



U.S. Department of Energy
Office of River Protection

P.O. Box 450, MSIN H6-60
Richland, Washington 99352

07-WTP-193

JUL 31 2007

Mr. C. M. Albert, Project Manager
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Dear Mr. Albert:

CONTRACT NO. DE-AC27-01RV14136 – INSPECTION REPORT A-07-AMWTP-RPPWTP-002 – ON-LOCATION INSPECTION REPORT FOR THE PERIOD APRIL 1, 2007 THROUGH JUNE 30, 2007

This letter forwards the results of the U.S. Department of Energy, Office of River Protection review of Bechtel National, Inc. (BNI) construction performance of the Waste Treatment and Immobilization Plant for the period April 1, 2007, through June 30, 2007. A summary of the inspections is documented in the attached Inspection Report A-07-AMWTP-RPPWTP-002 (Attachment 2).

The attached Notice of Finding (Attachment 1) identified three Findings (one with four examples and one with three examples) that require BNI response. These Findings are regarding: a) four examples of not fully passing down black cell or other inaccessible piping, arc component welding and material examination requirements to engineering specifications, and welding procedures; b) missing information on completed Above Ground Piping Inspection Records; and c) three quality related issues associated with implementation of BNI's Measuring and Testing Equipment calibration program. In addition, issues associated with BNI's implementation of its equipment preservation and maintenance of permanent plant equipment program were identified and will be discussed later in a separate correspondence.

This letter is not considered to constitute a change to the Contract. In the event BNI disagrees with this interpretation, it must immediately notify the Contracting Officer orally, and otherwise comply with the requirements of the Contract clause entitled 52.243-7 Notification of Changes.

If you have any questions, please contact me, (509) 376-3681.

Sincerely,

A handwritten signature in black ink, appearing to read "John R. Eschenberg".

John R. Eschenberg, Project Manager
Waste Treatment and Immobilization Plant Project

WTP:JWM

Attachments (2):

cc w/attachs:
D. Jantosik, BNI
D. Kammenzind, BNI
BNI Correspondence

NOTICE OF FINDING

Section C, “Statement of Work,” Standard 7, “Environment, Safety, Quality, and Health,” of the Waste Treatment and Immobilization Plant (WTP) Contract DE-AC27-01RV14136, dated December 11, 2000, between the U.S. Department of Energy (DOE), Office of River Protection (ORP) and Bechtel National, Inc. (BNI), defines BNI’s responsibilities as they relate to conventional nonradiological worker safety and health; radiological, nuclear, and process safety; environmental protection; and quality assurance.

Standard 7, Section (d) of the Contract requires BNI to develop and implement an integrated, standards-based, safety management program to ensure radiological, nuclear, and process safety requirements are defined, implemented, and maintained. BNI is required to conduct work in accordance with the BNI-developed and DOE-approved Safety Requirements Document (SRD).

Standard 7, Section (e)(3) of the Contract requires BNI to develop and implement a Quality Assurance (QA) program, supported by the documentation that describes the overall implementation of QA requirements. The documentation shall identify the procedures, instructions, and manuals used to implement BNI’s QA program within BNI’s scope of work. For radiological, nuclear, and process safety, QA is to be conducted in accordance with Title 10 *Code of Federal Regulations* (CFR) Part 830 Sub-Part A¹. BNI’s QA program is documented in 24590-WTP-QAM-QA-01-001, *Quality Assurance Manual (QAM)*, dated October 31, 2006.

While performing assessments of BNI’s construction activities, conducted from April 1, 2007, through June 30, 2007, ORP identified the following Findings:

- 1a. The SRD states in Appendix C, Section 26, “ASME B31.3-1996, Process Piping,” regarding welds undergoing vacuum box testing in lieu of hydrostatic or pneumatic leak testing (SRD 4.2-2). states: “All welds shall be 100% volumetrically inspected in accordance with ASME B31.3-1996, paragraphs 344.5 or 344.6. If the 100% volumetric inspection is conducted using ultrasonic examination per ASME B31.3-1996 paragraph 344.6, then the ultrasonic examination shall be conducted using a method that creates and maintains a reproducible computerized image(s) of the entire weld in the axial and radial direction.”

The QAM, Policy Q-05.1, paragraph 3.1.1, states: “Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, and drawings.”

Contrary to the above, BNI’s Weld Control Manual did not meet the above SRD requirement because although in Form 167 it stated “UT using AIT procedures may be used in lieu of RT-ASME,” it did not require reproducible computerized image(s). This is an example of a Finding for failure to have adequate documented instructions as specified in QAM, Policy Q-05.1, paragraph 3.1.1 (**A-07-AMWTP-RPPWTP-002-F02a**). (Inspection Note 002-16)

¹ 10 CFR 830, “Nuclear Safety Management;” 10 CFR 830 Sub-Part A, “Quality Assurance Requirements”

- 1b. The SRD Appendix C, Section 26, also regarding welds undergoing vacuum box testing in lieu of hydrostatic or pneumatic leak testing (SRD 4.2-2) states: “It [vacuum box tested welds] shall be limited to welds made using the Orbital welding machines. The only exception is that vacuum leak box testing may be used on manual welds if the 100% volumetric inspection was conducted by radiography per ASME B31.3-1996 paragraph 344.5.”

