Project W-566 AZ-102 Condensate Line Independent Integrity Assessment Report

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Abstract: Washington Administrative Code 173-303-640 requires the Owners or operators of new tank systems or components obtain a written assessment, reviewed and certified (in accordance with WAC 173-303-810(13)(a)) by an Independent, Qualified Registered Professional Engineer (IQRPE), attesting the system has sufficient structural integrity and is acceptable for the storing/handling or treating of dangerous waste (i.e. an integrity assessment)

Tank Operations Contractor (TOC) **RECORD OF REVISION**	(1) Document Number: **RPP-RPT-50189**	Page 1

(2) Title:

Project W-566 AZ-102 Condensate Line Integrity Assessment Report

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1 RS	A complete revision by the IQRPE to add clarity to the document following discussions with Ecology.	Jeremy J. Whitcomb 8/9/12	Christopher R. Watson 8/9/2012

AZ-102 CONDENSATE LINE

INDEPENDENT INTEGRITY ASSESSMENT REPORT, REV. 2

Prepared By

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For

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Meier Project No. 6185

July 10, 2012

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AZ-102 Condensate Line replacement

1.0 INTRODUCTION

This Design and Construction Integrity Assessment Report on the AZ-102 Condensate Line was prepared by Meier Architecture • Engineering (Meier) at the request of the Tank Operating Contractor (TOC). WAC 173.303.640 requires the owners or operators of new tank systems or components obtain a written assessment, reviewed and certified (in accordance with WAC 173.303.810(13)(a)) by an independent qualified registered professional engineer (IQRPE), attesting the system has sufficient structural integrity and is acceptable for the storing/handling or treating of dangerous waste (i.e. a design assessment).

1.1. SYSTEM DESCRIPTION

Condensate lines in the AZ tank farm DR-AZ2-M9, connected AZ-301 with AZ-102 ventilation return lines. These lines were previously designed and partially constructed before the project was terminated. The designs of these previous lines were evaluated by ChemMet, Ltd. in *E-525-DIAR, Design Integrity Assessment Report for Project E-525*. As a result of their evaluation, ARES provided a list of recommended changes which would allow the original design to be used for the completion of the new condensate line. The recommendations made by ARES and implementations were:

1. Revise construction standard E-525-C01 to implement latest standards and codes. Refer to ECN – 726718 Rev. 0 for these changes.
2. Prepare new procurement specification for AZ-102 Line. Refer RPP-SPEC-42698.
3. Prepare two (2) new ECNs to release the current hold on drawings; one (1) for holds on electrical drawings and one (1) for hold on mechanical drawings. Refer to ECN-726743 Rev. 0 for electrical holds and ECN-726725 Rev. 0 for the mechanical holds.

The condensate line piping previously fabricated by Project E-525 has been determined to be unacceptable for use. New piping will be fabricated, inspected and tested for the WFD-TLU, Waste Feed Delivery-Transfer Line Upgrades Project by an approved supplier. All SSCs affected by the work performed are designated as General Service.

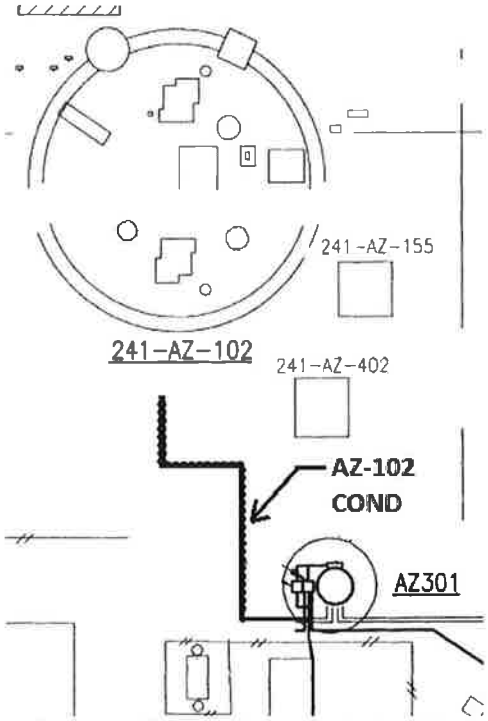


Figure 1: AZ-102 Condensate Line Plan View

1.2. SCOPE

This Integrity Assessment Report (IAR) is based on a design assessment performed in accordance with WAC 173.303.640(3)(a) for the modifications. The modifications outside the retrieval tank that will or may contain dangerous waste, or are necessary to support components which may contain dangerous waste, include:

1. Condensate transfer line DR-AZ2-M9 that connects AZ-301 with AZ-102 ventilation return line.

This independent assessment takes credit for the following previously issued IQRPE reports; *RPP-28538 Volume 1: IQRPE Double-shell Tank System Integrity Assessment HFFACO M-48-14*, which is the main assessment document and contains the assessment of DSTs, pits and vaults and RPP-25153, Volume 3: IQRPE DST System Integrity Assessment Waste Compatibility, which assesses the compatibility of materials in contact, or potentially in contact with the tank farm dangerous waste. *E-525-DIAR, Design Integrity Assessment Report for Project E-525*

The scope of this assessment will address the design and construction (i.e. fabrication, field installation and leak checking) of the above tank components but will not repeat assessments performed under RPP-28538, RPP-25153 and *E-525-DIAR, Design Integrity Assessment Report for Project E-525.*

The integrity of AZ-102 and ancillary equipment was evaluated in the IQRPE certified report, *RPP-28538 Volume 1: IQRPE Double-shell Tank System Integrity Assessment HFFACO M-48-14,* and was not re-evaluated here. That report designates AZ-102 and ancillary equipment as "Fit for Use."

In order to comply with WAC 173.303.640, the IQRPE or a qualified representative will be on site to assess the various tank systems during the fabrication, installation, and testing processes. Ecology publication number 94-114 *Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste* has a list of recommended construction activities that should be inspected. This project contains the following construction activities that are recommended to have inspected:

- Visual inspection and pressure testing
- Subgrade and foundation preparation
- Placement and compaction of backfill
- Placement of reinforcing steel and anchor bolts
- Concrete placement
- Installation of secondary containment liner or vault
- Installation of piping, pumping, and other ancillary equipment
- Installation of cathodic protection systems
- Tightness testing prior to placing tank system in service

This project does not contain the following construction activities and therefore will not have related inspections:

- Placement of shop-fabricated tanks
- Erection of field-erected tanks

The purpose of these inspections is to assure to the IQRPE that the tank systems have been properly fabricated, installed and tested. IQRPE inspections are not required by WAC 173-303-640 but are strongly recommended by Ecology's Guidelines 94-114 and consistent with generally accepted engineering practices.

1.3. COMMENTS ON CERTIFICATION

Section 5.0 contains a certificate attesting to the accuracy of the information presented in this report. The certificate is signed and sealed by Jay Ashbaugh, a Meier Independent Qualified Registered Professional Engineer (IQRPE), in accordance with WAC 173.303.640 (2)(b) and WAC 173.303.810 (13)(a).

2.0 DESIGN ASSESSMENT

The systems described above in Section 1.1 and addressed in the following sections, are adequately designed to prevent failure caused by corrosion or by structural loads imposed by the systems intended service. The system design complies with the requirements of WAC 173.303.640 and is satisfactory in "the foundation, structural support, seams, connections and pressure controls are adequately designed and the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure it will not collapse, rupture, or fail." Documents and analyses reviewed below were performed

according to generally acceptable engineering practices. Reviewed design documents are referenced in Section 6.0.

