Metallic Corrosion by Philip A Schweitzer

Crevice corrosion is localized type of corrosion occurring within or adjacent to narrow gaps or openings formed by metal-to-metal-to-nonmetal contact. It results from local differences in oxygen concentrations, associated deposits on the metal surface, gaskets, lap joints, or crevices under a bolt or around rivet heads where small amounts of liquid can collect and become stagnant.

Crevice corrosion may take place on any metal and in any corrosive environment. However, metals like aluminum and stainless steels that depend on their surface oxide film for corrosion resistance are particularly prone to crevice corrosion, especially in environments such as seawater that contain chloride ions.

The gap defining a crevice is usually large enough for the entrapment of a liquid but too small to permit flow of the liquid. The width is on the order of a few thousandths of an inch, but not exceeding 3.18 mm (⅛”).

The material responsible for forming the crevice need not be metallic. Wood, plastic, rubber, glass, concrete, asbestos, wax, and living organisms have been reported to cause crevice corrosion. After the attack begins within the crevice, its progress is very rapid. It is frequently more intense in chloride environments.

Prevention can be accomplished by proper design and operating procedures. Nonabsorbant gasketting material should be used at flanged joints, while fully penetrated butt-welded joints are preferred to threaded joints. If lap joints are used, the laps should be filled with welding or a suitable caulking compound designed to prevent crevice corrosion.

Several steps can be taken to prevent and / or control crevice corrosion:

1. Proper design, avoiding crevices, will control crevice corrosion. If lap joints are used, the laps should be filled with filled welding or a suitable caulking compound designed to prevent crevice corrosion. Welded butt joints are preferable to bolted or riveted joints.

2. Porous gaskets should be avoided. Use an impervious gasket material. During long shutdown periods, wet packing materials should be removed.

3. The use of alloys resistant to crevice corrosion should be considered. The resistance of stainless steels to crevice corrosion can be improved by increasing chromium, nickel, molybdenum and nitrogen content, For example, type 316 stainless steel containing 2-3% molybdenum is fairly resistant, whereas nickel alloys are more resistant than stainless steels.

4. Reduction of crevice corrosion can be accomplished, when possible, by reducing the temperature, decreasing the chloride content, or decreasing the acidity.

5. The gaps along the periphery of tanks mounted on a masonry platform should be closed with tar or bitumen to avoid seepage of rainwater. Vessels and tanks should be designed to provide complete drainage, thereby preventing the buildup of solid deposits on the bottom.

6. Regular inspections and removal of deposits should be scheduled.

Stress Corrosion Cracking (SCC)

The following is taken from Chapter 1 Fundamentals of Metallic Corrosion of the Corrosion Engineering Handbook (2nd Ed) Fundamentals of Metallic Corrosion by Philip A Schweitzer

SCC is defined as the delayed failure of alloys by cracking when exposed to certain environments in the presence of static tensile stress. The importance of a conjoint action of corrosion and stress is reflected in the definition; an alternate application of stress and corrosive environment will not produce SCC. The stress level at which the failure occurs is well below the stress required for a mechanical failure in the absence of corrosion. The minimum stress below which SCC will occur is called the threshold stress, but this may be as low as 10% of the yield stress in some systems. Corrosion alone in the absence of stress does not cause SCC.

SCC occurs at points of stress. Usually the metal or alloy is virtually free of corrosion over most of its surface, yet fine cracks penetrate through the surface at the points of stress. Depending on the alloy system and corrodent combination, the cracking can be intergranular or transgranular. The rate of propagation can vary greatly and is affected by stress levels, temperature, and concentration of the corrodent. This type of attack takes place in certain media. All metals are potentially subject to SCC. The conditions necessary for stress corrosion are:

1. Suitable environment
2. Tensile stress
3. Sensitive metal
4. Appropriate temperature and pH values

An ammonia environment can induce SCC in copper-containing alloys, whereas with low-alloy austenitic stainless steels a chloride-containing environment is necessary. It is not necessary to have a high concentration of corrodent to cause SCC. A solution containing only a few parts per million of the critical ion is all that is necessary. Temperature and pH are also factors. There is usually a threshold temperature below which SCC will not take place and a maximum or minimum pH value before cracking will start.

Normally, SCC will not occur if the part is in compression. Fatigue is triggered by a tensile stress that must approach the yield stress of the metal. The stresses may be induced by faulty installation or they may be residual stress from welding, straightening, bending, or accidental denting of the component. Pits, which act as stress concentration sites, will often initiate SCC.

The alloy content of stainless steel, particularly nickel, determines the sensitivity of the metal to SCC. Ferritic stainless steels, which are nickel-free, and the high-nickel alloys are not subject to SCC. An alloy with a nickel content greater than 30% is immune to SCC. The most common grades of stainless steel (304, 304L, 316, 316L, 321, 347, 303 and 301) have nickel contents in the range of 7-10% and are the most susceptible to SCC.

Examples of SCC include the cracking of austenitic stainless steels in the presence of chlorides; caustic embrittlement cracking or steel in caustic solutions; cracking of cold-formed brass in ammonia environments, and cracking on monel in hydrofluorosilicic acid. Table 1.5 provides partial listing of alloy systems and the environments that will cause SCC.

In severe combinations, such as type 304 stainless steel in a boiling magnesium chloride solution, extensive cracking can be generated in a matter of hours.

Fortunately, in most industrial applications the progress of SCC is much slower. However, because of the nature of the cracking, it is difficult to detect until extensive corrosion has developed, which can lead to unexpected failure.

Tensile stresses can lead to other corrosion processes, such as the simple mechanical fatigue process. Corrosion fatigue is difficult to differentiate from simple mechanical fatigue, but it is recognized as a factor when the environment is believed to have accelerated the normal fatigue process. Such systems can also have the effect of lowering the endurance limit such that fatigue will occur at a stress level below which it would normally be expected.

TABLE 1.5

Alloy–Environment Combinations Causing Stress Corrosion Cracking

Alloy	Environment
Aluminum alloys	Air with water; potable waters; seawater NaCl solutions; NaCl–H_2O_2 solutions
Carbon steels	Caustic NaOH solutions; seawater; calcium, ammonium, and sodium nitrate solutions; HCN solutions; acidified H_2S solutions; anhydrous liquid ammonia; carbonate/bicarbonate; CO/CO_2 solutions
Copper alloys	Ammonical solutions; amines; nitrites
Nickel alloys	Caustic alkaline solutions; high-temperature chloride solutions; high-purity steam; hydrofluoric acid; acid fluoride solutions
Stainless steels austenitic	Hot acid chloride solutions; NaCl–H_2O_2 solutions; NaOH–H_2S solutions; seawater; concentrated caustic solutions; neutral halides, Br^-, I^-, F^-
Austenitic (sensitized)	Polythionic acids; sulfurous acid; pressurized hot water containing 2 ppm dissolved oxygen
Ferritic	H_2S; NH_4Cl; NH_4NO_3; hypochlorite solutions
Martensitic	Caustic NaOH solutions
Titanium alloys	Red fuming nitric acid; hot salts; molten salts; N_2O_4; methanol/halide

It is important that any stresses that may have been induced during the fabrication be removed by an appropriate stress-relief operation. Care should be taken so as to not induce a stress as the result of installation. The design should also avoid stagnant areas that could lead to pitting and the initiation of stress concentration sites.

Hydrogen Embrittlement

The following is taken from Hydrogen Embrittlement from the Encyclopedia of Materials: Science and Technology Volume 4 2001

The introduction of hydrogen into metallic systems generally has a deleterious effect on the mechanical properties, and particularly on the fracture and fracture toughness. With few exceptions – these being systems in which hydrogen has extremely low solubility and mobility – the presence of hydrogen as a solute element causes low fracture toughness and brittle fracture. This embrittlement results from the presence of hydrogen as a solute that can be introduced by processing or from a gaseous or corrosive liquid environment.

The following is taken from Chapter 20 Titanium of the Corrosion Engineering Handbook (2nd Ed) Fundamentals of Metallic Corrosion by Philip A Schweitzer

The oxide film on titanium, in most cases, acts as an effective barrier to penetration by hydrogen. However, embrittlement can occur under conditions that allow hydrogen to enter titanium and exceed the concentration needed to form a hydride phase (about 100-150 ppm). Hydrogen absorption has been observed in alkaline solutions at temperatures above the boiling point. Acidic conditions that cause the oxide films to be unstable may also result in embrittlement under conditions in which hydrogen is generated on the titanium surface. In any event, it appears that embrittlement occurs only if the temperature is sufficiently high, i.e. above 170 F, to allow hydrogen to diffuse into the titanium. Otherwise, if surface hydride films form they are not detrimental.

Gaseous hydrogen has had no embrittlement effects on titanium. The presence of as little as 2% moisture effectively prevents the absorption of molecular hydrogen up to a temperature as high as 600 F. This may reduce the ability of the titanium to resist erosion, resulting in a higher corrosion rate.

Discussion of Titanium and Stainless Steel construction of the agent and high chloride content tanks in the Toxic Room.

Regarding the 316 L stainless steel Spent Decon Tanks which handle decontamination solutions (water) with spilled process solutions that contain chlorides.

The following is taken from Corrosion Engineering Handbook Second Edition Fundamentals of Metallic Corrosion by Philip A Schweitzer 2007

From Chapter 10.13 Type 316 (Chapter 10 Austenitic Stainless Steel Family)

These chromium–nickel grades of stainless steel have molybdenum added in the range of 2–3%. The molybdenum substantially increases resistance to pitting and crevice corrosion in systems containing chlorides and improves overall resistance to most types of corrosion in chemically reducing neutral solutions.

TABLE 10.3

Compatibility of Types 316, and 316L Stainless Steel with Selected Corrodents

Chemical	Maximum Temperature °F	Maximum Temperature °C
Sodium chloride, to 30%[a]	350	177
Sodium hydroxide, 10%	350	177

The chemicals listed are in the pure state or in a saturated solution unless otherwise indicated. Compatibility is shown to the maximum allowable temperature for which data are available. Incompatibility is shown by an X. When compatible, the corrosion rate is <20 mpy.

[a] Subject to stress cracking.
[b] Subject to pitting.
[c] Subject to crevice attack.

Source: From P.A. Schweitzer. 2004. *Corrosion Resistance Tables*, Vols. 1–4, 5th ed., New York: Marcel Dekker.

From Chapter 6.3 Stress Corrosion Cracking (Chapter 6 Corrosion of Stainless Steels)

Stress corrosion cracking (SCC) of stainless steels is caused by the combined effects of tensile stress, corrosion, temperature, and the presence of chlorides. Wet–dry or heat-transfer conditions that promote the concentration of chlorides are particularly aggressive with respect to initiating SSC.
Alloy contents of stainless steels, particularly nickel, determine the sensitivity of the metal to SCC. The most common grades of stainless steel (304, 304L, 316, 316L, 321, 347, 303, 302, and 301) have nickel contents in the range of 7–10% and are the most susceptible to SCC.

Sodium chloride usually causes SCC only between about 1208F (508C) and 3908F (2008C). However, SCC can occur at room temperature and even at cryogenic temperatures in the presence of other halides (e.g., sulfuric/NaCl mixtures, aqueous solutions of hydrogen sulfide/NaCl, HCl). For boldly exposed surfaces, there are rough correlations between pH and chloride concentration at which SCC may be anticipated. There is no minimum chloride concentration below which SCC will not occur if there is a possibility of concentration by evaporation or by occlusion or adsorption films adhering to the stainless surface (e.g., mill scale, heat tints, welding slag, rust deposits, calcareous deposits, and biomasses).

The solutions handled by the Spent Decon Tank system is not a heated process where temperature and tensile stress are not factors. Additionally, the Spent Decon Tank system is not continuously exposed to chloride environments. For the service life, stainless steel is suitable and requires no additional internal inspections.

Regarding the Titanium Toxic Room tanks: Agent Water Separators (Grade 7), Wash Water Collection Tanks (Grade 2), Hydrolyzers (Grade 7) and the MWS Room MWS Agent and Wash Water Surge Drum (Grade 2), the following assists in justifying no internal examinations required.

The following is taken from Corrosion Engineering Handbook Second Edition Fundamentals of Metallic Corrosion by Philip A Schweitzer 2007

From Chapter 20 Titanium
Grade 2 is most often used for corrosion resistance. Grade 7 alloy, compared with unalloyed titanium, possesses an improved corrosion resistance.

From Chapter 20.2.3 Hydrogen Embrittlement
The oxide film on titanium, in most cases, acts as an effective barrier to penetration by hydrogen. However, embrittlement can occur under conditions that allow hydrogen to enter titanium and exceed the concentration needed to form a hydride phase (about 100–150 ppm).
Hydrogen absorption has been observed in alkaline solutions at temperatures above the boiling point. Acidic conditions that cause the oxide films to be unstable may also result in embrittlement under conditions in which hydrogen is generated on the titanium surface. In any event, it appears that embrittlement occurs only if the temperature is sufficiently high, i.e., above 170 F (75 C), to allow hydrogen to diffuse into the titanium. Otherwise, if surface hydride films form they are not detrimental.
Gaseous hydrogen has had no embrittlement effects on titanium. The presence of as little as 2% moisture effectively prevents the absorption of molecular hydrogen up to a temperature as high as 600 F (315 C). This may reduce the ability of the titanium to resist erosion, resulting in a higher corrosion rate.

From Chapter 20.2.4 Crevice Corrosion
Crevice corrosion of titanium is most often observed in bromide, iodide, and sulfate solutions. Dissolved oxygen or other oxidizing agents present in the solution are depleted in the restricted volume of solution in the crevice. As a result, the potential of

the metal in the crevice becomes more negative than the metal exposed to the bulk solution. Consequently, an electrolytic cell is formed with the metal in the crevice acting as the anode and the metal outside the crevice acting as the cathode. The resulting current will cause metal to dissolve at the anode. Titanium chlorides formed in the crevice are unstable and tend to hydrolyze, forming small amounts of hydrochloric acid. This reaction is very slow at first, but in the restricted volume of the crevice it can reduce the pH of the solution to a value as low as 1. This reduces the potential still further until corrosion becomes severe.

Figure 20.1 shows the relationship between the temperature and pH of saturated brine at which corrosive attack initiates on grade 2.

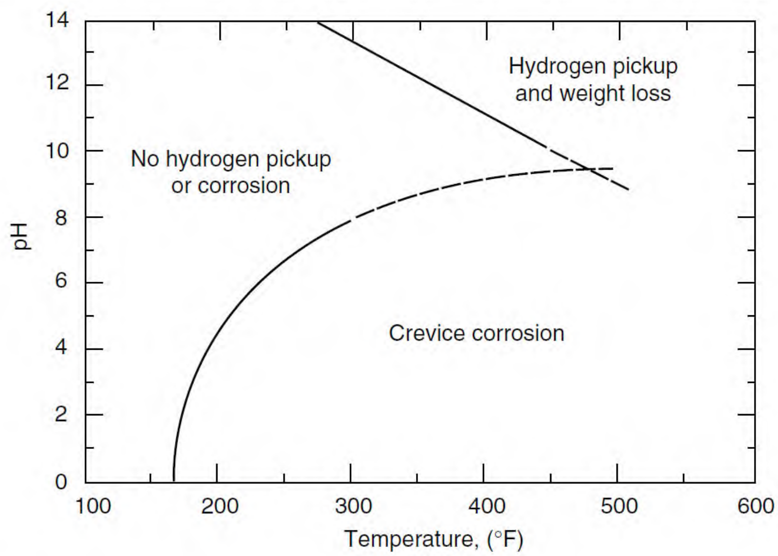

FIGURE 20.1
Effect of temperature and pH on crevice corrosion of grade 2 unalloyed titanium in saturated brine. (From L.C. Covington and P.A. Schweitzer. 1989. in *Corrosion and Corrosion Protection Handbook*, 2nd ed., P.A. Schweitzer, Ed., New York: Marcel Dekker.)

Figure 20.2 shows the relationship for grade 7 (Ti–Pd) alloys. Note the improved resistance to crevice corrosion of these alloys compared to that of unalloyed grade 2.

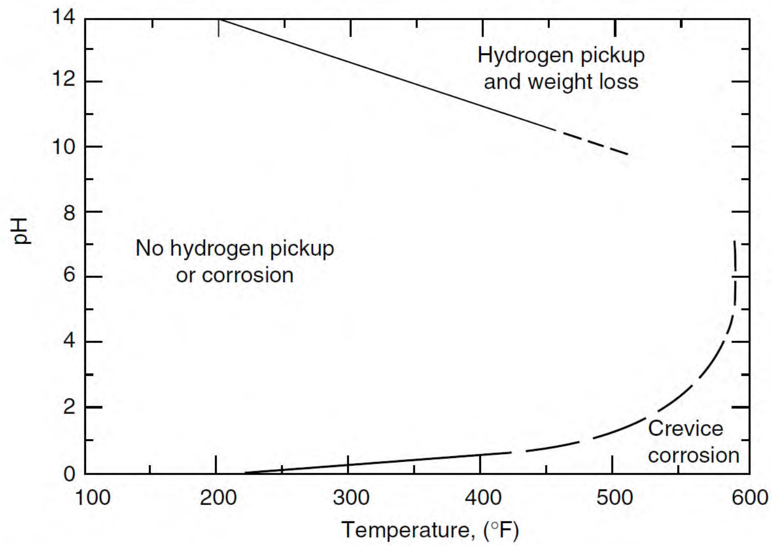

FIGURE 20.2
Effect of temperature and pH on crevice corrosion of grade 7 titanium alloy in NaCl brine. (Fro
L.C. Covington and P.A. Schweitzer. 1989. in *Corrosion and Corrosion Protection Handbook*, 2nd ec
P.A. Schweitzer, Ed., NewYork: Marcel Dekker.)

From Chapter 20.3 Corrosion Resistance
In general, titanium offers excellent resistance in oxidizing environments and poor resistance in reducing environments.
Titanium has replaced copper-based alloys that were corroding in the presence of sulfides, as well as stainless steels that were suffering from pitting and SCC caused by chlorides.

The above discussion shows that considering PCAPP's chemistry in the Titanium tanks, Agent Water Separators (Grade 7), Wash Water Collection Tanks (Grade 2), Hydrolyzers (Grade 7) and the MWS Room MWS Agent and Wash Water Surge Drum (Grade 2), is not susceptible to the corrosion mechanisms of concern.
Hydrogen Embrittlement is shown in Figure 20.2 for Grade 7 to be a concern at temperatures above 200 F and a pH near 14. PCAPP's pH control keeps the pH below 12.
Pitting is explained as not being a problem, as titanium has replaced stainless steels in high chloride environments.
Crevice corrosion is explained as not being a problem in Figures 20.1 and 20.2 showing the region crevice occurs is far outside the operating region for PCAPP.

APPENDIX D. TANK INSPECTION FORM

Tank Corrosion Inspection			
Date Stamp, Inspection Issued on:			
Inspector's Name and Signature:			
Inspection Date and Time:			
Item No.	**Criteria**	**Method**	**Findings**
Location / Tank:			
1	Describe the location on the tank where evidence of corrosion is found. Indicate if internal inspection or external inspection is performed. Attach photographs. Use measuring device for perspective.	Visual per ASTM G46*	
2	Describe in detail the appearance of the corrosion. See Attachment 2: Description of Defects See Attachment 3: Examples of Corrosion	Visual	
3	If pitting is observed, use the pitting grid in Attachment 4 to document the grouping of pits.	ASTM G46*	
4	If pitting is observed, clean or expose the pits to better determine the extent of damage (must be done in accordance with a Work Order)	ASTM G46*	
5	If pitting is observed, perform ultrasonic (UT) measurements of the pits and record values on the grid from step 3. Use the value that results in the most conservative corrosion value as the record for each pit (must be done in accordance with a Work Order)	ASTM G46*	
6	If pitting or cracking is observed, use penetrating liquid (dye penetrant) to more clearly expose the pits or cracks (must be done in accordance with a Work Order)	ASTM G46*	
7	If pitting is observed, use a micrometer or depth gage to determine the extent of pitting. Use the value that results in the most conservative corrosion value as the record for each pit. Record values on the grid from step 3 (must be done in accordance with a Work Order)	ASTM G46*	

Page 1 of 7

Tank Corrosion Inspection			
Date Stamp, Inspection Issued on:			
Inspector's Name and Signature:			
Inspection Date and Time:			
Item No.	**Criteria**	**Method**	**Findings**
Location / Tank:			
8	If pitting is observed, use the Standard Rating Chart for Pits from Attachment 1 to rate the pits.	ASTM G46*	
Provide recommended corrective actions (i.e. increase monitoring frequency, perform repair, remove tank from service, etc)			
Provide Condition Report Number this condition is recorded under (ensure this condition is documented as QA-02 for Non-Conformance)			
CR-			
List all Service Requests/Work Order Numbers generated from this inspection sheet and additional comments			
I have reviewed this inspection sheet and found it to be complete and accurate to the best of my knowledge		**Supervisor Initials**	

* ASTM G46 Standard Guide for Examination and Evaluation of Pitting Corrosion (see Attachment 1 for ASTM G46 guidance)

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Attachment 1: ASTM G46 Guidance

While ASTM G46 is specific to evaluation of pitting corrosion, the technics can be used to detect and examine other types of corrosion found in Attachment 2 and shown in Attachment 3.

Visual Inspection – A visual examination of the corroded metal surface is usually beneficial, and this is done under ordinary light, with or without the use of a low-power magnifying glass, to determine the extent of corrosion and the apparent location of pits. It is often advisable to photograph the corroded surface at this point so that it can be compared with the clean surface after the removal of corrosion products.

Note: Any physical work performed above visual examination shall be performed through the use of a Work Order.

Cleaning or Exposing Pit - It may be necessary to expose the pits to understand their full extent of growth and damage. Scrubbing with a stiff bristle brush will often enlarge the pit openings sufficiently by removal of corrosion products, or undercut metal to make the pits easier to evaluate.

It may be advisable during cleaning to probe the pits with a pointed tool to determine the extent of undercutting or subsurface corrosion

Note: DO NOT use this technique on blisters, crazing or flaking unless authorized by supervision.

Examine Cleaned Area - Examine the cleaned metal surface under ordinary light to determine the approximate size and distribution of pits.

Determine the size, shape and density of pits (see Figure 1)

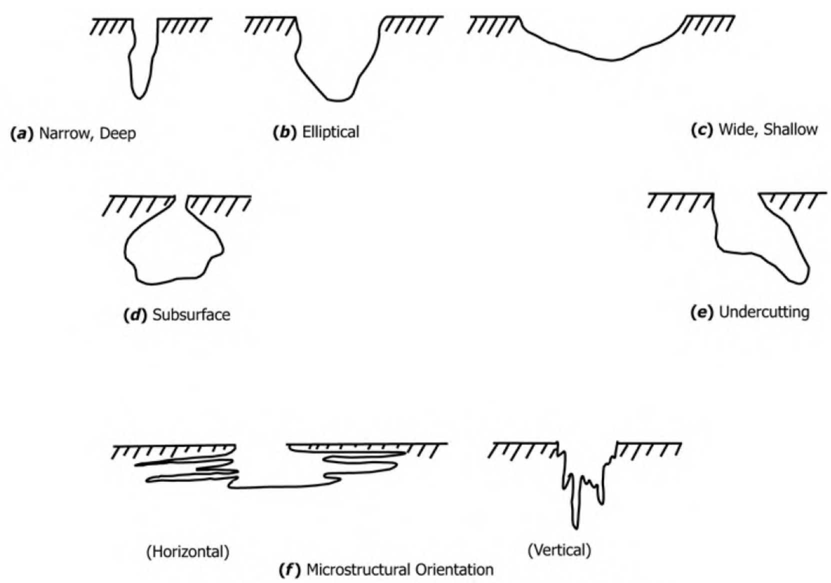


FIG. 1 Variations in the Cross-Sectional Shape of Pits

Nondestructive Examination – Utilize ultrasonic (UT) measurements to determine the extent of damage in the pits.

Utilize penetrating liquid (dye penetrant) to expose suspected areas of pitting or cracking.

Extent of Pitting – Use a micrometer or calibrated depth gage to penetrate the pit cavity. Insert the needle until it reaches the bottom of the pit. The measurement is the depth of the pit. This method is limited to a pit with a sufficiently large opening to allow the device inside.

Attachment 1: ASTM G46 Guidance (cont.)

Rating Pits
Use the following Figure for rating pits.

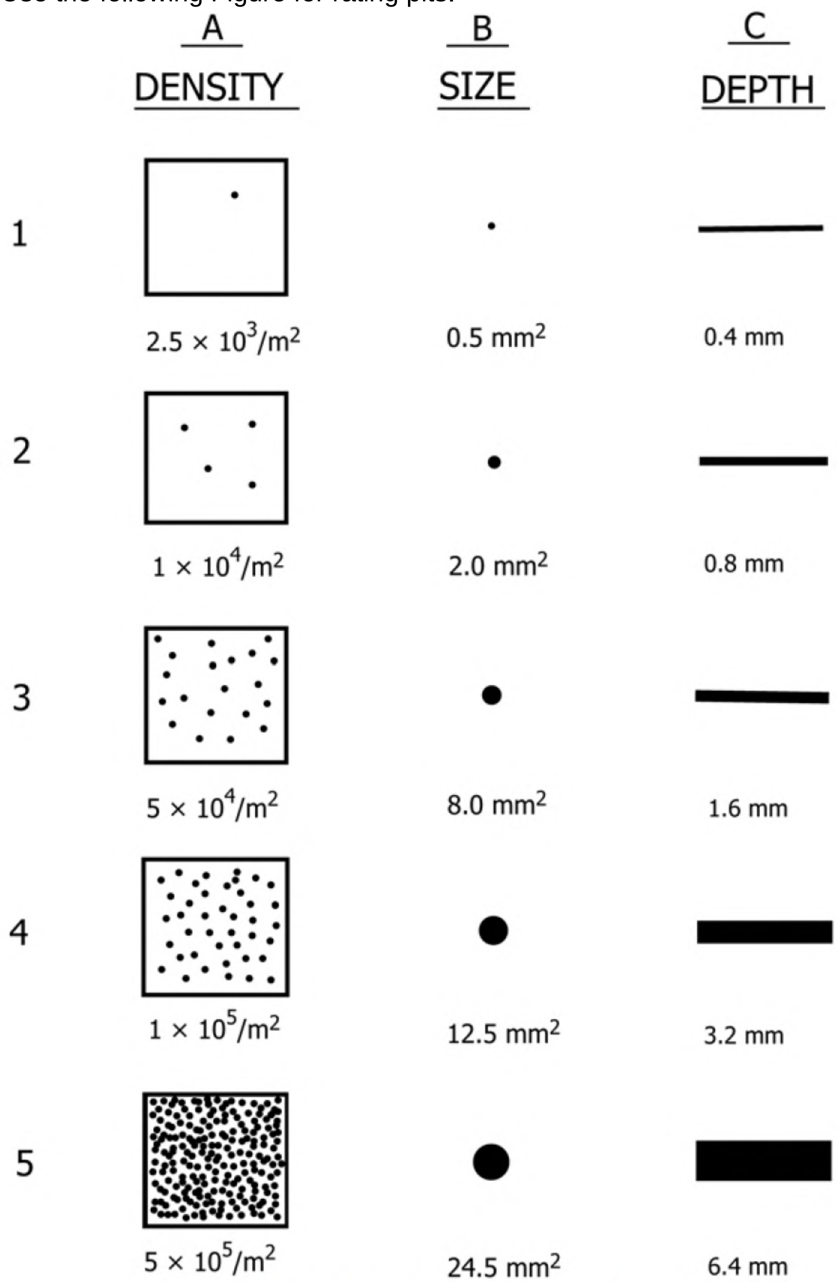


FIG. 2 Standard Rating Charts for Pits

Attachment 2: Description of Defects

Types of Defects
Corrosion of the base metal. (Permanent or massive type of base metal corrosion such **as** that in pinholes, bare, or flaked areas, or in craters of broken blisters.)

Stain due to base metal corrosion products, such as rust stain, which can be removed readily with a damp cloth or chamois and mild abrasive revealing a sound bright surface.

Stains or spots other than that of obvious base metal corrosion products

Surface pits. Corrosion pits probably not extending through to the basis metal-that is absence of obvious base metal corrosion products bleeding therefrom

Flaking or peeling of deposit

Blistering

Cracking

Crazing. A network of checks or cracks appearing on a coated surface

Galvanic corrosion. Electrochemical process where one metal corrodes preferentially to another

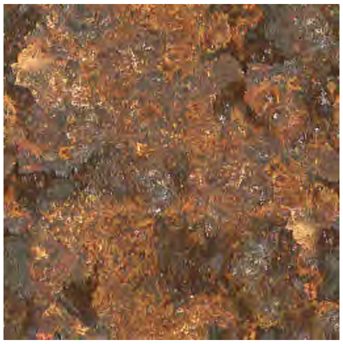
Crevice. Crevice corrosion is localized type of corrosion occurring within or adjacent to narrow gaps or openings formed by metal-to-metal-to-nonmetal contact. The width is on the order of a few thousandths of an inch, but not exceeding 3.18 mm (⅛”).