Contrary to the above, the 100% manual weld radiography requirement was not stated in the Contractor’s Weld Control Manual. This is another example of a Finding for failure to have adequately documented instructions as specified in QAM, Policy Q-05.1, paragraph 3.1.1 (**A-07-AMWTP-RPPWTP-002-F02b**). (Inspection Note 002-16)

- 1c. The SRD states in Appendix H, (“Ad Hoc Implementing Standard for Erosion/Corrosion and Assessments”) Section 6, “Positive Material Identification (PMI) is used to check to ensure that the correct material has been used in shop fabricated vessels and piping and in selected field pipe welds where corrosion is a concern.”

PMI specification (*Positive Material Identification (PMI) for Construction*), paragraph 4.1 under exclusion [from PMI requirements], subparagraph item 5 states: “Autogenous welds, fillet welds, or socket welds.” This requirement did not meet the above requirement for welding lugs to pipe where the filler material during welding could affect the piping material. This is another example of a Finding for failure to comply with the requirements of the Contractor’s Quality Assurance Manual, Policy Q-05.1, paragraph 3.1.1 (**A-07-AMWTP-RPPWTP-002-F02c**). (Inspection Note 002-16)

- 1d. In the Weld Control Manual, on Form 167, “Black Cells,” attachment welds under the PMI column is marked “No.” Again, this requirement did not meet the above requirement for welding lugs to pipe. This is another example of a Finding for failure to comply with the requirements of the Contractor’s Quality Assurance Manual, Policy Q-05.1, paragraph 3.1.1 (**A-07-AMWTP-RPPWTP-002-F02d**). (Inspection Note 002-16).

2. Contrary to the QAM Policy Q-05.1, paragraph 3.1.1 requirement stated above, during review of completed Above Ground Piping Inspection Records (APIR), several examples of failure to follow procedures were identified regarding missing information on the APIRs such as component numbers and incremental torque values and torque verification signatures. This is considered a Finding (**A-07-AMWTP-RPPWTP-002-F06**). (Inspection Note 002-17)

- 3a. QAM, Policy Q-12.1, *Control of Measuring and Test Equipment*, Section 3.1.3, states: “Selection of [Measuring and Testing Equipment] M&TE shall be controlled to ensure that such items are of a proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to requirements.”

Contrary to the above, BNI failed to ensure the equipment use range for some M&TE was within the range of the instrument calibration certificate. For example, torque wrench identification number 0702501964, a 3/8-inch torque wrench, was calibrated 15 to 75 ft/lb, but the M&TE Equipment Detail Log listed the usage range as 5 to 75 ft/lb. This is a Finding for

failure to implement QAM Policy Q-12.1 (**A-07-AMWTP-RPPWTP-002-F08a**). (Inspection Note 002-42).

- 3b. QAM Policy Q-12.1, Section 3.4.2.B states: “When M&TE is found out of calibration during recalibration, the validity of results obtained using that equipment since its last valid calibration shall be evaluated.

Contrary to the above, several instances where the need for an evaluation due to out-of-tolerance M&TE had been identified but the evaluation had not been performed. In some instances, the identification of out-of-tolerance M&TE had occurred more than a year ago and the evaluations had yet to be done. Failure to perform this evaluation in a timely manner is considered another example of a Finding against QAM Policy 12.1 (**A-07-AMWTP-RPPWTP-002-F08b**). (Inspection Note 002-42)

- 3c. QAM Policy 12.1, Section 2.1 states: “Procedures describing the controls applicable to M&TE will be established and implemented for the workers that use and calibrated M&TE.”

Periodic calibration verification on one specific tool (Pressure gage number A28290) was not conducted, as required by the M&TE Calibration Interval Approval Form as specified in paragraph 3.3.8 of 24590-WTP-GPP-CON-7102. Failure to perform the required calibration verification is considered another example of a Finding against QAM Policy 12.1 (**A-07-AMWTP-RPPWTP-002-F08c**). (Inspection Note 002-42)

The WTP Project Manager requests BNI to provide a reply to the Findings within 30 days of the date of the cover letter that transmitted this Notice. The reply should include:

1. Admission or denial of the Findings;
2. Reason for the Findings, if admitted, and if denied, the reason why;
3. Corrective steps that have been taken and the results achieved;
4. Corrective steps that will be taken to avoid further Findings; and
5. Date when full compliance with the applicable commitments in authorization bases will be achieved.

Where good cause is shown, consideration will be given to extending the requested response time.