2.1. WASTE CHARACTERIZATION

Waste characterization was assessed under the previous design assessment E-525-DIAR. Newly designed piping is connected to the same AZ tank system assessed in that report. These analyses appear to be complete and adequate.

2.2. POTENTIAL FOR CORROSION

The potential for corrosion for the AZ-102 Condensate Line was assessed under previous design assessment reports E-525-DIAR and RPP-RPT-26983, *Independent Construction Assessment Report for Project E-525,* Section 3.3. With these assessments no significant external corrosion of the encasement components is anticipated. These analyses appear to be complete and adequate.

The primary containment piping is comprised of stainless steel ASTM A 312, Grade TP 304L. This stainless steel is adequate for the transportation of waste, RPP-25153, which is conservative considering this piping is not considered to be a waste transfer line.

The epoxy coating will protect the exterior of the condensate line encasement from corrosion and stray current. The new condensate line is not considered to be a waste transfer line, therefore, cathodic protection is not required.

2.3. PRESSURE EFFECTS, JOINING, AND LEAK TESTING

Pressure effects, joining and leak testing for the AZ-102 Condensate lines were assessed under a previous design assessment E-525-DIAR and calculations conducted in E525DP1-P-003. Operating limitations and the design and construction requirements are assurance of a suitable operating design. These analyses appear to be complete and adequate.

A design pressure of 150 psig for the primary containment and 60 psig for the secondary containment with a design temperature of 175°F was used in the calculations. These design characteristics are considered to be conservative.

The calculations considered hoop stress (pipe wall circumferential stress) and longitudinal pressure stress, both of which are required by ASME B31.3. Also taken into account in this calculation was thermal expansion loads caused by the 175°F design temperature and sustained loads caused by the weight of both the primary and secondary piping and the weights of the contents in the primary pipe.

Stresses calculated were acceptable per the requirements of ASME B31.3 for each of the materials' basic allowable stress, found in E525DP1-P-003. The calculations showed the piping had an overall piping longitudinal stress of 11,063 psi, well within the allowable stress of 16,700 psi.

Leak testing is required for this piping after it is fabricated. Section 3.0 addresses inspection and requirements for leak testing.

2.4. SEISMIC AND LOAD EFFECTS

E525DP1-P-007 applied external loading and E525DP1-P-003 applied seismic requirements, as well as, pressure requirements to AZ-102 condensate line and supports. More specifically, both calculations, addressed all pipe supports and anchors, such as primary piping v-stop supports, guide supports, intermediate anchors, anchor welds, thermal loads, soil loads, and applicable loads to qualify under seismic safety class General Service PC-1.

Stresses calculated were acceptable per the requirements of ASME B31.3 for each of the materials' basic allowable stress, found in E525DP1-P-003 and 007. The calculation showed the encasement piping had a maximum stress of 9,013, less than the 20,000 psi allowable. The calculation showed the supports had a maximum load of 7,876 psi, less than the 25,050 psi allowable.

The design and calculations confirmed the system complies with WAC 173.303.640(3)(f) by showing the "ancillary equipment (is) supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction."

2.5. MAINTANENCE

The permanent parts of the system will be buried and are designed to be maintenance free for the life of the system. This is described in E-525-DIAR REV. 0. This analysis appears to be complete and adequate.

2.6. STORAGE AND HANDLING

The storage and handling procedures for incoming materials are designed to prevent damage, immediate physical or long-term chemical, to the piping and other materials. According to the timeline of the project there are no plants to store equipment or materials for any significant length of time that would warrant further investigation.

2.7. FREEZE PROTECTION

Freeze protection for the AZ-102 Condensate line was assessed under a previous design assessment E-525-DIAR and calculated in E525DP1-P-006. The calculation shows the minimum soil temperature at the 36in depth is 33.5°F and accompanied with the minimum 1" insulation the pipe maintains adequate freeze protection. These freeze protection procedures are consistent with Hanford standard practices and considered to be conservative.

2.8. OFF NORMAL EVENTS

No Technical Evaluations were performed by Washington River Protection Solutions to assess whether any conditions exist in the AZ-102 Condensate Line, which could lead to the escape of

hazardous waste to the environment during either normal or off normal events. This IQRPE could not identify any such conditions.

3.0 FABRICATION

All independent inspections were performed by Qualified Independent Inspectors (QII) with certifications from the International Code Council, American Welding Society or Professional Engineers registered in the State of Washington. See Section 7.0 for copies of all certifications. All certifications were current at the time of the inspections. All inspection sheets are included in Section 8.0. Each inspection sheet has a Findings/Recommendations/Comments section. This section needs to be acknowledged by a WRPS Project representative only if there is an uncorrected finding discovered by the inspector.

The purpose of these inspections was not to provide QA for the Project, but to assure to the IQRPE that the people, process, and product were all in place and performing in an acceptable manner.

3.1. WELDING

The AZ-102 Condensate Line assembly was fabricated locally at Intermech Inc. Additional welding occurred in the field. Weld inspections were conducted by a Certified Welding Inspector and welds were checked against the specifications found in the design documents.

All welds inspected were found to be satisfactory. After initial welding inspections of each type of weld, in-process welds, and welds by each welder, it was found that the people, process, and product were acceptable and many future welding inspections were waived. Frequency of waived inspections varied between facilities based upon CWI's observations of the facilities' QA/QC. Additionally, all welds, waived or not, were verified for integrity through pressure testing described in Section 3.2. For documentation on CWI weld inspections see Inspection Sheets 8.4, 8.5, and 8.11.

3.2. PRESSURE TESTING

Pressure testing was conducted locally at Intermech Inc. Fabrication pressure testing inspections were conducted by an independent inspector and approved by an IQRPE or by a certified non-destructive examination inspector.

Testing was conducted using hydrostatic or pneumatic methods and according to ASME B31.3. Test pressures were determined using B31.3 guidelines. For hydrostatic testing, the test pressure must be at least 50% above the design pressure. The primary pipe with a design pressure of 150 psi was hydrostatically tested to 225 psi.

Shop hydrostatic testing of the assembled AZ-pipe spool sections was conducted and found to be satisfactory (see Inspection sheets in Section 8.6). "All new tanks and ancillary equipment was tested for tightness prior to being covered, enclosed or placed in use" according to WAC 173.303(3)(e). These tests conform to the requirements of ASME B31.3.

4.0 INSTALLATION

The system described above in Section 1.1 was properly fabricated and installed in accordance with the drawings, specifications, and applicable codes. IQRPE review assessed the new tank system to ensure proper handling procedures are adhered to in order to prevent damage to the system during installation. This conclusion is based upon reviews of weld inspections, installation activities, results of component pressure testing, and observation of system leak tests. The reviews were performed to confirm documents and records were complete, accurate, sufficient, and errors/deficiencies were corrected or valid engineering support was provided to justify "use-as-is." Discussions of specific considerations follow.

Installation activities were observed by a certified QII and/or approved by an IQRPE. See Section 7.0 for copies of all certifications. All certifications were current at the time of the inspections. Additionally, installation documentation was reviewed and found to be satisfactory. The purpose of these inspections was not to provide QA for the Project, but to assure to the IQRPE that the people, process, and product were all in place and performing in an acceptable manner. See Inspection Sheet 8.8.

Subgrade and foundation preparation, placement and compaction of backfill, and concrete placement were witnessed by a QII. See Inspection Sheet 8.10. The installation activity effort, people, process, and product, was found to be satisfactory and future foundation, backfill, and concrete placement activities were waived. FIT plans for all aforementioned activities were reviewed and found to be acceptable.

