



U.S. Department of Energy
Office of River Protection

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

05-WTP-132

Mr. J. P. Henschel, Project Director
Bechtel National, Inc.
2435 Stevens Center
Richland, Washington 99352

Dear Mr. Henschel:

CONTRACT NO. DE-AC27-01RV14136 – INSPECTION REPORT A-05-AMWTP-RPPWTP-002 – ON-LOCATION INSPECTION REPORT FOR THE PERIOD APRIL 1, 2005, THROUGH JUNE 30, 2005

This letter forwards the results of the U.S. Department of Energy (DOE), Office of River Protection (ORP) review of Bechtel National, Inc. (BNI) construction performance of the Waste Treatment and Immobilization Plant (WTP) for the period April 1, 2005, through June 30, 2005. One hundred and eighteen specific inspections were completed during this period. One inspection Finding, regarding failure to adequately control design drawings used in the field for welding structural steel and piping, was identified requiring a formal response from BNI. The enclosed Notice of Finding (Enclosure 1) describes this issue and contains the instructions for responding.

Generally, construction performed acceptably during this period. However, significant issues were identified concerning performing welding inspections using the wrong acceptance criteria; poor quality program performance by non-important-to-safety suppliers; lack of adequate equipment preservation and maintenance by subcontractors; failure to incorporate dangerous waste permit requirements into design documents; poor implementation of BNI's lockout/tagout program; and failure to adequately implement the DOE Occurrence Reporting Program. In addition, site electrical installation problems continues to be an issue with over 20 examples identified this period. BNI will be asked to discuss these concerns during the July 13, 2005, inspection exit. A summary of the inspections is documented in the enclosed inspection report (Enclosure 2).

If you have any questions, please contact me, or your staff may call John R. Eschenberg, Manager, WTP Project, (509) 376-3681.

Sincerely,

Roy J. Schepens
Manager

WTP:JWM

Enclosures (2)

cc w/encls:

R. Davis, BNI W. R. Spezialetti, BNI

NOTICE OF FINDING

Section C, "Statement of Work," Standard 7, "Environment, Safety, Quality, and Health," of Contract DE-AC27-01RV14136, dated December 11, 2000, between the U.S. Department of Energy (DOE) and Bechtel National, Inc. (BNI), defined BNI's responsibilities under the Contract as they related to conventional non-radiological worker safety and health; radiological, nuclear, and process safety; environmental protection; and quality assurance.

Standard 7, Section (e)(3) of the Contract required BNI to develop and implement a Quality Assurance (QA) program, supported by 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 10 CFR 830.120. BNI's QA program was documented in 24590-WTP-QAM-QA-01-001, "Quality Assurance Manual (QAM)," Revision 5a, dated November 08, 2004.

During performance of an assessment of BNI's program for control of documents and records, conducted in June 2005, DOE Office of River Protection (ORP) identified the following Finding;

QAM Policy Q-06.1, "Document Control," Section 3.1.1 states, "The preparation, issue, and change of documents that specify technical requirements, quality requirements, or prescribe activities affecting quality such as instructions, procedures, and drawings, shall be controlled to ensure that correct documents are being employed."

Contrary to the above, the document control process did not assure correct documents were employed at the Waste Treatment and Immobilization Plant (WTP) work site as required by the BNI QA manual. Specifically, controlled drawings in Pretreatment Facility structural steel and piping welding packages did not reflect the current change status and several work packages contained at least one drawing in use that was not the correct revision. Additionally, revisions to uncontrolled drawings used for work were not verified daily and craft personnel were unsure of what was the current drawing revision.

Failure of BNI to ensure current revision of drawings are used in the field for construction and acceptance of structural steel and pipe welding is a Finding against QAM Policy Q-06.1 (Finding A-05-AMWTP-RPPWTP-002-F12.)

Note: Failure to adequately control construction drawings used in the field is a repeat Finding. See Inspection Report A-04-ES-RPP-WTP-002 (correspondence 04-ESQ-011) Finding A-04 ESQ-RPPWTP-002-F01.