Degree or Extent of Pinhole Rusting, Staining, Surface Pitting, Flaking, etc
Very slight amount
Slight amount
Intermediate or moderate amount
Excessive amount

Description of Blisters
Less than about 0.5 mm in diameter
About 0.5 to 2.0 mm in diameter
Greater than about 2.0 mm in diameter
5 of fewer blisters
5 to 10 blisters
10 to 25 blisters
25 to 50 blisters
Greater than 50 blisters

Attachment 3: Examples of Corrosion

Rust corrosion



Crazing

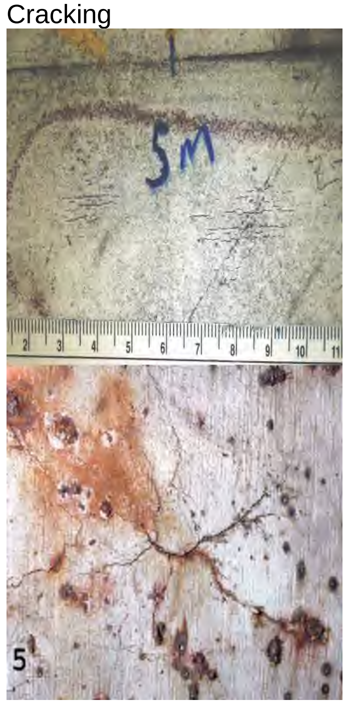
Flaking

Pitting corrosion

Blistering

Staining

Cracking



Galvanic

Crevice

Page 6 of 7

Attachment 4: Pitting Evaluation Grid

Squares are 6 mm x 6 mm (0.236 in x 0.236 in)

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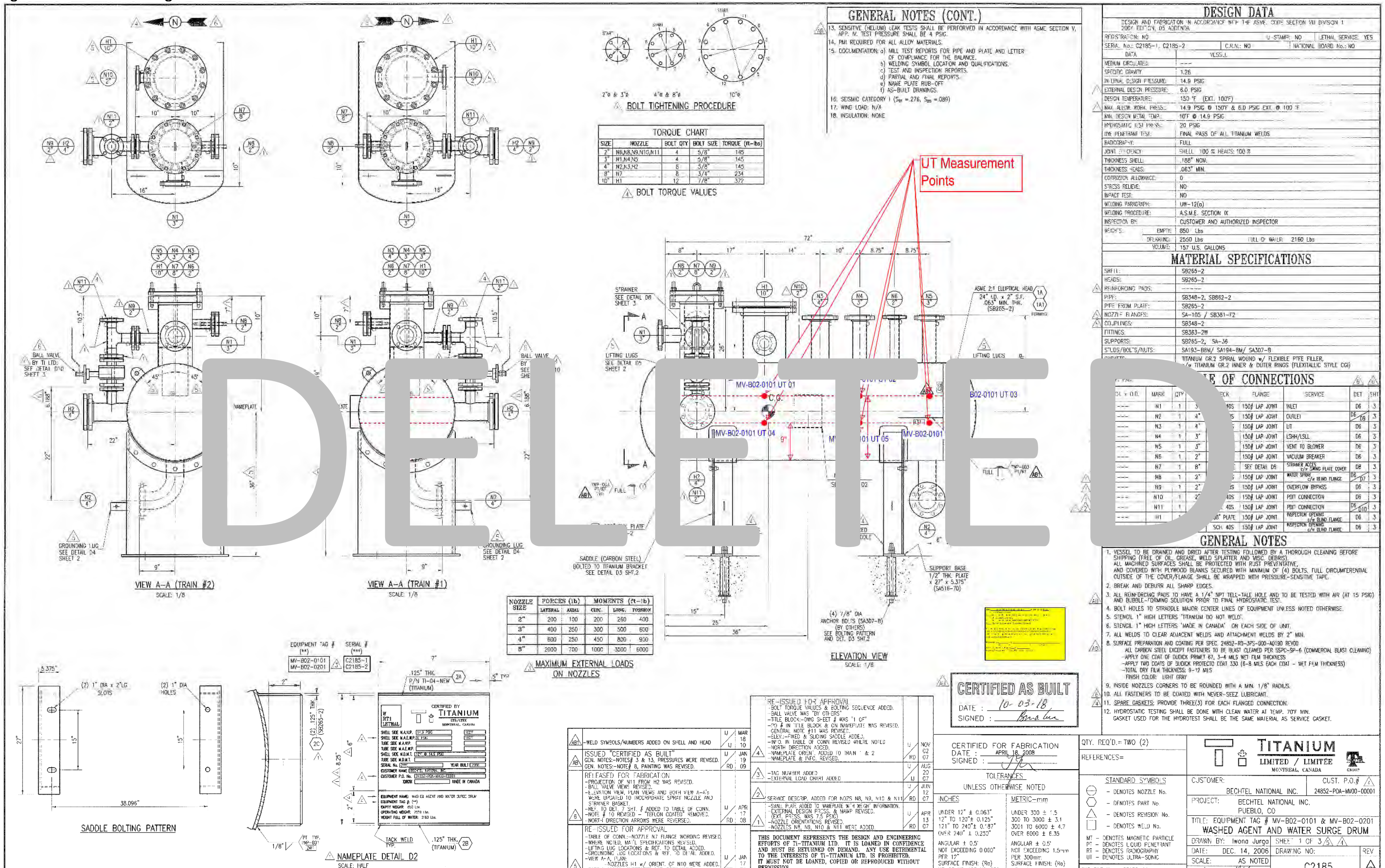
APPENDIX E. ULTRASONIC MONITORING LOCATIONS (SUPPLEMENT TO APPENDIX B)

Ultrasonic Monitoring Locations (cont)
B02 Munitions Washout

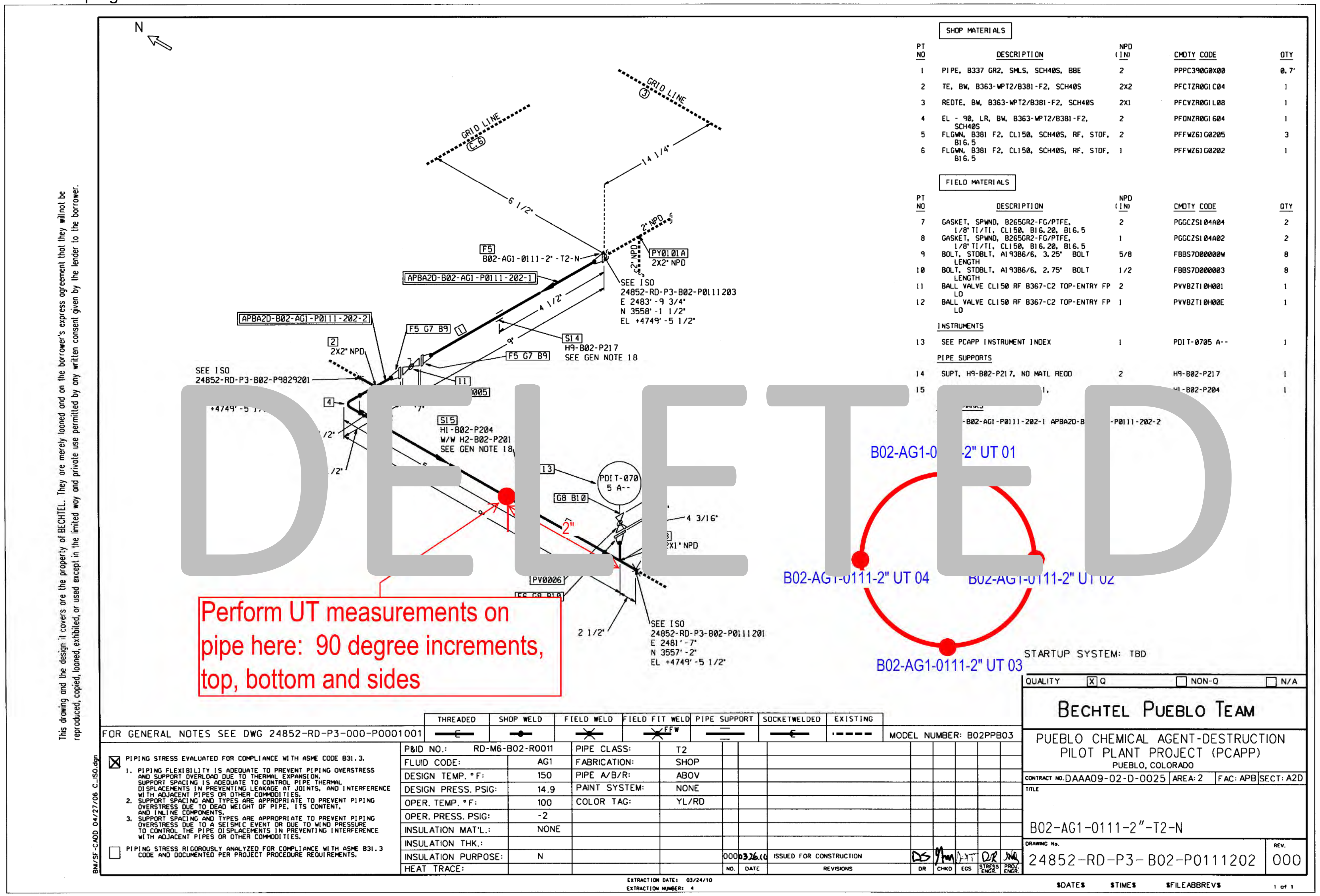
Ultrasonic Monitoring Locations (cont)

B02 Washed Agent and Water Surge Drum – MV-B02-0101/0201



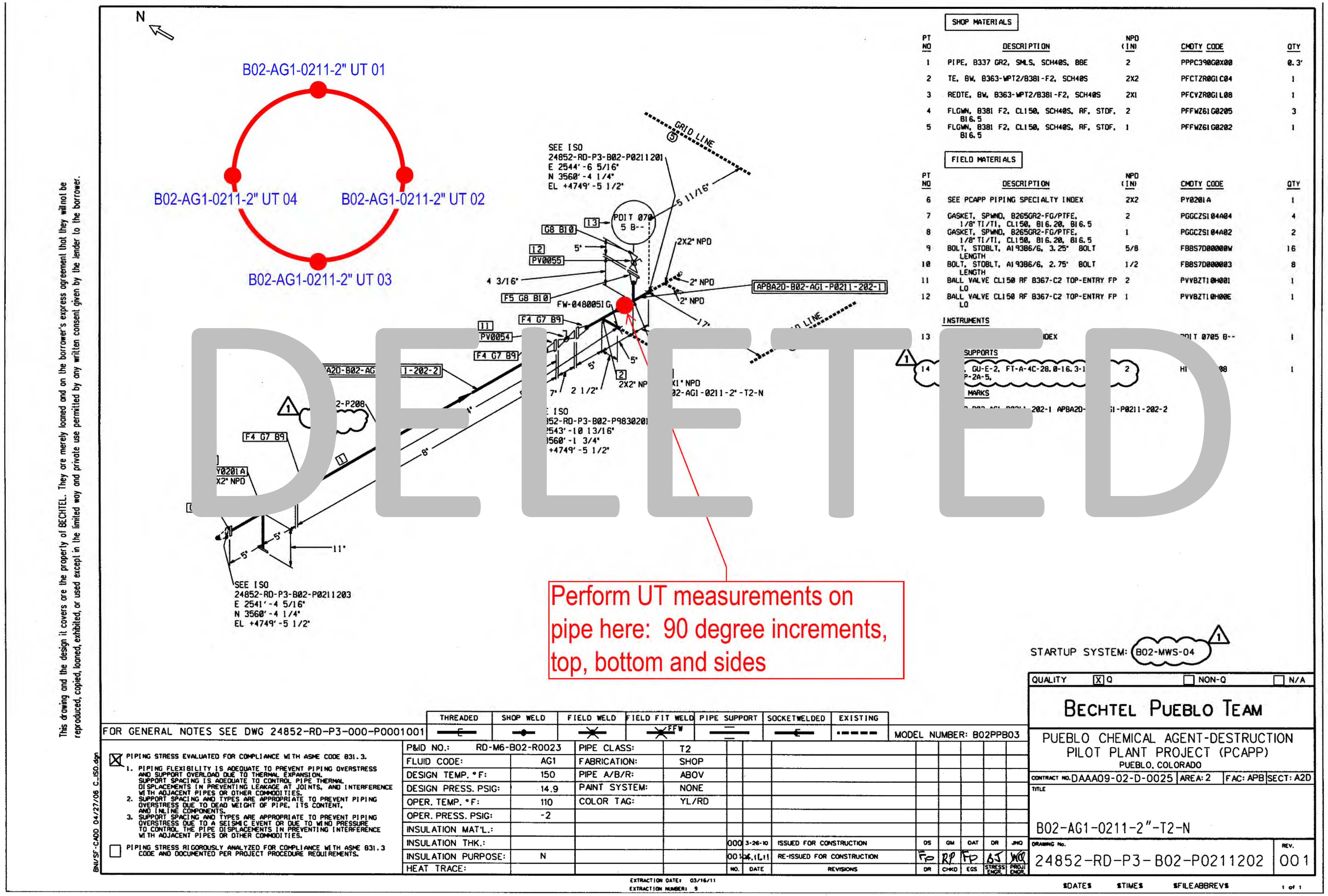
Ultrasonic Monitoring Locations (cont)

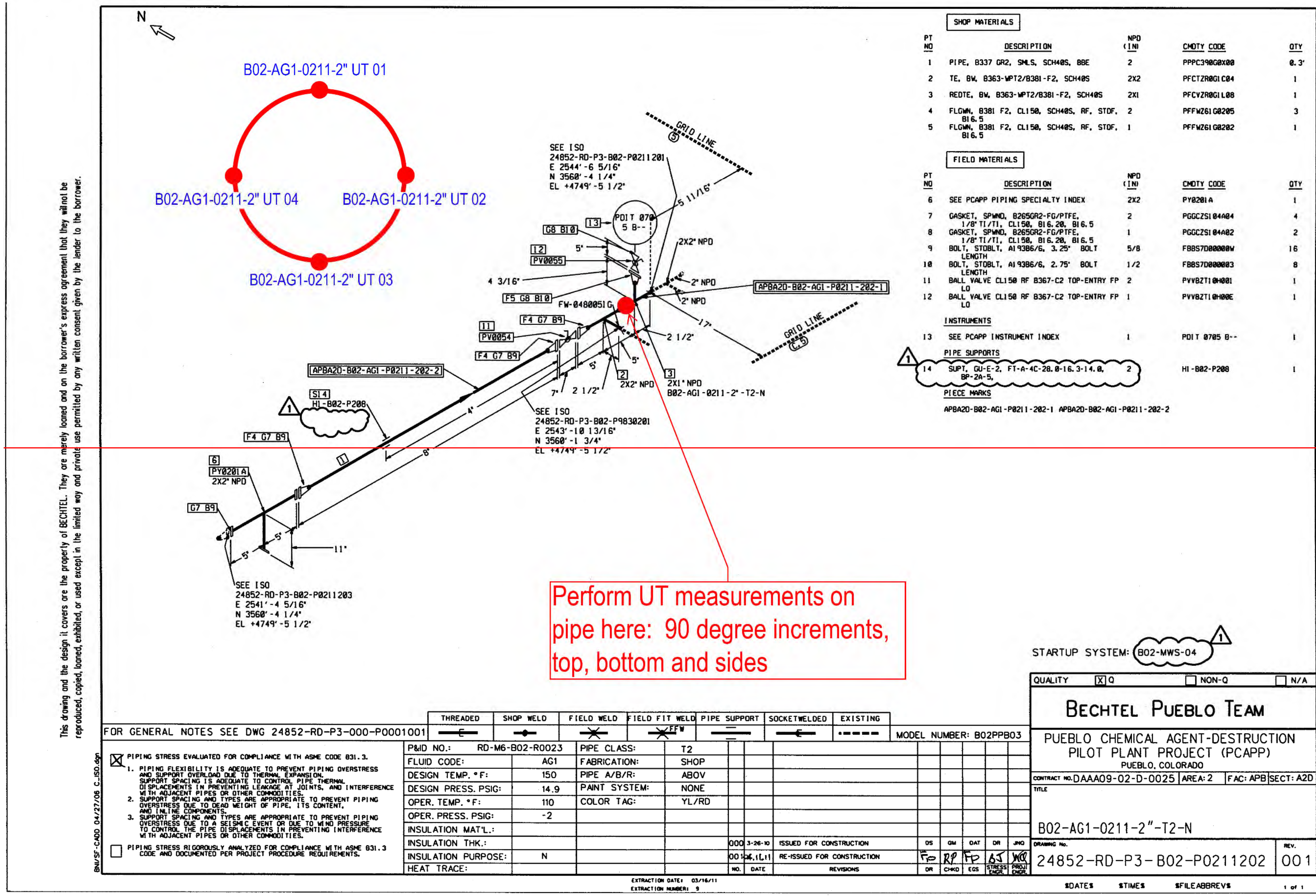
B02 Booster Pump Suction Piping – B02-AG1-0111-2”



Ultrasonic Monitoring Locations (cont)

B02 Booster Pump Suction Piping – B02-AG1-0211-2"

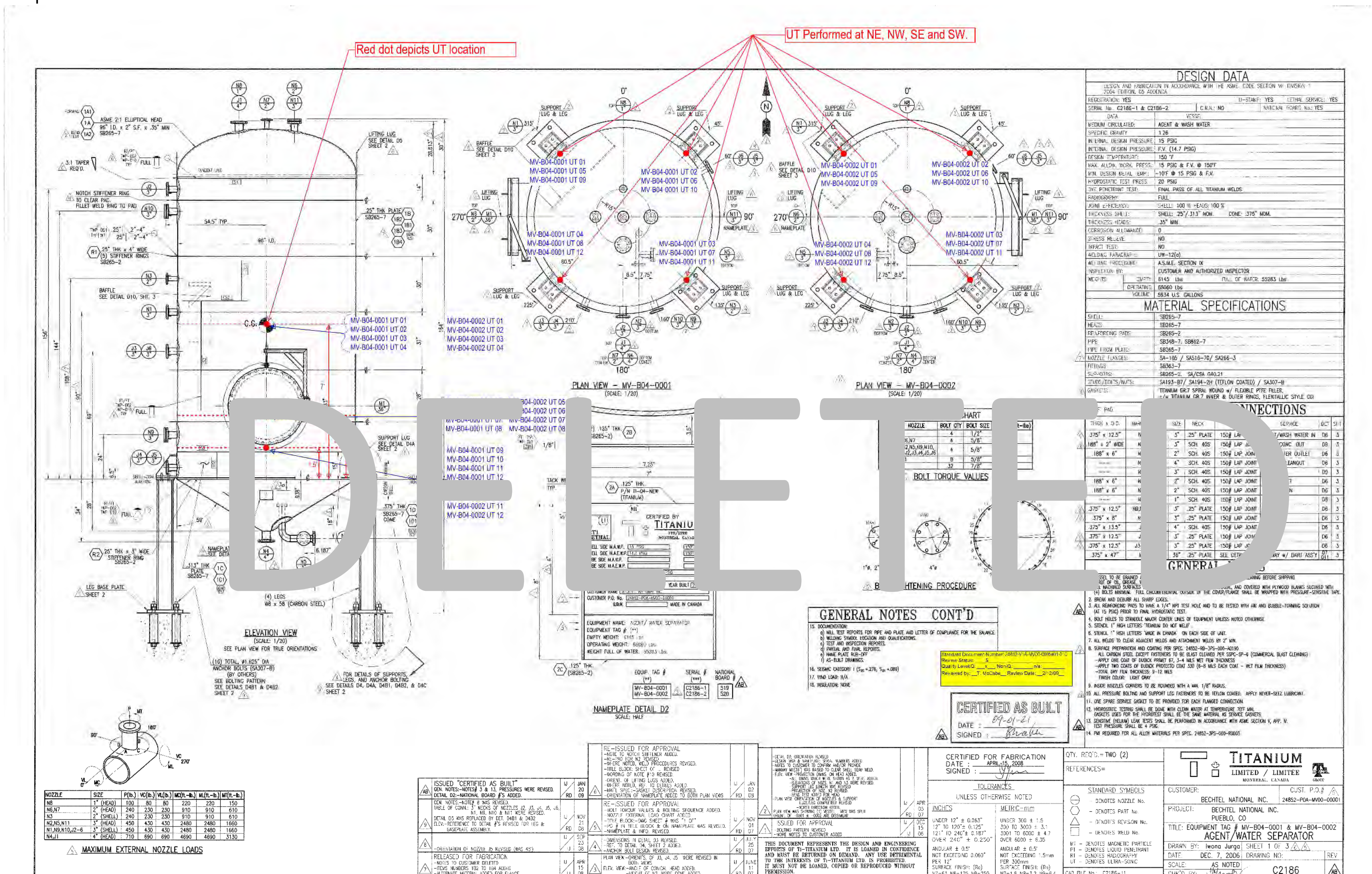



B02-AG1-0211-2" UT 01
B02-AG1-0211-2" UT 02
B02-AG1-0211-2" UT 03
B02-AG1-0211-2" UT 04
Perform UT measurements on pipe here: 90 degree increments, top, bottom and sides
SHOP MATERIALS
FIELD MATERIALS
INSTRUMENTS
PIPE SUPPORTS
PIECE MARKS
APBA20-B02-AG1-P0211-202-1 APBA20-B02-AG1-P0211-202-2
SEE ISO 24852-RD-P3-B02-P0211201
SEE ISO 24852-RD-P3-B02-P0830201
SEE ISO 24852-RD-P3-B02-P0211203
GRID LINE
STARTUP SYSTEM: B02-MWS-04
QUALITY Q NON-Q N/A
BECHTEL PUEBLO TEAM
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT PROJECT (PCAPP)
PUEBLO, COLORADO
CONTRACT NO. DAAA09-02-D-0025 AREA: 2 FAC: APB SECT: A2D
B02-AG1-0211-2"-T2-N
24852-RD-P3-B02-P0211202 001
FOR GENERAL NOTES SEE DWG 24852-RD-P3-000-P0001001
MODEL NUMBER: B02PPB03
P&ID NO.: RD-M6-B02-R0023
FLUID CODE: AG1
DESIGN TEMP. °F: 150
DESIGN PRESS. PSIG: 14.9
OPER. TEMP. °F: 110
OPER. PRESS. PSIG: -2
PIPE CLASS: T2
FABRICATION: SHOP
PIPE A/B/R: ABOV
PAINT SYSTEM: NONE
COLOR TAG: YL/RD
ISSUED FOR CONSTRUCTION
RE-ISSUED FOR CONSTRUCTION
This drawing and the design it covers are the property of BECHTEL. They are merely loaned and on the borrower's express agreement that they will not be reproduced, copied, loaned, exhibited, or used except in the limited way and private use permitted by any written consent given by the lender to the borrower.

Ultrasonic Monitoring Locations (cont)
B04 Agent Collection and Neutralization

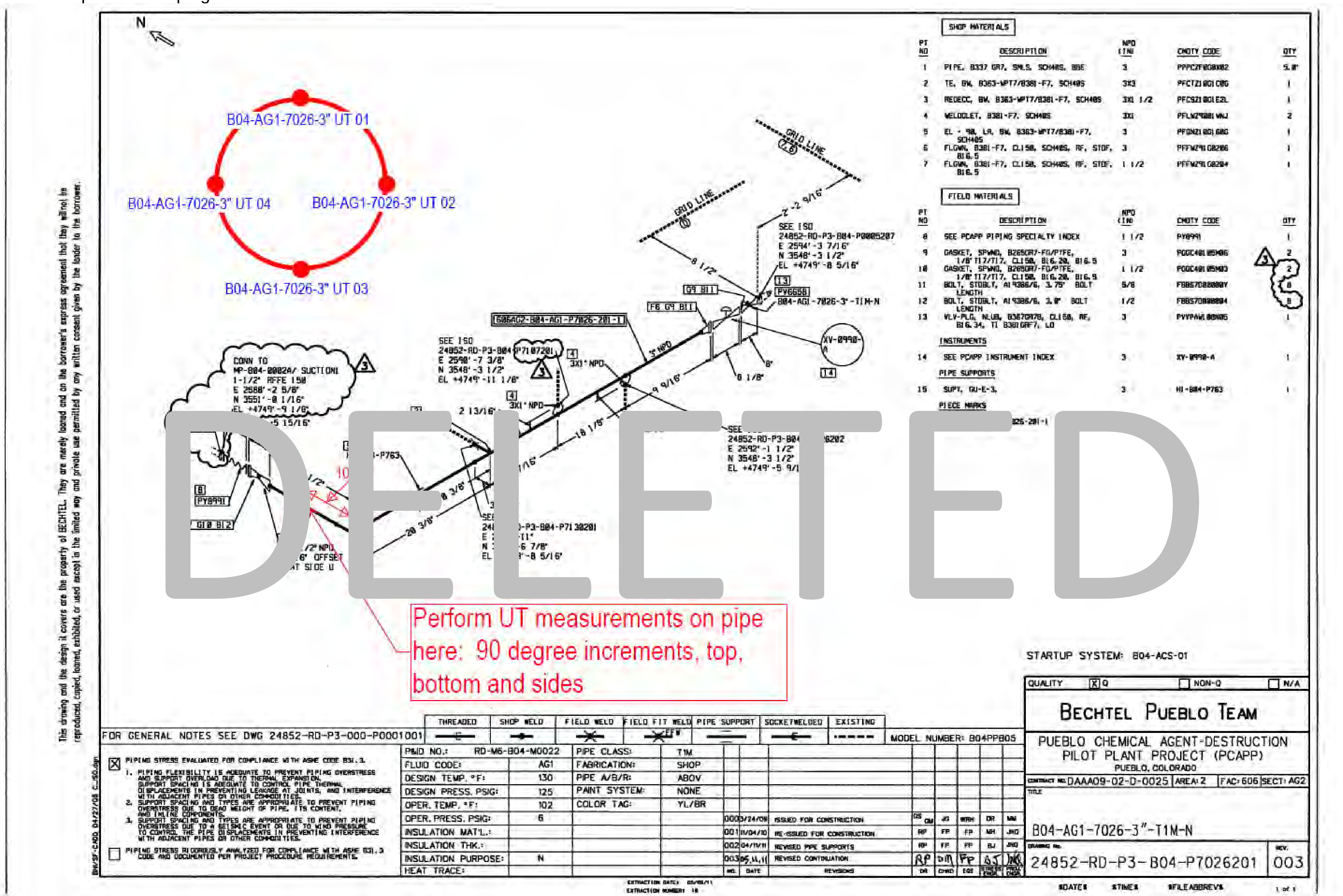
Ultrasonic Monitoring Locations (cont)

B04 Agent Water Separators MV-B04-0001/0002



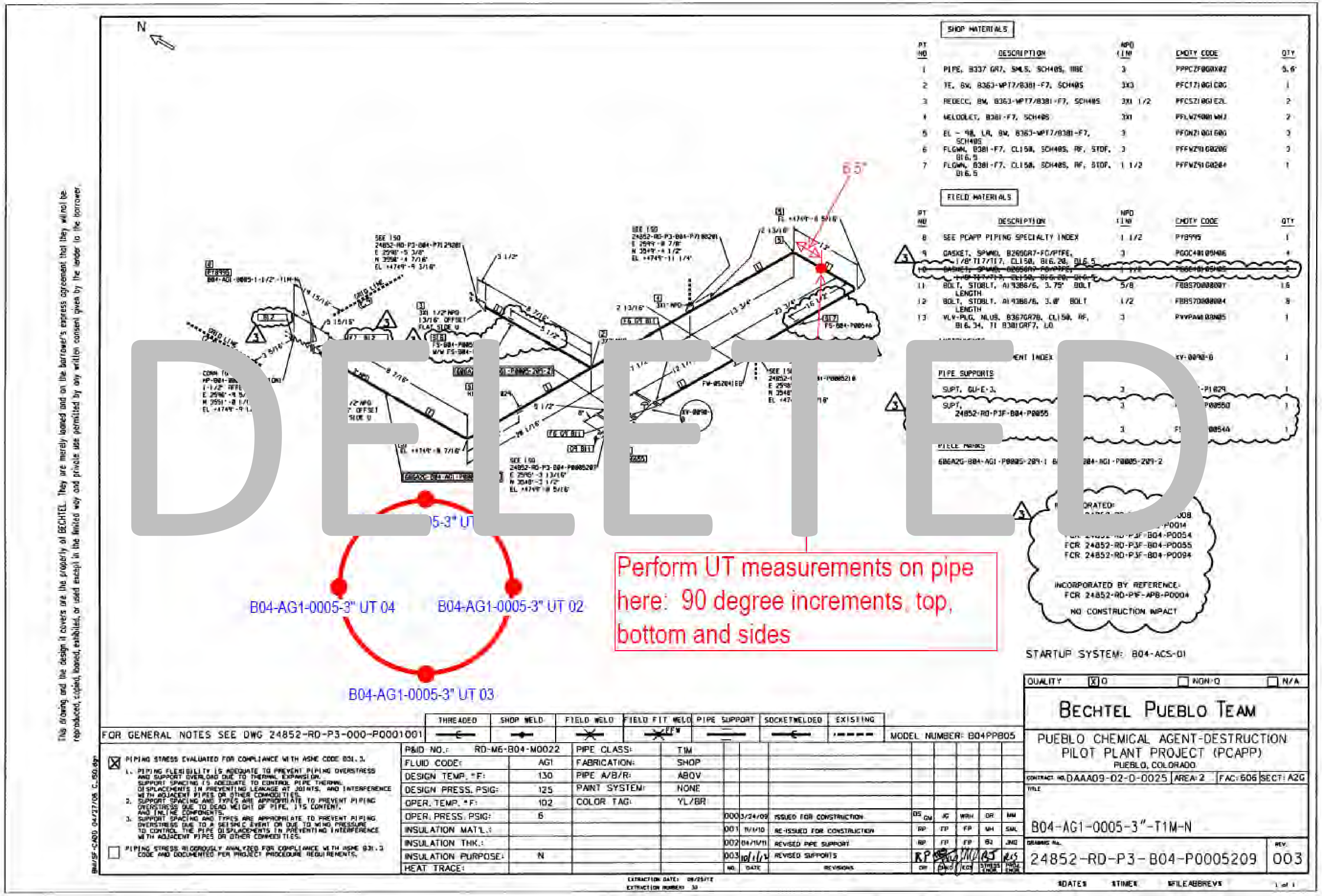
Ultrasonic Monitoring Locations (cont)

B04 Agent Concentrate Pump Suction Piping – B04-AG1-7026-3”



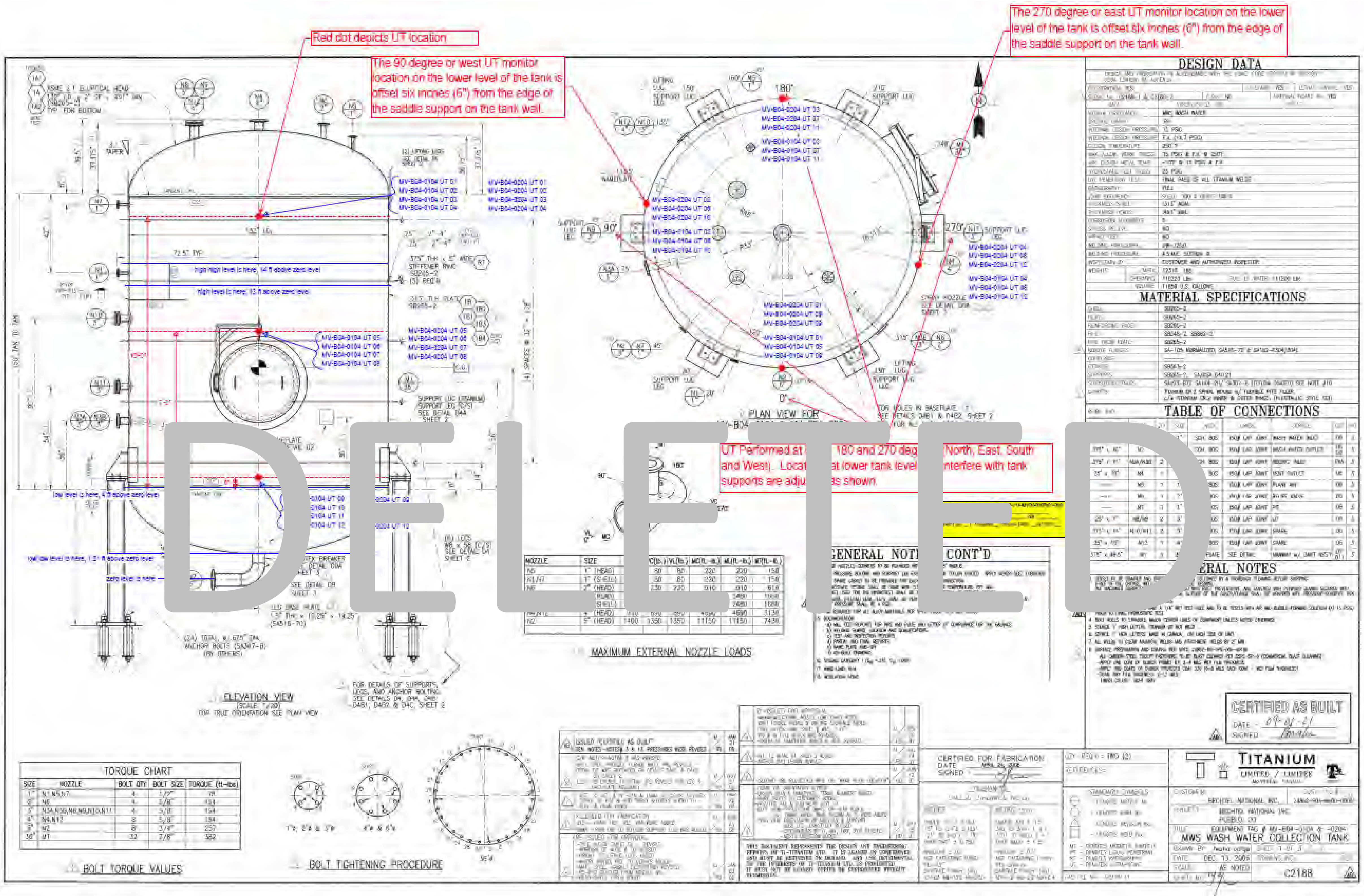
Ultrasonic Monitoring Locations (cont)

B04 Agent Concentrate Pump Suction Piping – B04-AG1-0005-3"

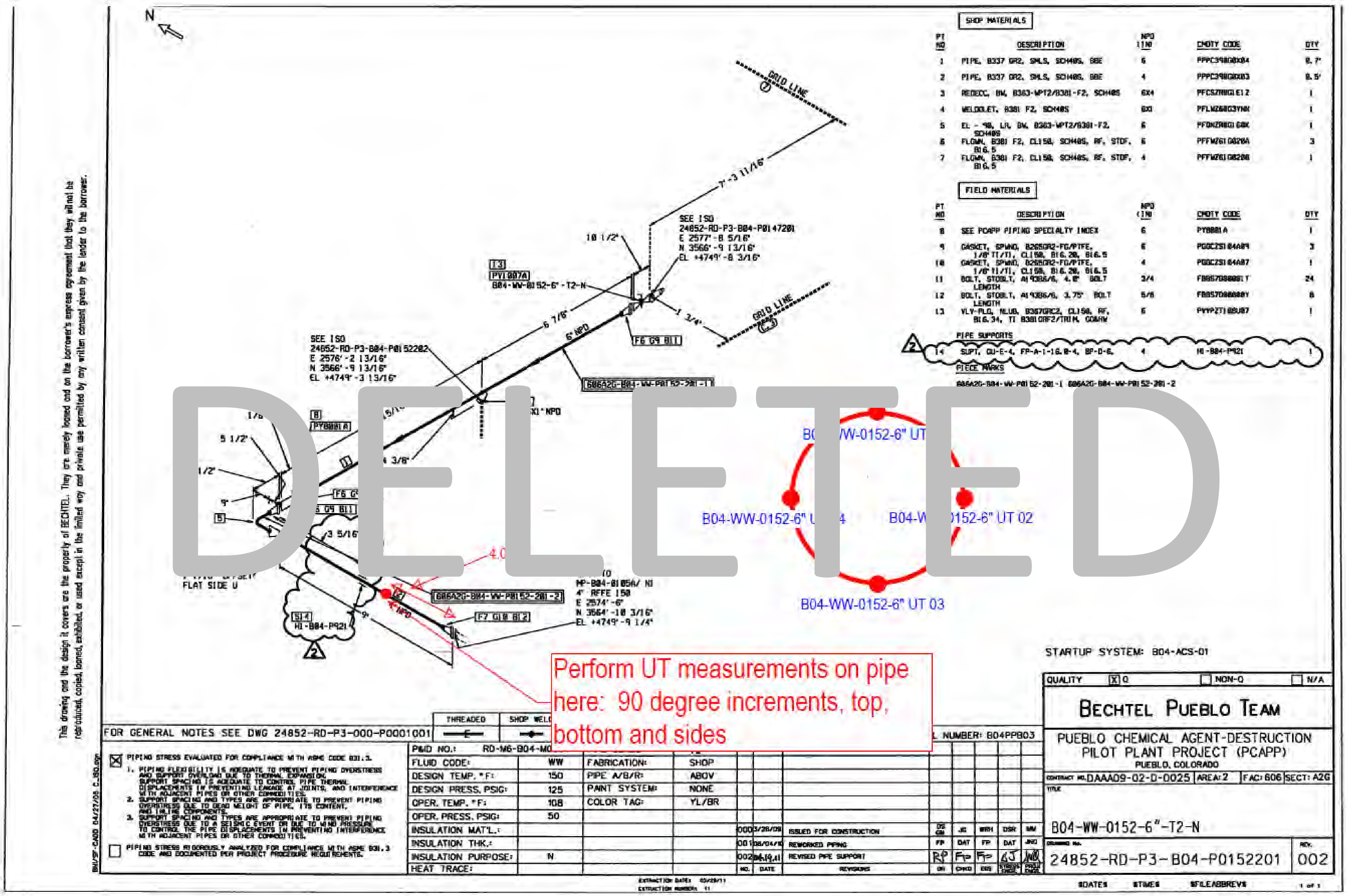


Ultrasonic Monitoring Locations (cont)