U.S. DEPARTMENT OF ENERGY
Office of River Protection

INSPECTION: On-location Inspection Report

REPORT NO.: A-07-AMWTP-RPPWTP-002

FACILITY: Bechtel National, Inc. (BNI)

LOCATION: 2435 Stevens Center Place
Richland, Washington 99354

DATES: April 1, 2007, through June 30, 2007

INSPECTORS: J. McCormick-Barger, Construction Inspection Lead
J. Bruggeman, ORP Facility Representative
J. Christ, ORP Facility Representative
B. Harkins, ORP Facility Representative
J. Navarro, ORP Facility Representative
E. Enloe, Team Member
M. Evarts, Team Member
R. Taylor, Team Member
D. Wallace, Team Member

APPROVED BY: J. R. Eschenberg, Project Manager
Waste Treatment and Immobilization Plant Project

INSPECTION REPORT

Introduction

During the period April 1, 2007, through June 30, 2007, the U.S. Department of Energy (DOE), Office of River Protection (ORP), Waste Treatment and Immobilization Plant (WTP) Project conducted inspections of important-to-safety (ITS) and non-ITS (Balance-of-Plant) activities during the construction of the WTP. These inspections were documented on inspection notes and maintained electronically. There were 60 inspections of various construction activities, summarized below. A summary listing of the inspection notes is included at the end of this report; copies of the inspection notes are available upon request.

Significant Observations and Conclusion

- Welding of piping associated with the Low-Activity Waste (LAW) Facility Radioactive Liquid Waste Disposal line was in accordance with engineering and welding requirements. (Inspection Note 002-01)
- Bechtel National, Inc. (BNI) (WTP construction contractor) staff was observed disconnecting power, donning personal protection equipment (PPE), and performing a zero-energy check to perform maintenance on the elevator in the Main Construction Office Building T1. These activities were performed in accordance with the lock-out/tag-out (LOTO) procedure and met the safety requirements of the National Fire Protection Association (NFPA) 70E requirements. (Inspection Note 002-02)
- BNI batched, placed, consolidated, and tested concrete for LAW Annex Building slab on grade placement LAW-138 in accordance with engineering specifications and applicable standards. (Inspection Note 002-03)
- Welding of piping associated with the Demineralized Water System (DIW) line was in accordance with engineering and welding requirements. (Inspection Note 002-04)
- For placements LAW-137A and 138B, BNI installed forms, rebar, embeds, and electrical grounding, in an acceptable manner in accordance with the listed design requirements. BNI also batched, placed, consolidated, and tested concrete in accordance with procedures, specifications, and required codes and standards. (Inspection Note 002-05)
- With the one exception of not having the current redlined drawing in the work package to perform the zero-energy check associated with annual maintenance on Substation 1, which was immediately corrected, the work package adequately implemented the proper controls as described in the Hazardous Energy Work Control procedure. The disconnecting of power, donning the appropriate PPE, and performing the zero-energy check were in accordance with the LOTO procedure and met the safety requirements of NFPA 70E. BNI also installed Arc Flash and Shock Hazard warning labels on Substation 1 equipment describing the various boundaries and appropriate PPE required to safely work on this equipment, thus adding an additional level of safety.

Failure to ensure the work package had the current redlined drawing is considered a Finding and was previously identified as **Finding A-07-AMWTP-RPPWTP-001-F04a**, issued about the same time this inspection was performed. Corrective actions to address this issue will be tracked by this previously identified Finding. (Inspection Note 002-06)

- A review of BNI's implementation of its equipment preservation and maintenance of permanent plant equipment program was performed and issues identified. The results of this review were being prepared to be transmitted to BNI in separate correspondence. (Inspection Note 002-07)
- Welding of piping associated with the Radioactive Liquid Waste Disposal System (RLD) was in accordance with engineering and welding requirements. (Inspection Note 002-08)
- BNI had accomplished hydrostatic/pneumatic testing at various locations within the Balance of Facilities (BOF) project during the month of April 2007 in accordance with established requirements. (Inspection Note 002-09)
- Welding of a BOF pipe support was in accordance with engineering and welding requirements. (Inspection Note 002-10)
- Welding of piping associated with the Non-Radioactive Liquid Waste Disposal System (NLD) at the LAW Facility was in accordance with engineering and welding requirements. (Inspection Note 002-11)
- Welding of piping associated with the Plant Service Air System (PSA) was in accordance with engineering and welding requirements. (Inspection Note 002-12)
- The LAW roofing subcontractor was installing the permanent walkway system to the requirements stated on approved drawings. (Inspection Note 002-13)
- BNI installed a double unistrut to W14 × 233 column for an electrical support in the LAW Facility in accordance with the appropriate design and weld procedure requirements. (Inspection Note 002-14)
- Rebar inspected during a walkdown of the High-Level Waste (HLW) Facility, Pretreatment (PT) Facility, and rebar lay down areas was found to be in an acceptable condition free of heavy rusting and pitting that would cause the rebar to become suspect from sitting in the inclement weather for the past two years. The walkdown included a good representative sample of rebar that had been previously installed in these areas. (Inspection Note 002-15)
- Four Weld Control Manual and/or specification issues were identified regarding failure to specify Safety Requirement Document (SRD) required non-destructive examination (NDE), and positive material identification (PMI) requirements for certain "Black Cell" and otherwise inaccessible piping requiring in-service inspections. They include:

1. Failure of the BNI Weld Control Manual to require auto ultrasonic test (UT) examination records to include reproducible computerized images (Finding example **F02a**). Note: This is an administrative issue since the BNI NDE subcontractor was actually generating reproducible computerized images.
2. Failure of the BNI Weld Control Manual to require 100% radiography of manual welds associated with welds not hydro tested (closure welds) (**F02b**). Note: So far no manual closure welds have been performed.
3. Failure of BNI's Positive Material Identification (PMI) specification to require checking field piping material (associated with fillet welds) where corrosion is a concern (**F02c**). Note: Some of this type of material had been installed.
4. Failure of BNI's Weld Control Manual to require PMI checking of field piping material where corrosion is a concern (**F02d**) (also associated with fillet welds). Note: Some of this type of material had been installed.

The above four examples represent a failure to comply with the requirements of the Contractor's Quality Assurance Manual (QAM), Policy Q-05.1, paragraph 3.1.1, which states: "Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, and drawings." This is considered a Finding (**A-07-AMWTP-RPPWTP-002-F02a-d**). In addition, BNI might have installed lugs on piping in the HLW where the piping may have corrosion concerns and PMI inspections were not performed. This issue will be tracked as Assessment Follow-up Item (AFI) **A-07-AMWTP-RPPWTP-002-A03**.

This review did not address the SRD requirements for piping installation, hydrostatic/pneumatic testing, embedded ductwork, vacuum box testing, and inspector certification. Based on the issues identified with SRD NDE requirements flow-down discussed above, as part of the extent of condition review, BNI should review these other requirements to assure they have been passed down to engineering specifications and construction procedures. (Inspection Note 002-16)

- As part of ORP's ASME B31.3, *Process Piping*, "Owner Inspector" responsibilities, APIRs were reviewed for applicable code and Contractor procedure compliance. Several examples of failure to follow procedures were identified regarding missing information on APIRs, such as component numbers, incremental torque values, and torque verification signatures. This is considered a Finding against QAM, Policy Q-05.1, "Instructions, Procedures, and Drawings," paragraph 3.1.1 (**A-07-AMWTP-RPPWTP-002-F06**).

Based on the high error rate for the APIRs reviewed, the inspectors suspended the review of these completed records to allow time for the Contractor to address the above Finding, including extent of condition. (Inspection Note 002-17)

- Wire rope guardrail was properly installed at the Analytical Laboratory (LAB) and complied with Occupational Safety and Health Administration (OSHA) requirements. Minor

deficiencies with the rigging plan and installation were discussed with BNI's site rigging engineer. (Inspection Note 002-18)

- Overall, the March 29, 2007, fire drill and evacuation was conducted well and building residents responded appropriately. No Hanford Fire Department response was required for this drill scenario. (Inspection Note 002-19)
- BNI was batching, placing, consolidating, and testing concrete at LAW wall #135E in accordance with engineering specifications and the SRD. (Inspection Note 002-20)
- With one minor exception, BNI was placing new completed LAW Field Weld Checklists in Project Document Control in an acceptable manner. (Inspection Note 002-21)
- Welding of piping associated with the treated LAW evaporation process line (GB-01) on the south side of the PT Facility was in accordance with engineering and welding requirements. (Inspection Note 002-22)
- Welding of piping associated with the BOF Radioactive Liquid Waste Disposal System (RLD) line was in accordance with engineering and welding requirements. (Inspection Note 002-23)
- An inspection was performed on actions taken by BNI to address AFI A-06-AMWTP-RPPWTP-002-A10 regarding the need to follow up on BNI's efforts to develop a program to maintain configuration management of supplier design drawings of temporary facilities. During this inspection, a National Electrical Code (NEC) compliance review of as-built drawings issued for the T-52 Warehouse was performed. A number of potential NEC compliance issues were identified with the as-built drawings, which either indicated the drawings were not fully as-built or installation errors occurred. BNI's Construction Utility Group issued a Project Issues Evaluation Report (PIER) to investigate these compliance issues. Based on these issues, AFI A-06-AMWTP-RPPWTP-002-A10 will remain open. In addition, AFI **A-07-AMWTP-RPPWTP-002-A04** will be assigned to track BNI's efforts to determine if the as-installed conditions of building T52 electrical panels met NEC requirements. (Inspection Note 002-24)
- The BNI subcontractor installed mineral wool insulation and fire-rated silicone at the LAW Facility as indicated on the drawings/engineering analysis and within specified environmental conditions to achieve 2-hour rated fire protection. (Inspection Note 002-25)
- BNI performed and documented the required testing on A490 high strength bolts (7/8 inch and 1 1/8 inch diameter) in compliance with American Society for Testing and Material (ASTM). The bolts were randomly selected from several lots. The bolts tested from each lot were found acceptable for use at various locations on the WTP site. (Inspection Note 002-26)
- Welding of piping associated with the Plant Wash and Disposal System (PWD) was in accordance with engineering and welding requirements. (Inspection Note 002-27)

- Pressure testing (hydrostatic or pneumatic) at various locations within the WTP site during the months of May and June 2007 was accomplished in accordance with established requirements. (Inspection Note 002-28)
- Following the identification of a potentially significant concern regarding the manner in which Hirschfeld Steel Group had evaluated its suppliers prior to placing them on their Approved Suppliers List (ASL), BNI and Hirschfeld were able to provide adequate documentation to demonstrate that the process used by Hirschfeld to place sub-tier suppliers on their ASL met minimum Nuclear Quality Assurance (NQA)-1 requirements. Based on this, Finding A-07-AMWTP-RPPWTP-001-F01 was withdrawn.