Holiday inspections of the AZ-102 Condensate line were conducted in the 200E area during fabrication (See Inspection Sheet 8.3). All holiday inspections were found to be acceptable.
The previously uncoated sections were field coated. Representative inspections of the field coating were performed and field coating were found to be with industry standards established by the Coating Manufacture's DATA sheets (See Inspection Sheets in Sections 8.1, 8.2 and 8.9).

Testing was performed in accordance with WAC 173-303-640(3)(c) and (h) to ensure "proper handling procedures are adhered to in order to prevent damage to the system during installation," and that the Owner kept on file, at the facility, "written statements by those persons required to certify the design of the tank system and supervise the installation of the tank system… that attest that the tank system was properly designed and installed."

4.1. TIGHTNESS TESTING RESULTS

All pressure tests were conducted in accordance with subcontractor procedures that are consistent with ASME B31.3 Paragraph 345, and were approved by WRPS QA and Engineering. Leak testing was observed by a certified QII and/or approved by an IQRPE.

Field hydrostatic and pneumatic pressure tests were performed on the AZ-102 Condensate line. The pressure tests met the requirements of the specifications found on the design documents. The test report documents were also reviewed. Visual examination of the pipe and fittings for leaks was found to be in accordance with AMSE B31.3 (see Inspection sheet in Section 8.7).

5.0 STRUCTURAL INTEGRITY ASSESSMENT 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 fine and imprisonment for knowing violations.

6.0 REFERENCES

Drawings:
H-14-105763, Sheets 1, 2
H-14-105764, Sheet 2
H-14-105765, Sheets 1,2,5,7
H-14-105766, Sheet 1
H-14-105769, Sheet 1
H-14-105770, Sheets 1-5
H-14-105772, Sheet 4, Rev 3

Documents:

E-525-DIAR, *Design Integrity Assessment Report for Project E-525.*

E525DP1-C-002, AZ-PC-SP-1 CONDENSATE DISRIBUTION SYSTEM DOME LOADING

E525DP1-P-003, AZ-PC-SP-1 CONDENSATE DISTRIBUTION SYSTEM STATIC PIPING DESIGN

E525DP1-P-006, CALCULATION AZ-PC-SP-1 CONDENSATE DISTRIBUTION SYSTEM DURIED PIPING FREEZE PROTECTION

E525DP1-P-007, CALCULATION AZ-PC-SP-1 CONDENSATE DISTRIBUTION SYSTEM BURIED PIPING ANALYSIS

Ecology Publication 94-111 "Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste".

RPP-25153, Volume 3: IQRPE DST System Integrity Assessment- Waste Compatibility.

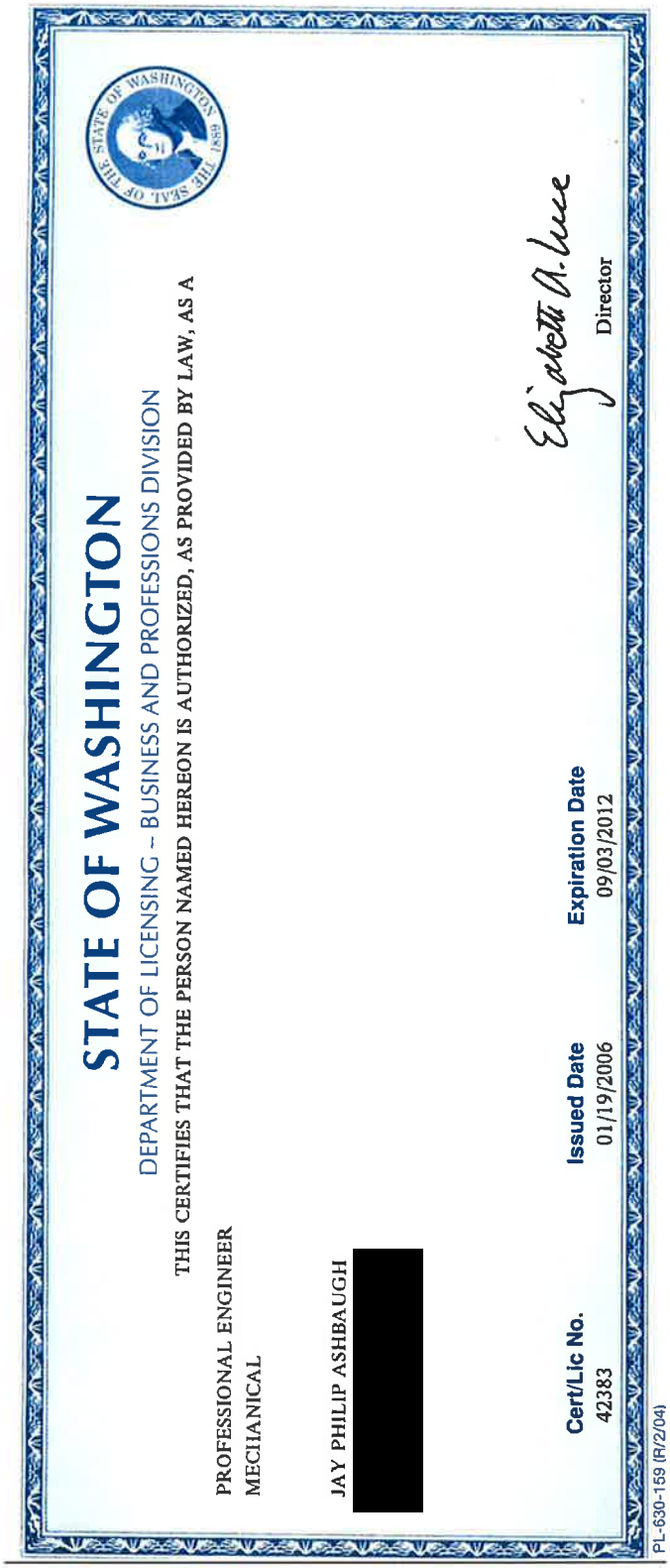
RPP-28538 Volume 1: IQRPE Double-shell Tank System Integrity Assessment HFFACO M-48-14.

RPP-RPT-26983, *Independent Construction Assessment Report for Project E-525*

RPP-SPEC-42698, 241-AZ CONDENSATE PIPING PROCUREMENT SPECIFICATION

WAC 173.303 Dangerous Waste Regulations as Amended

7.0 PROFESSIONAL CERTIFICATES



STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

THIS CERTIFIES THAT THE PERSON NAMED HEREON IS AUTHORIZED, AS PROVIDED BY LAW, AS A

PROFESSIONAL ENGINEER
MECHANICAL

JAY PHILIP ASHBAUGH [redacted]

Cert/Lic No. 42383

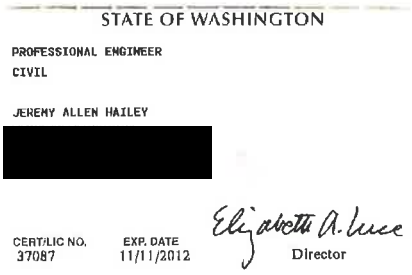
Issued Date 01/19/2006

Expiration Date 09/03/2012

Director

PL-630-159 (R/2/04)


NACE
CORROSION SPECIALIST
Jeremy A. Hailey
Cert No: 5401
Expires: August 31, 2014


STATE OF WASHINGTON
PROFESSIONAL ENGINEER
CIVIL
JEREMY ALLEN HAILEY
[redacted]
CERT/LIC NO.
37087
EXP. DATE
11/11/2012
Director