B04 Wash Water Collection Tanks MV-B04-0104/0204

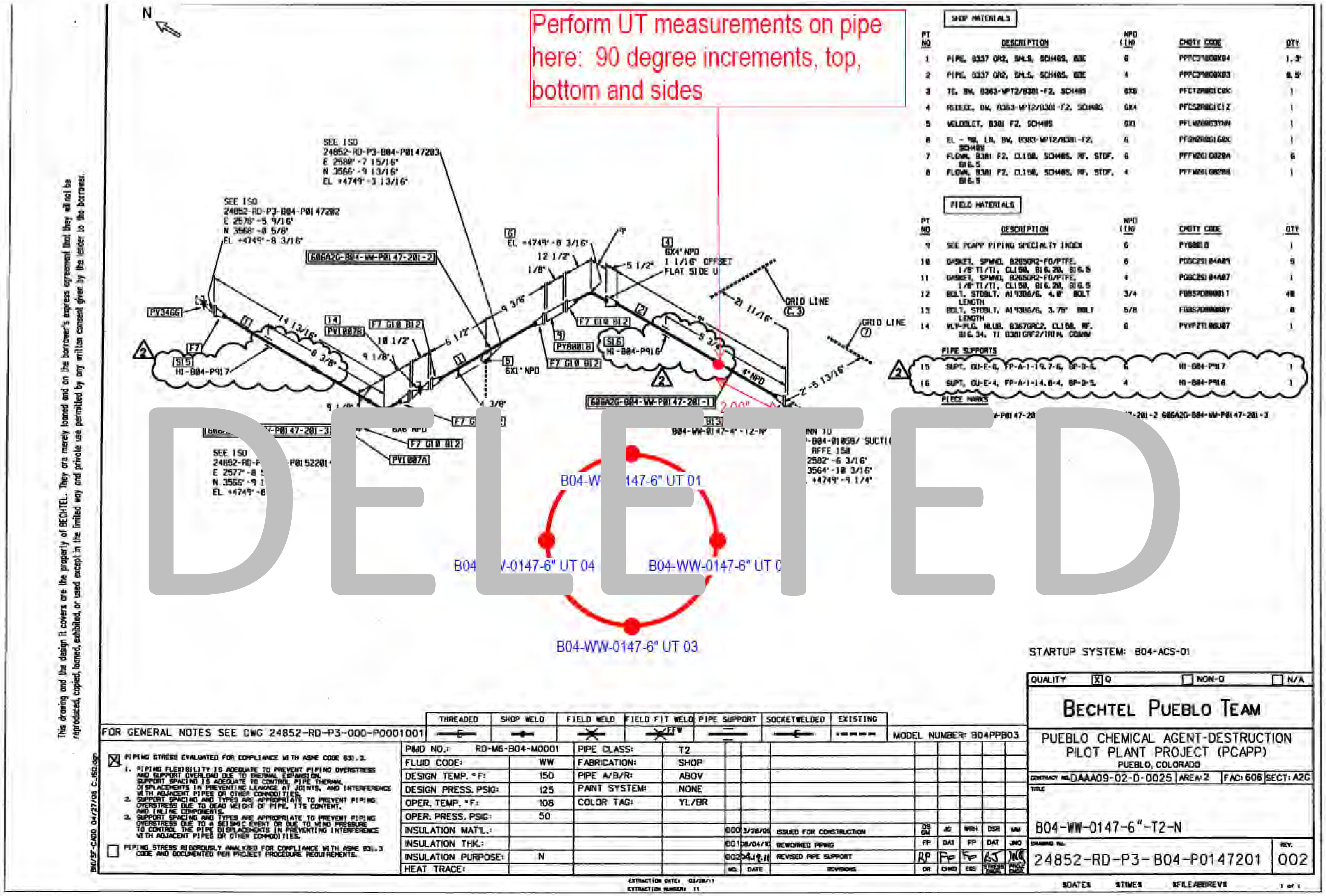


Ultrasonic Monitoring Locations (cont)
B04 Wash Water Pump Suction Piping – B04-WW-0152-6"



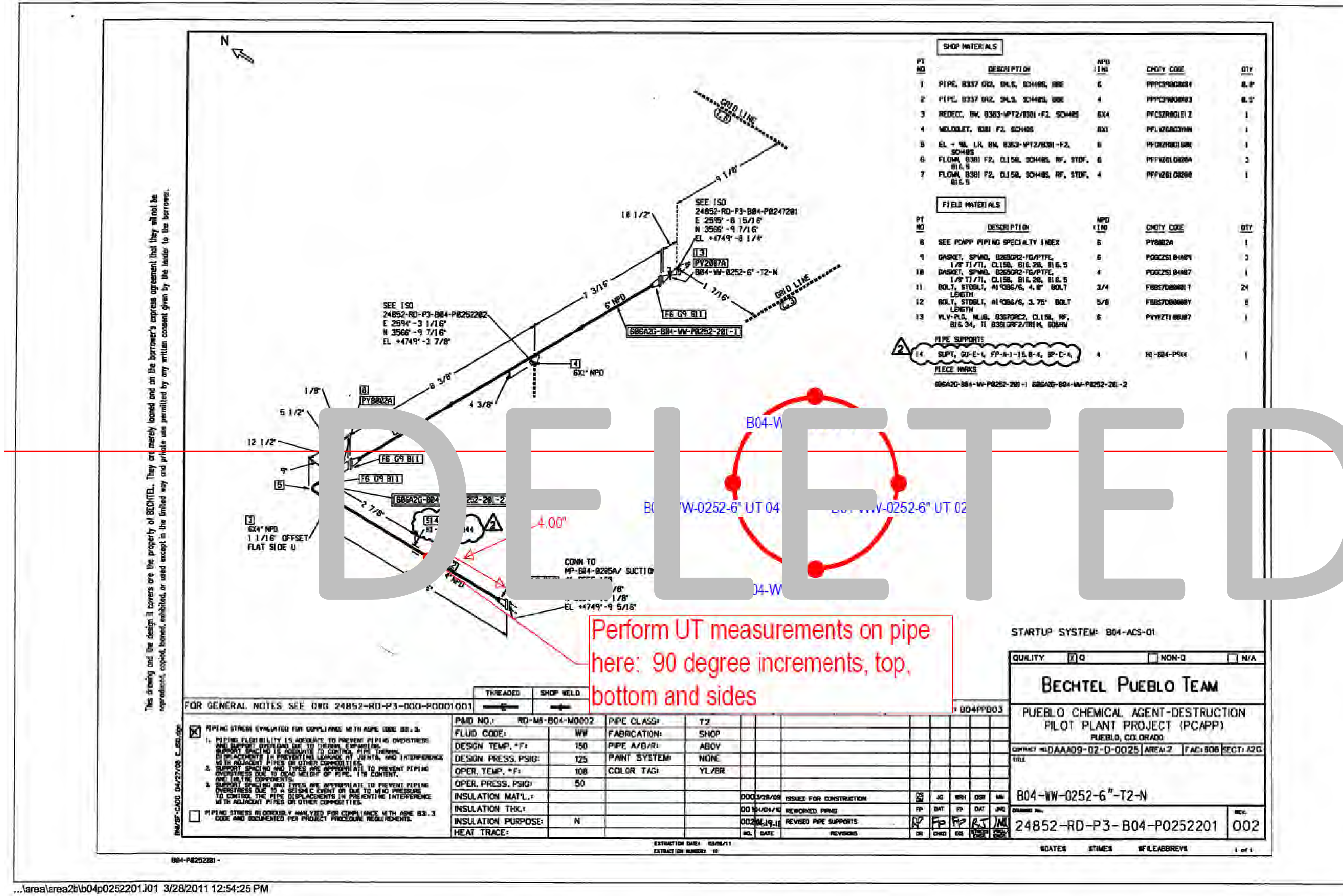
Ultrasonic Monitoring Locations (cont)

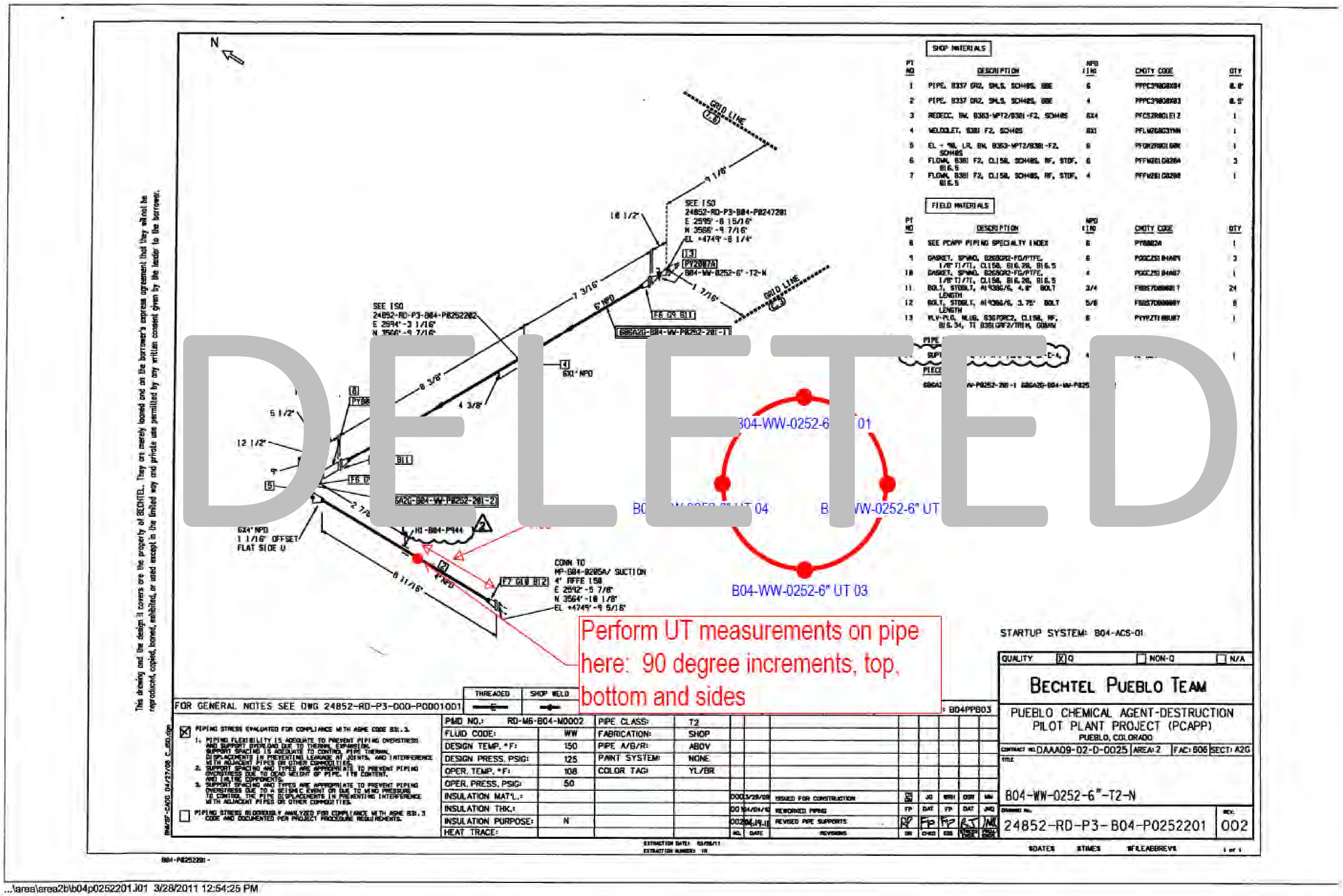
B04 Wash Water Pump Suction Piping – B04-WW-0147-6"



Ultrasonic Monitoring Locations (cont)

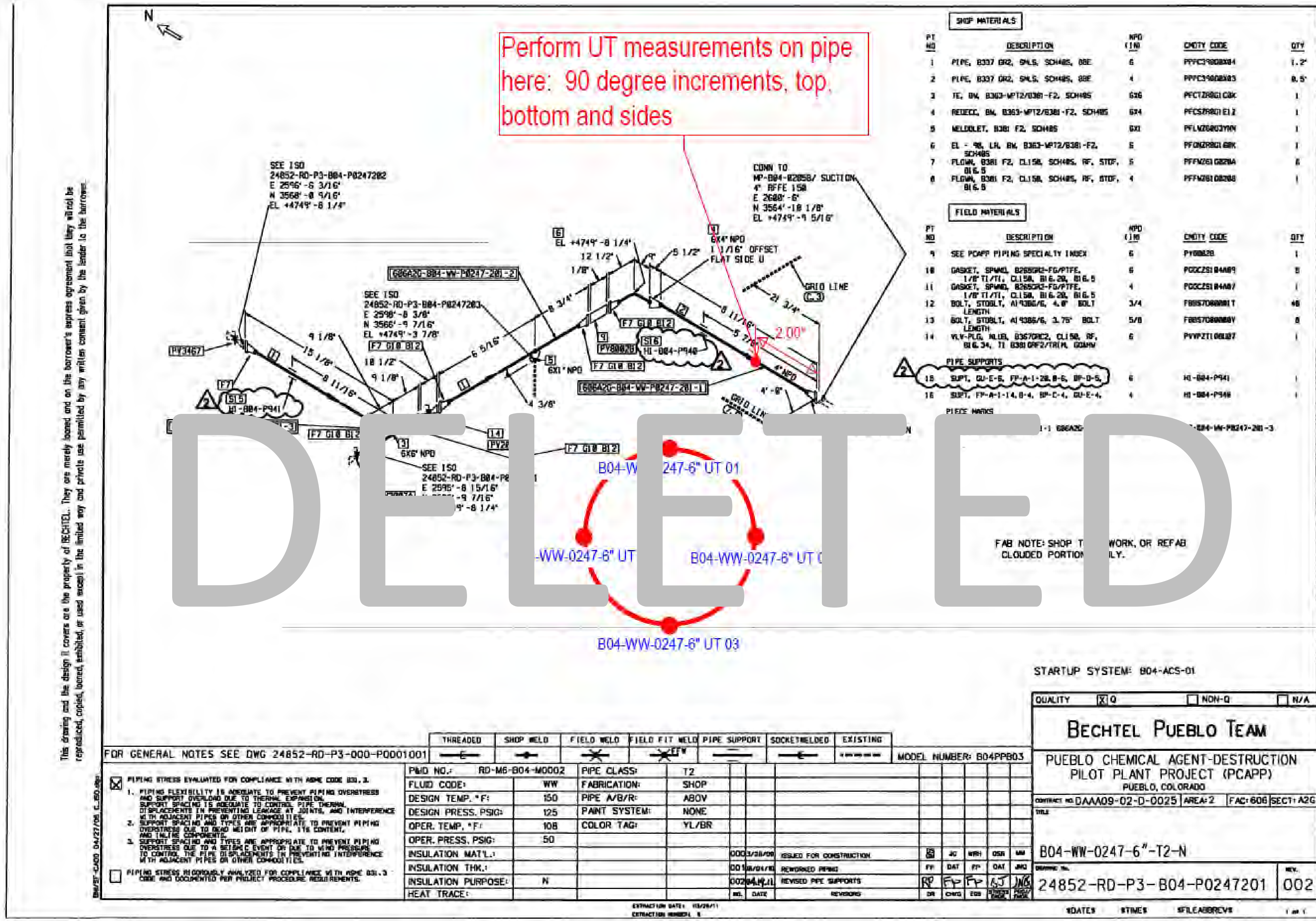
B04 Wash Water Pump Suction Piping – B04-WW-0252-6"




DELETED
B04-WW-0252-6" UT 03
Perform UT measurements on pipe here: 90 degree increments, top, bottom and sides
STARTUP SYSTEM: B04-ACS-01
BECHTEL PUEBLO TEAM
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT PROJECT (PCAPP)
PUEBLO, COLORADO
B04-WW-0252-6"-T2-N
24852-RD-P3-B04-P0252201
002
FOR GENERAL NOTES SEE DWG 24852-RD-P3-000-P0001001
...\area\area2b\b04p0252201.i01 3/28/2011 12:54:25 PM

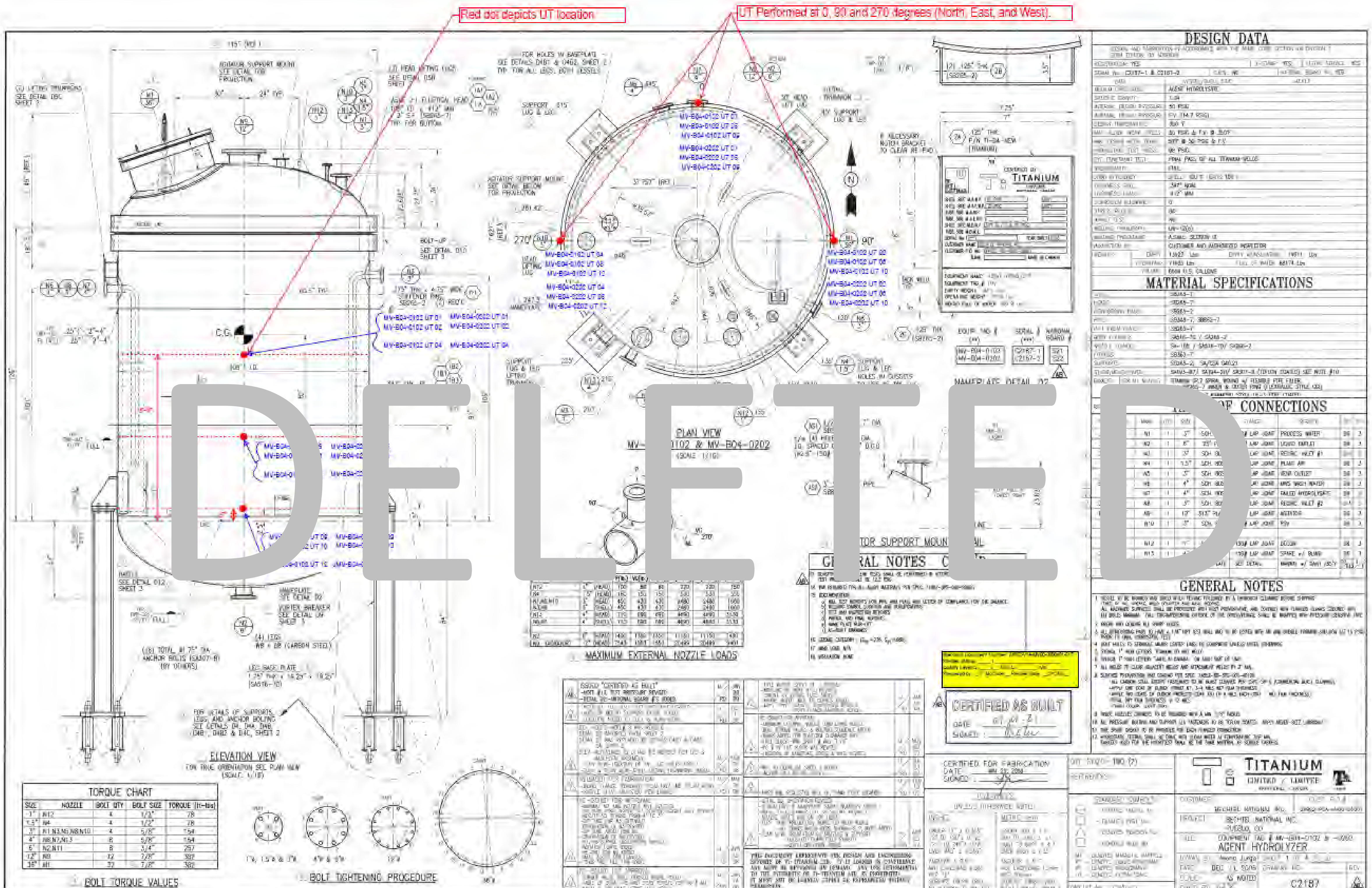
Ultrasonic Monitoring Locations (cont)

B04 Wash Water Pump Suction Piping – B04-WW-0247-6"



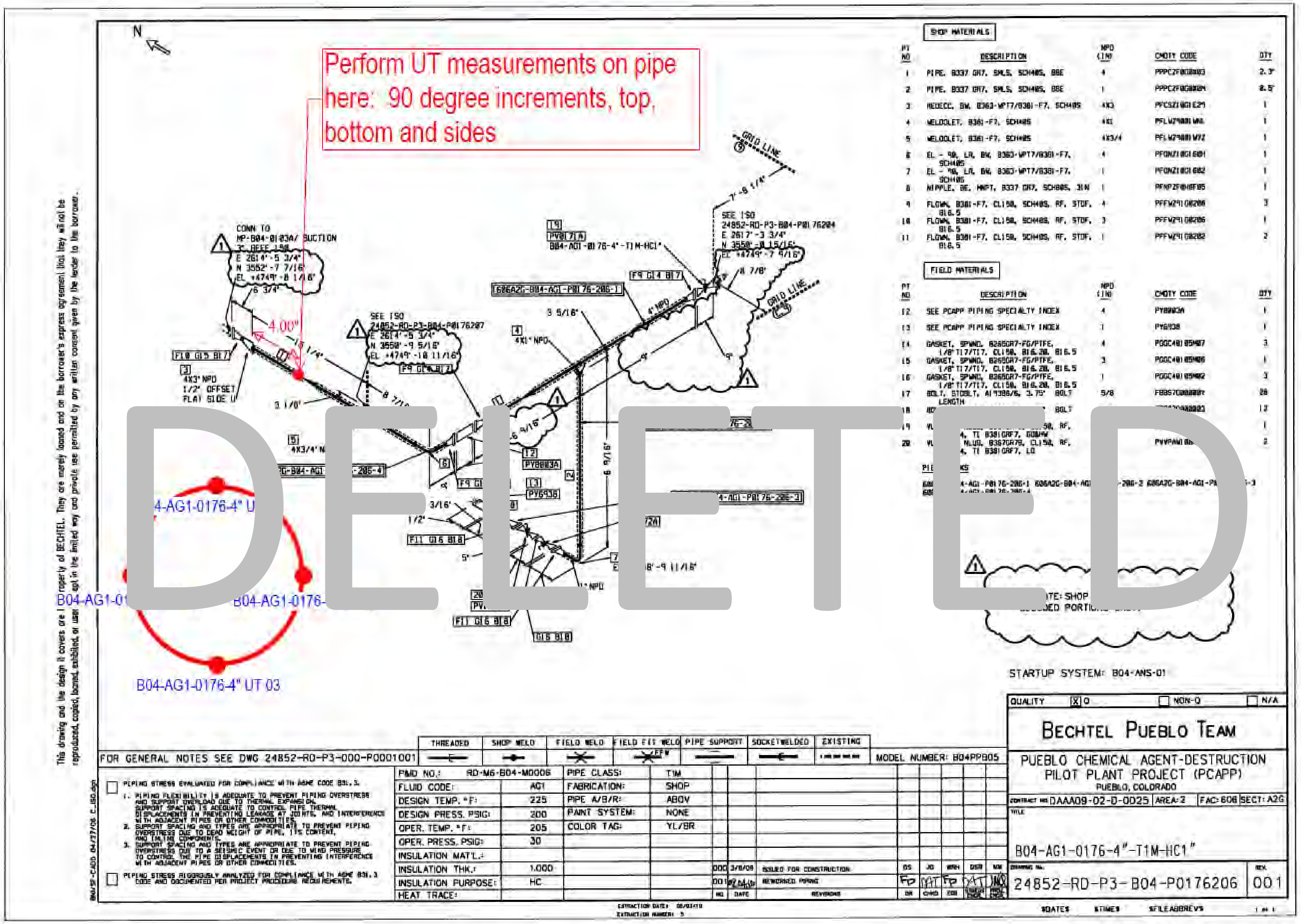
Ultrasonic Monitoring Locations (cont)

B04 Wash Water Collection Tanks MV-B04-0102/0202



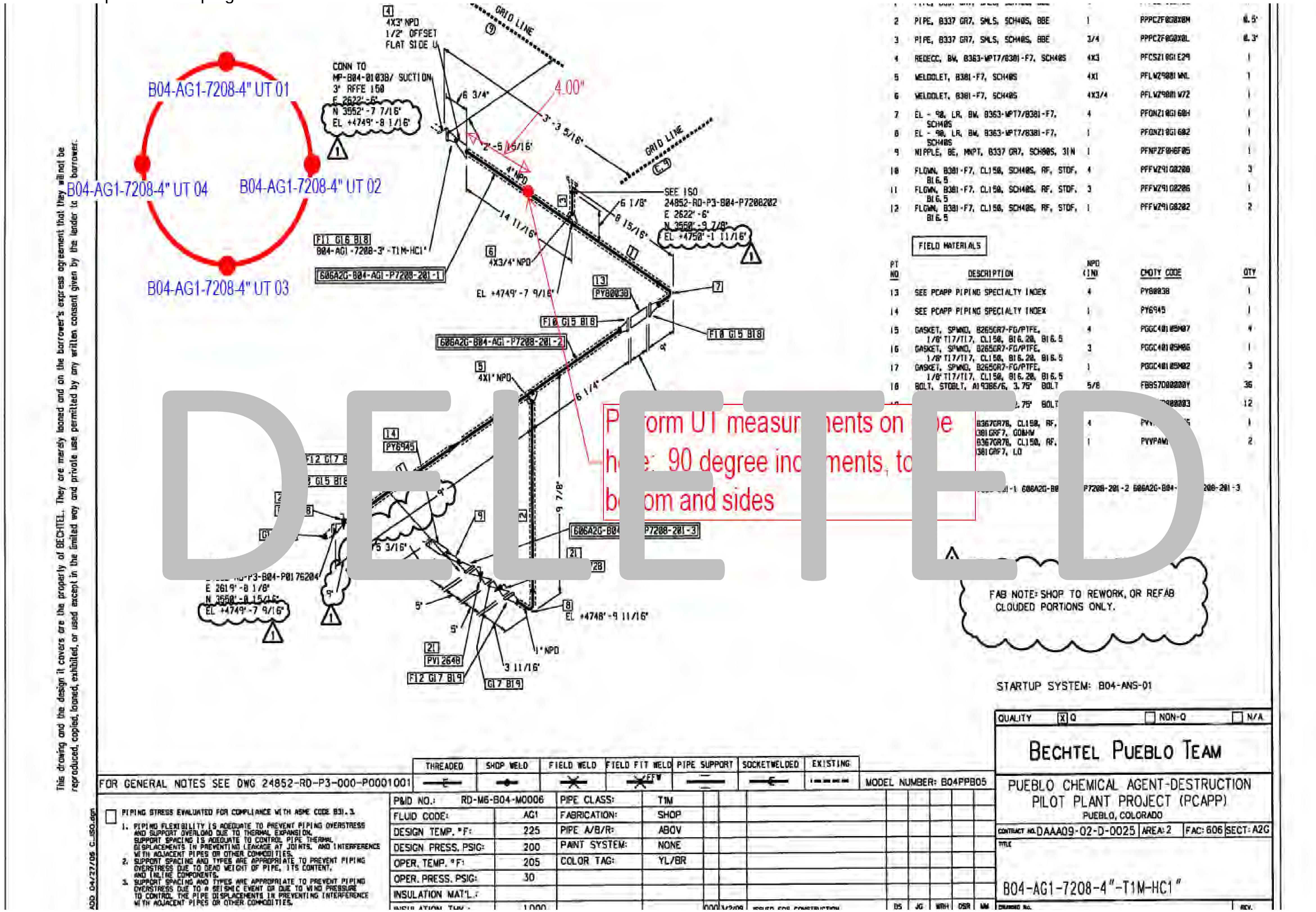
Ultrasonic Monitoring Locations (cont)

B04 Hydrolyzer Recirculation Pump Suction Piping – B04-AG1-0176-4”



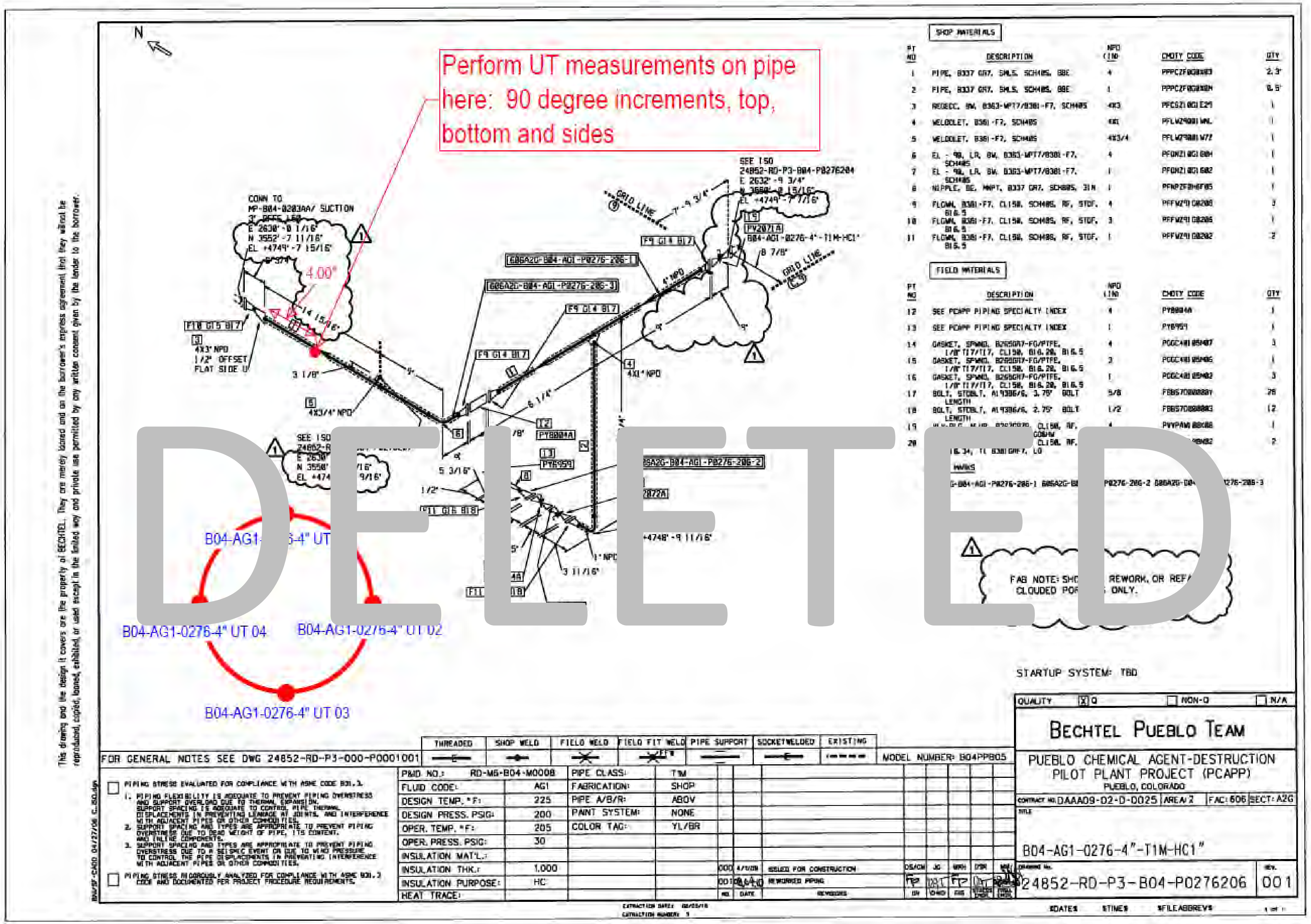
Ultrasonic Monitoring Locations (cont)

B04 Hydrolyzer Recirculation Pump Suction Piping – B04-AG1-7208-4"



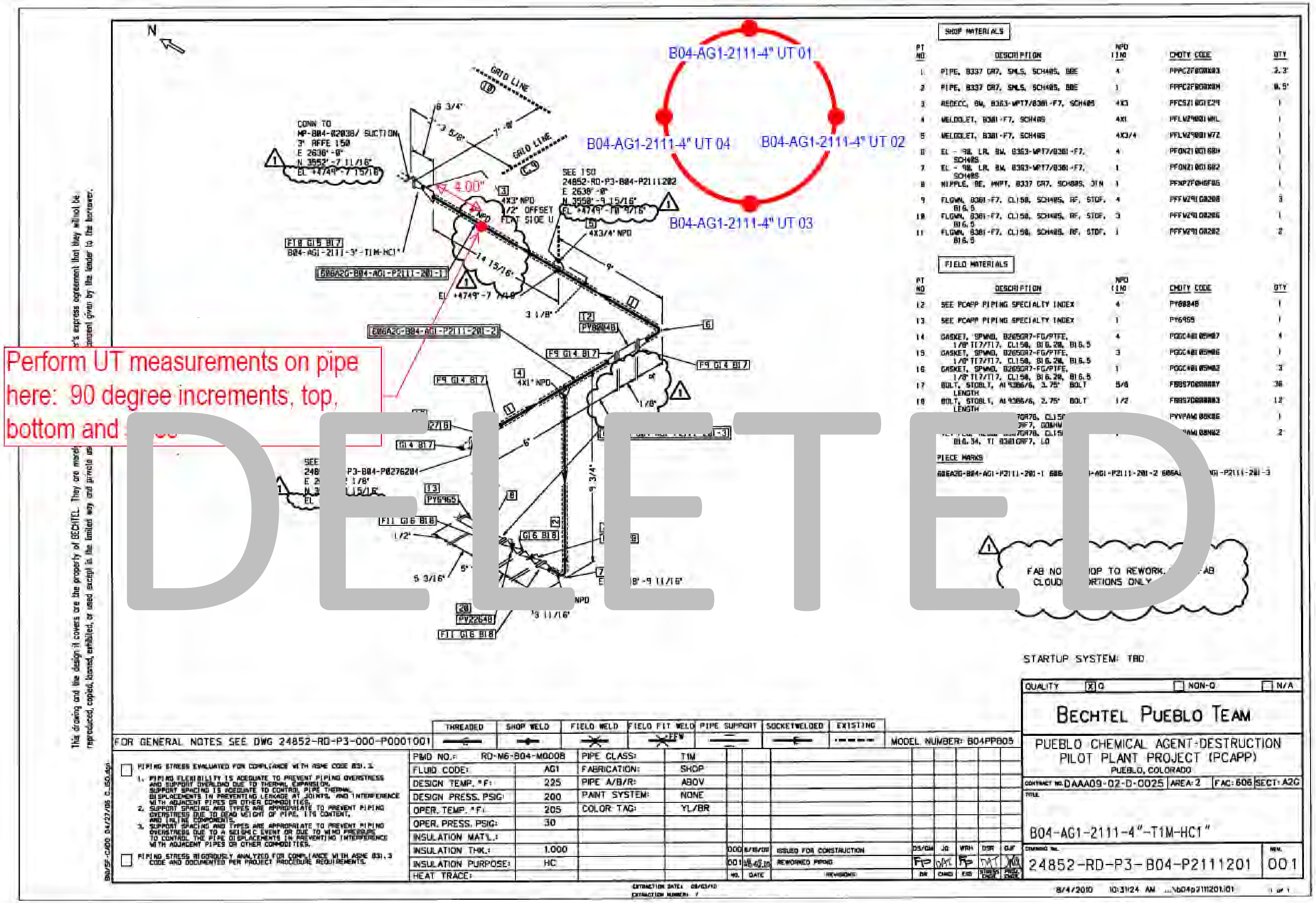
Ultrasonic Monitoring Locations (cont)