Because of other quality-related problems associated with Hirschfeld, BNI had previously removed Hirschfeld from its ASL and planned to reinstate them after corrective actions were completed and BNI performs a new supplier audit. ORP plans to send an inspector with the BNI auditor team to observe this re-qualification process. (Inspection Note 002-29)

- BNI had adequately closed Occurrence Report EM-RP--BNRP-RPPWTP-2006-012. Corrective actions were completed and the corrective actions for this event appeared adequate to prevent recurrence. (Inspection Note 002-30)
- Welding of a truss to a column at the LAB was in accordance with engineering and welding requirements. (Inspection Note 002-31)
- BNI was batching, placing, consolidating, and testing concrete for wall placement at LAW wall #135B in accordance with engineering specifications and the SRD. (Inspection Note 002-32)
- Welding of a support bracket to a W12 wide flange at the LAB to support a W8 wide flange, was in accordance with the nonconformance report disposition, design, and welding requirements. (Inspection Note 002-33)
- BNI's oversight of Central Research Laboratories, a fabricator of master slave manipulators, was acceptable. The fabricator's quality and fabrication process were generally acceptable with only a minor weld-related issue (incorrect weld symbol specified on drawings) identified. The fabricator and BNI's supplier quality inspectors had identified a number of purchase order requirement issues that were being addressed in accordance with BNI's supplier oversight process in an acceptable manner. (Inspection Note 02-34)
- BNI's oversight of PaR Systems, a fabricator of high-integrity CMAA 70 cranes with power manipulators for the HLW and PT Facilities, was acceptable and included good oversight of PaR Systems and its sub-tier suppliers' electrical work. PaR's quality and fabrication processes were generally acceptable with only minor weld program issues identified. PaR and BNI supplier quality inspectors had identified many purchase order requirement issues that were being addressed in accordance with BNI's supplier oversight process and in an acceptable manner. (Inspection Note 002-35)

- Based on the evidence (provided by BNI) confirming zero-energy checks had been adequately performed during modification of circuits associated with LAW Substations 1, 4, and 5, Finding A-07-AMWTP-RPPWTP-001-F04b is withdrawn. The concern regarding BNI's process for establishing and controlling safe switching procedures when performing power isolations to support multiple work outage activities is being tracked by AFI **A-07-AMWTP-RPPWTP-002-A07**. (Inspection Note 002-36)
- Based on a review performed by independent QA subject matter experts of NQA-1 supplier evaluation requirements and BNI's flow-down of these requirements to fabricators, and a review of BNI's response to Finding A-06-AMWTP-RPPWTP-004-F03 regarding Paxton Vierling Steel Company procurement of weld wire and structural steel, this Finding is withdrawn. Flow-down requirements and actions taken by the fabricator to qualify its sub-tier suppliers were adequate for the materials procured. (Inspection Note 002-37)
- BNI adequately closed Occurrence Report EM-RP--BNRP-RPPWTP-2006-0027. The corrective actions were completed and considered adequate to prevent recurrence of this event. (Inspection Note 002-38)
- Granular insulation depicted in Special Instruction 24590-BOF-SI-C-07-0004 had been installed per the applicable engineering specification and special instructions. (Inspection Note 002-39)
- Welding of piping associated with the Treated LAW Concentrate Storage Process System (TCP) was in accordance with engineering and welding requirements. (Inspection Note 002-40)
- Grouting activities at the LAB on May 24, 2007, had been performed in accordance with engineering requirements. (Inspection Note 002-41)
- In general, BNI was adequately implementing its M&TE program. However, several issues were identified with program implementation. They included (a) calibration ranges were more restrictive than the usage ranges specified in the equipment log for some M&TE tools; (b) some as-found out-of-calibration tool evaluations were not being performed in a timely manner (in some cases a year or more); and (c) calibration verification of one M&TE tool was not performed as required by the M&TE calibration procedure. Construction Management acknowledged these issues and documented them in PIER numbers 24590-WTP-PIER-MGT-07-704, 24590-WTP-PIER-MGT-07-705, and 24590-WTP-PIER-MGT-07-706. These three examples are considered a Finding for failure to fully implement the M&TE requirements of QAM Policy 12.1 (**A-07-AMWTP-RPPWTP-002-F08a, b, and c**). (Inspection Note 002-42)
- The documentation associated with BNI's Readiness Review to recommence construction activities for the HLW Facility provided good evidence of the BNI documents reviewed and of interviews conducted. The documentation included copies of the supporting documents within the respective lines of inquiry (LOI) sections, and the LOIs included the completed conclusion section and any open items, and indicated whether items were Pre-start A-Type, or

Post-start B-Type open items. The performance of the 21 Safety Assurance LOIs resulted in 6 open items, 5 Type-A Pre-start, and 1 Type-B Post-start open items. Four of the five Pre-start open items dealt with the need for assignment of an HLW superintendent.