The Manager, DOE ORP, requests the Contractor provide, within 30 days of the date of the cover letter that transmitted this Notice, a reply to the Finding above. The reply should include: (1) admission or denial of the Finding; (2) the reason for the Finding, if admitted, and if denied, the reason why; (3) the corrective steps that have been taken and the results achieved; (4) the corrective steps that will be taken to avoid further Findings; and (5) the date when full compliance with the applicable commitments in your 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 for the Period April 1, 2005, through
June 30, 2005

REPORT NO.: A-05-AMWTP-RPPWTP-002

FACILITY: Bechtel National, Inc. (BNI)

LOCATION: 2435 Stevens Center
Richland, Washington 99352

DATES: April 1 through June 30, 2005

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

APPROVED BY: M. Thomas, Operations and Commissioning Team Leader
Waste Treatment and Immobilization Plant Project

INSPECTION REPORT

Introduction

During the period April 1, 2005, through June 30, 2005, 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 of the construction of the WTP. These inspections were documented on inspection notes and maintained electronically. There were 118 inspections of various construction activities summarized below. A summary listing of the inspection notes is included in back of this report. Copies of the inspection notes are available upon request.

Significant Observations and Conclusion

- BNI's program for storing, cleaning, and issuing respirators was being adequately implemented. BNI's surveillance of Chicago Bridge and Iron's (CB&I) respirator program was adequately performed, resulting in the identification and documentation of several deficiencies. (Inspection Note 002-01.)
- The thin film intumescent fireproofing subcontractor had correctly documented activities related to fire proofing installations, including material receipt and storage. Materials were correctly applied to the required specified thickness for each steel member as indicated on the drawings/specifications and were installed within proper environmental conditions. BNI provided adequate oversight of the subcontractor as documented on Fireproofing Final Inspection Forms and Special Instructions. (Inspection Note 002-02.)
- BNI had adequately prepared for and upended/set the Low Activity Waste (LAW) Facility +3 foot wet electrostatic precipitator (WESP) vessels in a safe manner in accordance with the applicable requirements. (Inspection Note 002-03.)
- BNI had installed reinforcement and embed steel, and/or batched, placed, consolidated, tested, and monitored concrete in accordance with engineering specifications and the Safety Requirements Document (SRD). (Inspection Notes 002-04, 002-05, 002-22, 002-38, 002-39, 002-42, 002-58, 002-63, 002-72, 002-87, 002-92, 002-94, 002-105, 002-106, 002-113, and 002-116.)
- Material, fit-up and alignment, final weld performance, welder qualification, and non destructive examinations of Field weld 01 for nozzle N-17 of HOP VSL-0904 (SBS Condensate Vessel 904) was performed to the specified requirements and standards. (Inspection Note 002-06.)
- Earthen backfill placement and compaction testing activities for the Analytical Laboratory Facility (LAB) and ITS Switchgear Buildings 88A and 88B were performed in accordance with specified design and standard requirements. (Inspection Notes 002-08, 002-18, 002-33, and 002-34.)

- Welding of piping associated with Pretreatment (PT) Modular Fabrication slabs was being performed in accordance with specified codes and standards. (Inspection Note 002-09.)
- The Heating, Ventilation, and Air-conditioning (HVAC) sub-contractor was installing duct supports and duct in accordance with applicable requirements and documentation, except the Quality Control (QC) inspector was not entering the latest revision of the drawings used for acceptance on the work package. BNI's field Quality Assurance (QA) department wrote a Corrective Action Report (CAR) (24590-WTP-CAR-QA-05-061) to address this issue. Follow-up to assess BNI's corrective actions will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A01**. (Inspection Note 002-12.)
- Although many electrical inspections identified acceptable work, inspections continue to identify electrical installation errors associated with both temporary and permanent electrical installations. Examples included:
 1. Installation of #10 AWG grounding conductor when a #8 was required;
 2. Installation (twice) of a #10 type SOOW cord on 30 amp fuses when only 25 amp fuses are allowed with this sized conductor;
 3. Installation of black #6 AWG with green phase tape when green or green with one or more yellow stripes was required;
 4. Failure to install a grounding bushing with a liquid tight flexible metal conduit;
 5. Wrong colored conductors used for 120 volt single phase system;
 6. Grounding jumper installed on the neutral terminal bus when not allowed;
 7. Failure to install two required isolated grounding buses;
 8. A welding rack had not been connected to a grounding electrode;
 9. Emergency lights not installed on a normal lighting circuit;
 10. Installed Steam Plant condensate transfer pumps 2 and 3 components and wiring were reversed;
 11. Settings of the 30 amp MCP circuit breaker associated with the Steam Plant were not correct;
 12. Wrong sized conductors for Steam Plant MCC-85001A;
 13. Wrong sized breaker installed;
 14. Installed 100 amp plugs with 65 amp rated conductors;
 15. Clayton fireproofing building transformer was installed as a service in accordance with NESC (versus NEC but this was not clear on the design drawing);
 16. Subcontractor had not bonded the metal cover or the unistrut in utility vault 575-LA;
 17. Transformer bollards not grounded;
 18. A #10 grounding wire was installed when a #8 conductor was required;
 19. Failure to install bonding locknuts or bushings on the fireproofing building service raceway of Panelboard H1;
 20. Installed a 225 amp main breaker in fireproofing building when a 125 amp main breaker was needed to meet requirements;
 21. Wrong sized bonding jumper was installed from fireproofing building transformer T1 to Panelboard L1;
 22. Failure to install a grounding electrode at the T-46 100 amp, 480 volt disconnect;