NACE
NACE CERTIFIED COATING INSPECTOR—LEVEL 3
Jeremy Hailey
Cert No. 5672
Expires: October 2012


NACE
Cathodic Protection Training and Certification Program
CATHODIC PROTECTION SPECIALIST
Jeremy A Hailey
Cert No. 5401
Expires:August 31, 2014


American Welding Society
AWS
Certifies that Welding Inspector
Christopher F Mitchell
has complied with the requirements of AWS QC1,
Standard for AWS Certification of Welding Inspectors
99050441
CERTIFICATE NUMBER
May 1 2014
EXPIRATION DATE
AWS PRESIDENT
AWS QUALIFICATION COMMITTEE CHAIR
AWS CERTIFICATION COMMITTEE CHAIR

American Welding Society

Certifies that Welding Inspector

James T Hill

has complied with the requirements of AWS QC1,
Standard for AWS Certification of Welding Inspectors

06110051
CERTIFICATE NUMBER

November 1 2012
EXPIRATION DATE

Victor G Matthews
PRESIDENT AWS

CHAIR, QUALIFICATION COMMITTEE

CHAIR, CERTIFICATION COMMITTEE

Earl F Peterson - 5242638
UST Installation/Retrofitting - Exp. 01/08/2013

ICC

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500 New Jersey Avenue, NW
Washington, DC 20001

The individual named hereon is CERTIFIED in the categories shown, having been so certified pursuant to successful completion of the prescribed written examinations.

Not valid unless signed by certificate holder.
ICC Certification attests to competent knowledge of codes and standards.

8.0 INSPECTION SHEETS

8.1. CORROSION & COATING SUMMARY

Northwest Corrosion Engineering

10995 Warfield Road, Sedro-Woolley, WA 98284
Phone: (360) 826-4570 Fax: (360) 826-6321

February 21, 2011

To: Rod Powell, Meier Architecture & Engineering

From: Jeremy Hailey, Northwest Corrosion Engineering

Subject: Summary of Hanford AZ Condensate Piping

Northwest Corrosion Engineering was contracted by Meier Architecture & Engineering to conduct coating inspection work on the SY piping and AZ condensate piping to be installed at the Hanford site. The surface preparation, coating application, and holiday inspection work was the responsibility of Columbia Energy (SY piping) and Intermech Richland (AZ piping). The following describes the inspection work completed for this piping.

AZ Piping – Coating Inspection Summary

11/04/10: Initial inspection. Most of the piping surfaces had been coated prior to our inspection, however field weld joint locations were available to take surface profile tests on. Results of the tests showed an anchor profile of 2.7 mils – the manufacture recommends a 3.0 to 5.0 mil profile for application of the Enviroline 376F-30 coating material. We requested a letter from the manufacture stating that this deviation would be acceptable and would not alter the warrantee. Conducted dry film testing of the pipe surfaces, coating was found to be a bit too thin, additional coating was to be applied to make up the remainder of the required coating thickness.

11/12/10: Received and approved the requested environmental condition report submitted by Hancock (for the coating work that was performed prior to our 11/04/10 inspection).

1/20/11: On site inspection of piping spool pieces AZ 2-2, 2-3, and 2-4. Verification of surface preparation, coating mixing and application, and dry film thickness testing.

2/03/11: On site inspection of all four spool pieces (AZ 2-1, 2-2, 2-3, and 2-4) after previous coating application work had been conducted. Measurement of dry film thickness of coatings and recording surface anchor profile at exposed areas to be coated.

2/09/11: Final inspection of AZ piping after coating application. All spool pieces are now coated as required and will be shipped to the job site.

8.1 CORROSION & COATING SUMMARY (CONTINUED)

2/16/11: Was informed by Jason Martin at Intermech that damage had occurred to the piping during the shipping process. Was informed that repairs to the coating would be competed in the Intermech shop prior to transport. I requested that Intermech forward pictures of the damage both prior to and after repair work has been completed. As of the writing of this summary, pictures of the damage have been provided. We are awaiting final photographs of the repair work for our approval.

AZ Condensate Piping – Work to be Completed:

1. Review pipe coating repairs. It is likely that the inspection will involve reviewing provided photographs and issuing a letter of our approval of the repair work.
2. Conduct on-site inspection of the piping as it is being installed.

SY Piping – Coating Inspection Summary

9/09/10: Initial inspection. Upon arrival to the coating contractors site, we noted that the contract[illegible]s not using appropriate materials or techniques for properly preparing the surfa[illegible] SY piping. The work was being conducted in the outdoors without provi[illegible]s f[illegible]ecting the blasted surfaces and the blaster was using sand as opposed to an app[illegible]priate bl[illegible]t grit for surface cleaning. We recommended that a new contractor be selected and [illegible]r this important aspect of the work. A new contractor was brought on board (M[illegible]ainting, Pasco WA). The spool pieces were transferred to Matheson's shop [illegible] the proper facilities were available for conducting the surface preparation, coati[illegible]on, and holiday testing.

9/15/10: Site inspect[illegible]atheson included surface profile testing, measurement of environmental condition[illegible]s testing, dry film thickness testing, and holiday testing of the SY piping. All [illegible]ements and test results were as required by the coating manufactures product dat[illegible]eet.

10/11/10: Portions of the SY pi[illegible]e been shipped to Fort Worth TX in order to apply an external thermal insulation[illegible]rrival, it was noted that several of the pieces has coating flaws that were a result o[illegible]ping process. As requested, photographs of the surfaces prior to repairs were s[illegible]plied al[illegible]g with photographs depicting the preparation of the surfaces, mixing of the co[illegible]material, application of the coating material, and pictures of the holiday testing [illegible]pleted. The coating repair work was reviewed and approved.

10/29/10: On site inspection of repair work mad[illegible]outlet on the SY piping. Damage to this area had occurred and we were provid[illegible]photographs showing the various stages of repair work. The repairs were found to [illegible]able.

11/11/10: On site inspection at Matheson. Work [illegible]measurement of environmental conditions and measuring anchor profile and surf[illegible]ss. All work was within requirements.

SY Piping: Not Applicable

8.1 CORROSION & COATING SUMMARY (CONTINUED)

11/12/10: On site inspection at Matheson of additional SY piping. Inspection included measurement of environmental condition, measurement of dry film thickness, and review of procedures.

11/15/10: On site inspection at Matheson to conduct additional dry film thickness testing and holiday testing of repaired pipe.

11/18/10: It was reported to us that minor damage was done to the pipe coating during the handling process. Repairs were made to the piping at Matheson's shop. This on site inspection including review of the repair work, measuring dry film thickness of repair material, and conducting confirmatory holiday testing. All work was found to be acceptable.

12/02/10: On site at Matheson to witness cleaning and blasting operations of additional SY piping. Environmental conditions were recorded, anchor profiles were measured, and wet film thickness testing was completed.

12/03/10: On site at Matheson to conduct inspection of coating application. Environmental conditions recorded as well as dry film thickness measurements.

12/04/10: On site at Matheson to conduct final dry film thickness measurements of 3-coat system applied to the SY piping spools. Conducted holiday testing and found two locations that will require repair.

1/21/11: Was informed by Columbia Energy that all repairs to coating flaws had to be completed in Fort Worth TX. Pictures of the coating application were provided. We were also provided with a signed inspection surveillance report (performed by Jeff Chadwick) describing that the repair work was completed in accordance with the coating manufactures recommendations and that holiday testing of the repairs was completed. We have accepted the work for the coating repairs made to the piping.