Follow-up of the closure of the five readiness review open items (identified in PIERs) to ensure the identified issues are adequately addressed, will be tracked as AFI **A-07-AMWTP-RPPWTP-002-A05**. (Inspection Note 002-43)

- Eight reviewed BOF Field Weld Checklists were found to be completed in accordance with 24590-WTP-MN-CON-01-001-08-01, *Welding Documentation (WD-3)*. (Inspection Note 002-44)
- Testing verified the workmanship of the C5 exhaust ductwork main trunk from column E5 to E12, Room LCB004 and associated branch lines at the -21-foot elevation in the LAW Facility and conformed to Contract documents and applicable codes. (Inspection Note 002-45)
- Several immediate actions were taken by BNI field supervision to address an excavation event where a cable was almost penetrated when driving a metal stake into the ground. These include: (1) Before any metal stakes are driven into the WTP site, the Underground Services Coordinator (USC) is to be contacted the day before the work is performed; and (2) The USC is to physically verify all locations by walking the location with the job supervisor. PIER 24590-WTP-PIER-MGT-07-0714 was written to track this issue.

Corrections to the weaknesses with the Excavations and Backfill procedure were being captured in (1) Procedure/Guide Change Notice(s) to procedure 24590-WTP-GPP-3202, Rev. 5, Construction procedure; Excavations and Backfill, and (2) were documented in PIER 24590-WTP-PIER-MGT-07-0714. Corrective actions for the deficiency in the LOTO process will be evaluated in PIER 24590-WTP-PIER-MGT-07-0676.

The actions above were discussed with BNI management and will be tracked as AFI **A-07-AMWTP-RPPWTP-002-A09**. (Inspection Note 002-46)

- BNI performed calculations and proof tested the leak detection boxes (LDB) so that the LDB were in compliance with both ASME B31.3 and ASME Section VIII. BNI had fulfilled requirements showing justification from calculations and testing that the fit, form, and function of the LDB were acceptable and would function as required. BNI had corrected their process (through training and procedure changes) for changing and controlling design changes from their vendors. (Inspection Note 002-47)
- BNI took appropriate actions to establish and implement a preservation maintenance program for WTP equipment in the custody of site subcontractors. Based on these actions, AFI A-05-AMWTP-RPPWTP-002-A14 is considered closed. (Inspection Note 002-48)
- Welding of piping associated with the Radioactive Liquid Waste Disposal System (RLD) was in accordance with engineering and welding requirements. (Inspection Note 002-49)

- BNI's procedure for Permit-Required Confined Space (PRCS) entry met the OSHA requirements with the exception noted below. The entry to a PRCS by F.D. Thomas was adequate; staff was observed following the BNI procedure requirements.

A clarification of the OSHA requirement for forced air ventilation will be sought through the DOE Office of Health, Safety, and Security, to better define the requirements for using forced air ventilations, specifically addressing when either positive or negative forced air ventilation can be used. BNI will be developing a procedure change notice (PCN) to ensure changes in issued PRCS permits are modified only with the concurrence of the Field Safety Assurance Representative. These actions were discussed with BNI management and will be tracked as AFI A-07-AMWTP-RPPWTP-002-A17. (Inspection Note 002-50)

- Welding of piping associated with the Plant Wash and Disposal System (PWD) was in accordance with engineering and welding requirements. (Inspection Note 002-51)
- Welding of piping associated with Fire Protection installation subcontractor fabricated and installed stainless steel fire protection piping for the LAB building was in accordance with engineering and welding requirements. (Inspection Note 002-52)
- BNI was batching, placing, consolidating, and testing LAB slab #0024C concrete in accordance with engineering specifications and the SRD. (Inspection Note 002-53)
- The results of the fabricator's structural integrity tests for LAW high-efficiency particulate air (HEPA) filter housing units C5V-HEPA-00001A thru G were acceptable. (Inspection Note 002-54)
- BNI's process for controlling drawings and documents in work packages was acceptable. Minor issues with the Construction Work Planning and Control procedure and with work packages unnecessarily containing two separate document lists were discussed with BNI Management and actions were being taken to address them. (Inspection Note 002-55)
- BNI installed reinforcement, embeds, and electrical grounding for placement of LAW slab 140 in an acceptable manner in accordance with the Concrete Work engineering specification. (Inspection Note 002-56)
- Welding of piping associated with the Plant Service Air System (PSA) at the LAW Facility was in accordance with engineering and welding requirements. (Inspection Note 002-57)
- Testing of the LAW C2 ductwork and inline components at the +28-foot elevation verified the workmanship of the ductwork and conformed to Contract documents and applicable codes. (Inspection Note 002-58)
- BNI accomplished pneumatic testing of 15 LAB Sanitary Disposal System (SND) drain and cleanout lines in accordance with established requirements. (Inspection Note 002-59)