23. Use of a #6 AWG bonding jumper when #4 AWG was required;
24. Flexible metal conduit installed with wrong sized reducing washers; and
25. Multi-branch circuits installed but not correctly identified on the sub-contractor's drawings.

Note: Follow-up on items 10-14 will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A08**; follow-up on items 15-17 will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A10**; follow-up of items 22-25 will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A16**. The rest of the items listed above were corrected prior to the end of the inspection period. (Inspection Notes 002-10, 002-14, 002-32, 002-40, 002-54, 002-59, 002-66, 002-78, 002-88, 002-90, 002-91, 002-97, 002-100, 002-101, 002-110, and 002-114.)

- Pneumatic and hydraulic shop and field testing of installed (or to be installed) piping was conducted in accordance with site procedures and specifications, and code requirements. Piping was installed in accordance with design and specification requirements. (Inspection Notes 002-07, 002-17, 002-23, 002-46, 002-47, 002-50, 002-51, 002-61, 002-80, 002-82, 002-85, 002-99, 002-103, and 002-115.)
- BNI had adequately prepared for and set the PT vessels CXP-VSL-00001 and -0003, in a safe manner in accordance with the applicable requirement. (Inspection Notes 002-15 and 002-19.)
- BNI was installing and documenting PT Facility beam seats at the 52' elevation, room PA21, in accordance with the applicable design and specification requirements. (Inspection Note 002-16.)
- BNI was observed welding on several LAB piping systems in accordance with design and specification requirements. (Inspection Note 002-20.)
- With the exception of one concern, BNI was installing LAW structural steel moment connections with qualified welders and quality control staff in accordance with site procedures and applicable design codes. One concern was identified regarding BNI specifying and using visual acceptance criteria NCIG-1 (Nuclear Construction Issues Group, Visual Weld Acceptance Criteria for Structural Welding at Nuclear Power Plants), rather than AWS-D1.1 (American Welding Society, Structural Welding Code-Steel) (required by PSAR, Section 2.4.1). Follow-up of this concern will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A09**. (Inspection Note 002-24.)
- BNI Occurrence Reporting Program needs improvement. Some occurrences were reported late, some event information and corrective actions were missing, some corrective actions listed in the reports were not effective or not implemented, some corrective actions were inappropriately limited in scope, and some corrective actions had long-lead implementation

dates. Follow-up on BNI actions to address these Occurrence Report Program problems will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A11**. (Inspection Note 002-25.)