2/09/11: Conducted a visual inspection of all SY piping at the Columbia Energy facilities in Pasco and Richland. All piping had been received back from insulation application in Fort Worth TX. Minor repair work had been completed on rings installed on the SY piping – located at the Pasco site. All inspected repair work was acceptable.

SY Piping – Work to be Completed:

1. Complete in-field inspection during the installation process.

8.2. COATING FINAL INSPECTION

DAILY ACTIVITIES LOG		NORTHWEST CORROSION ENGINEERING 10995 WARFIELD ROAD SEDRO-WOOLLEY, WA 98284		
PAGE 1 OF 3	JOB # 1055			
PROJECT Hanford AZ Pipe Coating	CLIENT Meier Enterprises, Inc.	INSPECTOR Jeremy Hailey	LEVEL Certified	
LOCATION: Intermech and Columbia Energy	CONTRACTOR Intermech Richland	DATE 09-Feb-11	TIME START	TIME FINISH

TIME	REMARKS

Our recent work included a visual inspection of the completed AZ condensate piping at the Intermech facility. The four spool pieces (AZ2-1, 2, 3, and 4) have been coated up to their field weld joints. These piping section have had coating inspection completed at all phases of their coating work including: surface preparation, coating application, and holiday testing. In addition, our inspection work involved taking surface profile tests (after blasting operations) and dry film thickness testing. During our inspection, small areas of repair work were identified and pointed out to the coating contractor. These areas were repaired in accordance with manufactures recommendations and a final coating inspection was completed to our satisfaction. Unless further damage to the spool pieces occurs, there should be no more inspection required until they are placed in the field. Representative photographs of the coating work are shown below. A CD is being provided to Meier that includes copies of all photographs taken during our work (both with the AZ and SY piping) along with copies of each of our inspection reports.

Four AZ piping spool pieces

Close-up of field joint holdback

IDAR AZ-102 REV 2

8.2 COATING INSPECTION (CONTINUED)

DAILY ACTIVITIES LOG				NORTHWEST CORROSION ENGINEERING 10995 WARFIELD ROAD SEDRO-WOOLLEY, WA 98284
PAGE 2 OF 3	JOB # 1055			
PROJECT Hanford AZ Pipe Coating	CLIENT Meier Enterprises, Inc.	INSPECTOR Jeremy Hailey		LEVEL Certified
LOCATION: Intermech and Columbia Energy	CONTRACTOR Intermech Richland Columbia Energy	DATE 09-Feb-11	TIME START	TIME FINISH

TIME	REMARKS
	Intermech provided copies of their coating inspection records that we reviewed. The coating surface preparation and environmental condition monitoring was completed in accordance with our agreed-upon procedures. The records covered the dates of 1/20/11, 1/27/11, 1/28/11 and 2/01/11. All recorded data is within manufactures recommendations for the application of the coating repair materials. In addition to our on site inspection at Intermech and discussions with Intermech personnel, we conduct[illegible] inspection of the SY piping both at Columbia Energy's location in Pasco and their laydo[illegible]ard in Richland. The SY piping pieces had been coated and then shipped to Texas in order [illegible]nstall thermal insulation. During the transportation of these pieces, there was noted coating damage that was reported and subsequently repaired to our satisfaction. The purpose of inspecting the s[illegible]ces in Pasco and Richland was to verify that all piping was properly wrapped and support[illegible]d to verify that damage to the sections of exposed piping at the Pasco yard were properly [illegible]shown below are photographs of the piping pieces.  Insulated SY piping in Richland  Insulate[illegible]g in Richland

SY Piping - Not Applicable

IDAR AZ-102 REV 2

8.2 COATING INSPECTION (CONTINUED)

DAILY ACTIVITIES LOG		NORTHWEST CORROSION ENGINEERING 10995 WARFIELD ROAD SEDRO-WOOLLEY, WA 98284
PAGE 3 OF 3	JOB # 1055	

PROJECT	CLIENT	INSPECTOR	LEVEL
Hanford AZ Pipe Coating	Meier Enterprises, Inc.	Jeremy Hailey	Certified

LOCATION: Intermech and Columbia Energy	CONTRACTOR	DATE	TIME START	TIME FINISH
	Intermech Richland Columbia Energy	09-Feb-11		

TIME	REMARKS

SY Piping - Not Applicable

Insulated and wrapped SY piping in Pasco

Coating repair area

After our inspection work was completed, a meeting was held at Meier Architects with myself, Rod Powell (Meier), and Don Laegare (WRPS). Discussions were held concerning all coating inspection work that has been completed to date as well as the field work that is anticipated to start in the mid March time frame (AZ piping installation). It was pointed out that I would like to have access to the installation locations as the piping is being installed and the field joints are being coated. I was informed that efforts would be made to try to accommodate. Installation timing of the SY piping was not known, but estimates put it somewhere in the mid-March time frame. There will be a total of eight separate SY piping lines that are to be installed. Again, I requested that I be allowed to have access to the installation area in order to witness the coating work associated with the installation of the field joints.

I informed the clients that I would provide them with a CD that contains all inspection reports to date, a summary of the coating inspection work completed to date, and copies of all photographs.

Jeremy A Hailey

17-Feb-11

INSPECTOR'S SIGNATURE DATE

8.3. HOLIDAY TEST INSPECTIONS

INTERMECH
A Bahnson Holdings, Inc. Group Company

Inspection Report

I.R. No: TF28-04

Client: AEI / WRPS Date: 4/25/11 Page 1 of 1

Project: 241-AZ-Condensate

Acceptance Criteria: No Sparks / No Alarm Procedure: Intermech IP-9F Rev. 0

Specification Section: 15493 Drawing Ref.: CEES-10-263-M-001 Sht. 1-7

Location: 241-AZ

Inspections Performed and Results:
Performed discontinuity (Holiday) testing of coatings on spools AZ2-1, AZ2-2, AZ2-3 & AZ2-4. Testing was performed in accordance with Intermech IP-9F Rev.0, and Elcometer 236 DC holiday detector operating instructions.

All areas found to be acceptable excluding the coatings at the AZ-TK-301 tie in Location. The unacceptable portion is to be recoated and retested.

Comments:

Calibration Due January 24th, 2012

Voltage set to 6,000 based upon table 1 of Intermech IP-9F Rev. 0

Inspected By: [signature] Date: 4/25/11

Reviewed By: _____ Date: _____

Witnessed By: Paul A. Werner NACE Coating Inspector Level II Certified CIP # 23478 exp. 6-30-12
Paul A. Werner 4-25-11

INTERMECH
A Bahnson Holdings, Inc. Group Company

Inspection Report

I.R. No: TF28-05

Client: AEI / WRPS Date: 4/26/11 Page 1 of 1

Project: 241-AZ-Condensate

Acceptance Criteria: No Sparks / No Alarm Procedure: Intermech IP-9F Rev. 0

Specification Section: 15493 Drawing Ref.: CEES-10-263-M-001 Sht. 1-7

Location: 241-AZ

Inspections Performed and Results:
Performed discontinuity (Holiday) testing of coatings on spool AZ2-4 where it ties into AZ-TK-301. Testing was performed in accordance with Intermech IP-9F Rev.0, and Elcometer 236 DC holiday detector operating instructions.