List of Assessment Items Opened, Closed, and Discussed:

Opened*

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| A-07-AMWTP-RPPWTP-002-F02a, b, c, & d | Finding | Four examples of failure to specify SRD required NDE and positive material identification (PMI) for certain “Black Cell” and otherwise inaccessible piping requiring in-service inspections. (Inspection Note 002-16) |
| A-07-AMWTP-RPPWTP-002-A03 | Assessment Follow-up Item | Follow-up on BNI action to address lugs on piping in the HLW where the piping may have corrosion concerns and PMI inspections were not performed. (Inspection Note 002-16) |
| A-07-AMWTP-RPPWTP-002-A04 | Assessment Follow-up Item | Follow-up on potential NEC compliance issues with T52 Warehouse building as-built drawings. (Inspection Note 002-24) |
| A-07-AMWTP-RPPWTP-002-A05 | Assessment Follow-up Item | Follow-up on BNI’s efforts to close five readiness review open items associated with the HLW restart. (Inspection Note 002-43) |
| A-07-AMWTP-RPPWTP-002-F06 | Finding | Failure to follow procedures resulting in missing information on APIRs, such as component numbers, incremental torque values, and torque verification signatures. (Inspection Note 002-17) |
| A-07-AMWTP-RPPWTP-002-A07 | Assessment Follow-up Item | Follow-up on BNI’s actions to establish and control safe switching procedures when performing power isolations to support multiple work outage activities. (Inspection Note 002-36) |
| A-07-AMWTP-RPPWTP-002-F08a, b, & c | Finding | Three examples of failure to fully implement BNI’s M&TE program. (Inspection Note 002-42) |
| A-07-AMWTP-RPPWTP-002-A09 | Assessment Follow-up Item | Follow-up on BNI actions to address issues with its Excavation and Backfill procedure. (Inspection Note 002-46) |
| A-07-AMWTP-RPPWTP-002-A17 | Assessment Follow-up Item | Follow-up on ORP obtaining a clarification of confined space entry using ventilation, and BNI issuing procedure change to address confined space permit change process. (Inspection Note 002-50) |

* Some items associated with an assessment of BNI's preservation and maintenance of permanent plant equipment program were removed from the above list and may be transmitted to BNI in separate correspondence.

Closed

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| A-05-AMWTP-RPPWTP-002-A14 | Assessment Follow-up Item | Follow-up on Contractor actions to establish and implement preservation and maintenance requirements for equipment that remains in the custody of site subcontractors. (Inspection Note 002-48) |
| A-06-AMWTP-RPPWTP-004-F03 | Finding | Based on a review performed by independent QA subject matter experts of NQA-1 supplier evaluation requirements and BNI's flow-down of these requirements to fabricators, and a review of BNI's response to this Finding, this Finding is withdrawn. (Inspection Note 002-37) |
| A-07-AMWTP-RPPWTP-001-F01 | Finding | BNI and Hirschfeld were able to provide adequate documentation to demonstrate that the process used by Hirschfeld to place sub-tier suppliers on their ASL met minimum NQA-1 requirements. This Finding is withdrawn. (Inspection Note 002-29) |
| A-07-AMWTP-RPPWTP-001-N03 | Non-Cited Finding | Failure to coat inaccessible hangers prior to installation (Inspection Note 002-60) |
| A-07-AMWTP-RPPWTP-001-F04b | Finding | Failure to implement the requirements of NFPA 70E regarding (b) failure to perform adequate zero energy checks before working on the three transformers. (Inspection Note 002-36) |