- Grouting of LAW structural steel base plates were performed in accordance with the approved grouting procedure. (Inspection Note 002-26.)
- Welding and acceptance of PT Facility Radioactive Vessel Vent piping was performed in accordance with the applicable design and welding codes. (Inspection Note 002-27.)
- Leak testing of the LAW -21' elevation east main HEPA header ductwork, exhaust ductwork, crossover ductwork, and inline components was performed in accordance with specified requirements and verified the workmanship of the ductwork. (Inspection Notes 002-28, 002-48, and 002-75.)
- Based on an inspection performed in April 2005, site excavations were being performed in accordance with a well established procedure that met or exceeded 29 CFR Part 1926.650, Subpart P requirements. However, subsequent to this inspection, on May 3, 2005, an excavation occurred where the workers failed to adequately follow the procedure, resulting in damaging a buried energized temporary power cable. BNI performed an adequate investigation of the event and implemented appropriate corrective actions to address the event. (Inspection Notes 002-29 and 002-67.)
- WTP electrical hand tool safety was being implemented in an adequate manner in accordance with 29 CFR 1926, Subpart I, *Tools – Hand and Power*. (Inspection Note 002-30.)
- PT Facility duct support DS-3B-002, in black cell room P-0108C, was installed and inspected in accordance with design, specification, and procedural requirements, and met SRD specified codes and standards. (Inspection Note 002-31.)
- Installation of structural steel and insulation associated with the two fireproofing buildings was performed in accordance with design and contractual requirements. (Inspection Note 002-35.)
- BNI was installing PT Facility crane rail beam seats at elevation 28', in room PA21, in accordance with applicable requirements except BNI was using the wrong visual acceptance criteria (EPRI NP-5380 vs. the required AWS D1.1) required in ASME N690. Follow-up on BNI's efforts to address this issue will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A02**. (Inspection Note 002-36.)
- LAB C3 and C5 Effluent Vessel Cell liner plates were installed in accordance with design and specification requirements. (Inspection Notes 002-37 and 002-77.)

- Functional testing of the Switchgear Building Fire detection and alarm system was adequately performed and verified audible/visual alarms were working correctly and the display at the fire alarm control panel provided the correct status for the signals received. (Inspection Note 002-41.)
- American Boiler Works Technology, Inc. (ABW) was found to be implementing an acceptable QA program and an acceptable welding program. Materials were being adequately controlled and welders and inspectors were qualified in accordance with purchase order requirements. (Inspection Note 002-43.)
- A number of quality issues were identified at Diamond B Constructors, a non-important-to-safety (ITS) pipe fabricator. These issues included: (1) failure to have a required Visual Test procedure; (2) two welding procedures lacked volts and travel speed (required non-essential variables); (3) no evidence the pipe bending sub-supplier (a Canadian company) was using the BNI approved pipe bending procedure; (4) two welder qualifications were in error regarding their not using gas backing when in fact they did use gas backing; (5) QC Inspectors were not qualified to ASNT-TC-1A as required by purchase order and supplier's QA manual (they were however, qualified to AWS requirements); and (6) QC inspectors did not have required current eye exams on file. Although the supplier quality representatives (SQRs) had not focused on the QA issues described above, they were heavily involved with ensuring quality products were being shipped to the WTP. They had nearly a full-time presence at the site and had identified over 70 quality deficiency reports since WTP work started. Follow-up on BNI's efforts to address these QA issues and the generic issue regarding QA oversight of non-ITS suppliers will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A03**. (Inspection Note 002-44.)
- BNI's eye protection program was generally adequate. However, BNI needed to verify personnel are using ANSI Z87.1-1989 compliant glasses. In addition, BNI needed to provide employees information/training on how to properly select the correct welding hood filter lens for their specific application as required by 29 CFR 1910.133(a)(1). Follow-up to verify BNI addresses the welder eye protection issue will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A04**. After BNI took adequate actions to address this issue the follow-up item was subsequently closed. (Inspection Notes 002-45 and 002-111.)
- PT Facility liner plate within ring beam of Vessels TLP VSL 00009B (Treated LAW Evaporator Process System) and UFP VSL S62A, S62B and S62C (PTF Ultrafiltration Process System) were installed in accordance with design and specification requirements. (Inspection Notes 002-49, 002-53, 002-98, and 002-104.)
- Subcontractor Advanced Inspection Technology (AIT) performed Ultrasonic Testing on a field weld on the PTF Waste Feed System in accordance with the design requirements and ASME B31.3. (Inspection Note 002-55.)
- BNI was installing underground ITS conduit raceway systems for future MVE-SWGR-88001B and MVE-SWGR-88001A in accordance with design and the National Electrical

Code (NEC). (Inspection Note 002-56.)