All areas found to be acceptable

Comments:

Calibration Due January 24th, 2012 For TMC-HT-01 Tm 4/26/11

Voltage set to 6,000 based upon table 1 of Intermech IP-9F Rev. 0

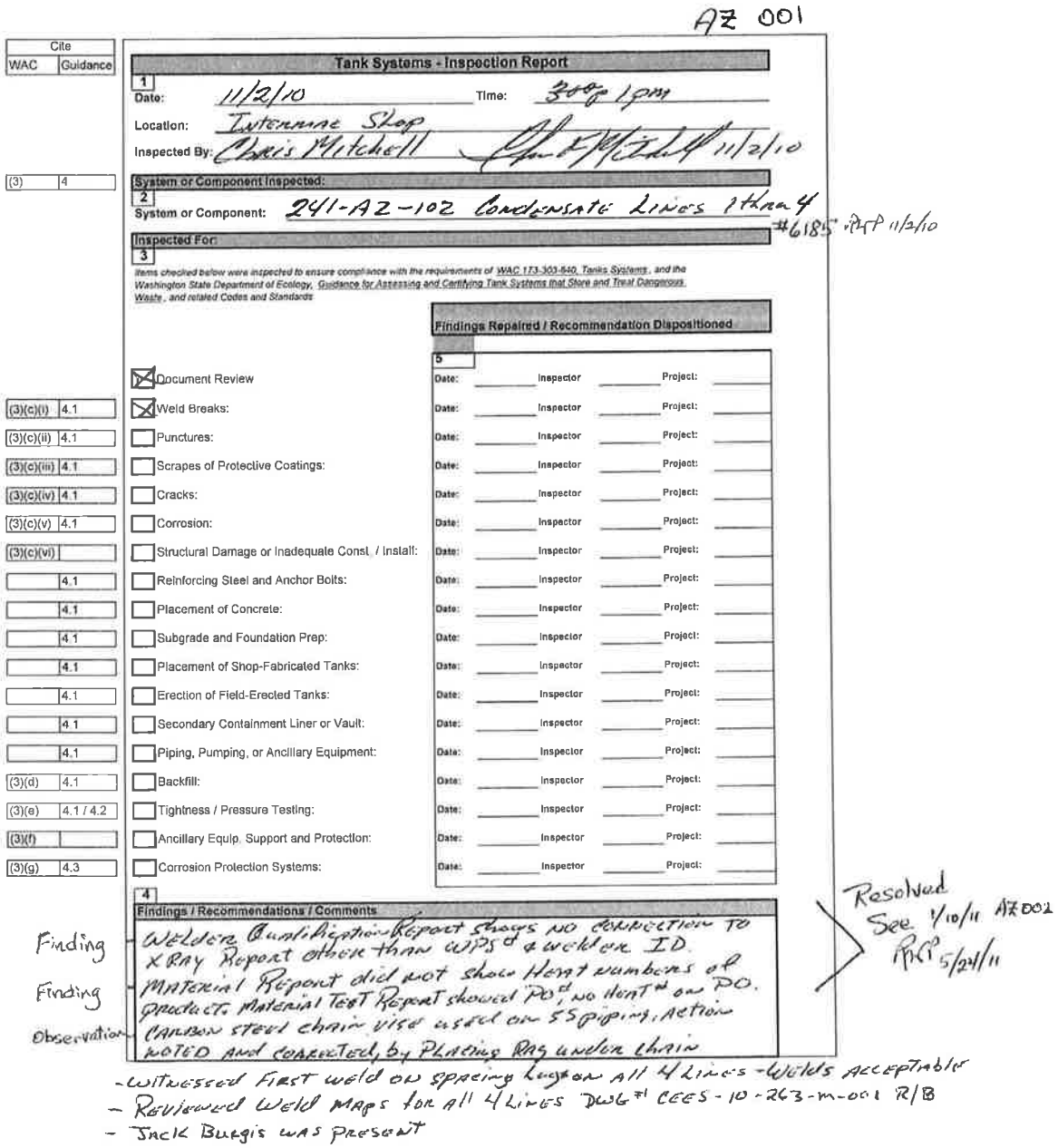
Inspected By: [signature] Date: 4/26/11

Reviewed By: _____ Date: _____

Witnessed by: Paul A. Werner NACE Coating Inspector Level II Certified CIP # 23478 exp. 6-30-201:
Paul A. Werner 4-26-11

IDAR AZ-102 REV 2

8.4. WELDING INSPECTION



AZ 001

Tank Systems - Inspection Report

1 Date: 11/2/10 Time: 3:00 & 1pm

Location: Intermine Shop

Inspected By: Chris Mitchell 11/2/10

System or Component Inspected:

2 System or Component: 241-AZ-102 Condensate Lines 1 thru 4 #6185 RPP 11/2/10

Inspected For:

3 Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards

Cite WAC	Cite Guidance		Findings Repaired / Recommendation Dispositioned (5)
		☒ Document Review	Date: Inspector: Project:
(3)(c)(i)	4.1	☒ Weld Breaks:	Date: Inspector: Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector: Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector: Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector: Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector: Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector: Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector: Project:
	4.1	☐ Placement of Concrete:	Date: Inspector: Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector: Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector: Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector: Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector: Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector: Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector: Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector: Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector: Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector: Project:

4 Findings / Recommendations / Comments

Finding: Welders Qualification Report shows NO connection to XRAY Report other than WPS # & welder ID.

Finding: Material Report did not show Heat numbers of products. Material Test Report showed PO#, no Heat# on PO.

Observation: CARBON steel chain vise used on SS piping, Action NOTED and CORRECTED, by PLACING RAG under chain

Resolved See 1/10/11 AZ 002 RPP 5/24/11

- Witnessed First weld on spacing Leg on All 4 Lines - Welds Acceptable
- Reviewed Weld Maps for All 4 Lines DWG # CCES-10-263-M-001 R/B
- Jack Burgis was present

MEIER Enterprises, Inc.
8697 Gage Boulevard Kennewick, WA 99336
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IDAR AZ-102 REV 2

8.5. SECONDARY WELDING INSPECTION

AZ 002

Cite WAC	Cite Guidance	Tank Systems - Inspection Report	Findings Repaired / Recommendation Dispositioned
		1 Date: 1/10/11 Time: 3pm	
		Location: Intermech	
		Inspected By: Chris Mitchell 1/10/11	
(3)	4	System or Component Inspected:	
		2 System or Component: N/A	
		Inspected For:	
		3 Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards	
		☒ Document Review	5 Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip. Support and Protection	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems	Date: Inspector Project:

4 Findings / Recommendations / Comments

Reviewing Report # TF-10-QSR-252 performed on 12/15/10 by Jack Burgess. Finds that Intermech can Retrieve RT Film on file to Backup Welders Qualification. All Documentation is acceptable.

Resolves AZ 001

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IDAR AZ-102 REV 2

8.6. HYDROSTATIC TESTING

AZ 003

Cite WAC	Cite Guidance	Tank Systems - Inspection Report	Findings Repaired / Recommendation Dispositioned
		1 Date: 11/18/2010 Time: 7:30 A.M.	
		Location: 654 Truman Ave. Richland, Wa. Dittenmack RPP 11/29/10	
		Inspected By: Jim Hill C.W.I.	
(3)	4	System or Component Inspected:	
		2 System or Component: Condensate Line Project #6185 AZ RPP 11/29/10	
		Inspected For:	
		3 Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards	
		☐ Document Review	5 Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector Project:

4 Findings / Recommendations / Comments

Witness a Hydrostatic test performed on pipe assembly on the Condensate Line . The leak test meets the requirements of the specification and the drawings CEES-10-263-M-001. I also reviewed documentation of the test report. Visually examine pipe and fittings for leaks. The test is in accordance with ASME. B31.3

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8.6 HYDROSTATIC TESTING (CONTINUED)

AZ 004

Cite WAC	Cite Guidance

Tank Systems - Inspection Report

1

Date: 11/29/2010 Time: 7:30 A.M.