Discussed

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| A-06-AMWTP-RPPWTP-002-A10 | Assessment Follow-up Item | Follow-up on Contractor actions to address the program to maintain configuration management of supplier design drawings of temporary facilities. (Inspection Note 002-24) |
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| <u>Inspection Note Number</u> | <u>Inspection Subject</u> |
|-------------------------------|--|
| A-07-AMWTP-RPPWTP-002-01 | Welding-LAW RLD piping. |
| A-07-AMWTP-RPPWTP-002-02 | Electrical-elevator maintenance in building T1. |
| A-07-AMWTP-RPPWTP-002-03 | Concrete placement-LAW-138. |
| A-07-AMWTP-RPPWTP-002-04 | Welding-LAW DIW piping. |
| A-07-AMWTP-RPPWTP-002-05 | FRE installation-LAW-137/138. |
| A-07-AMWTP-RPPWTP-002-06 | Electrical-BOF annual substation 1 maintenance. |
| A-07-AMWTP-RPPWTP-002-07 | Preservation and Maintenance of Equipment. |
| A-07-AMWTP-RPPWTP-002-08 | Welding-BOF RLD piping. |
| A-07-AMWTP-RPPWTP-002-09 | BOF pressure testing of piping. |
| A-07-AMWTP-RPPWTP-002-10 | Welding-BOF pipe hanger support. |
| A-07-AMWTP-RPPWTP-002-11 | Welding-LAW NLD piping. |
| A-07-AMWTP-RPPWTP-002-12 | Welding-BOF PSA piping. |
| A-07-AMWTP-RPPWTP-002-13 | LAW roof permanent walkway. |
| A-07-AMWTP-RPPWTP-002-14 | Welding-LAW electrical support. |
| A-07-AMWTP-RPPWTP-002-15 | PTF/HLW rebar inspection. |
| A-07-AMWTP-RPPWTP-002-16 | Weld Program review SRD black-cell. |
| A-07-AMWTP-RPPWTP-002-17 | BOF APIR records review. |
| A-07-AMWTP-RPPWTP-002-18 | LAB temporary wire rope guardrail. |
| A-07-AMWTP-RPPWTP-002-19 | Emergency Preparedness T1 fire drill. |
| A-07-AMWTP-RPPWTP-002-20 | Concrete placement-LAW Wall 135E. |
| A-07-AMWTP-RPPWTP-002-21 | Final weld card review-LAW. |
| A-07-AMWTP-RPPWTP-002-22 | Welding-PTF evaporator process line. |
| A-07-AMWTP-RPPWTP-002-23 | Welding-BOF RLD line. |
| A-07-AMWTP-RPPWTP-002-24 | Electrical T-52 Warehouse as-built verification. |
| A-07-AMWTP-RPPWTP-002-25 | LAW mineral wool and intumescent caulking. |
| A-07-AMWTP-RPPWTP-002-26 | LAW bolting tension testing. |
| A-07-AMWTP-RPPWTP-002-27 | Welding-PTF plant wash and disposal line. |
| A-07-AMWTP-RPPWTP-002-28 | Pressure testing of BOF piping May and June. |
| A-07-AMWTP-RPPWTP-002-29 | Hirschfeld Steel re-inspection. |
| A-07-AMWTP-RPPWTP-002-30 | Closure of Occurrence Report 2006-0012. |
| A-07-AMWTP-RPPWTP-002-31 | Welding-LAB structural steel. |
| A-07-AMWTP-RPPWTP-002-32 | Concrete placement-LAW Wall 135B. |
| A-07-AMWTP-RPPWTP-002-33 | Welding-LAB structural steel. |
| A-07-AMWTP-RPPWTP-002-34 | Supplier inspection-Central Research Lab. |
| A-07-AMWTP-RPPWTP-002-35 | Supplier inspection-PaR Systems. |
| A-07-AMWTP-RPPWTP-002-36 | Withdrawal of Finding 07-001-F04b-LOTO Issue. |
| A-07-AMWTP-RPPWTP-002-37 | Withdrawal of Finding 06-004-F03 P&V Steel. |
| A-07-AMWTP-RPPWTP-002-38 | Closure of Occurrence Report 2007-0002. |
| A-07-AMWTP-RPPWTP-002-39 | LAB Dritherm insulation around RAD line. |
| A-07-AMWTP-RPPWTP-002-40 | Weld-LAW concentrate storage process system. |
| A-07-AMWTP-RPPWTP-002-41 | LAB grout placement 0' elevation. |
| A-07-AMWTP-RPPWTP-002-42 | M&TE program review. |
| A-07-AMWTP-RPPWTP-002-43 | Review of BNI HLW Readiness Review. |
| A-07-AMWTP-RPPWTP-002-44 | Welding-review of BOF FWCLs. |

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| A-07-AMWTP-RPPWTP-002-45 | LAW C5 exhaust ductwork test. |
| A-07-AMWTP-RPPWTP-002-46 | BOF incident review-metal stakes in ground. |
| A-07-AMWTP-RPPWTP-002-47 | PTF leak detection box issue review. |
| A-07-AMWTP-RPPWTP-002-48 | Closure of A-05-AMWTP-RPPWTP-002-A14. |
| A-07-AMWTP-RPPWTP-002-49 | Weld-PTF RLD pipe installation. |
| A-07-AMWTP-RPPWTP-002-50 | Confined Space Program Review. |
| A-07-AMWTP-RPPWTP-002-51 | Weld-BOF PWD pipe installation. |
| A-07-AMWTP-RPPWTP-002-52 | Weld-LAB Fire Protection Piping. |
| A-07-AMWTP-RPPWTP-002-53 | Concrete-LAB slab 0024c. |
| A-07-AMWTP-RPPWTP-002-54 | LAW HEPA filters housing tests. |
| A-07-AMWTP-RPPWTP-002-55 | Work Package Drawing Control review |
| A-07-AMWTP-RPPWTP-002-56 | Concrete-FRE LAW slab 140. |
| A-07-AMWTP-RPPWTP-002-57 | Weld-LAW PSA piping. |
| A-07-AMWTP-RPPWTP-002-58 | Testing of LAW HVAC System. |
| A-07-AMWTP-RPPWTP-002-59 | LAB pneumatic testing of 15 SND lines. |
| A-07-AMWTP-RPPWTP-002-60 | Closure of A-07-AMWTP-RPPWTP-001-N03. |