B04 Hydrolyzer Recirculation Pump Suction Piping – B04-AG1-0276-4"



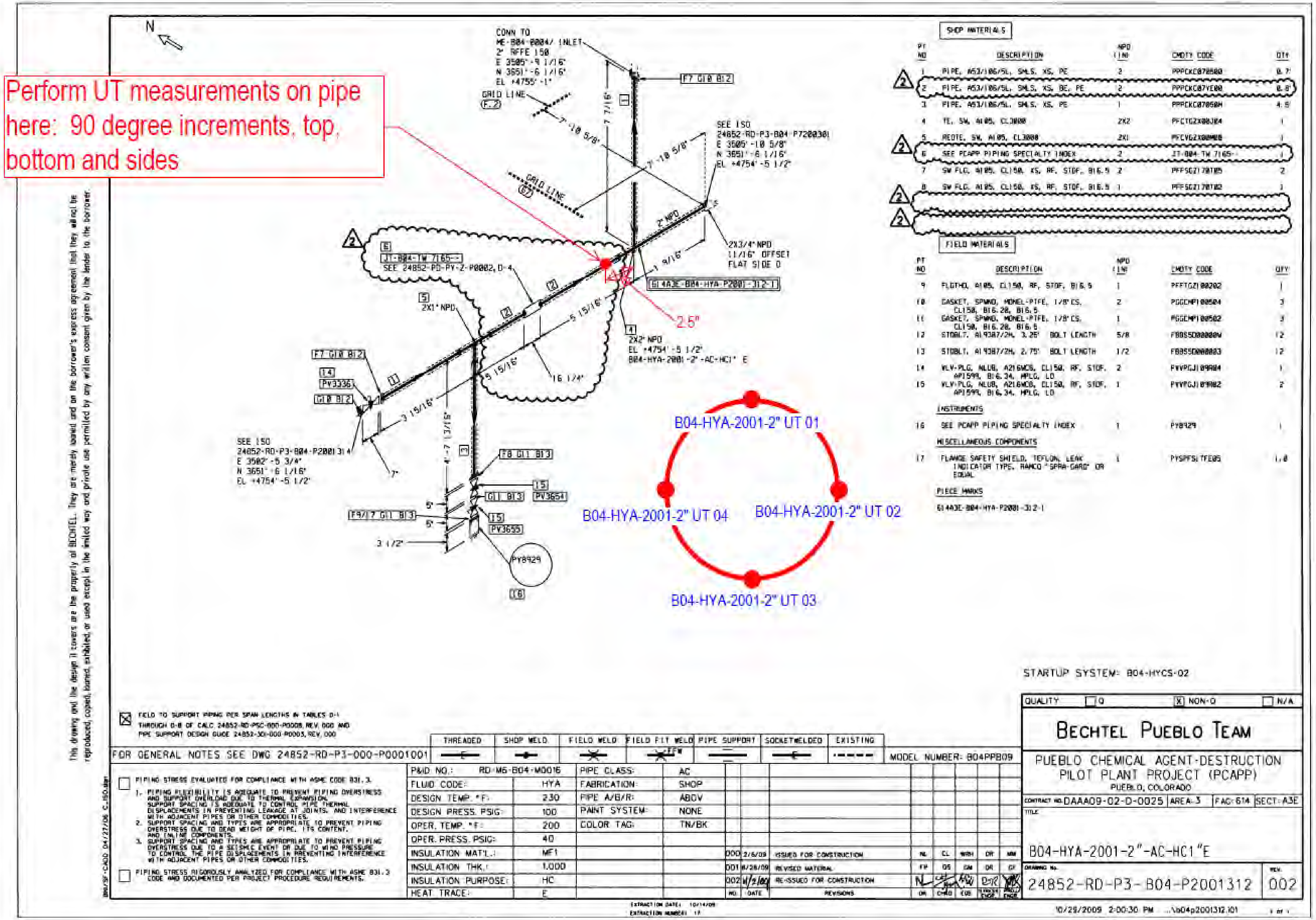
Ultrasonic Monitoring Locations (cont)

B04 Hydrolyzer Recirculation Pump Suction Piping – B04-AG1-2111-4”



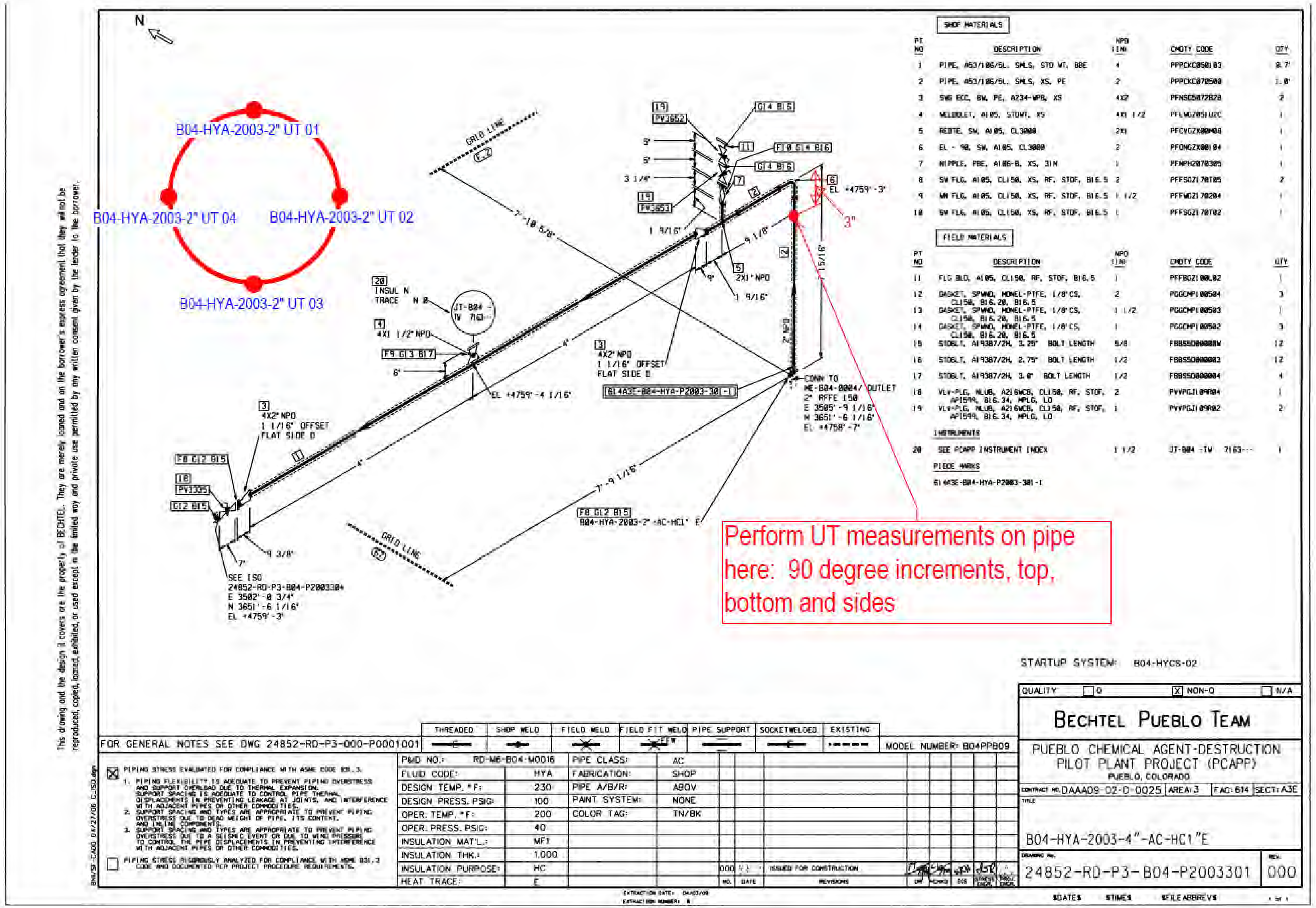
Ultrasonic Monitoring Locations (cont)

B04 30 Day Tank Air Cooler Inlet Piping – B04-HYA-2001-2"



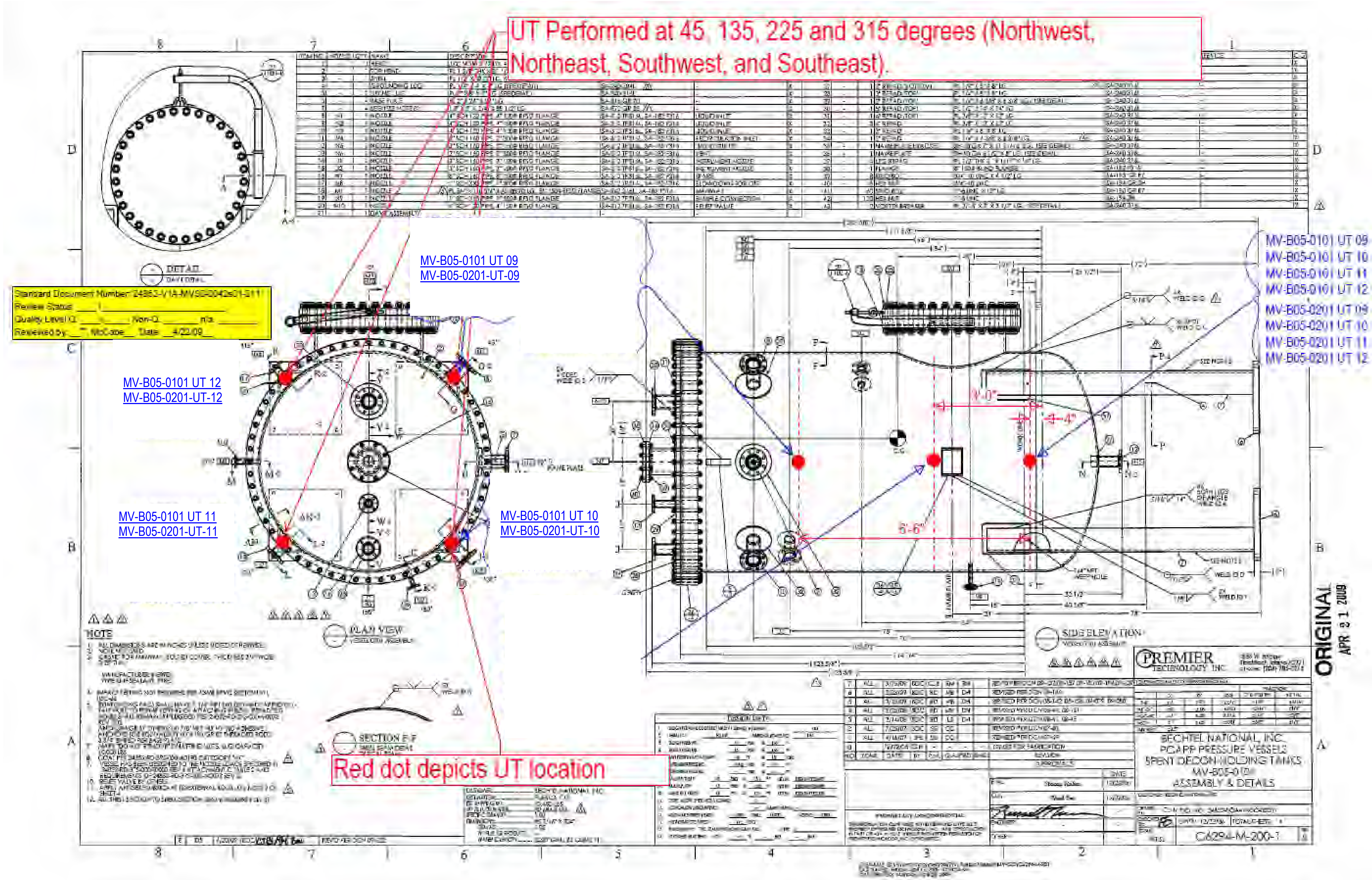
Ultrasonic Monitoring Locations (cont)

B04 30 Day Tank Air Cooler Outlet Piping – B04-HYA-2003-2"



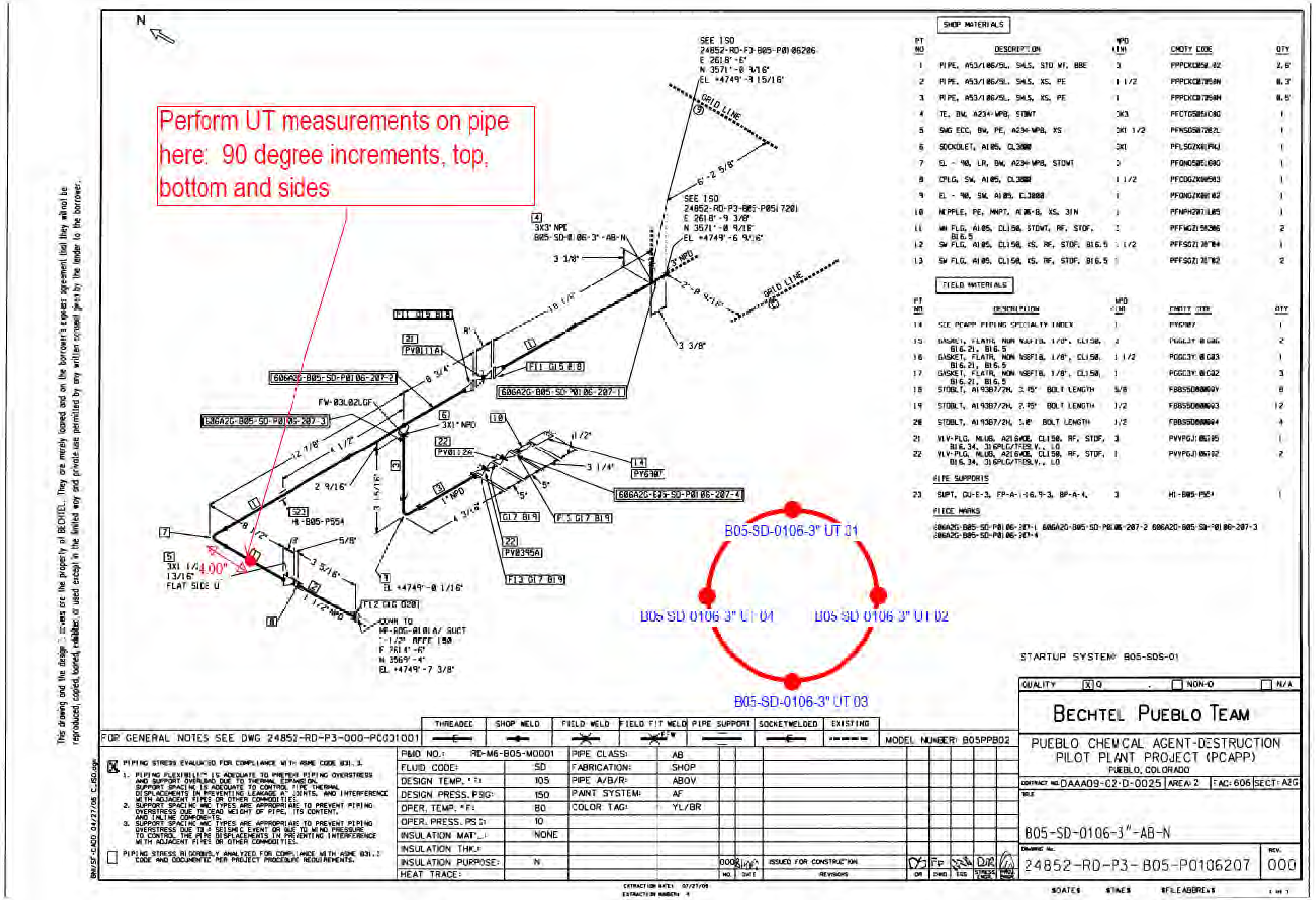
Ultrasonic Monitoring Locations (cont)
B05 Spent Decon

Ultrasonic Monitoring Locations (cont)
B05 Spent Decon Tanks MV-B05-0101/0201



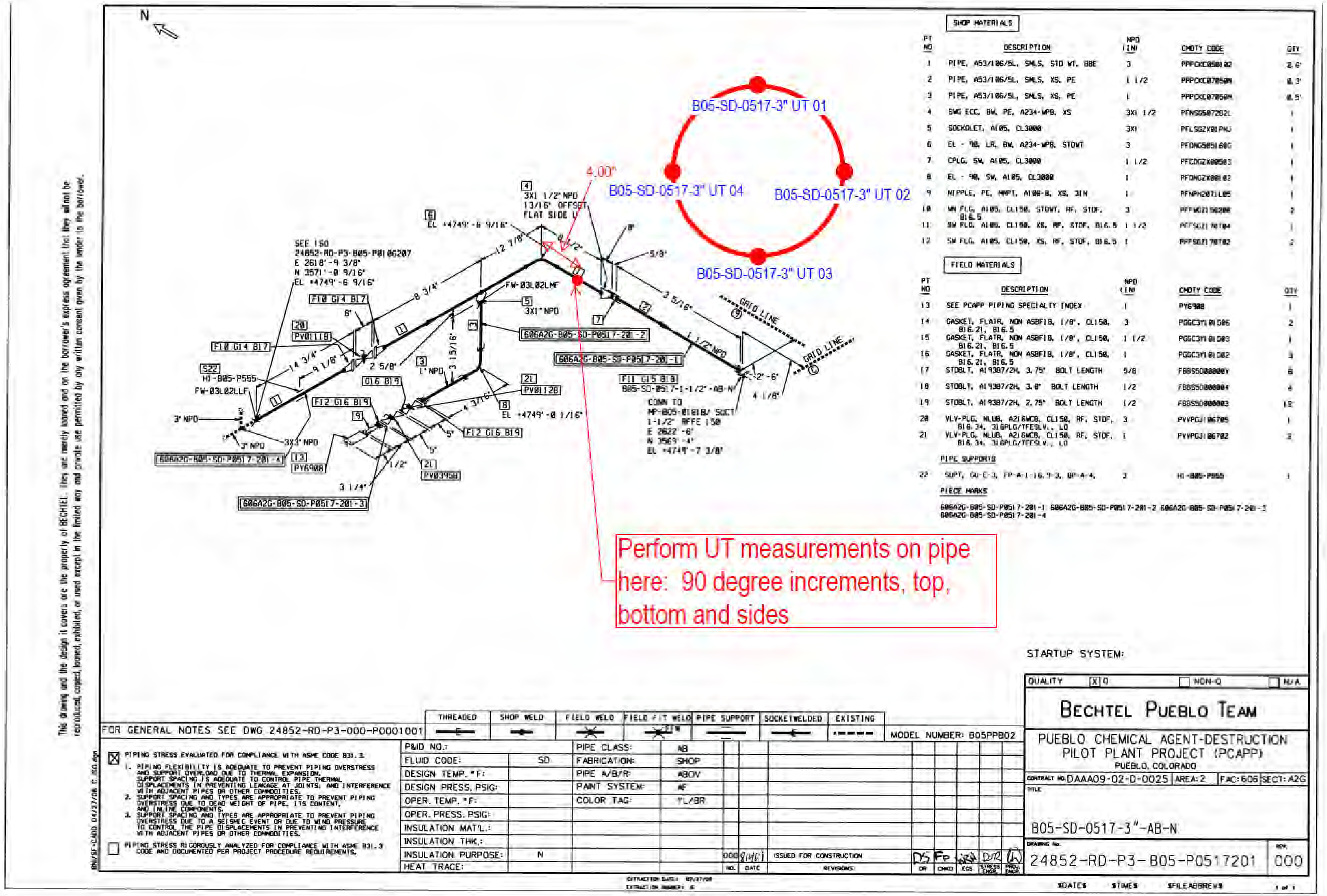
Ultrasonic Monitoring Locations (cont)

B05 Spent Decon Pump Suction Piping – B05-SD-0106-3"



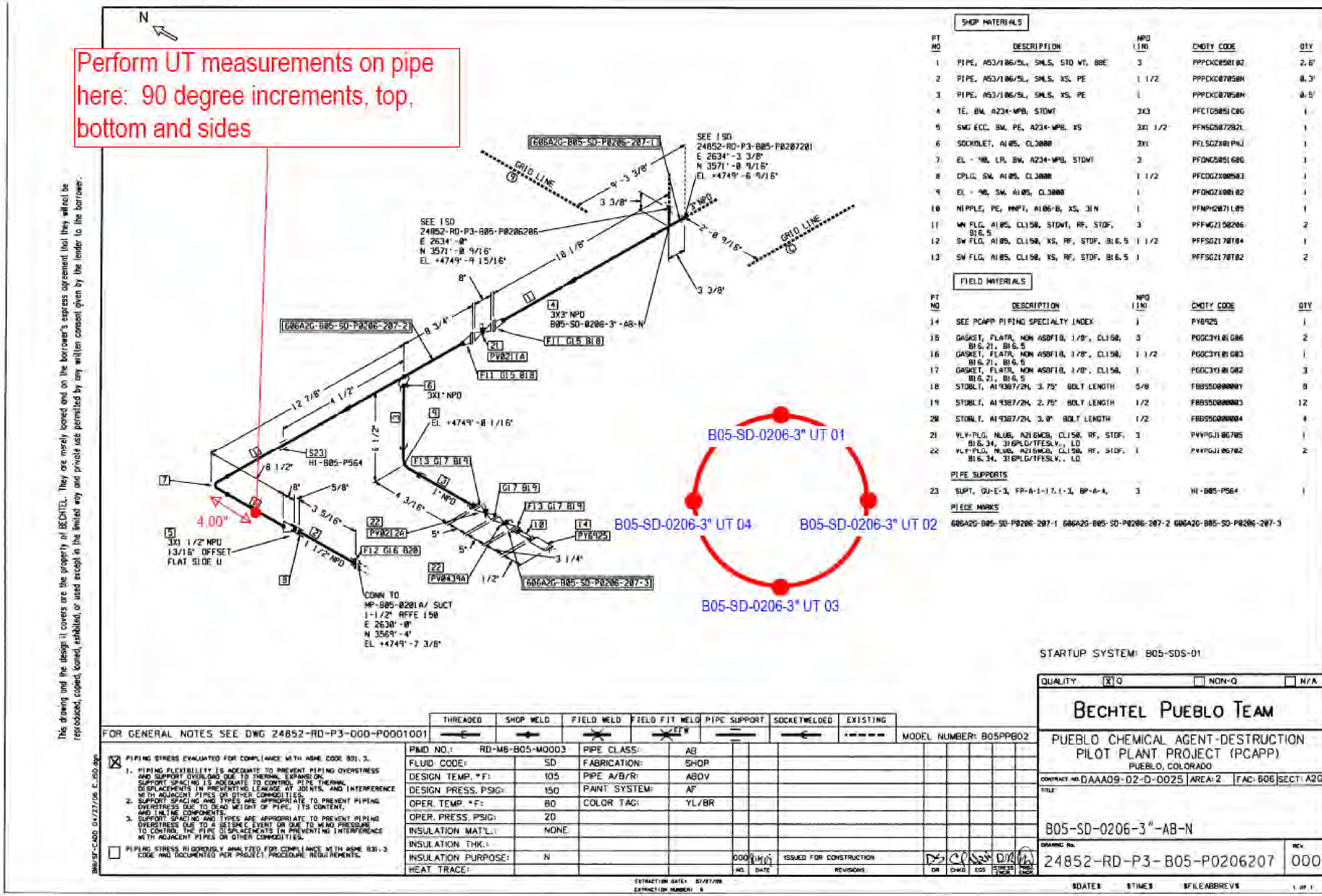
Ultrasonic Monitoring Locations (cont)

B05 Spent Decon Pump Suction Piping – B05-SD-0517-3"

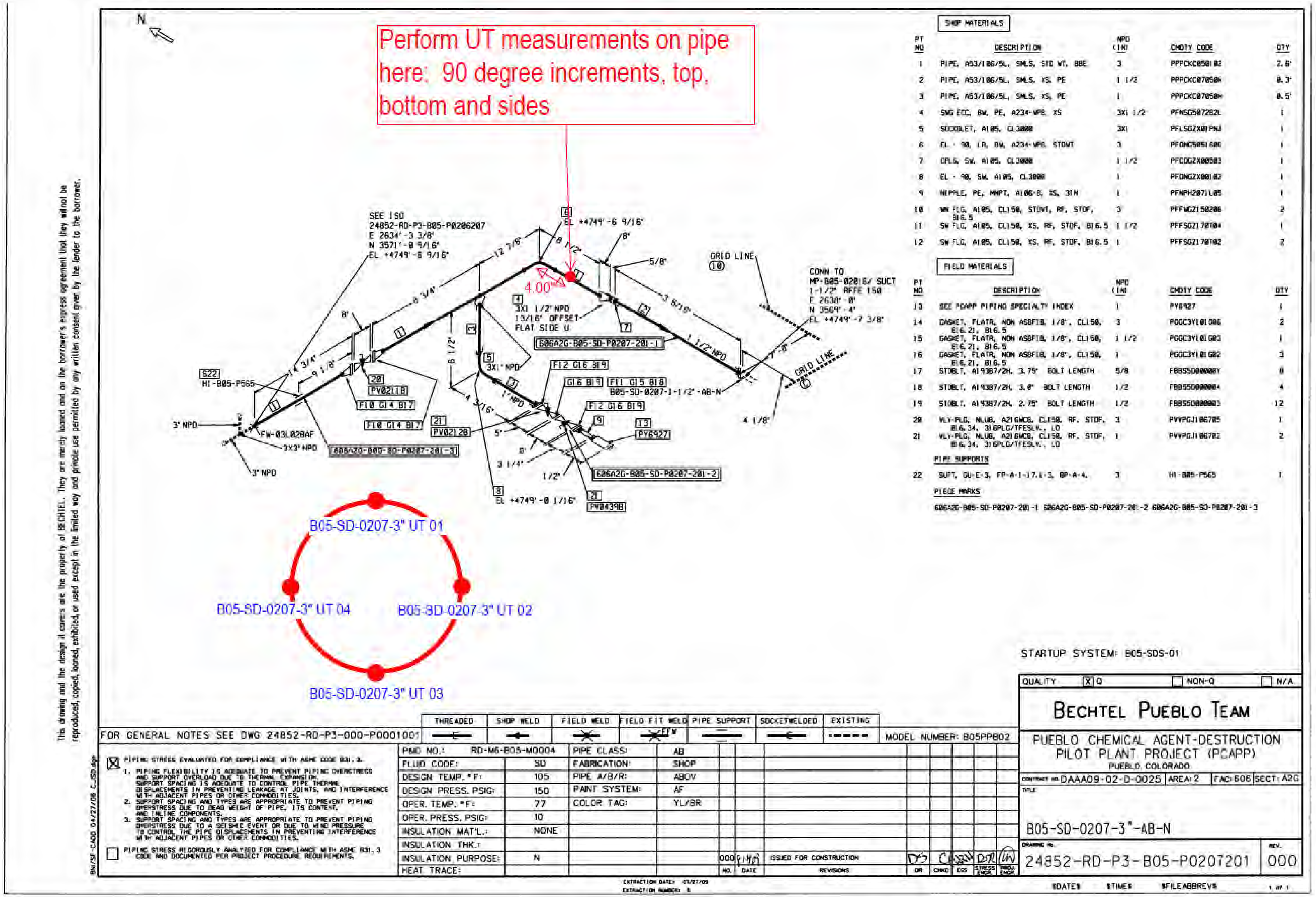


Ultrasonic Monitoring Locations (cont)

B05 Spent Decon Pump Suction Piping – B05-SD-0206-3"

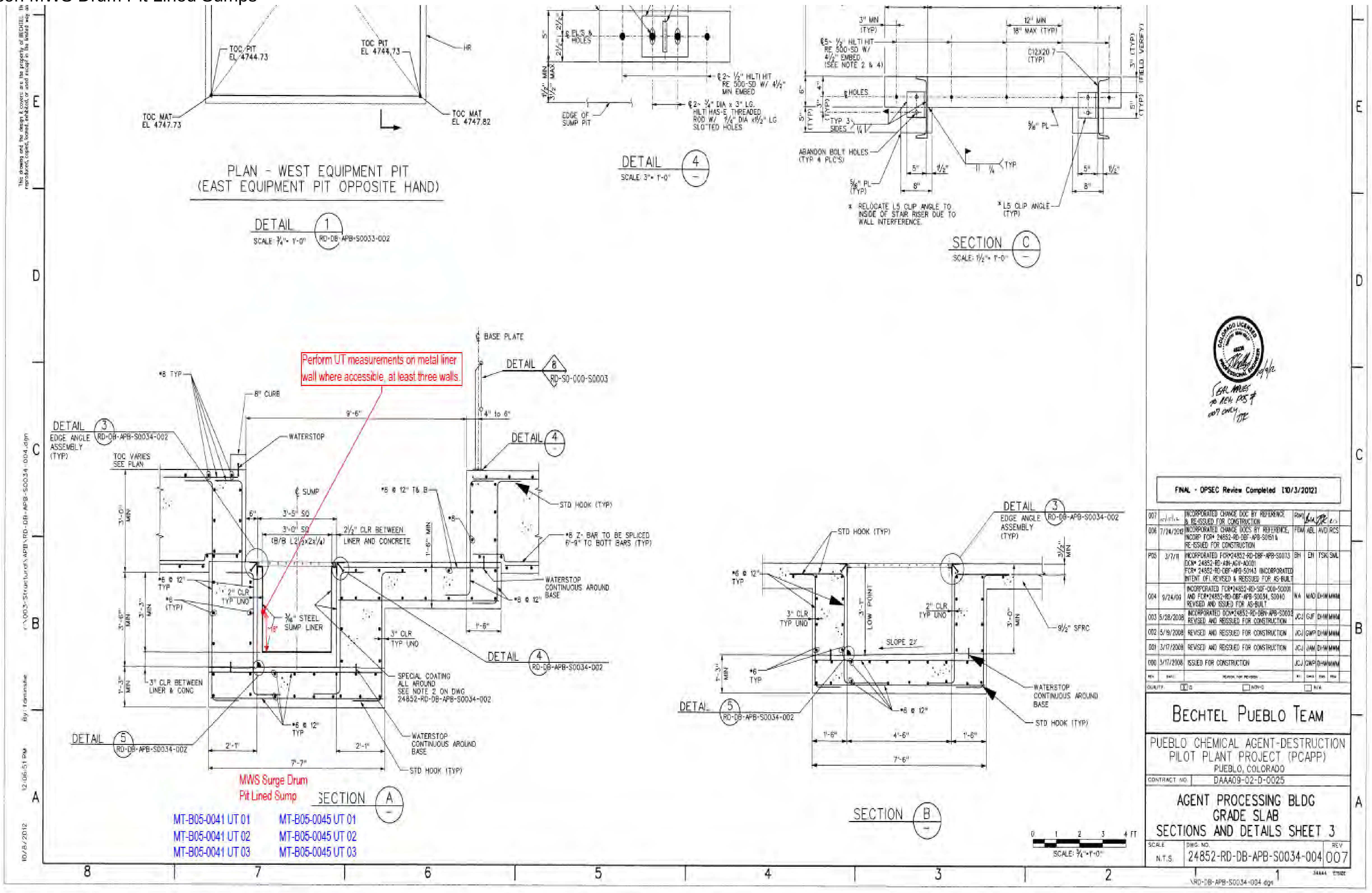


Ultrasonic Monitoring Locations (cont)
B05 Spent Decon Pump Suction Piping – B05-SD-0207-3"