Location: 654 Truman Ave. Richland, Wa. Intermech RPP 12/2/10

Inspected By: Jim Hill C.W.I.

(3)	4	System or Component Inspected:

2

System or Component: Condensate Line Project #6185 AZ line RPP 12/2/10

Inspected For:

3

Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards

			Findings Repaired / Recommendation Dispositioned
		☐ Document Review	5 Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector Project:

4

Findings / Recommendations / Comments

Witness a in - process weld performed on pipe assembly on the Condensate Line . The weld # 18 meets the requirements of the specification and the drawings CEES-10-263-M-001. I also reviewed documentation for the welder (TM 41) Visually examine W.P.Q . Also reviewed P.Q.R. and the W.P.S. used on G.T.A.W. welds made. The welds are in accordance with ASME. B31.3

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8.6 HYDROSTATIC TESTING (CONTINUED)

AZ 005

Tank Systems - Inspection Report

1

Date: 12/7/2010 Time: 7:30 A.M.

Location: 654 Truman Ave. Richland, Wa. Intermech RPP 12/8/10

Inspected By: Jim Hill C.W.I.

System or Component Inspected:

2

System or Component: Condensate Line Projeck #6185

Inspected For:

3

Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards

Cite WAC	Cite Guidance		Findings Repaired / Recommendation Dispositioned (5)
		☐ Document Review	Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector Project:

4

Findings / Recommendations / Comments

Witness a Hydrostatic test performed on pipe assembly on the Condensato Line . The leak test meets the requirements of the specification and the drawings CEES-10-263-M-001. I also reviewed documentation of the test report. Visually examine pipe and fittings for leaks. The test is in accordance with ASME. B31.3

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8.6 HYDROSTATIC TESTING (CONTINUED)

AZ 006

Cite WAC	Cite Guidance	Tank Systems - Inspection Report	Findings Repaired / Recommendation Dispositioned
		1 Date: 1/27/2011 Time: 1:00 P.M.	
		Location: 654 Truman Ave. Richland, Wa. Intermech RWP 1/31/11	
		Inspected By: Jim Hill C.W.I.	
(3)	4	System or Component Inspected:	
		2 System or Component: Condensate Line Project #6185	
		Inspected For:	
		3 Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards.	
		☐ Document Review	5 Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector Project:

4 Findings / Recommendations / Comments

Witness a Leak Test performed on pipe assembly (Weld Repair) on the Condensate Line . The leak test meets the requirements of the specification and the drawings CEES-10-263-M-001. I also reviewed documentation of the test report. Visually examine pipe and fittings for leaks. The test is in accordance with ASME. B31.3

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8.6 HYDROSTATIC TESTING (CONTINUED)

AZ 001

Cite WAC	Cite Guidance	Tank Systems - Inspection Report	Findings Repaired / Recommendation Dispositioned
		1 Date: 1/19/2011 Time: 7:30 A.M.	
		Location: 654 Truman Ave. Richland, Wa. Determined RHP 1/31/11	
		Inspected By: Jim Hill C.W.I.	
(3)	4	System or Component Inspected:	
		2 System or Component: Condensate Line Project #6185	
		Inspected For:	
		3 Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards.	
		☐ Document Review	5 Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector Project:

4 Findings / Recommendations / Comments

Witness a Hydrostatic test performed on pipe assembly on the Condensate Line . The leak test meets the requirements of the specification and the drawings CEES-10-263-M-001. I also reviewed documentation of the test report. Visually examine pipe and fittings for leaks. The test is in accordance with ASME. B31.3

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IDAR AZ-102 REV 2

8.7. FIELD HYDROSTATIC TESTING

AZ 010

Cite WAC	Cite Guidance
(3)	4

Tank Systems - Inspection Report

1 Date: 3/8/11 Time: 0800

Location: 200E AZ FARM

Inspected By: E PETERSEN / SPITLER

System or Component Inspected:

2 6185

System or Component: AZ CONDENSATE LINE HYDRO

Inspected For:

3

Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards

Cite WAC	Cite Guidance		Findings Repaired / Recommendation Dispositioned (5)
		☒ Document Review	Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☒ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector Project:

4 **Findings / Recommendations / Comments**

HYDRO COMPLETED SATISFACTORILY

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Phone: 509.735.1589 Fax: 509.783.5075

8.8. INSTALLATION INSPECTION

AZ 008

Tank Systems - Inspection Report

1 Date: 2/23/11 Time: 1030

Location: 200E

Inspected By: E PETERSEN / [signature]

System or Component Inspected: (Cite WAC (3), Guidance 4)

2 ~~6246~~ 6185 [initials] 2/24/2011 System or Component: AZ CONDENSATE LINE SPOOL PIECE INSTALL

Inspected For:

3 *Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste and related Codes and Standards*

Cite WAC	Cite Guidance	Item	Findings Repaired / Recommendation Dispositioned (5)
		☐ Document Review	Date: Inspector Project:
(3)(c)(i)	4.1	☐ Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	☐ Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	☐ Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector Project:
(3)(c)(vi)		☐ Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	☐ Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	☐ Placement of Concrete:	Date: Inspector Project:
	4.1	☐ Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	☐ Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	☐ Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	☐ Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	☐ Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	☐ Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector Project:

4 **Findings / Recommendations / Comments**

SPOOL PIECES & CONDENSATE LINE PROPERLY INSTALL IN TRENCH

MEIER Enterprises, Inc.
8697 Gage Boulevard Kennewick, WA 99336
Phone: 509.735.1589 Fax: 509.783.5075

IDAR AZ-102 REV 2

8.9. INSTALLATION COATING INSPECTION

May 19, 2011

Northwest Corrosion Engineering

10995 Warfield Road, Sedro-Woolley, WA 98284
Phone: (360) 826-4570 Fax: (360) 826-6321

Rod Powell, Project Manager
Meier Architecture & Engineering
8697 Gage Blvd.
Kennewick, WA 99336

Subject: Hanford AZ Condensate Piping – Coatings Inspection Summary

Northwest Corrosion Engineering was contracted by Meier Architecture & Engineering to conduct coating inspection work on the AZ condensate piping to be installed at the Hanford site. The surface preparation, coating application, and holiday testing work were completed by Intermech Richland (AZ piping).

As part of our responsibilities, multiple on-site inspections were completed during all phases of the coating work. Specific inspection tasks associated with this piping included:

1. Inspection of prepared surfaces to verify that proper anchor profile and level of surface cleanliness had been achieved.
2. Recording environmental conditions to ensure that temperature, humidity, and dew point were within tolerances.
3. Witnessing the mixing of the coating materials.
4. Observing the application of the coating to the prepared surfaces.
5. Measurement of coating dry film thickness to determine if application was within requirements outlined by the coating manufacture.
6. Observing holiday testing over the coated surfaces. NOTE: Items 1 – 6 were completed in the Intermech shop.
7. Witness on-site coating application and holiday testing of all field joints associated with the AZ piping prior to installation and backfilling processes.

Due to site entry constraints, the field portion of our inspection required that observations be made through a fence barrier. After the final field coating had been applied and properly cured, a holiday test was completed. One location was found to not be in compliance with the specifications. As such, field repairs were made to this single location and additional holiday testing was completed to verify proper application. The final holiday test was witnessed by Paul Werner, NACE Certified Level II coating inspector.

Based upon our observations and results of the inspection, I am satisfied that all phases of the coating work application and holiday testing associated with the AZ condensate piping was completed in accordance with industry standards.