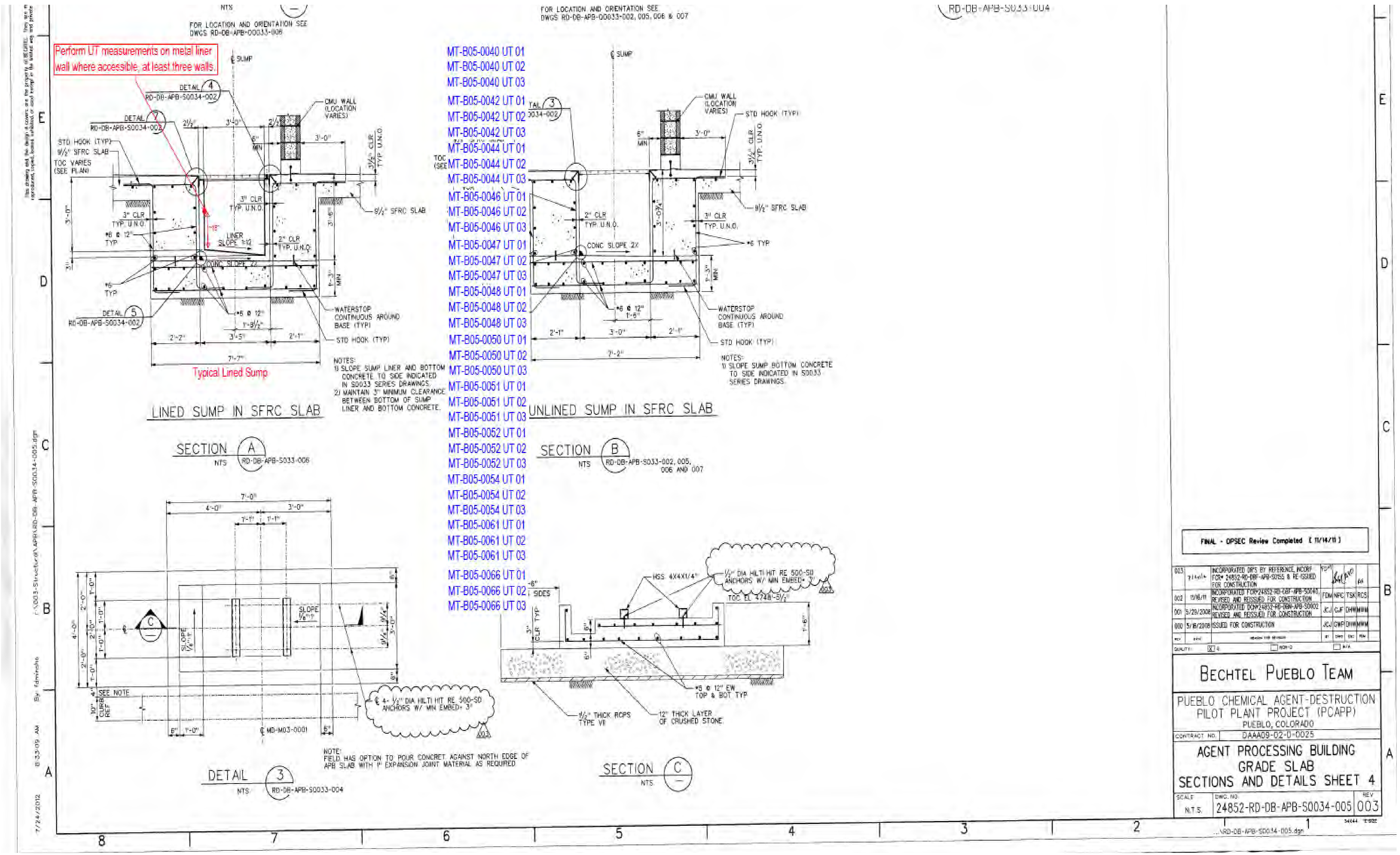
Ultrasonic Monitoring Locations (cont)

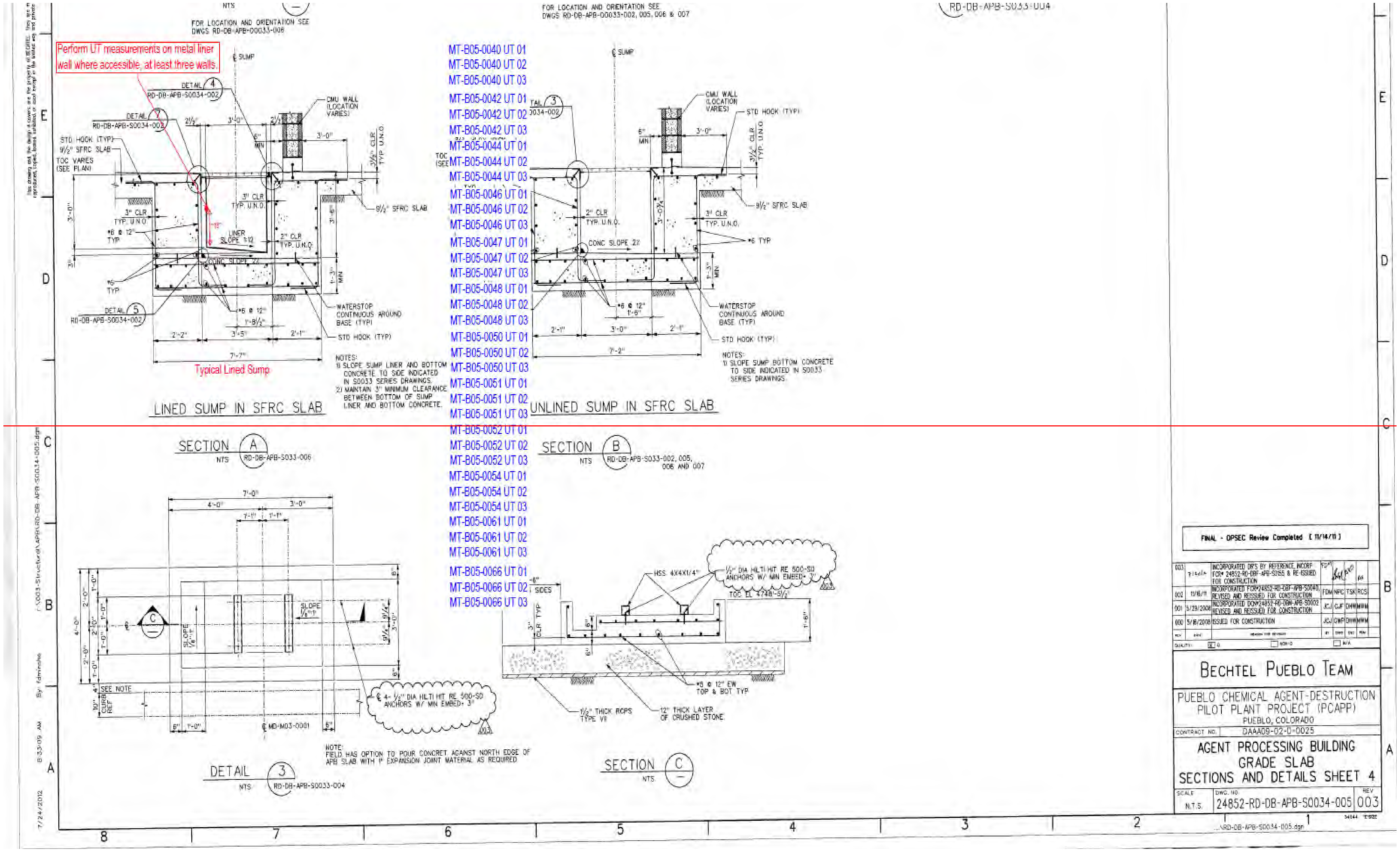
B05 Spent Decon MWS Drum Pit Lined Sumps



Ultrasonic Monitoring Locations (cont)

B05 Spent Decon Lined Sumps

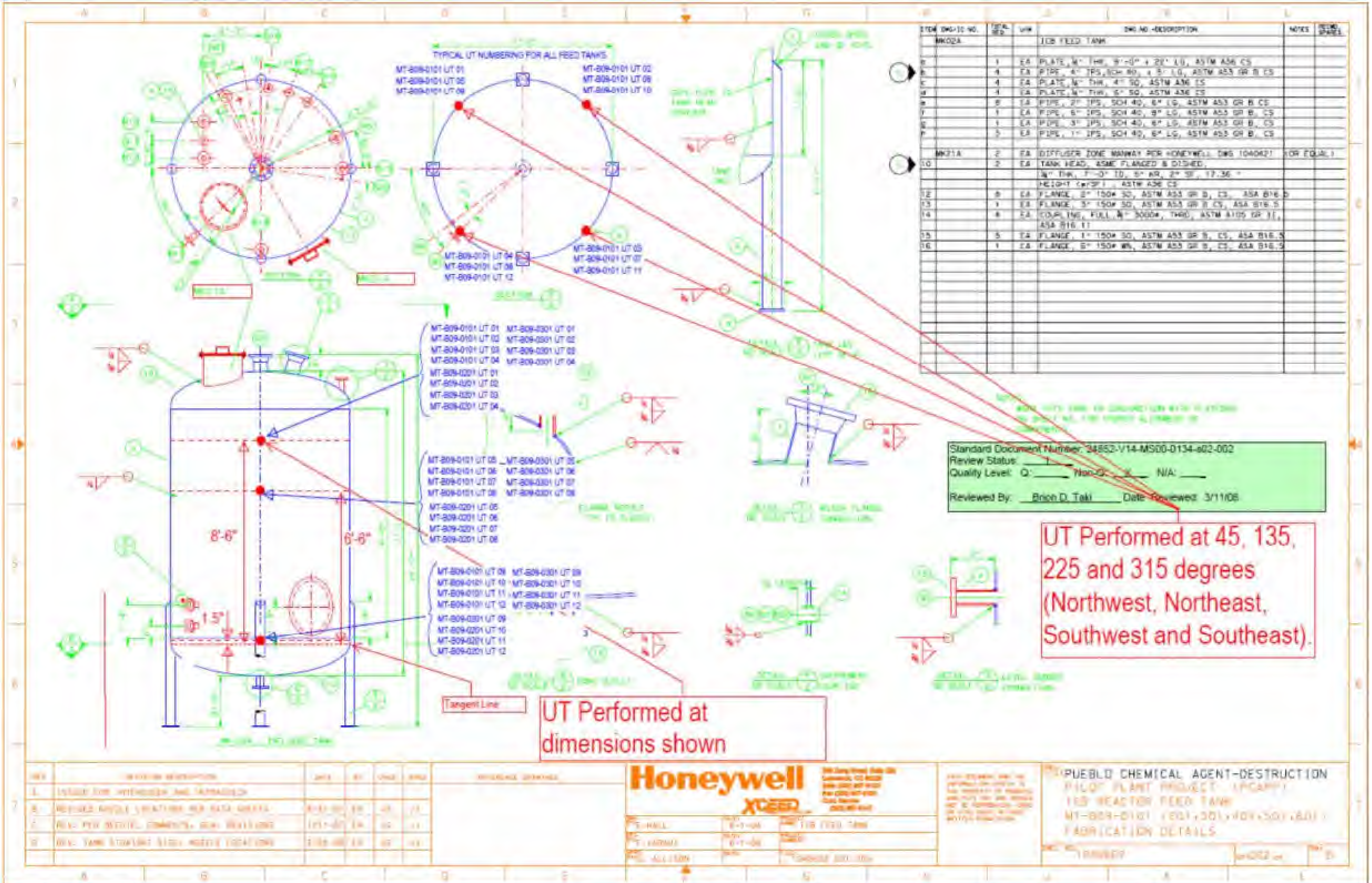



Perform UT measurements on metal liner wall where accessible, at least three walls.
Typical Lined Sump
LINED SUMP IN SFRC SLAB
SECTION A
UNLINED SUMP IN SFRC SLAB
SECTION B
DETAIL 3
SECTION C
MT-B05-0040 UT 01
MT-B05-0040 UT 02
MT-B05-0040 UT 03
MT-B05-0042 UT 01
MT-B05-0042 UT 02
MT-B05-0042 UT 03
MT-B05-0044 UT 01
MT-B05-0044 UT 02
MT-B05-0044 UT 03
MT-B05-0046 UT 01
MT-B05-0046 UT 02
MT-B05-0046 UT 03
MT-B05-0047 UT 01
MT-B05-0047 UT 02
MT-B05-0047 UT 03
MT-B05-0048 UT 01
MT-B05-0048 UT 02
MT-B05-0048 UT 03
MT-B05-0050 UT 01
MT-B05-0050 UT 02
MT-B05-0050 UT 03
MT-B05-0051 UT 01
MT-B05-0051 UT 02
MT-B05-0051 UT 03
MT-B05-0052 UT 01
MT-B05-0052 UT 02
MT-B05-0052 UT 03
MT-B05-0054 UT 01
MT-B05-0054 UT 02
MT-B05-0054 UT 03
MT-B05-0061 UT 01
MT-B05-0061 UT 02
MT-B05-0061 UT 03
MT-B05-0066 UT 01
MT-B05-0066 UT 02
MT-B05-0066 UT 03
FINAL - OPSEC Review Completed
BECHTEL PUEBLO TEAM
PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT PROJECT (PCAPP)
PUEBLO, COLORADO
DAAA09-02-D-0025
AGENT PROCESSING BUILDING GRADE SLAB SECTIONS AND DETAILS SHEET 4
24852-RD-DB-APB-S0034-005
003

Ultrasonic Monitoring Locations (cont)
B09 Biotreatment

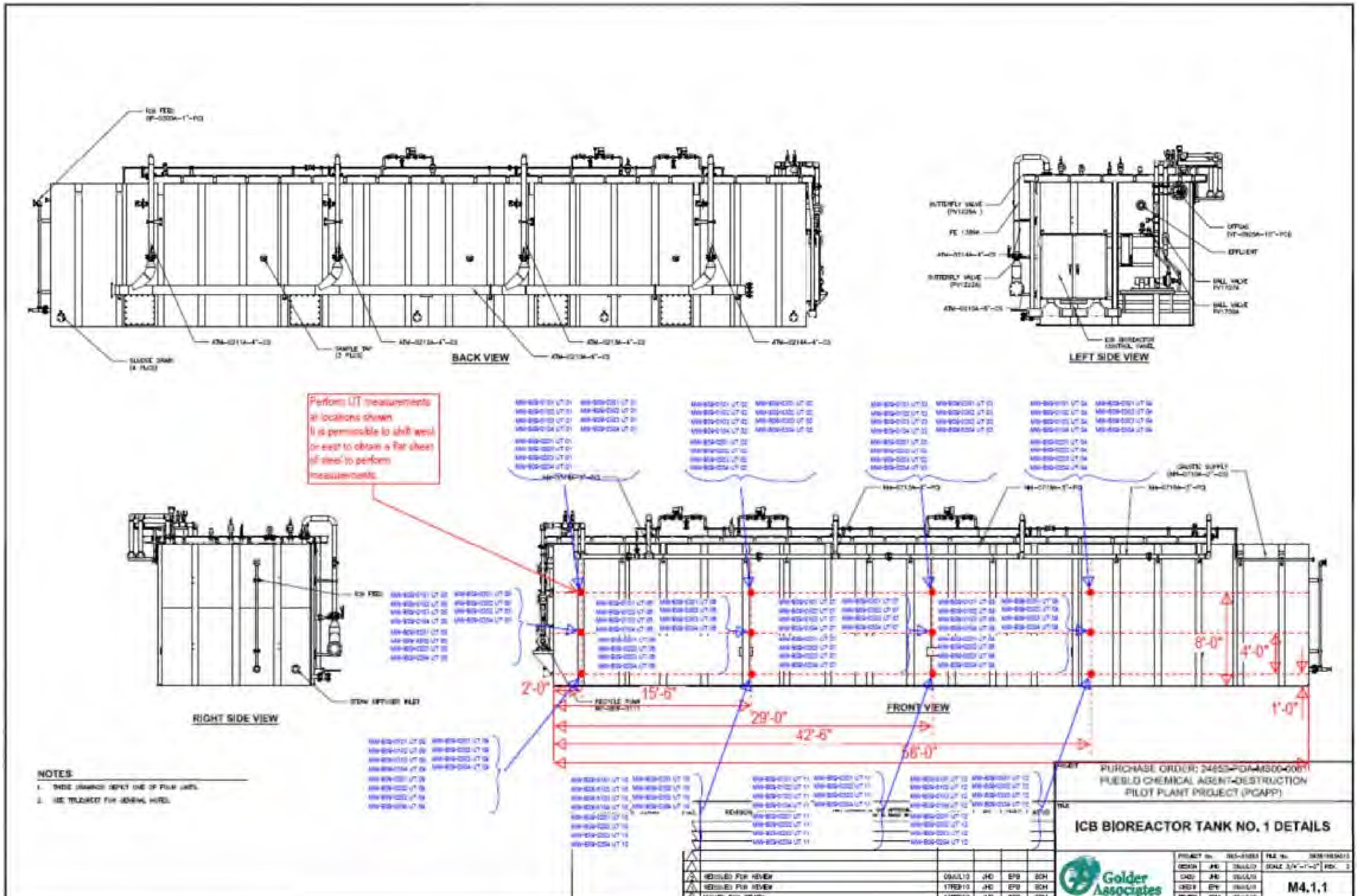
Ultrasonic Monitoring Locations (cont)

B09 ICB Feed Tanks MT-B09-0101/0201/0301

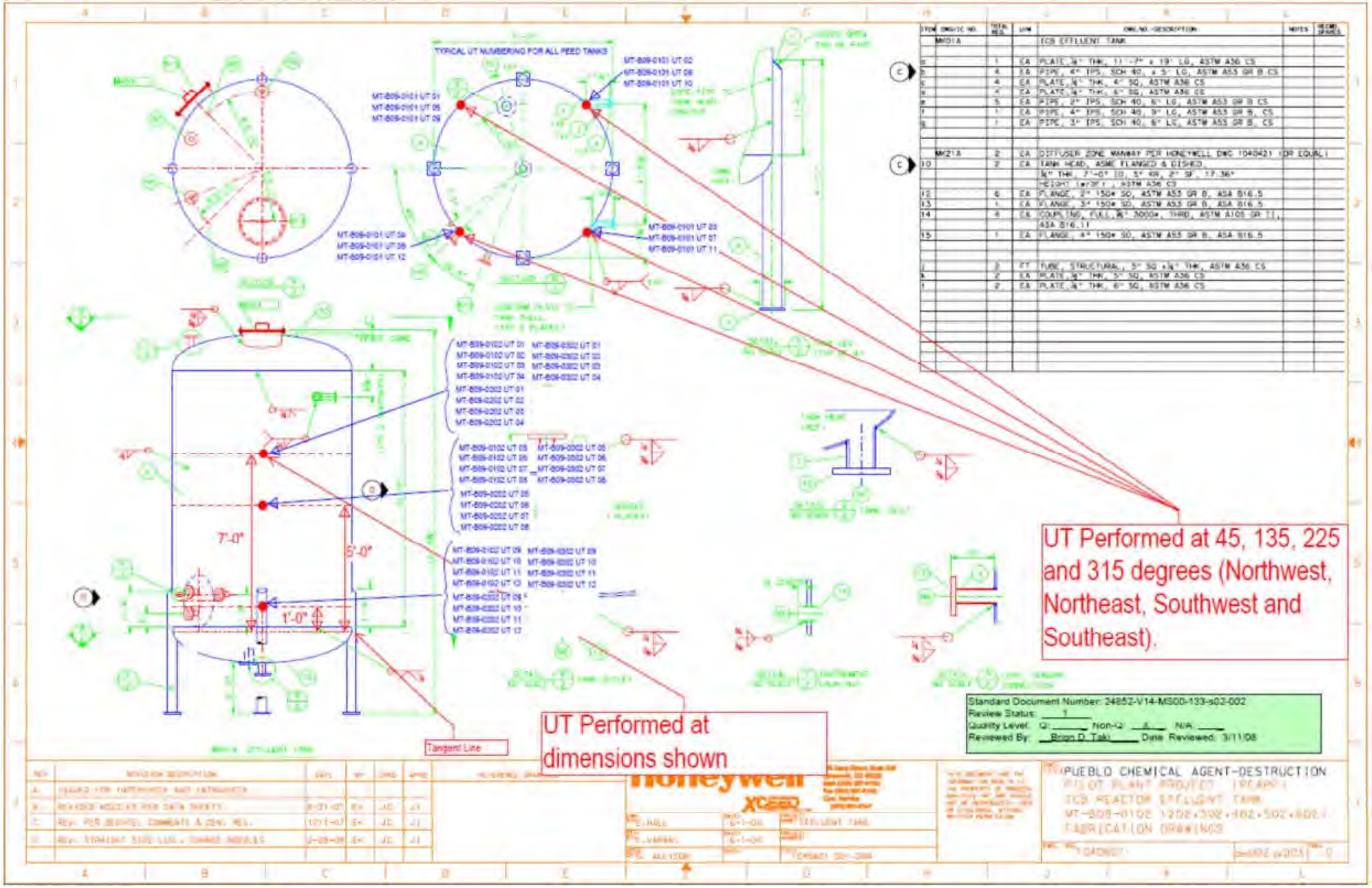


Ultrasonic Monitoring Locations (cont)

B09 ICB Bioreactors MW-B09-0101/0102/0103, 0201/0202/0203, 0301/0302/0303, 0401/0402/0403



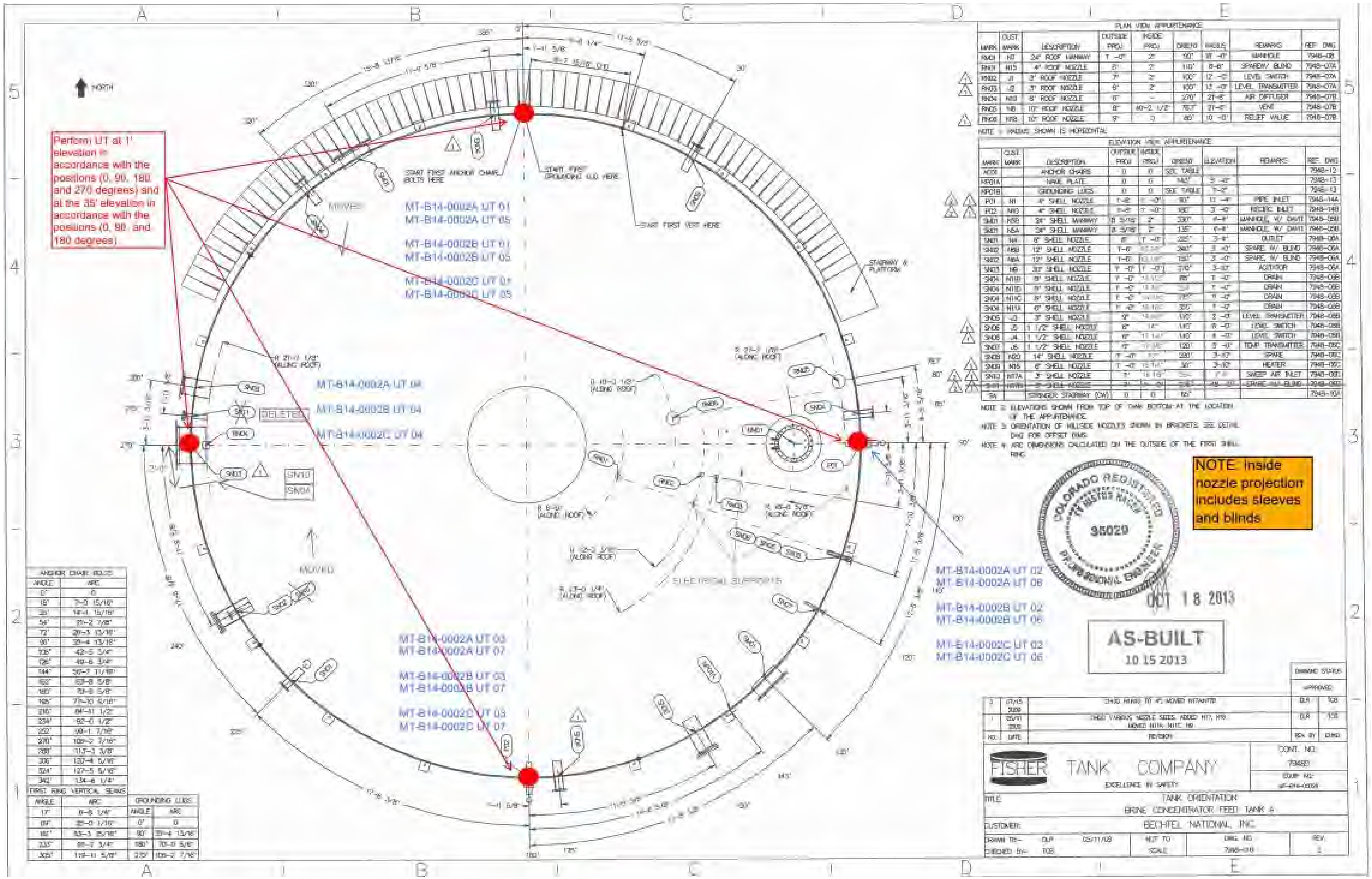
Ultrasonic Monitoring Locations (cont)
B09 ICB Effluent Tanks MT-B09-0102/0202/0302



Ultrasonic Monitoring Locations (cont)
B14 Brine Concentrator Feed Tanks

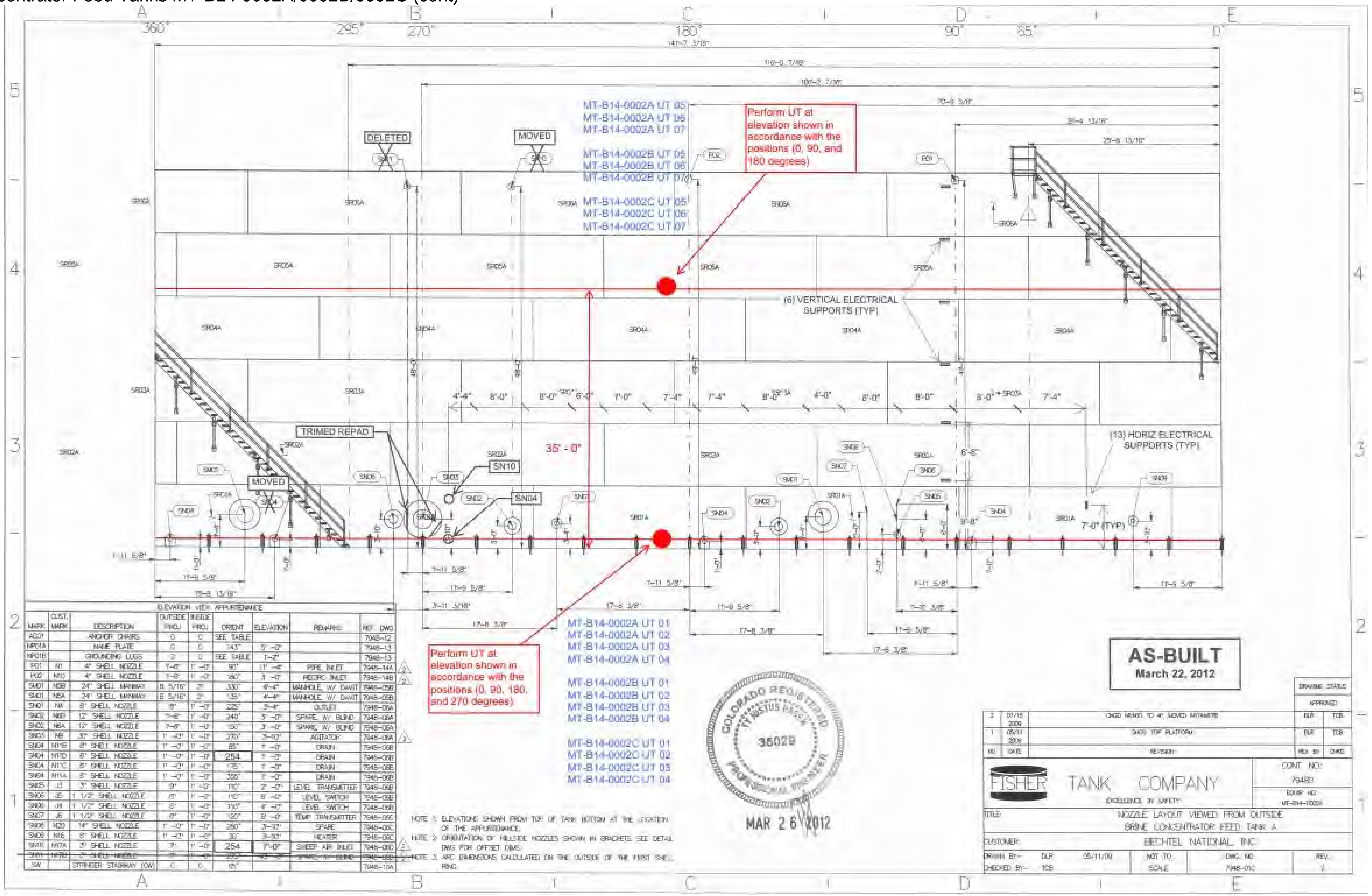
Ultrasonic Monitoring Locations (cont)

B14 Brine Concentrator Feed Tanks MT-B14-0002A/0002B/0002C



Ultrasonic Monitoring Locations (cont)

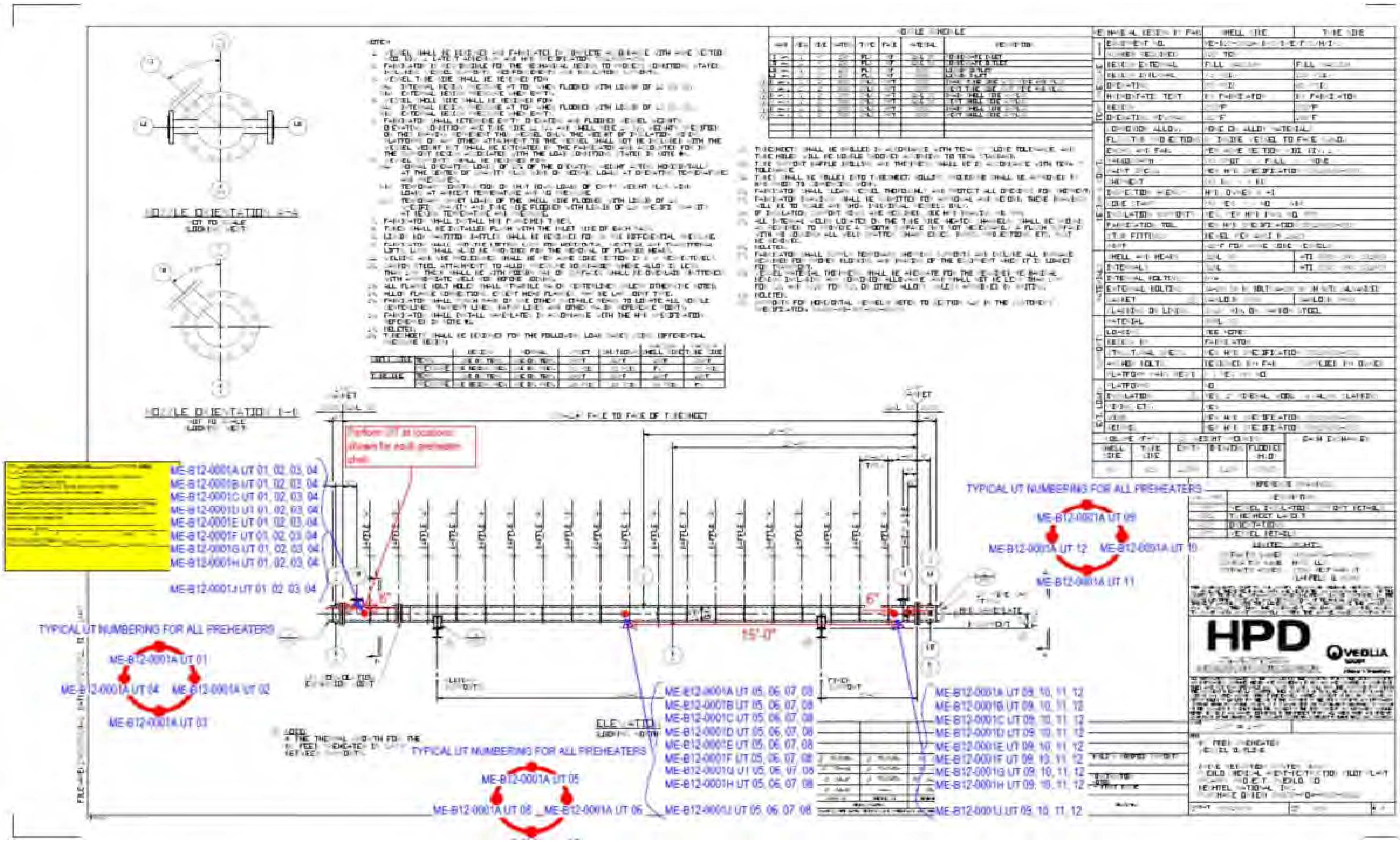
B14 Brine Concentrator Feed Tanks MT-B14-0002A/0002B/0002C (cont)



Ultrasonic Monitoring Locations (cont)
B12 Brine Reduction System

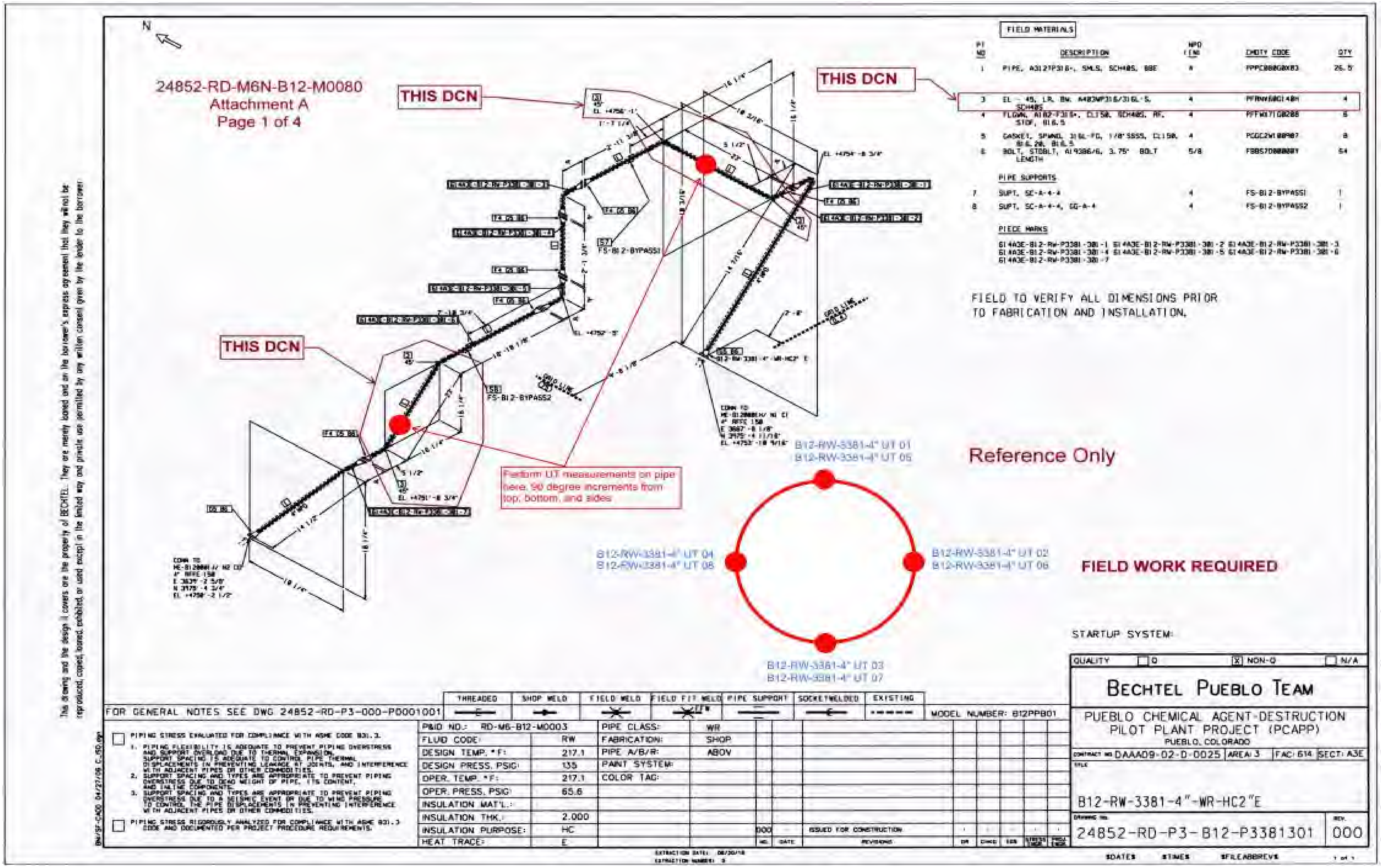
Ultrasonic Monitoring Locations (cont)

B12 Feed Preheater ME-B12-0001A, 0001B, 0001C, 0001D, 0001E, 0001F, 0001G, 0001H, 0001J



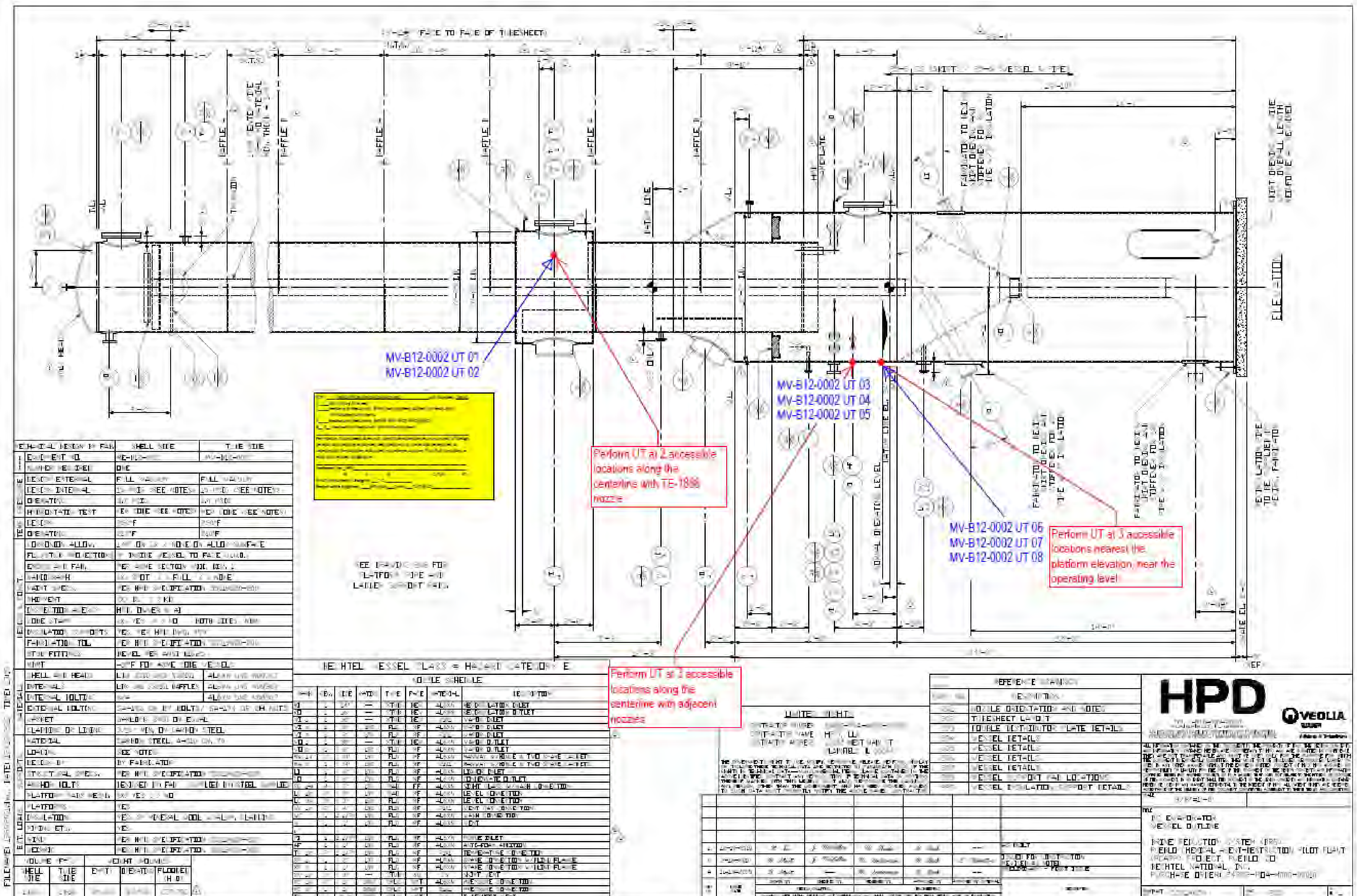
Ultrasonic Monitoring Locations (cont)

B12 Feed Preheater ME-B12-0001I Bypass Line



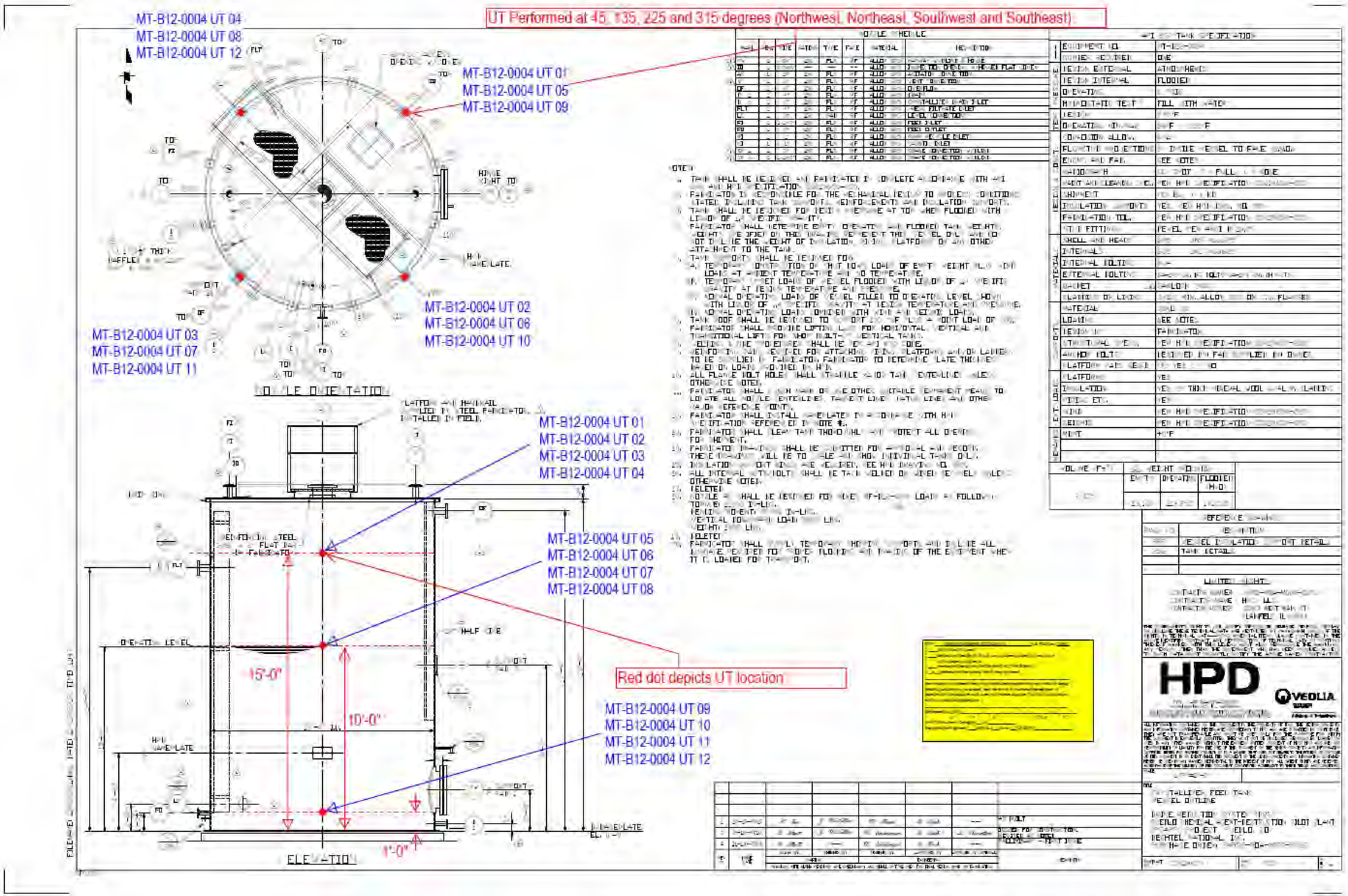
Ultrasonic Monitoring Locations (cont)

B12 Evaporator MV-B12-0002

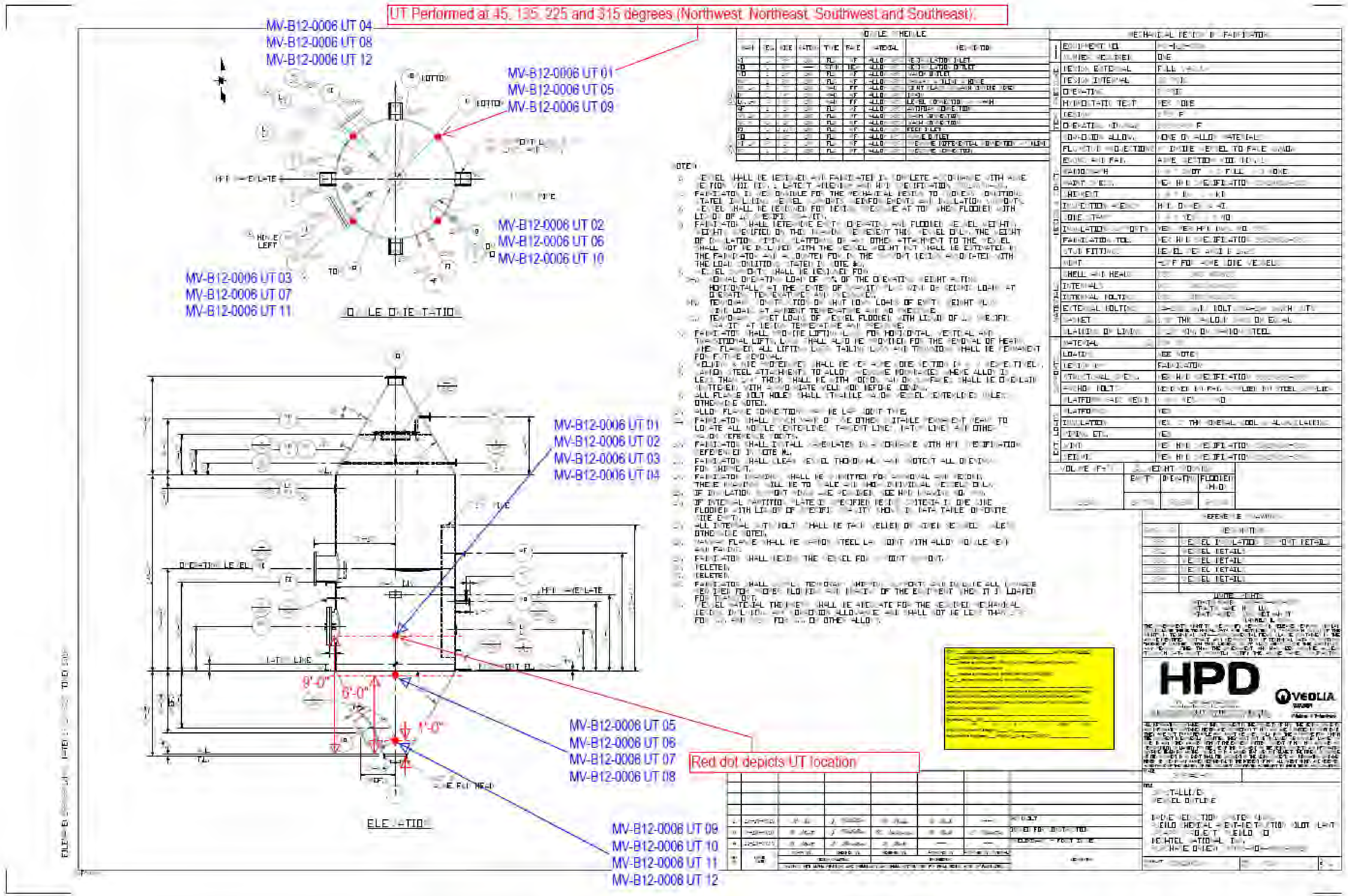


Ultrasonic Monitoring Locations (cont)

B12 Crystallizer Feed Tank MT-B12-0004



Ultrasonic Monitoring Locations (cont)
B12 Crystallizer MV-B12-0006



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Enclosure 21

Justification for Reducing Inspections Required by the
Corrosion Monitoring Plan, Attachment M, During Campaign Changeover

Justification for Reducing Inspections Required by the
Corrosion Monitoring Plan, Attachment M, During Campaign Changeover

1.0 SUMP SYSTEMS

This section refers to changes to the Corrosion Monitoring Plan (CMP) in Table 1, *Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities* regarding specific sump systems.

1.1 AFFECTED SUMPS

The following is a list of the Spent Decon Storage Tanks System Sumps (lined) from Table 1 in the CMP that are impacted by the change. These are carbon steel sumps lined with special coatings.

- MT-B05-0040
- MT-B05-0041
- MT-B05-0042
- MT-B05-0044
- MT-B05-0045
- MT-B05-0046
- MT-B05-0047
- MT-B05-0048
- MT-B05-0050
- MT-B05-0051
- MT-B05-0052
- MT-B05-0061
- MT-B05-0066

1.2 PROPOSED CHANGE

To delete the requirement to perform nondestructive (NDE)-Ultrasonic Testing (UT) and corrosion rate calculations following campaigns.

1.3 JUSTIFICATION

These sumps, along with other designated sumps, are included in the *Resource Conservation and Recovery Act* (*RCRA) Quarterly Inspections*, Attachment K of the Inspection Plan PCAPP RCRA RD&D Permit CO-04-07-01-01, Table K-11. An audit of the RCRA Inspection Records confirmed that the inspections are being performed in accordance with the permit. Deficiencies found during the inspections are added to work orders (WO) to perform repairs to the coatings.

Closeout of the WOs was confirmed. Review of inspections subsequent to the repairs also confirm that the defined coating deficiencies no longer exist. This program helps to ensure that the coating's integrity is maintained in the subject sumps for the life of the plant. To perform the currently required NDE-UT following campaigns would require personnel to enter a confined area, exposing workers to safety challenges to remove the intact coatings, perform the NDE, and repair the coatings. This proposed change would help to mitigate safety challenges, and the quarterly RCRA inspections ensure that the coating continues to perform as required by the permit.

2.0 TITANIUM TANK SYSTEMS AND PIPING

This section refers to changes to the Corrosion Monitoring Plan (CMP) in Table 1, *Summary of Materials of Construction, Corrosion Allowances, and Selected Corrosion Monitoring Program Activities* regarding specific tank systems.

2.1 AFFECTED TANK SYSTEMS

The following is a list of the Tank Systems from Table 1 in the CMP that are impacted by the change. The equipment and piping in these systems are either constructed of titanium Grade 2 or Grade 7.

- Washed Agent and Water Surge Drum Tank System
- Agent-Water Separator Tank System
- MWS Wash Water Collection Tank System
- Agent Hydrolyzer Tank System.

2.2 PROPOSED CHANGE

To delete the requirement to perform NDE-UT and corrosion rate calculations following campaigns.

2.3 JUSTIFICATION

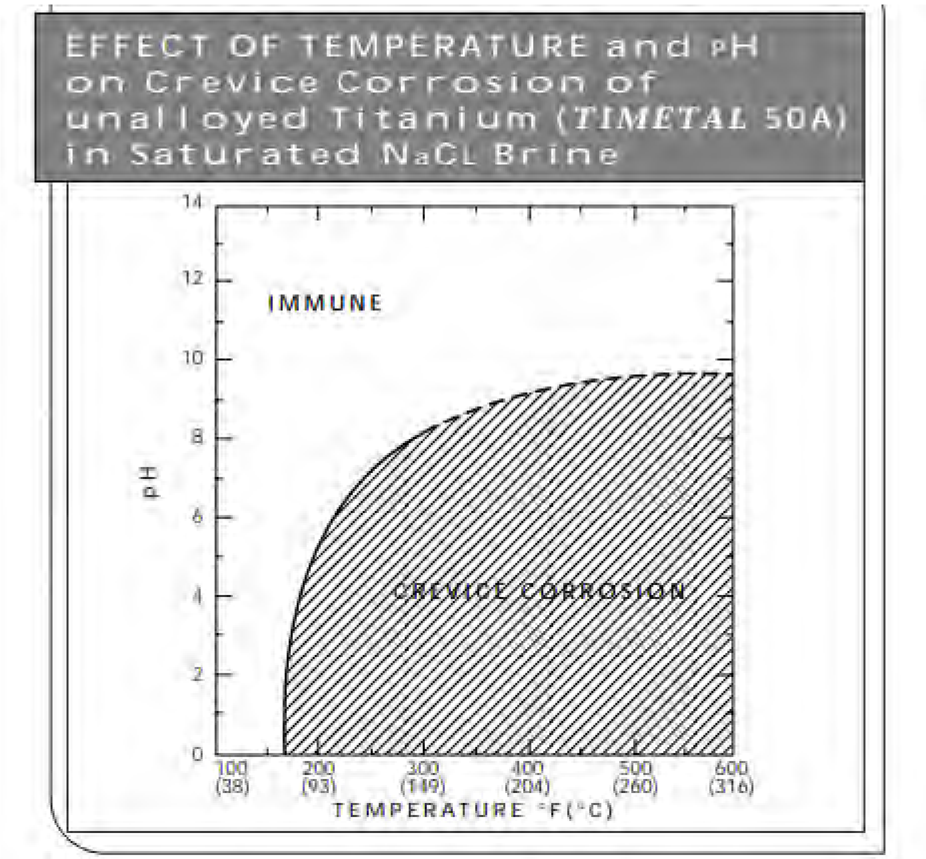
Reference document 24115-36A-U4-CSAA-00001, *Report on Corrosion Evaluation of Titanium in Surrogate Hydrolysate*, submitted to Bechtel Aberdeen July 26, 2000 by J. S. Gruman, Manager-Corrosion and Analytical Laboratory, TIMET-Henderson Technical Conclusions were presented:

- "Titanium Grade 7 would be recommended as the material best able to withstand all possible modes of corrosion and degradation in this very aggressive process."
- "Titanium Grade 2 would be acceptable for use at lower temperatures or in combination with Grade 7 to prevent crevice corrosion attack."

Additional findings showed that Crevice Corrosion may occur in titanium Grade 2 at an acidic pH and above 175 °F, but that titanium Grade 7 is essentially resistant to general and crevice corrosion and hydrogen embrittlement as long as the pH is not above 13 and the temperature does not exceed 480°F.

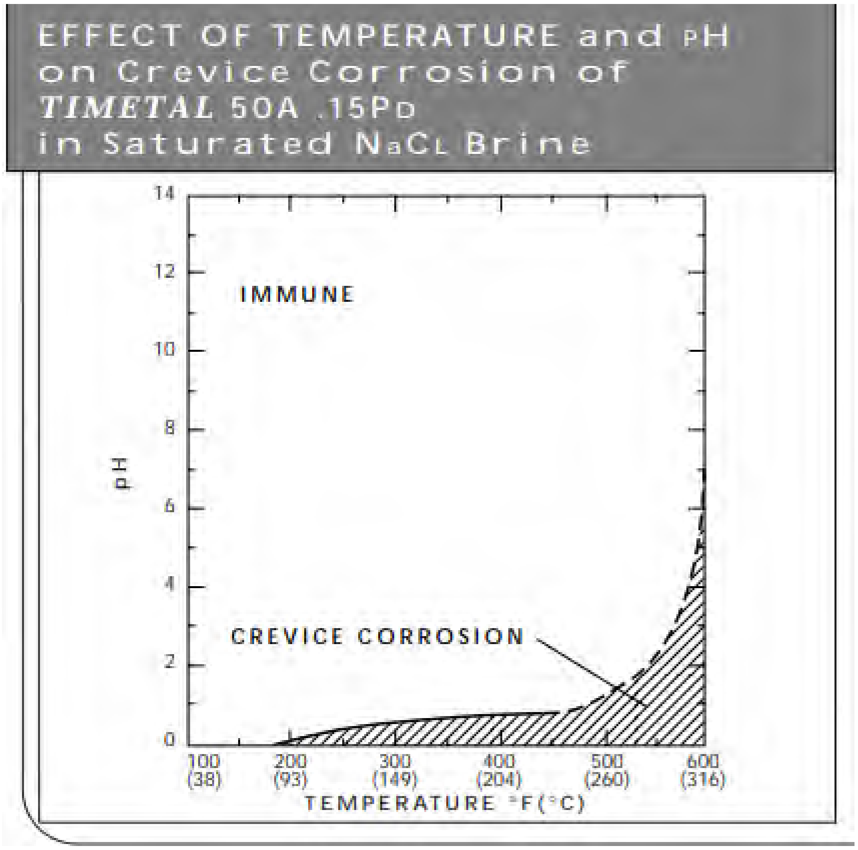
The graphs below are taken from the TIMET's corrosion resistance literature and depict the effects of temperature and pH on Crevice Corrosion for titanium Grade 2 and titanium Grade 7 when exposed to saturated NaCl Brine.

Source: 24115-36A-U4-CSAA-00001, *Report on Corrosion*



Evaluation of Titanium in Surrogate Hydrolysate

- Figure 1. The Effect of Temperature and pH on Crevice Corrosion of Unalloyed Titanium Grade 2 in Saturated NaCl Brine



Source: 24115-36A-U4-CSAA-00001, *Report on Corrosion Evaluation of Titanium in Surrogate Hydrolysate*

- Figure 2. The Effect of Temperature and pH on Crevice Corrosion of Unalloyed Titanium Grade 7 in Saturated NaCl Brine

Table 1. Ultrasonic Testing Measurements Agent Processing Building (APB)

Location	Baseline (2016)	#1 (inches)	#2 (inches)	#3 (inches)
MV-B04-0204-East	0.376	0.338	0.338	0.338
MV-B04-0001-South West	0.256	0.255	0.255	0.255
MV-B04-0202- West	0.366	0.355	0.355	0.355
MV-B04-0204- North	0.333	0.339	0.339	0.339

Ultrasonic Testing Measurements taken on a few of the Titanium Grade 7 and Grade 2 tanks show little wall loss, reinforcing the theoretical corrosion resistance of these materials discussed above.

PCAPP service conditions in which the listed titanium tanks and pipe are exposed to, fall within the Crevice Corrosion limits stipulated by manufacturer's like Allegheny Technologies Corporation and TIMET.

In addition, a review of pH and temperature data recorded by Splunk from 2017 through 2019 confirms that these parameters were within the limitations set for pH and temperature as stated in 24115-36A-U4-CSAA-00001, *Report on Corrosion Evaluation of Titanium in Surrogate Hydrolysate*.

Allegheny Technologies Corporation (ATI) showed that titanium is susceptible to hydrogen embrittlement under certain circumstances. The higher strength grades like titanium Grade 7 are more susceptible to this corrosion mechanism than the lower strength grades like titanium Grade 2. However, in order for corrosion to occur, the temperature must be above 175°F, the titanium is galvanically coupled to an active metal, or the pH is less than 3 or greater than 12. The titanium tanks at PCAPP are not galvanically coupled to an active metal but rather coupled to a passive metal such as stainless steel. Based on the factors listed above, hydrogen embrittlement is not a concern.

The Washed Agent and Water Surge Drum Tank System and its piping is constructed of titanium Grade 2. The worst-case operating temperatures range from 110 to 120°F. These components operate in the very acidic range of around pH 1. The operating temperatures are below the findings of the TIMET report for this pH range, which supports the use of Grade 2 for these components.

The Agent-Water Separator Tank System components are constructed of titanium Grade 7 with the piping being titanium Grade 2. According to the TIMET report, this is an appropriate selection.

The MWS Wash Water Collection Tank System is constructed of titanium Grade 2. The system operates in the very acidic range of around pH 1 and temperatures range from 100 to 110°F. The operating temperatures are below the findings of the TIMET report for this pH range, which supports the use of titanium Grade 2 for these components.

The Agent Hydrolyzer Tank System components are constructed of titanium Grade 7 and the piping is titanium Grade 2 and Grade 7. The maximum operating temperature ranges from 190 to 200°F. The pH ranges from 1 to 13. Time in operations above pH 13 is about 30 minutes/batch maximum, and that was for a limited duration while the overuse of caustic was corrected in the ANRs. The temperature and pH are within the range of acceptable conditions defined in the TIMET Report.

3.0 SPENT DECON TANKS

Due to administrative controls and physical limitations, UT locations at the 3’ and 6.5’ above tangent line levels are unreachable. Therefore, no UT measurements will be obtained at these locations during campaign change over on either tank.

4.0 SUMMARY

In summary, the operating conditions and material selection are within the limits presented in the TIMET Report. During a Corrosion Assessment Briefing made to the Pueblo Team in August 2007, findings of a corrosion assessment by Aberdeen ABCDF after operations were completed and during equipment demolition were presented. The Neutralization Reactor was constructed of titanium Grade 7 and the Rinse Water Holding Tank was constructed of titanium Grade 2. The presented findings concluded that the "samples appeared to be in perfect condition."

The following findings were reported in 24852-RD-30V-000T-L0007, *Corrosion Analysis of ABCDF Tank Samples- Phase 1*, in samples taken from the Neutralization Reactor 2, which was constructed of titanium Grade 7:

- "PNR-01 -Sample taken from reactor wall. Surface covered with deposits. No attack noted."

- "PNR-04 - Sample taken Reactor bottom. Surface covered by deposits. No attack."

This report also refenced a 691-page report detailing the analysis of all the Aberdeen equipment. The reference is 24719-100-580-U07T-10079, *Test Report for Metallurgical and Samples of ABCDF Reactors, Vessels and Vent Piping*, however, a copy of this report has not been located.

The testing performed in the TIMET Report and results from the corrosion assessment performed on the Aberdeen titanium equipment (which demonstrated no significant corrosion), support the deletion of the NDE-UT requirements for the titanium equipment and piping. In addition, safety concerns are further mitigated by reducing the number of entries into the toxic areas.

5.0 REFERENCES

24115-36A-U4-CSAA-00001, *Report on Corrosion Evaluation of Titanium in Surrogate Hydrolysate*

24852-RD-30V-000T-L0007, *Corrosion Analysis of ABCDF Tank Samples- Phase 1*

ATI Literature: https://www.atimetals.com/products/Titanium

6.0 LIST OF ACRONYMS

- ATI Allegheny Technologies Corporation
- CMP Corrosion Monitoring Plan
- NDE nondestructive examination
- PCAPP Pueblo Chemical Agent-Destruction Pilot Project
- RCRA Resource Conservation and Recovery Act
- TIMET Titanium Metals Corporation
- UT Ultrasonic Testing
- WO work order

Enclosure 22

Revised *Odor Monitoring Plan*, new Attachment N

Odor Monitoring Plan

Attachment N

ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

AGV	automated guided vehicle
ANR	Agent Neutralization Reactor
APB	Agent Processing Building
ASTM	American Society for Testing and Materials
AWS	Agent/Water Separator
BCFT	Brine Concentrator Feed Tank
BOTS	Off-gas Treatment System
BRS	Brine Reduction System
BTA	Biotreatment Area
BTS	Biotreatment System
CAM	cavity access machine
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CON	control room
COPC	chemical of potential concern
D/T	dilution to threshold
ECR	explosion containment room
ERB	Enhanced Reconfiguration Building
Ft	feet
GAC	granular activated carbon
HD	distilled mustard, blister agent, bis(2-chloroethyl) sulfide
Hr	hour
HT	Mustard T mixture: mixture of and 60% sulfur mustard (HD) and 40% agent-T (bis [2-(2-chloroethylthio) ethyl] ether)
ICB™	immobilized cell bioreactor
JTG	Joint Test Group
LAMP	Laboratory Analysis and Monitoring Plan
MAV	modified ammunition vehicle
MME	munitions monitoring enclosure
MPHRE	Multiple Pathway Health-Risk Assessment
MSM	munitions service magazine
MTU	munitions treatment unit
MWS	Munitions Washout System
OAL	odor action level
ODT	odor detection team
OMP	Odor Monitoring Plan
OPP	overpack pallet
OTS	Off-gas Treatment System
PCAPP	Pueblo Chemical Agent-Destruction Pilot Plant

ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

PCD	Pueblo Chemical Depot
PDAR	PDAR Process Data Acquisition and Recording System
PMD	projectile/mortar disassembly (machine)
PME	parts monitoring enclosure
PSM	Plant Shift Manager
PTDP	Pilot Test Demonstration Plan
RCRA	Resource Conservation and Recovery Act
RTA	Receiving and Traveling Area
T	Odor Detection Threshold
WRS	Water Recovery System
SDU	supplemental decontamination unit

N-1 Introduction

This Odor Monitoring Plan (OMP) provides the following:

- The odor monitoring protocol (measurement techniques, site monitoring locations, frequency of monitoring, and data collection and reporting requirements) to be used during plant operations (Section N-3).

- Measures to be taken to demonstrate that odor can be controlled so that no odor is detected at the PCD property line (Sections N-2 and N-3).

- Description of the training personnel will receive regarding odor detection (Section N-3).

Emissions sampling conducted in accordance with the *Pilot Test Demonstration Plan* (PTDP), 24852-GPP-GYPM-00006, demonstrated that emissions from Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) sources did not exceed the cumulative risk goals identified within the *Multiple Pathway Health Risk Assessment Transmittal of Final Screening Multiple Pathway Health Risk Assessment (MPHRA) Report for Pueblo Chemical Agent Destruction Pilot Plant(PCAPP) with Explosive Destruction System and Static Detonation Chambers*, 24852-3RC-000-V0011. Data from the Biotreatment Area (BTA) Bioreactor Off-gas Treatment System (BOTS) carbon loading and useable life evaluated using vendor methods in accordance with the *White Paper on Carbon Adsorption Sampler Strategy*, 24852-30H-000-W0004, and the criteria defined in the PTDP were not usable, due to accumulation of water in the samples. As such this plan was and is intended only to address the control, monitoring, and mitigation of potential nuisance odors originating from PCAPP hazardous waste operations in accordance with Code of Colorado Regulations 5 CCR 1001-4, No. 2, *Odor Emission* (Colorado Air Regulation No. 2).

For Conclusions and Recommendations regarding pilot test demonstrations, to include the Odor Monitoring Plan, see *Final Report for PCAPP Pilot Testing*, 24852-3TS-000-L0030. For Baseline Data Summary regarding odor monitoring during pilot test operations, see *Odor Monitoring Report for Pilot Test Phase Operations*, 24852-30R-GBL-V0001.

N-1a Potential Odor Producing Processes at PCAPP

PCAPP is a state-of-the-art plant built to safely destroy the chemical weapons stockpile, consisting of 155-mm, 105-mm projectiles and 4.2-in mortars, currently in storage at the Pueblo Chemical Depot (PCD) near Pueblo, CO. The plant encompasses approximately 85 acres and is a government-owned, contractor-operated Treatment, Storage, or Disposal Facility (TSDF). As such, PCAPP complies with Federal and State regulatory Resource Conservation and Recovery Act (RCRA) requirements with respect to design, construction and operation. PCAPP operates on a 24x7 schedule and will process the munitions stockpile in three campaigns beginning with the 155-mm HD campaign, followed by 105-mm projectiles, and ending with the 4.2-inch HD and HT mortar campaign. The following paragraphs explain munitions handling operations during the 155-mm projectile campaign.

Chemical agent munitions stored in PCD igloos are placed in overpack pallets (OPP) and loaded into a Modified Ammunition Vehicle (MAV) for transport to the PCAPP Enhanced Reconfiguration Building (ERB) MAV unloading dock. At the MAV dock, each MAV is monitored for chemical agent before the vehicle is opened and OPPs are offloaded into one of three buffer storage Munitions Service Magazines (MSMs) or directly to the ERB Receiving and Traveling Area (RTA). In the RTA, the OPPs are headspace-monitored before the OPP cover is removed and munitions are fed into the Explosion Containment Rooms (ECR) for enhanced reconfiguration by the Projectile Mortar Disassembly (PMD) machine. Following enhanced reconfiguration, the deburstered munitions, energetics, and parts are monitored in the Munitions Monitoring Enclosures (MME) and the Parts Monitoring Enclosures (PME). The energetics and parts are packaged for final disposition. Deburstered munitions are repacked on slave pallets and delivered to the Agent Processing Building (APB) via Automated Guided Vehicles (AGV). Munitions determined to be leaking, or in-process rejects, are overpacked or palletized, respectively, and returned to PCD igloos or sent directly to the static detonation chamber.