Submitted By:

Jeremy A. Hailey, P.E.
NACE Certified Coating Inspector, #5672
NACE Certified Corrosion Specialist, #5401

8.10. BURIAL INSPECTION

AZ 016

Tank Systems - Inspection Report

1
Date: 5/2/11 Time: 1000
Location: 200 E AZ FARM
Inspected By: B PETERSON [signature]

Cite WAC	Cite Guidance
(3)	4

System or Component Inspected:
2 ~~6146~~ 6185 RPP 5/2/11
System or Component: AZ CONDENSATE LINE

Inspected For:
3
Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards

WAC	Guidance	Item	Findings Repaired / Recommendation Dispositioned (5)
		[X] Document Review	Date: Inspector Project:
(3)(c)(i)	4.1	[ ] Weld Breaks:	Date: Inspector Project:
(3)(c)(ii)	4.1	[ ] Punctures:	Date: Inspector Project:
(3)(c)(iii)	4.1	[ ] Scrapes of Protective Coatings:	Date: Inspector Project:
(3)(c)(iv)	4.1	[ ] Cracks:	Date: Inspector Project:
(3)(c)(v)	4.1	[ ] Corrosion:	Date: Inspector Project:
(3)(c)(vi)		[ ] Structural Damage or Inadequate Const. / Install:	Date: Inspector Project:
	4.1	[ ] Reinforcing Steel and Anchor Bolts:	Date: Inspector Project:
	4.1	[ ] Placement of Concrete:	Date: Inspector Project:
	4.1	[ ] Subgrade and Foundation Prep:	Date: Inspector Project:
	4.1	[ ] Placement of Shop-Fabricated Tanks:	Date: Inspector Project:
	4.1	[ ] Erection of Field-Erected Tanks:	Date: Inspector Project:
	4.1	[ ] Secondary Containment Liner or Vault:	Date: Inspector Project:
	4.1	[ ] Piping, Pumping, or Ancillary Equipment:	Date: Inspector Project:
(3)(d)	4.1	[ ] Backfill:	Date: Inspector Project:
(3)(e)	4.1 / 4.2	[ ] Tightness / Pressure Testing:	Date: Inspector Project:
(3)(f)		[ ] Ancillary Equip. Support and Protection:	Date: Inspector Project:
(3)(g)	4.3	[ ] Corrosion Protection Systems:	Date: Inspector Project:

4
Findings / Recommendations / Comments

CONDENSATE LINE BURIAL - SATISFACTORY

MEIER Enterprises, Inc.
8697 Gage Boulevard Kennewick, WA 99336
Phone: 509.735.1589 Fax: 509.783.5075

8.11. FIELD WELDING INSPECTION

AZ 015

Tank Systems - Inspection Report

1

Date: 4-15-17-11 Time:

Location: AZ Farm

Inspected By: Jon Elliott Jon Elliott

System or Component Inspected:

2

System or Component: 6185 AZ Condensate Line - Welding

Inspected For:

3

Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste and related Codes and Standards

5 Findings Repaired / Recommendation Dispositioned

Cite WAC	Cite Guidance	Item	Findings Repaired / Recommendation Dispositioned
		[x] Document Review	Date: ___ Inspector ___ Project: ___
(3)(c)(i)	4.1	[x] Weld Breaks:	Date: ___ Inspector ___ Project: ___
(3)(c)(ii)	4.1	[ ] Punctures:	Date: ___ Inspector ___ Project: ___
(3)(c)(iii)	4.1	[ ] Scrapes of Protective Coalings:	Date: ___ Inspector ___ Project: ___
(3)(c)(iv)	4.1	[ ] Cracks:	Date: ___ Inspector ___ Project: ___
(3)(c)(v)	4.1	[ ] Corrosion:	Date: ___ Inspector ___ Project: ___
(3)(c)(vi)		[ ] Structural Damage or Inadequate Const. / Install:	Date: ___ Inspector ___ Project: ___
	4.1	[ ] Reinforcing Steel and Anchor Bolts:	Date: ___ Inspector ___ Project: ___
	4.1	[ ] Placement of Concrete.	Date: ___ Inspector ___ Project: ___
	4.1	[ ] Subgrade and Foundation Prep:	Date: ___ Inspector ___ Project: ___
	4.1	[ ] Placement of Shop-Fabricated Tanks:	Date: ___ Inspector ___ Project: ___
	4.1	[ ] Erection of Field-Erected Tanks:	Date: ___ Inspector ___ Project: ___
	4.1	[ ] Secondary Containment Liner or Vault:	Date: ___ Inspector ___ Project: ___
	4.1	[x] Piping, Pumping, or Ancillary Equipment:	Date: ___ Inspector ___ Project: ___
(3)(d)	4.1	[ ] Backfill:	Date: ___ Inspector ___ Project: ___
(3)(e)	4.1 / 4.2	[ ] Tighiness / Pressure Testing:	Date: ___ Inspector ___ Project: ___
(3)(f)		[ ] Ancillary Equip. Support and Protection	Date: ___ Inspector ___ Project: ___
(3)(g)	4.3	[ ] Corrosion Protection Systems:	Date: ___ Inspector ___ Project: ___

4

Findings / Recommendations / Comments

checked welder certs & WPS.
witnessed fitup, root/OF weld VT & PT
witnessed by photo Final weld fitup VT & VT & PT of Root
all were acceptable

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Phone: 509.735.1589 Fax: 509.783.5075

8.11 FIELD WELDING INSPECTION (CONTINUED)

AZ 001

Cite WAC	Cite Guidance
(3)	4

Tank Systems - Inspection Report

1 Date: 11/2/10 Time: 3ish 1pm

Location: Interchange Shop

Inspected By: Chris Mitchell 11/2/10

System or Component Inspected:

2 System or Component: 241-AZ-102 Condensate Lines 1 thru 4 #6185 PRP 11/2/10

Inspected For:

3

Items checked below were inspected to ensure compliance with the requirements of WAC 173-303-640, Tanks Systems, and the Washington State Department of Ecology, Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste, and related Codes and Standards

Cite WAC	Cite Guidance		Findings Repaired / Recommendation Dispositioned (5)
		☒ Document Review	Date: Inspector: Project:
(3)(c)(i)	4.1	☒ Weld Breaks:	Date: Inspector: Project:
(3)(c)(ii)	4.1	☐ Punctures:	Date: Inspector: Project:
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(3)(c)(v)	4.1	☐ Corrosion:	Date: Inspector: Project:
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(3)(d)	4.1	☐ Backfill:	Date: Inspector: Project:
(3)(e)	4.1 / 4.2	☐ Tightness / Pressure Testing:	Date: Inspector: Project:
(3)(f)		☐ Ancillary Equip. Support and Protection:	Date: Inspector: Project:
(3)(g)	4.3	☐ Corrosion Protection Systems:	Date: Inspector: Project:

4 **Findings / Recommendations / Comments**

Finding — Welder Qualification Report shows NO CONNECTION TO XRAY Report other than WPS # & welder ID

Finding — MATERIAL Report did not show Heat numbers of products. Material Test Report showed PO#, no Heat# on PO.

Observation — CARBON STEEL chain vise used on SS piping. Action NOTED and CORRECTED by PLACING RAG under chain

Resolved See 1/10/11 AZ 002 RPS 5/21/11

- Witnessed First weld on spacing Lugs on all 4 Lines - Welds Acceptable
- Reviewed Weld Maps for all 4 Lines DWG # CEES-10-263-M-001 R/B
- Jack Burgis was present

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