Within the APB, the agent cavity of each munition is breached by the Cavity Access Machine (CAM) of the Munitions Washout System (MWS). The MWS delivers pressurized warm water to rinse the agent cavity. The agent and rinse water are sent to the Agent/Water Separator (AWS) while the munition bodies are thermally treated in the Munitions Treatment Unit (MTU). The AWS separates the agent and wash water for agent feed into the agent hydrolyzers (also called the Agent Neutralization Reactors [ANR]) per the reactor recipe. Following hydrolysis in the agent hydrolyzers, hydrolysate batches are sent to a holding tank where the hydrolysate is recirculated, sampled, and analyzed for chemical agent to confirm destruction criteria have been met. When the hydrolysate is cleared to be non-detect for mustard in accordance with the *Laboratory Analysis and Monitoring Plan* (LAMP), Appendix 1 of the Waste Analysis Plan (WAP) Attachment D of this Permit , it is pumped into a 30-Day Hydrolysate Storage Tank, located outside of the APB. These holding tanks serve as feed equalization tanks for the Biotreatment System (BTS), located in the Biotreatment Area (BTA).

The BTS includes four modules, each of which contains four Immobilized Cell Bioreactors (ICB™) designed to treat agent hydrolysate. The ICBs™ will be pH-controlled and aerated to maintain aerobic metabolism of hydrolysis products. The resulting bio-effluent is sent to the Water Recovery System (WRS), where it is blended with boiler and cooling tower blowdown and reject water from a reverse osmosis process. The WRS consists of three aerated and mixed tanks (Brine Concentrator Feed Tanks [BCFT]) which serve as buffer storage prior to final treatment of brine within the Brine Reduction System (BRS). The BRS consists of an evaporator and crystallizer to recover water and a belt filter to dewater the concentrated solids and produce a solid filter cake suitable for shipment off-site for disposition. The BRS distillate water passes through carbon absorbers to remove residual organics and other constituents and is then recycled back to the plant.

The BTA including the 30-Day Hydrolysate Storage Tanks, the four BTS modules, the BRS, and the WRS are expected to be the primary potential sources for nuisance odors at PCAPP. During routine operations, primary odor sources also include the associated vents (e.g., 30-Day Hydrolysate Storage Tanks, BTS, WRS, and BRS), the filter press building within the BRS, and the Waste Laydown Yard where BRS filter cake is stored prior to off-site disposition. During off-normal operations, odorous emissions may occur at any area within the treatment units. [Note: In the subsequent paragraphs, reference to BTA operations or BTA stacks includes the 30-Day Hydrolysate Storage Tanks and the associated tank vent.]

N-1b Primary Odorous Chemicals of Potential Concern

Sulfur-containing chemicals (e.g., mercaptans, thiodiglycol (TDG), 1-4-oxathiane, and 1,4-dithiane) are expected to be the primary cause of nuisance odors. These sulfur-containing compounds are produced during the storage and treatment of hydrolysate.

N-2 Control of Nuisance Odors

At PCAPP, nuisance odors are mitigated by design elements and administrative controls as discussed in the following paragraphs.

An odor detection at PCAPP is defined as an odor measurement (at any level) with characteristics recognizable as originating from PCAPP hazardous waste operations, by onemember of the Odor Detection Team (ODT).

N-2a Design Elements

There are two primary elements built into the plant's OTS design to control odors:

1. The use of carbon filters to absorb any odors produced by the off-gases. These are discussed further in Sections N-2a(1).

2. OTS vents (stack exhausts) to provide dilution by atmospheric dispersion. These are discussed further in Sections N-2a(1) and N-2a(2).

N-2a(1) Carbon Filtration and Stack Controls

Each BTS OTS includes a carbon filtration system consisting of:

- Two Granular Activated Carbon (GAC) filters in series
- An off-gas fan (blower) to move air through the treatment system

- A stack to emit the scrubbed air stream 15 feet (ft) above ground level to promote dilution by air dispersion

Each filter can operate in the lead position or in the lag position. Additionally, each BTS OTS filtration system is configured to facilitate replacement of one GAC filter bed while the other filter remains operational.

For the BRS OTS system, three filters are provided, with two in series and the third as standby for rotation into service when the carbon in one filter has to be replaced. The BRS OTS blower pulls the air stream and entrained chemical vapors through the GAC filters to the BRS stack, from which the scrubbed air stream is vented to the atmosphere. The stack height is 25 ft.

The BRS OTS stack emits the scrubbed air stream 15 feet (ft) above ground level to promote dilution by air dispersion. Three BCFTs are vented through a carbon filtration system, which includes two GAC filters in series, a blower, and an exhaust stack that vents 55 ft above the ground. Each BCFT GAC filter can operate in the lead or lag position, and the filtration system is configured to facilitate replacement of one GAC bed while the other remains operational.

The three 30-Day Hydrolysate Storage Tanks vent to a common duct leading to two GAC filters in parallel (of which only one is used at any given time) and a third filter in series. The carbon filtration system for the hydrolysate storage tanks is passive. That is, no blower is present in the system; the tanks simply “breathe” through the carbon filters to a stack. exhaust located at a height of 40 ft. Because the filtration system is passive, the transport of chemical-vapor-laden air through the GAC filters is periodic, not continuous, and is driven by displacement when filling and draining the tanks.

Each ICB™ has Biotreatment Off-gas Treatment System (BOTS) modules to prevent and control odors. There are a total of four (4) BOTS and each has one (1) Off-gas heater, two (2) carbon filters, one (1) Off-gas fan, and one (1) bioreactor stack. The off-gas from the bioreactor is heated to reduce the relative humidity (RH) as it passes through the GAC filters. The off-gas is then forced through the BOTS and discharged into the stacks. The stacks then vent the off-gas into the atmosphere.

N-2a(2) Air Dispersion

The PCAPP site employs air dispersion to dilute the concentration of odorous COPCs to reduce the potential for detection of odors at the PCD property line.

Dispersion conditions that maximize downwind odor (primarily for near surface odor sources) are stable at near calm conditions. By definition, stable conditions can only exist when solar radiation (ground heating) does not occur. The most stable/calm time of day is within ±1 hour of sunrise, when the accumulated effect of surface cooling (via radiation) overnight has had maximum effect in creating a surface-based temperature inversion (cooler near ground than aloft), which stratifies the atmosphere and caps the surface boundary layer in a temperature inversion. From dispersion modeling, stable conditions yield the least plume spread (diffusion), so the plume will yield its highest downwind concentrations. If winds are absolutely calm, the plume will rise vertically until it fumigates downward from the inversion.

The following are indicators that meteorological conditions are not optimal for dispersion of odors:

- Times between one hour after sunset to one hour after sunrise
- Wind speed between 0.5 and 2 m/s (1.1 and 4.5 mph)
- Wind direction variability, sigma theta, less than 5 degrees
- Vertical temperature differential (temperature at 10 m [32.8 ft] – surface temperature at 2 m [6.6 ft]) greater than 0.5°C (1.0°F) (non-negative)
- Evidence of surface fog

N-2b Administrative Controls

A review of odor monitoring activities during pilot testing, refer to *Odor Monitoring Report for Pilot Test Phase Operations* (24852-30R-GBL-V0001) indicated that odors were more likely to be identified by Plant/PCD personnel and site visitors, than through increased monitoring during off-normal or non-routine operations. To take advantage of this observation, the following administrative controls have been implemented at PCAPP:

- General odor awareness training has been incorporated into visitor and general site training.
- Training includes an explanation of the potential for odors onsite with a description of specific odor characteristics pertinent to PCAPP operations and
- The protocol for immediate odor reporting to the Control Room (CON).

Numerous routine and non-routine operations at PCAPP have the potential to emit odorous emissions. During routine operations, primary odor sources include associated stacks (e.g. 30-Day Hydrolysate Storage Tanks, BTS, WRS, and BRS), operations in the filter press building within the BRS, and the Waste Laydown Yard where the filter cake container is temporarily staged prior to off-site disposal. To control these potential odorous emissions, the following administrative controls are implemented:

- Exterior doors in the filter press building remain closed during filtering operations.

- BRS filter cake roll-off containers are covered within the building and are maintained as such through final disposition.

During off-normal operations, odorous emissions may occur at any area within the treatment units. PCAPP has identified the following specific off-normal and/or non-routine conditions with the potential to result in odorous emissions. If these operations should generate nuisance odors, site personnel and visitors are trained to report the odors to the CON. In response to *reported odors* by Plant/PCD personnel, site visitors, or area residents, actions will be taken in accordance with Section N-3d(4b).

- Sludge removal (BTS, WRS, 30-Day Hydrolysate Storage Tanks)

- Power Outage (BTS, WRS, BRS)

- Loss of tank blower (BTS, WRS)

- Loss of OTS blower (BTS, WRS, BRS)

- Maintenance activities diverting air flow from GAC (30-day, BTS, WRS, BRS)

- Off-gas carbon filter replacement (30-day, BTS, WRS, BRS)

- Distillate Carbon changeout

- Filter cake roll-off staging

- Spill (PCAPP)

- Off-normal conditions resulting in ammonia generation (WRS, BRS)

N-3 Investigation and Resolution of Odor Detection

The approach to reducing nuisance odors at the PCD property line (yellow route) was presented in Section N-2 of this document. This section outlines the odor monitoring program during operations. The PCAPP odor monitoring program includes the following key components:

- Qualified odor observers (Odor Monitoring Training)
- Objective observational methods (odor characterization, intensity, and monitoring equipment)
- Meteorological forecasting and monitoring
- Standard odor monitoring practices (background and baseline monitoring, odor monitoring zones, and odor monitoring frequencies)
- Odor action levels (OAL) and corrective action protocols
- Data collection and reporting

Each component is described below.

N-3a Qualified Odor Observers

A minimum of one (1) staff member per shift will be selected for the ODT. Since odor detection and sensitivity vary among individuals, staff will be screened for their odor sensitivity to confirm that the staff is in the "normal" range. Selection will follow the guidance in US Public Health Service Publication 999-AP-32, *Selection and Training of Judges for Sensory Evaluation of the Intensity and Character of Diesel Exhaust Odors,"* as referenced in 5 CCR 1001-4, No. 2.

The ODT will be trained in odor observation methods using commercially available training. The training will include information on what causes odors, the role of personal perception, and recognizing odors. At a minimum, training will incorporate familiarization with the n-butanol intensity scale (American Society for Testing and Materials [ASTM] International Method E-544) and use of the Field Olfactometer. ODT members will have olfactory sensitivity testing. The results will be documented, and records will be retained for a period of at least five years from the date of operations, as referenced in 5 CCR 1001-4 X.B.3.

The ODT will undergo annual olfactory sensitivity testing and refresher training for the duration of munitions processing, unless approved otherwise by the Division.

N-3b Objective Observational Methods

The ODT personnel will be responsible for identifying the odor character, intensity, duration, and frequency of odors detected. The duration and frequency of odors will be calculated using data collected through odor monitoring surveys as described in Section N-3d. Odor character and intensity are discussed here with a summary of the associated equipment.

N-3b(1) Odor Characterization

Proper odor characterization is essential to confirm detected odors associated with PCAPP hazardous waste operations and non-seasonal variations in baseline odors (see Section N-3d(4) or off-site activities. A standard practice for odor description is to provide observers with a list of descriptor terms, which are organized in categories or groups. Numerous standard odor descriptor lists are available to use as a referencing vocabulary. PCAPP will use the eight odor descriptor categories illustrated in the “odor wheel” provided in Figure N-1 to define odor character.

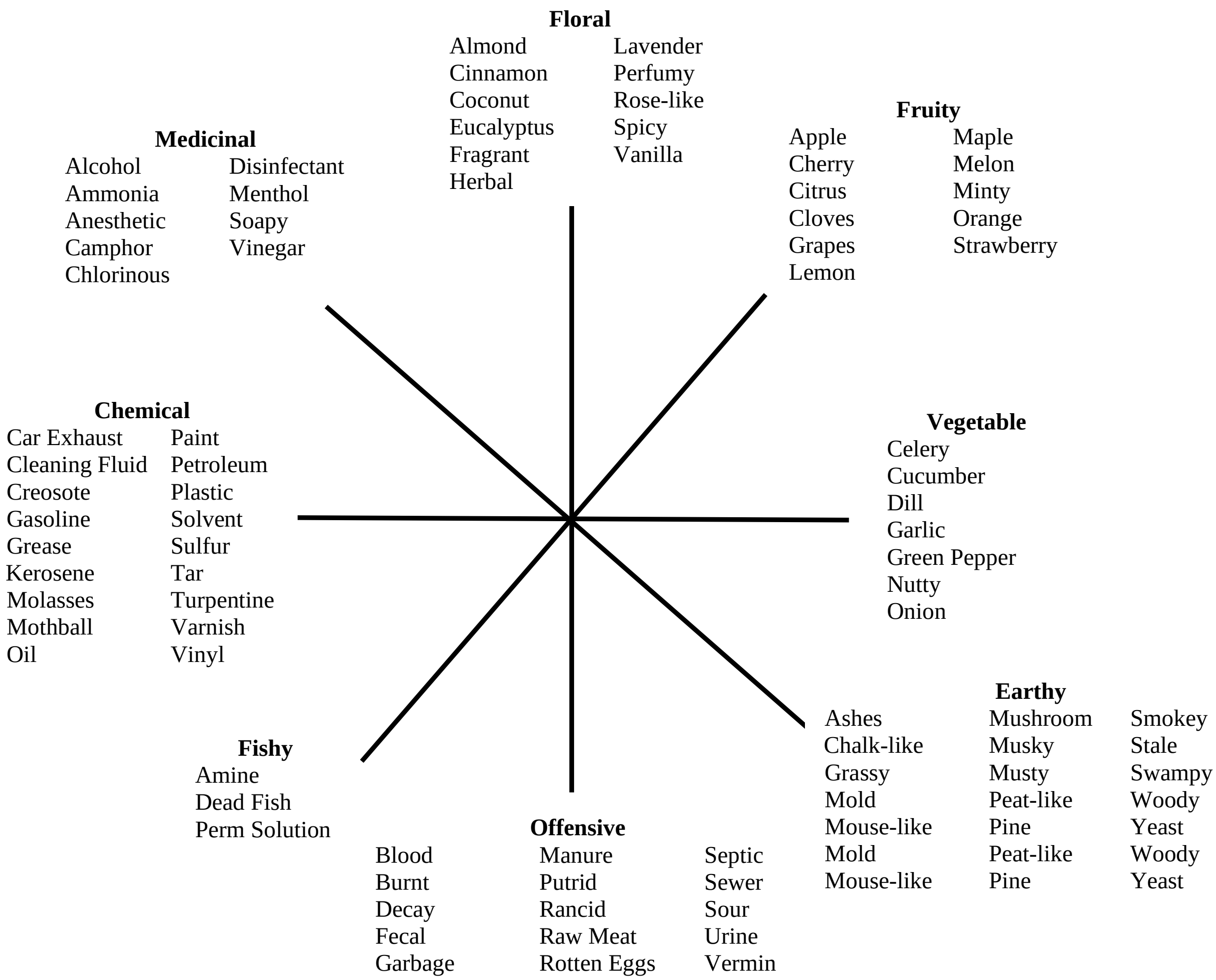


Figure N-1. Odor Wheel

N-3b(2) Odor Intensity

Odor monitoring surveys will quantify the perceived level of odor. Nuisance odors can be perceived prior to reaching a Dilution to Threshold (D/T) odor concentration standard of 7:1, a limit value defined in Colorado Air Regulation No. 2. Odor intensity will be reported using the ASTM International E544 *Standard Practices for Referencing Suprathreshold Odor Intensity*. This method classifies odor in terms of intensity referenced to standardized concentrations of a reference odorant. Consistent with the method, the user is allowed to select from various standardized concentrations as starting points for the n-butanol concentration scale. Therefore, the selected starting point and the geometric progression ratio of the concentration series must be clearly identified. PCAPP will employ the 5-point static scale method with reference concentrations for n-butanol (1-butyl alcohol) in water as defined in Table1.

Table N-1. PCAPP Odor Intensity Scale.

Designation	n-butanol concentration in water, ppm	Word Descriptors
n = 1	25	Trace (very faint odor)
n = 2	75	Noticeable (faint but noticeable)
n = 3	225	Moderate (odorous and recognizable)
n = 4	675	Strong (intense odor)
n = 5	2025	Very strong (extremely strong odor)

N-3b(3) Odor Monitoring Equipment

Portable odor intensity kits consisting of five bottles of aqueous n-butanol solutions in strengths rated from one to five in Table 1 will be used by the ODT.

A field olfactometer will be used to measure the D/T odor concentration standard if the qualified member of the odor monitoring team detects a qualifying odor that is recognizable as coming from hazardous waste operations at PCAPP and at an intensity of n =1 or greater. As the observer inhales, ambient air is drawn into the instrument at selectable dilution ratios. The dilution ratio is reported as the D/T odor concentration ratio. If there is a qualifying odor, a qualified ODT member will confirm the observed within an hour of the initial discovery. A handheld GPS unit will be used to document coordinates of monitoring locations.

N-3c Meteorological Forecasting and Monitoring

Meteorological forecasting data will be used to identify downwind monitoring locations (see Section N-3d).

Meteorological monitoring will be conducted using PCD Meteorological Tower 2 located northwest of G block. Information collected from this station will include surface temperature, wind speed and wind direction variability which combined with other indicators (e.g., time of day and surface fog) will be used to identify meteorological conditions that are not optimal for dispersion.

N-3d Standard Odor Monitoring Practices

- PCAPP will employ standard odor monitoring practices:
- Establish background and baseline PCD odor characterization data

- Establish odor monitoring zones
- Establish odor monitoring frequencies

Each of these is discussed in the following paragraphs.

N-3d(1) Background Monitoring

Prior to the start of pre-operational surrogate testing, routine odor monitoring surveys were conducted by the ODT to identify locations, characteristics, and intensity levels of existing odor sources within PCD and the surrounding area. These background and baseline odor monitoring surveys identified the odor monitoring zones, per Section N-3d(3).

N-3d(2) Baseline Monitoring

Routine odor monitoring was continued during pre-operational surrogate testing, at the frequency used for background monitoring, to establish baseline measurements and operational capabilities.

N-3d(3) Odor Monitoring Zones

Odor monitoring will be conducted in three zones:

- Within PCD (blue and yellow routes)
- At the PCD property line (orange route)

Figure N-2 show the odor monitoring routes within PCD (blue and yellow routes) and at the PCD property line (orange route). Location of potential odorous emissions at PCAPP amd an example of downwind monitoring are shown in Figure N-3. The internal blue route is at a distance close enough to the odor sources to provide an early indication of project-specific odors and to allow prompt application of odor control measures prior to an exceedance of the odor action level (OAL, see Section N-3e) at the property line.

Routine odor monitoring within PCD will be conducted along the defined route (blue route) at points downwind of PCAPP. The routine patrol will conduct odor measurements at a position along the road that is directly downwind from potential PCAPP odorous areas. The wind direction will be determined using a flag as the indicator or based on the last reported wind direction from the CON should there be no prevalent wind at the time of the observation.

Odor monitoring at the defined yellow route will be conducted at points downwind of the blue route at the frequency specified in Section 3d(4).

Property line monitoring will be conducted at the PCD property line at points downwind of PCAPP at the frequency specified in Section N-3d(4).

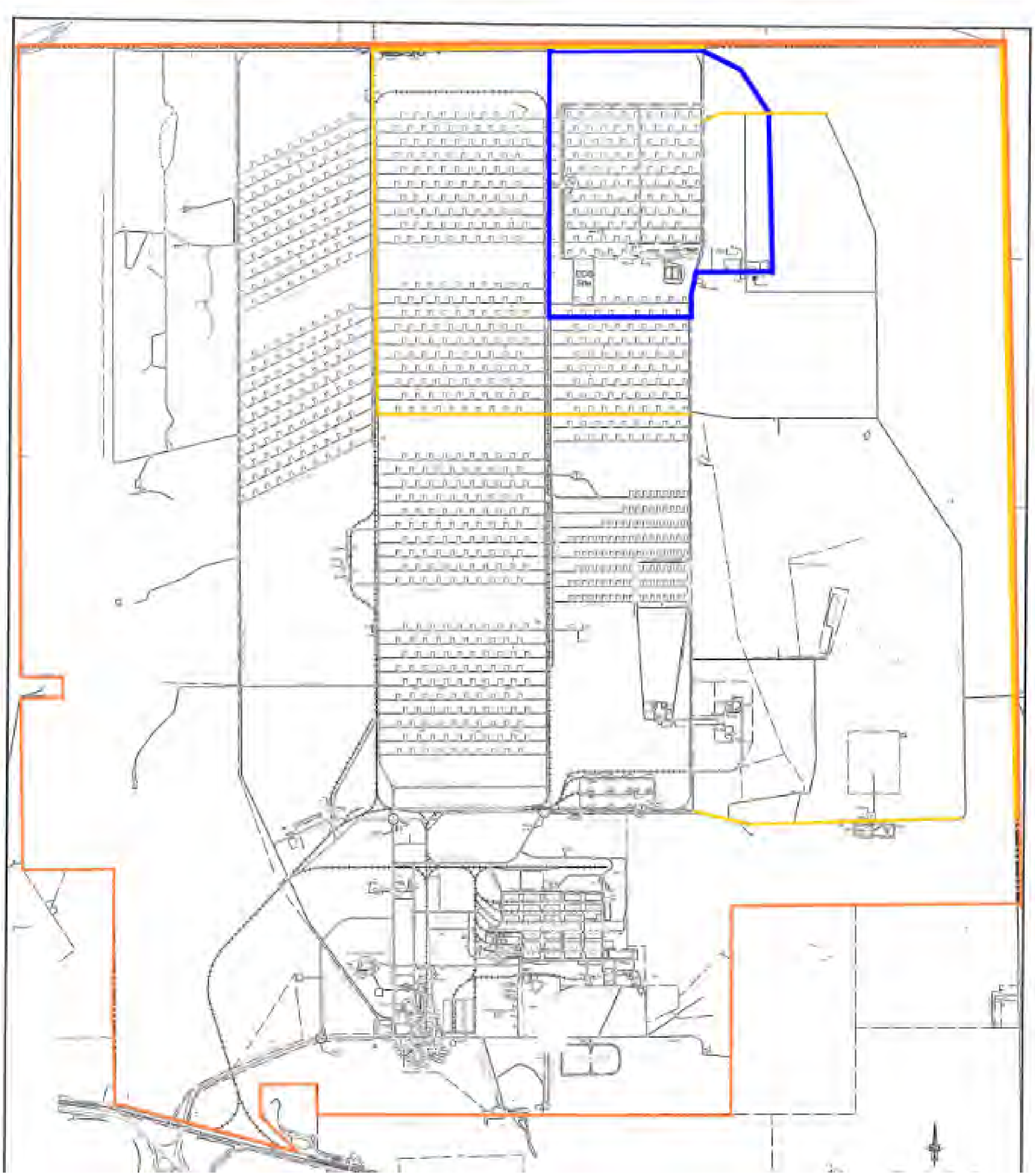


Figure N-2. Odor Monitoring Routes

Figure N-3. Example of Downwind Monitoring Approach for Routine Odor Monitoring within PCD.

N-3d(4) Odor Monitoring Frequencies

The frequency of routine odor surveys allowed PCAPP to establish an "operational baseline" for the facility, which will allow staff to more quickly recognize and respond to an incident of an odor detection on site to preclude it from becoming an off-site concern.

- An *odor detection* at PCAPP is defined as an odor measurement (at any level) with characteristics recognizable as originating from PCAPP hazardous waste operations, by one member of the ODT.

- Unless meteorological or site conditions preclude personnel from following the specified survey routes, routine odor monitoring within PCD (i.e., downwind monitoring along the blue route) occurs at sunrise and sundown (± 1 hour (hr)).

- Yellow Route investigations will only be performed in response to an *odor detection* with an OAL intensity of n=1 or greater (see

Section N-3e) within PCD blue route, at the yellow route downwind from the suspected odor detection.

- Property route (orange route) insvestigations will also be performed in response to *odor detection* with an OAL intensity of n=1 or greater at the yellow route, at the property route downwind from the suspected odor detection.

- Hourly odor measurements are defined as occurring at a one hour (60 minute) ± 30 minute time interval. The ± 30 minute period will allow time for travel between odor monitoring locations, and for minor variations in time on different time-keeping devices (e.g., watches, phones).

N-3d(4)(A) Frequency in response to odor detection within Blue Route:

In response to an odor detection, ODT member(s) will respond to odor detection location and perform monitoring. If OAL is n = 1 or greater, then:

Odor monitoring survey downwind on blue route will be performed and the frequency of odor monitoring surveys will be increased to hourly, on the blue route, and continue until corrective actions are completed or until two consecutive monitoring events demonstrate no detectable odor.

If odor is detected within the blue route, odor monitoring at the blue route will be suspended and will continue to be monitored hourly downwind on the yellow route. *Frequency in response to reported odors:*

In response to *reported odors* by Plant/PCD personnel, site visitors, or area residents (Section N-3e(1)), the ODT member(s) will conduct odor monitoring at the location of the reported odor. If the reported odor within the blue route is confirmed by the ODT (*odor detection*) at the OAL of n=1 or greater:

- The frequency of odor monitoring surveys within PCD (blue route) will be increased to hourly. Until two consecutive monitorings events demonstrate no detectable odor.

- If *odor is detected* within the blue route, odor monitoring will be suspended within PCD blue route and be conducted downwind at the yellow route. Odor monitoring will be performed hourly, and will continue until corrective actions are completed or two consecutive monitoring events demonstrate no detectable odor.

N-3d(4)(B) Frequency in response to odor detection at the Yellow Route:

In response to odors detected with an OAL of n=1 or greater, at the blue route, the ODT member(s) will:

- Monitor on an hourly basis, at the yellow route. Odor monitoring will be performed until two consecutive monitoring events demonstrate no detectable odor.

- If odor is detected at the yellow route, ODT member(s) will also travel downwind of the odor detection to the property line (orange route). Hourly frequency for odor monitoring will continue until corrective actions are completed or until two consecutive monitoring events demonstrate no detectable odor post corrective action.

N-3.d(4)(C) Frequency in response to odor detection at the Property Line

In response to odors detected with an OAL of n=1 or greater, at the property line (orange route), the ODT members will:

- Monitor hourly at the yellow route and property route (orange route). Odor monitoring will be performed until two consecutive monitoring events demonstrate no detecteable odor.

- If odor is detected at both the yellow and property route, ODT member(s) will notify their management for further instructions and follow instructions per N-3e(2b).

N-3e Odor Action Levels and Associated Actions

As defined above, an *odor detection* at PCAPP is defined as an odor measurement with characteristics recognizable as originating from PCAPP hazardous waste operations, by one member of the ODT. Odor detections at PCAPP may be detected as a result of:

- Routine odor monitoring patrols by member(s) of the PCAPP ODT.

- Reports of odors by other site personnel (non ODT members), PCD personnel, visitors or by area residents that are confirmed as an odor detection by member(s) of the ODT.

The field olfactometer will be used to quantify the D/T for each odor detection, irrespective of location. The following paragraphs provide additional information on handling odor complaints and on the actions defined within Table N-2.

Table N-2. Odor Action level and Associated Actions.

Odor Monitoring Location	OAL**	Action(s)
Within PCD (blue route)*	n = 1	Increase odor-monitoring frequency to hourly. Conduct odor monitoring at the PCD property-line, if downwind from PCAPP. Initiate operational walk-down and investigation of BTA operations.
At Putermost PCD (yellow route)	n=1	Increase odor monitoring frequency to hourly. Conduct odor monitoring at the yellow route, if downwind from thblue route. Initiate operational walk-down and investigation of BTA operations.
At Property line (yellow route)*	Any odor detection	Notify Colorado Department of Public Health and Environment, continue hourly odor monitoring frequency at the property line (if downwind from PCAPP), initiate operational walk-down and investigation of BTA operations.

*Along the northern boundary, the property line actions will apply for observed odors.

**OALs are only applicable to PCAPP-recognizable odors as determined by baseline odor monitoring. No action, except documentation, is taken for odors not associated with PCAPP hazardous waste operations.

N-3e(1) Spontaneous Observations of Odor by Non-ODMember

General odor awareness training will be incorporated into visitor and general site training. Training will include an explanation of the potential for odors onsite with a description of specific odor characteristics pertinent to PCAPP operations and the protocol for immediate odor reporting to the Control Room (CON). In response to odor observations by site personnel, the CON will initiate an Odor Observation Response Form (see Appendix B), collecting the following data before providing the form to an ODT member:

- Date/time
- Location
- General description of odor
- Observer’s name and contact information

The ODT member that receives the odor observation form will initiate the odor survey within 2 hours of the reported observation at the location of the reported odor. The ODT member will complete the Odor Observation Response Form. If the ODT member confirms the odor (i.e., *odor detection*), appropriate actions will be taken per Table 2. If the odor observation is confirmed, the events will be documented within the PCAPP's Condition Reporting Management System to ensure closeout of corrective actions. If more than three unconfirmed odor observations by three different individuals occur in a week, the frequency of ODT surveys within PCD will be increased.

N-3e(2) Actions in Response to Odor Detection

Different actions will be taken based on the location (i.e., within PCD (blue or yellow routes) or the PCD property line (orange route)) of an odor detection (Table N-2). Twice per day odor monitoring will be performed within PCD blue route. Odor monitoring at the yellow route and property line (orange route) will only be performed if odor with OAL of n=1 or greater is detected.

N-3e(2)(A) Actions in Response to Odor Detection Within PCD

Odor detections within PCD with an OAL of n=1 and recognizable as originating from PCAPP hazardous waste operations will result in additional odor monitoring frequency and an investigation of BTA operations.

ODT member(s) will consult with the Operations department to determine the cause of the odor. A review of site operations taking place (e.g., Process Data Acquisition and Reporting (PDARS), Logbooks, etc.,) will be performed as needed. If cause cannot be identified with an operations review, an investigational walkdown will be conducted by a multi-disciplinary team (at the discretion of the Plant Shift Manager (PSM)). If the multi-disciplinary walk-down identifies an operational cause, the team will produce a list of corrective action for immediate implementation and an Odor Detection Investigation Report will be generated. Any or all corrective actions will be managed using PCAPP's Condition Reporting Management System to ensure closeout of corrective actions.

Documentation of the findings by the multi-disciplinary team will be reported on the Odor Detection Report. The Odor Detection Report shall include:

- Date/time
- Locations
- Intensity
- Characteristics

- Meteorological conditions
- Corrective actions implemented to mitigate the odor
- Odor monitoring conducted during the corrective actions(s) period

If corrective actions are not identified during the operations review or the investigation walkdown, the PSM and PCAPP management will define the path forward.

If odor is detected during odor monitoring at the blue route, blue and yellow route monitoring will continue hourly until two consecutive hours with no odor are detected. The Odor Patrol Log will also annotate any findings.

If odor is detected at the yellow route, yellow and property line (orange route) will continue hourly until two consecutive hours with no odor are detected. Findings will be annotated in the Odor Patrol Log.

N-3e(2)(B) Actions in Response to Odor Detection at the Yellow Route and or Property Line

If an odor is observed on PCD’s property line (orange route) at an OAL of n=1 or greater and is recognizable as originating from PCAPP’s hazardous waste operations, the odor detection will be reported to CDPHE and Pueblo County Health Department within four hours of detection. Frequency of odor monitoring at the yellow and property line (orange route) will be increased to hourly. The hourly odor monitoring will be performed and documented, in the Odor Patrol Logs, until two consecutive hours with no detection are obtained.

An investigation of BTA operations will be conducted with Operations to identify the cause of the odor. If cause of the odor is found corrective actions will be implemented and documented in the Odor Detection Report. Any or all corrective actions will be managed using PCAPP’s Condition Reporting Management System to ensure closeout of corrective actions.

If cause cannot be identified, a multi-disciplinary team walk-down shall be conducted as per Section N-3e(2a). If cause is identified by the multi-disciplinary team, findings will be documented on the Odor Detection Investigation Report. If cause cannot be identified by the multi-disciplinary team or correction actions cannot be implemented, the PSM and PCAPP management will define a path forward as per Section N-3e(2a).

If odor detections continue to occur at the property line or the yellow for more than 24 hours, PCAPP will notify the Division, and allow the multi-disciplinary investigation team to determine the appropriate course for corrective action.

The Odor Detection Report will be submitted to CDPHE within five (5) business days of the determination of the cause of odor, by email or, or other means. Otherwise, the Odor Detection Investigation Report will be submitted within 30-days of the implemented corrective action.

N-3f Data Collection and Reporting

Each time one or more ODT member(s) conduct an odor monitoring survey, detect an odor, or confirm an odor reported by others, they will document their findings on the Odor Patrol Log or Odor Observation Response Form. [Note that Appendix A and B provide examples of these forms. However, final forms will be controlled in accordance with plant procedures.] Data collected includes:

- Date/time
- Meteorological conditions at start of survey (wind direction and wind direction variability from the site weather station, ground temperature, cloud cover, and precipitation or fog conditions from personal observation)
- Plant Activity (e.g., modules operating, BRS operating or in stand-by)
- Monitoring location(s) (GPS coordinates)
- Description of the odor character and its intensity at each location (if observed)
- Source of information (e.g., individuals consulted for information, Operations logs, PDAR screens, samples, etc.,)
- Additional observations
- Observer's name and signature

The information from surveys will be compiled in the site database maintained by the Environmental department. This database will include:

- Data collected during odor monitoring surveys, to include those conducted to establish a site background prior to the start of pre-operational surrogate testing

- Odor surveys conducted to establish a site baseline during pre-operational surrogate testing

- Corrective actions implemented

If corrective actions cannot be implemented, report will be submitted to PCAPP's Condition Reporting Management System for tracking.

N-4 Recordkeeping

Records of olfactory sensitivity training and olfactory sensitivity testing shall be retained for a period of at least five years from the date of operations. Odor Observation Response Forms and Odor Patrol Logs will be retained in the Operating Record.

APPENDICES

Appendix A

ODOR PATROL LOG

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Odor Patrol Log

Date: ______________________ Time: ______________________

Odor Team Members: ______________________

Print and Sign Name

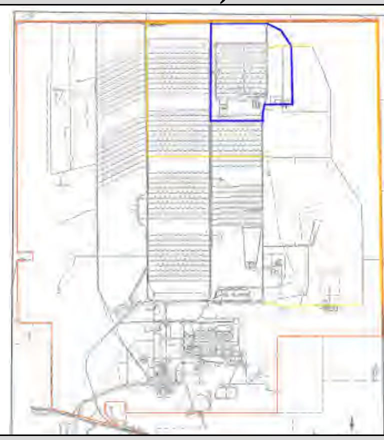
____

Print and Sign Name

Meteorological Conditions (ODT to Obtain from PCD)

Time:	Wind direction variability at 10 m (degrees):
Wind speed at 10 m (mph / m/s):	Temperature:
Wind direction at 10 m (degrees):	Weather (circle):Clear Skies Partly Cloudy Cloudy Light Rain Heavy Rain Snow Fog

Monitoring Route (Based on time of day, prevailing wind direction. ODT shall MARK required locations with GPS coordinates)



Odor Monitoring Survey Results (Completed by ODT, N/A rows and cells not required)

Location	GPS Coordinates	Time	Did you notice an odor? (✓ or No)	Is odor recognizable from PCAPP (✓ or No)	How strong was the odor? (N/A or n = 1–5)	What did it smell like? (Odor Descriptor*)	Nasal Ranger D/T
1	N38 W104						
2	N38 W104						

* Potential odor descriptors are: Floral, Fruity, Vegetable, Earthy, Offensive, Fishy, Chemical, or Medicinal.

Additional Observations (Completed by ODT)

Odor Monitor: ______________________ Date: ______________

Print Name and Signature

Odor Monitor (Peer Reviewer): ______________________ Date: ______________

Print Name and Signature

Appendix B

ODOR OBSERVATION RESPONSE FORM

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Odor Observation Response Form

To be Completed by CON Operator Receiving Complaint			
Call Received by:		Call Date/Time:	
Observer's Name:		Observer's Contact Info:	
Time Odor Observed:			
Description of Odor:			
Location(s) Odor Observed:			
Plant System Number(s)	**On-Line, Stand-by, Maintenance, Off-Normal, or Non-Routine Conditions**		
Mark (X) at the location of the odor complaint:			

Meteorological Conditions to be Completed by the CON	
Time:	
Wind speed at 10 m (mph / m/s):	
Wind direction at 10 m (degrees):	
Wind direction variability at 10 m (degrees):	
Temperature:	
Weather (circle): Clear Skies Partly Cloudy Cloudy Light Rain Heavy Rain Snow Fog	

Odor Investigation (Completed by ODT)			
GPS Coordinates:	N38 W104		
Did you notice any odor? (circle) Yes No			
How does the odor observed compare with the odor baseline? Above Same Below			
What is the N value of the odor? (circle) NA 1 2 3 4 5			
What is the D/T value of the odor?			
What did it smell like? (circle) Floral Fruity Vegetable Earthy Offensive Fishy Chemical Medicinal			
Additional Observations (Completed by ODT)			

Odor Monitor: ______________________ Date: __________
Print Name and Signature

Odor Monitor
(Peer Reviewer): ______________________ Date: __________
Print Name and Signature

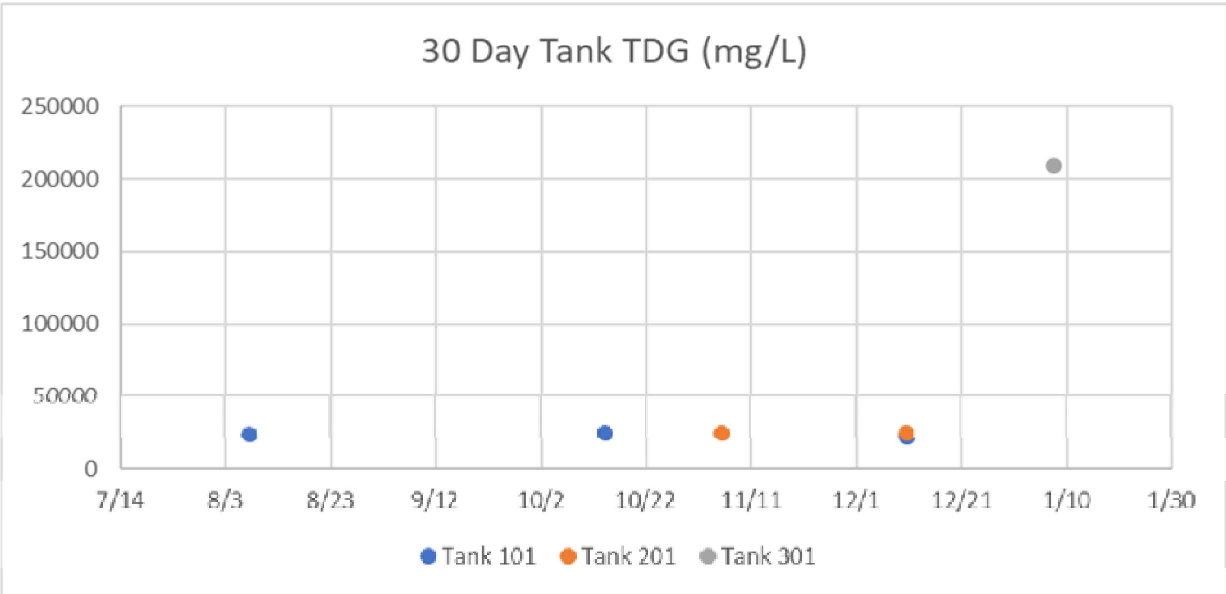
/

Enclosure 23

Thiodiglycol (TDG), Oxathiane (OX), and Dithiane (DT) Concentrations
in Hydrolysate in 30-day Hydrolysate Storage Tanks,
ICB™ Influent and Effluent Tanks, and at the BRS Pre-Filter

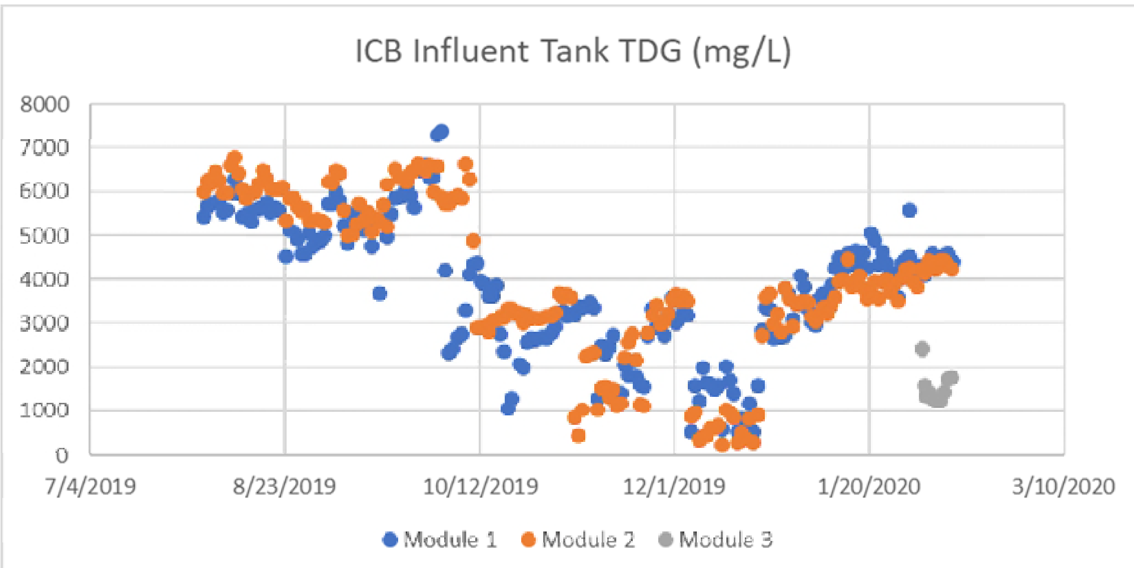
30-day Hydrolysate Hold Tanks

Tank No.	Analyte	Average Result (mg/L)	Minimum Result (mg/L)	Maximum Result (mg/L)	No. Samples
101	TDG	23634	22294	209502	3
201	TDG	24623	24573	24672	2
301	TDG	209502	--	--	1



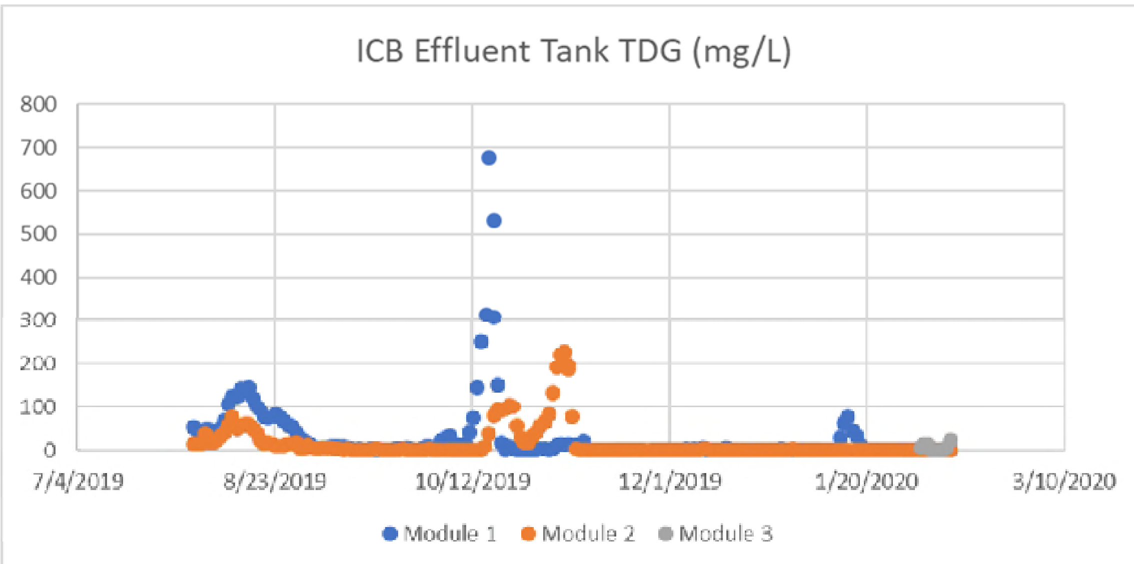
ICB™ Influent Tanks

Module No. Location	Analyte	Average Result (mg/L)	Minimum Result (mg/L)	Maximum Result (mg/L)	No. Samples
1 (S1) PY-1323A	TDG	3487	7408	531	194
2 (S1) PY-1323B	TDG	3458	6643	235	194
3 (S1) PY-1323C	TDG	1547	2430	1238	10



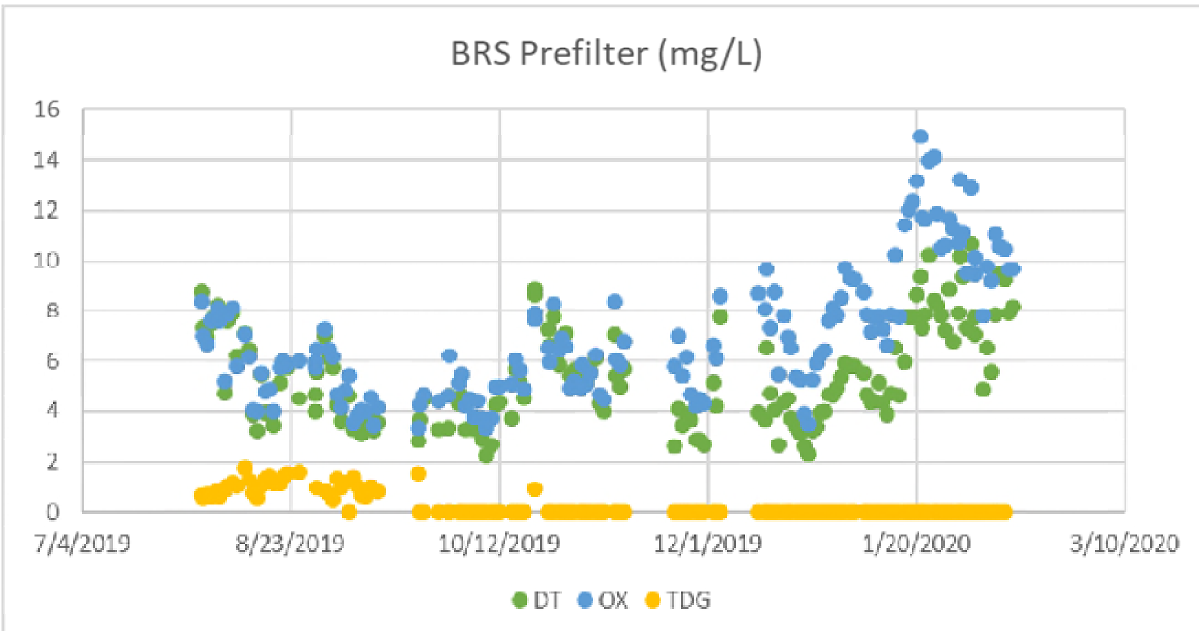
ICB™ Effluent Tanks

Module No. Location	Analyte	Average Result (mg/L)	Minimum Result (mg/L)	Maximum Result (mg/L)	No. Samples
1 (S1) PY-1520A	TDG	49	< Reporting Limit	676	194
2 (S1) PY-15208B	TDG	41	< Reporting Limit	227	194
3 (S1) PY-1520C	TDG	7	23	1	9



BRS Pre-Filter

Analyte	Average Result (mg/L)	Minimum Result (mg/L)	Maximum Result (mg/L)	No. Samples
Dithiane	5.44	2.22	10.66	156
Oxathiane	7.03	3.36	14.89	156
TDG	1.01	< Reporting Limit	1.78	151



Enclosure 24

Proposed Revisions to *TraceTek and H_2Obvious Leak Detection Alarm Response* (24852-OPS-OAP-W0031), with changes depicted using "track changes"

If printed this document may become outdated. Refer to the electronic document on the project server for the current revision.

PUEBLO CHEMICAL AGENT-DESTRUCTION PILOT PLANT (PCAPP)

24852-OPS-OAP-W0031		
ENV TRACETEK AND H_2OBVIOUS LEAK DETECTION ALARM RESPONSE		
REVISION	**TOTAL PAGE COUNT**	**ANNUAL REVIEW DUE**
006	**11**	**05 JUN 2020**

APPROVALS: (N/A FOR PCN)

REQUIRED	PRINT AND SIGN	DATE
MISTY HILZMAN OPSEC REVIEW COMPLETE		
MICHAEL SAUPE ENVIRONMENTAL MANAGER		MOD/CHRON#
BRYAN GREASOR PROCEDURE OWNER		
CLIFTON WALTER OPERATIONS MANAGER		

ENV This procedure in its entirety is incorporated into the RCRA Permit. All changes made to this procedure will require a permit modification. Notification and identification of the proposed changes must be made to CDPHE through the Environmental Department.

Table of Contents

1.0 PURPOSE

This procedure describes the process to respond to leak detection alarms detected by the TraceTek® or H_2Obvious™ alarm system on the permitted storage tanks and piping at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP). This procedure implements the requirements in the hazardous waste permit condition III.C.4 and III.F.2.h.

2.0 SCOPE

This alarm response procedure is applicable during the Operations and Closure Phases of the project once hazardous waste is introduced into the permitted storage tanks and piping. TraceTek® and H2Obvious™ are noted as trademarks here to cover use in the entire procedure.

3.0 RESPONSIBILITIES

3.1 Operations

3.1.1 Initiates this alarm response procedure within 30 minutes of identifying an alarm.

3.1.2 Performs sampling of fluids.

3.1.3 Notifies Environmental when a leak detection alarm occurs.

3.1.4 Notifies the Plant Shift Manager (PSM) when a leak detection alarm occurs.

3.2 Maintenance

3.2.1 (TraceTek) Removes and reinstalls the sensing cable as required to confirm positive indication of alarm.

3.2.2 (H_2Obvious) Removes the encapsulated vial for testing.

3.2.3 Performs corrective and preventive maintenance on the leak detection system.

3.3 Laboratory

3.3.1 Performs analytical services to confirm the presence of hydrolysate, thiodiglycol (TDG), oxathiane (OX), dithiane (DT) or other hazardous waste constituents found in ICB effluent or brine in the event of a suspected leak.

3.3.2 OX and DT are included as analytes of confirmation after an H_2Obvious or TraceTek alarm downstream of the Biotreatment System (BTS) (B09). This includes the Brine Concentrator Feed Tanks (BCFT) (B14), the Brine Recovery System (BRS) (B12), and the piping outside secondary containment downstream of the ICBs.

a. OX and DT must both be analyzed in these areas and, in the event that the sample results fall in different ranges of leak classifications (i.e., refute, confirm, or further investigation needed), the action for the more conservative result will be followed.

3.4 Environmental

3.4.1 Notifies the CDPHE within 24 hours when a leak detection alarm is confirmed and communicates the path forward to restore the plant to normal configuration.

3.5 Engineering

3.5.1 Evaluates alarms.

4.0 ALARM RESPONSE PROCEDURE – TraceTek

4.1 One of the following conditions MUST exist to enter into alarm response actions.

4.1.1 Visible indication of a leak in the containment area, or

4.1.2 A module in alarm.

4.2 Determine corrective action timeframes in accordance with *Timeframe to Correct Environmental Deficiencies*, 24852-30L-000-00001.

Operations

4.3 Investigate the alarm and note the tank and location of the leak detection alarm in the Operations logbook.

4.4 Notify the Area Supervisor and PSM and make notification to Environmental ~~Compliance~~ Shift Representatives (~~ECRs~~ESRs) of the TraceTek alarm.

4.4.1 When sump MT-B12-0018 is in alarm, the Control Room will complete the exceedance paperwork.

4.5 Monitor the air for odor in accordance with *Odor Monitoring and Response*, 24852-OPS-OAP-W0041, following the relevant weather event and confirm liquid released from the grooves.

4.6 Utilize vacuum probe to obtain a liquid sample.

4.6.1 Generate Laboratory Information Management System (LIMS) sample request and ensure proper sample number is entered.

4.6.2 Obtain 2-~~ml~~ mL sample and transport to the Lab.

a. If unable to get a greater than 2-mL~~l~~ sample, obtain as much as possible.

b. If no sample is available, notify PSM for instructions.

c. PSM notify ~~ECRs~~ ESRs that sample could NOT be obtained and will continue to be monitored.

4.7 Request Maintenance to perform the following.

4.7.1 Submit Emergent Work Order.

4.7.2 Remove the sensing cable(s) in alarm.

4.7.3 Clean and dry the groove for the sensing cable.

4.7.4 Install new sensing cable(s) whenever physically possible.

Laboratory

4.8 Perform analysis and confirm or refute the presence of TDG, OX, and/ or DT as applicable.

PSM

For 30-day Storage Tank Secondary Containment -

4.9 If the concentration of TDG ~~(and OX and DT if alarm is NOT in the 30-day Storage Tank area)~~ is ~~(are)~~ less than 1 mg/L~~l~~, the leak is REFUTED. Document results in the Operations logbook and resume normal operations.

4.9.1 If leak is refuted and alarm stays on, perform the following.

a. Collect a sample every four hours if liquid is available as long as the alarm stays on.

b. If still in alarm after four days, contact Engineering for a path forward.

4.10 If the concentration of TDG ~~(or OX or DT if alarm is NOT in the 30-day Storage Tank area)~~ is greater than or equal to 1 mg/L~~l~~ and less than 10 mg/L~~the~~ a potential leak is confirmed.

4.10.1 The tank system will be further investigated until the cause of the alarm is found.

4.11 If the concentration of TDG is greater than or equal to 10 mg/L, the leak is confirmed.

~~4.10.1~~4.11.1 Notify Environmental of the confirmed results.

~~4.10.2~~4.11.2 Proceed with initiation of tank transfer to an available tank within 24 hours of the sample confirmation.

~~4.10.3~~4.11.3 When the tank is drained, remove the tank from service.

4.11.4 Engineering will initiate work orders with instructions to determine source of leak and develop a scope of work to return the tank to service.

For BCFT and BRS Sump secondary containment -

4.12 If the concentrations of OX and DT are less than the detection limits, the leak is REFUTED. Document results in the Operations logbook and resume normal operations.

4.12.1 If leak is refuted and alarm stays on, perform the following.

a. Collect a sample every four hours if liquid is available as long as the alarm stays on.

b. If still in alarm after four days, contact Engineering for a path forward.

4.13 If the concentrations of OX and DT are greater than or equal to the detection limits and less than 3 mg/L, a potential leak is confirmed.

4.13.1 The tank system will be further investigated until the cause of the alarm is found.

4.14 If the concentrations of OX and DT are greater than or equal to 3 mg/L, the leak is confirmed.

4.14.1 Notify Environmental of the confirmed results.

4.14.2 Proceed with initiation of tank transfer to an available tank within 24 hours of the sample confirmation.

4.14.3 When the tank is drained, remove the tank from service.

~~4.10.4~~4.14.4 Engineering will initiate work orders with instructions to determine source of leak and develop a scope of work to return the tank to service.

5.0 ALARM RESPONSE PROCEDURE – H_2Obvious

5.1 One of the following conditions MUST exist to enter into alarm response actions.

5.1.1 Visible indication of a leak under the piping, or

5.1.2 The LED or level float alarm on the H_2Obvious detector is activated.

5.2 Determine corrective action timeframes in accordance with *Timeframe to Correct Environmental Deficiencies*, 24852-30L-000-00001.

Plant Operators

5.3 Investigate the alarm and note the location of the leak in the Operations logbook.

5.4 Notify the PSM and make notification to ~~ECRs~~ESRs.

5.5 Submit a Service Request for Maintenance support and LIMS request.

Maintenance

5.6 Remove the encapsulated vial for testing and install a replacement sensor.

5.7 Remove cladding and insulation from the affected area in accordance with the work order and inspect for liquid present and any obvious sign of a leak. If free liquids or leak is discovered, notify PSM.

Operations

5.7.1 Generate LIMS sample request and ensure proper sample number is entered.

5.7.2 Obtain greater than 2-~~ml~~ mL sample and transport to the Lab.

a. If unable to get a greater than 2-~~ml~~ mL sample, obtain as much as possible.

b. If no sample is available, notify PSM for instructions.

c. PSM notify ~~ECRs~~ ESRs that sample could NOT be obtained and will continue to be monitored.

Laboratory

5.8 Perform analysis and confirm or refute the presence of TDG, OX or DT or other hazardous waste constituents found in ICB effluent or brine.

PSM

5.9 After a leak is detected the H_2Obvious detector must be changed.

5.9.1 Submit a Service Request to replace the H_2Obvious detector.

For piping between the APB and the ICB Feed Tanks -

5.10 ~~IF~~ If the concentration of TDG ~~(and OX and DT if alarm is NOT in the 30-day Storage Tank area or the associated piping)~~ is ~~(are)~~ less than 1 mg/l, the leak is REFUTED, document results in the Operations logbook and resume normal operations.

5.11 ~~IF~~ If the concentration of TDG in the sample is greater than or equal to 1 mg/~~l~~L and less than 10 mg/~~l~~L ~~(and OX and DT if alarm is NOT in the 30-day Storage Tank area or the associated piping are less than 1 mg/l),~~ the pipe can be left in service while further investigation is conducted. See step 6.0 for investigation instructions.

5.12 ~~IF~~ If the concentration of TDG is 10 mg/~~l~~L or greater ~~(or OX or DT if alarm is NOT in the 30-day Storage Tank area or the associated piping is equal to or greater than 1 mg/l),~~ the leak is CONFIRMED for hydrolysate, ~~or other hazardous waste constituents found in ICB effluent or brine,~~ **PERFORM** the following~~.~~:

5.12.1 Suspend fill to affected piping.

5.12.2 Notify Environmental of the confirmed results.

5.12.3 Proceed with removal of as much of the liquid as possible.

5.12.4 Submit a Service Request to allow inspection and repair of the piping system.

For piping downstream of the ICB Effluent Tanks –

5.13 If the concentrations of OX and DT are less than the detection limits, the leak is REFUTED, document results in the Operations logbook and resume normal operations.

5.14 If the concentrations of OX and DT are greater than or equal to the detection limits and less than 3 mg/L, the pipe can be left in service while further investigation is conducted. See step 6.0 for investigation instructions.

5.15 If the concentrations of OX and DT are greater than or equal to 3 mg/L, the leak is CONFIRMED for hazardous waste constituents found in ICB effluent or brine, PERFORM the following.

5.15.1 Suspend fill to affected piping.

5.15.2 Notify Environmental of the confirmed results.

5.15.3 Proceed with removal of as much of the liquid as possible.

~~5.13~~5.16 Submit a Service Request to allow inspection and repair of the piping system.

6.0 H_2OBVIOUS INVESTIGATION

6.1 The investigation will consist of drilling or removing the insulation from the pipe and performing a visual inspection or moisture content to determine whether a leak is present. The amount of insulation to be removed will be based on the moisture content of the insulation. The moisture content of the insulation will be measured with a moisture meter (Thermo-Hygrometer IR Meter, Model MR77 or equivalent). Insulation with a moisture content greater than or equal to 10% will be removed to allow inspection of the pipe. The locations of the moisture content measurements and responses to the readings will be as described below.

6.2 Initial moisture readings will be taken at an approximate one foot interval on either side of the active sensor.

6.3 If the moisture reading is less than 10%, no insulation will be stripped and normal operations may continue.

6.4 If the moisture reading is greater than or equal to 10%, the insulation will be stripped between the location of the reading in excess of 10% and the sensor to allow the pipe to be inspected for leaks.

6.5 If a leak is visually confirmed, the pipe will be taken out of service until necessary repairs are completed. Once the repairs are completed, the pipe will be reinsulated and normal operations may continue.

6.6 If no leak is detected, then testing of additional insulation for moisture content will be performed as described below.

6.7 Additional moisture readings will be taken on either side (or both sides) of the active sensor where the moisture content at the one foot interval is greater than or equal to 10%. The readings will be at a distance of approximately two feet from the location of the previous test.

6.8 If the moisture reading at the location(s) is less than 10%, the wet insulation will be stripped from the pipe between the active sensor and this sample point and then an additional two feet from this sample location to allow the pipe to be inspected for leaks. If a leak is visually confirmed, the pipe will be taken out of service until necessary repairs are completed. If no leak is detected, the pipe will be reinsulated and normal operation may continue.

6.9 If the moisture reading at the location(s) is greater than or equal to 10%, then additional measurements will be taken at locations approximately two feet beyond the locations where the moisture readings are greater than or equal to 10%. This sampling will continue until a reading of less than 10% occurs. At the location where the reading of less than 10% occurs, the insulation will be stripped from the pipe between the active sensor and the location of the less than 10% reading plus an additional approximately two feet beyond the sample point to allow the pipe to be inspected.

6.10 If a leak is visually confirmed, the pipe will be taken out of service until necessary repairs are completed. Once the repairs are completed, the pipe will be reinsulated and normal operations may continue.

6.11 If no leak is detected, the pipe will be reinsulated and normal operation may continue.

7.0 DOCUMENTATION

7.1 Documentation will be maintained in accordance with step 10.1 and 10.4.

7.2 Alarm events will be documented in the Operations logbooks.

7.3 Leak detection results shall be documented in the Operations logbooks and laboratory analytical results shall be maintained in the Control Room until transferred to Document Control Center (DCC).

7.4 Operations logbooks are maintained in accordance with *Log Keeping* 24852-OPS-OAP-W0052. The laboratory analytical results are kept in the sample logbook in the Control Room and when the book is full it is sent to DCC.

8.0 DEFINITIONS

8.1 TraceTek – leak detection system

8.2 H_2Obvious – leak detection system

9.0 ACRONYMS

9.1 CDPHE – Colorado Department of Public Health and Environment

9.2 DCC – Document Control Center

9.3 ~~ECR~~ ESR - Environmental ~~Compliance~~ Shift Representatives

9.4 LIMS – Laboratory Information Management System

9.5 PCAPP – Pueblo Chemical Agent- Destruction Pilot Plant

9.6 PSM – Plant Shift Manager

9.7 TDG – Thiodiglycol

9.8 OX – Oxathiane

9.9 DT - Dithiane

10.0 REFERENCES

10.1 *Completing Quality Records*, 24852-GPP-GAM-00016

10.2 *Log Keeping*, 24852-OPS-OAP-W0052

10.3 *Odor Monitoring and Response*, 24852-OPS-OAP-W0041

10.4 *Records and Information Management*, 24852-K10B-00150

10.5 *Timeframe to Correct Environmental Deficiencies*, 24852-30L-000-00001

PLANT PROCEDURE REVISION/PCN FORM

REQUESTOR: BRYAN GREASOR	PHONE: 5240	REQUEST DATE: 1/30/2020
DOC NO.: 24852-OPS-OAP-W0031	TITLE: TRACETEK AND H2OBVIOUS LEAK DETECTION ALARM RESPONSE	

NEW REVISION NO.: 006

TYPE: ☐ NEW ☐ EDITORIAL ☒ TECHNICAL ☐ CANCEL ☐ SUSPENSION ☐ ANNUAL REVIEW ☐ PCN 24852-PCN-020-

ASSOCIATED CRS: ☐ YES ☒ NO IF YES, LIST:

VALIDATION REQUIRED? ☐ YES ☒ NO

HAZARD EVALUATION? ☐ JHA ☐SR ☒N/A

ASSOCIATED PCP: ☐ YES ☒ NO IF YES, LIST:

TYPE OF VALIDATION: ☐ TABLE TOP ☐ PERFORM ☐ SIMULATION ☒ N/A

EXPEDITED ☐ NO ☐ YES REASON:

BRYAN GREASOR

PROCEDURE OWNER (PRINT AND SIGN) DATE

REVISION DESCRIPTION (PAGE NO., SUMMARY OF CHANGES, ETC.)

GLOBALLY CHANGED ml to mL
GLOBALLY CHANGED ENVIRONMENTAL COMPLIANCE REPRESENTATIVES (ECR) TO ENVIRONMENTAL SHIFT REPRESENTATIVES (ESR)

ADDED 3.3.2 a OX and DT must both be analyzed in these areas and, in the event that the sample results fall in different ranges of leak classifications (i.e., refute, confirm, or further investigation needed), the action for the more conservative result will be followed.

4.4 NOW READS: Notify the Area Supervisor and PSM and make notification to Environmental Shift Representatives (ESRs) of the TraceTek alarm.

ABOVE STEP 4.9 ADDED For 30-day Storage Tank Secondary Containment -
4.9 NOW READS: If the concentration of TDG is less than 1 mg/L, the leak is REFUTED. Document results in the Operations logbook and resume normal operations.
4.10 NOW READS: If the concentration of TDG is greater than or equal to 1 mg/L and less than 10 mg/L a potential leak is confirmed.
ADDED 4.10.1 The tank system will be further investigated until the cause of the alarm is found.
ADDED 4.11 If the concentration of TDG is greater than or equal to 10 mg/L, the leak is confirmed.
4.11.2 NOW READS: Proceed with initiation of tank transfer to an available tank within 24 hours of the sample confirmation.
ADDED THE FOLLOWING BELOW 4.11.4:
For BCFT and BRS Sump secondary containment -
4.12 If the concentrations of OX and DT are less than the detection limits, the leak is REFUTED. Document results in the Operations logbook and resume normal operations.
4.12.1 If leak is refuted and alarm stays on, perform the following.
a. Collect a sample every four hours if liquid is available as long as the alarm stays on.
b. If still in alarm after four days, contact Engineering for a path forward.
4.13 If the concentrations of OX and DT are greater than or equal to the detection limits and less than 3 mg/L, a potential leak is confirmed.
4.13.1 The tank system will be further investigated until the cause of the alarm is found.
4.14 If the concentrations of OX and DT are greater than or equal to 3 mg/L, the leak is confirmed.
4.14.1 Notify Environmental of the confirmed results.
4.14.2 Proceed with initiation of tank transfer to an available tank within 24 hours of the sample confirmation.

PCAPP FORM PLT-GAP-W0009-F001 R009 1 of 2 08 Jan 2020

PLANT PROCEDURE REVISION/PCN FORM

REQUESTOR: BRYAN GREASOR	PHONE: 5240	REQUEST DATE: 1/30/2020
DOC NO.: 24852-OPS-OAP-W0031	TITLE: TRACETEK AND H2OBVIOUS LEAK DETECTION ALARM RESPONSE	

4.14.3 When the tank is drained, remove the tank from service.
4.14.4 Engineering will initiate work orders with instructions to determine source of leak and develop a scope of work to return the tank to service.
ADDED THE FOLLOWING ABOVE STEP 5.10 : For piping between the APB and the ICB Feed Tanks –
5.10 NOW READS: If the concentration of TDG is less than 1 mg/l, the leak is REFUTED, document results in the Operations logbook and resume normal operations.
5.11 NOW READS: If the concentration of TDG in the sample is greater than or equal to 1 mg/L and less than 10 mg/L the pipe can be left in service while further investigation is conducted. See step **Error! Reference source not found.** for investigation instructions.
5.12 NOW READS: If the concentration of TDG is 10 mg/L or greater the leak is CONFIRMED for hydrolysate, **PERFORM** the following:
ADDED THE FOLLOWING BELOW STEP 5.12.4:
For piping downstream of the ICB Effluent Tanks –
5.13 If the concentrations of OX and DT are less than the detection limits, the leak is REFUTED, document results in the Operations logbook and resume normal operations.
5.14 If the concentrations of OX and DT are greater than or equal to the detection limits and less than 3 mg/L, the pipe can be left in service while further investigation is conducted. See step 6.0 for investigation instructions.
5.15 If the concentrations of OX and DT are greater than or equal to 3 mg/L, the leak is CONFIRMED for hazardous waste constituents found in ICB effluent or brine, PERFORM the following.
5.15.1 Suspend fill to affected piping.
5.15.2 Notify Environmental of the confirmed results.
5.15.3 Proceed with removal of as much of the liquid as possible.
5.12.45.16 Submit a Service Request to allow inspection and repair of the piping system.