- BNI adequately prepared for and set vessel RLD-VSL-00017A and -00017B in the PT Facility and LAW vessels TCP-VSL-00001, -00009A, and -00009B in accordance with applicable requirements. (Inspection Notes 002-52 and 002-57.)
- BNI was performing welding on the High Level Waste 36” Canister Handling Embedded C5 duct in accordance with site procedures, engineering specifications, and code requirements. (Inspection Note 002-60.)
- BNI adequately specified the requirements for compliance with 29 CFR 1926 regarding protection from falling objects. Procedures and a Construction Guide provided construction staff with implementation requirements that addressed protection of workers from falling objects, and with some deficiencies that were being addressed, BNI was found to be adequately implementing these requirements. Subsequent to the May 5, 2005, falling tool incident, BNI had notified construction workers of this incident via a Safety Bulletin and worker pre-job briefings, and was in the process of further clarifying construction management’s expectations regarding control of falling object hazards. (Inspection Note 002-62.)
- After DOE identified and discussed with the applicable LAW structural steel supervisor and later with the WTP Field Safety Assurance Manager unsafe fall protection work practices at the LAW, DOE again identified unsafe work practices with LAW structural steel installations at or near the same location. DOE discussed these concerns with site management and requested they provide a plan for ensuring safe fall protection and overhead work practices are employed when performing LAW structural steel installation work. Follow-up of this concern will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A05**. Subsequently, BNI took adequate corrective actions and this item was closed. (Inspection Notes 002-64 and 002-107.)
- With the exception of installed equipment under the custody of subcontractors, BNI’s equipment preservation and maintenance program was generally acceptable. However, Pour Handling System LPH Doors were not listed in BNI’s preservation and maintenance program and were not being maintained. Also, program implementation was challenged by lack of early engineering and procurement involvement in establishing preservation and maintenance requirements. Identification of preservation and maintenance requirements early may identify the need for the site and Marshalling Yard to take actions needed to accommodate the equipment before critical preservation and maintenance activities are missed. An assessment follow-up item was assigned to track BNI’s actions to establish and implement preservation and maintenance requirements for the Balance of Facilities (BOF) Centrifugal Air Compressors (**A-05-AMWTP-RPPWTP-002-A13**.)

The subcontract oversight organization needs to establish requirements and verify implementation of the subcontractor's preservation and maintenance programs for equipment installed at the WTP site and not immediately turned over to the Commissioning and

Training organization. An assessment follow-up item was assigned to track BNI's actions to establish and implement a preservation and maintenance program for WTP equipment in the custody of site subcontractors (**A-05-AMWTP-RPPWTP-002-A014**). (Inspection Note 002-65.)

- The process to incorporate Dangerous Waste Permit requirements in the design of the WTP and to verify these requirements are implemented during installation needs to be reviewed to ensure Dangerous Waste Permit requirements are met during construction of the WTP. Follow-up on BNI actions to specifically address a PT slab 56-21 drain pipe slope issue and address the generic issue regarding incorporation of Dangerous Waste Permit requirements in WTP design and verify implementation during construction will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A07**. (Inspection Note 002-68.)
- BNI had performed continuity testing of the Steam Plant 24 volt dc conductors routed from Boiler 1-6 Remote 1/0 Panels to various instrument/equipment, and functional testing of lighting circuits in accordance with engineering specifications and the NEC. (Inspection Notes 002-69 and 002-83.)
- The following quality issues were identified during an inspection of Eaton Metal Products Company:
 1. There was no VT inspection procedure even though it was required by the Supplier's Quality Control Manual;
 2. Welder qualification records were not signed by the Supplier;
 3. Quality Control inspectors were not qualified to ASNT-TC-1A as required by the BNI purchase order or by their own Quality Control Manual;
 4. Some support steel to be used for tank supports on a High Level Waste (HLW) black cell tank had carbon content (.04%) in excess of the Material Data Sheet required .030% Maximum. Some support steel used for a shipped Low Activity Waste (LAW) tank also had steel with carbon content (.06%) in excess of the .030% carbon limit;
 5. Inspectors observed RT film indications that resembled oxidation (sugaring as a result of lack of adequate purge gas). A visual inspection of the welds verified oxidation occurred inside the nozzle to cap welds. Similar conditions were observed with welds on other tanks being manufactured for the WTP;
 6. Two 6" pipes welded to the HLW black cell tank were seamed pipe but the seam welds had not yet been radiographed even though it was required on the applicable Mechanical Data Sheet;
 7. Although Hastelloy pipe was being installed in WTP tanks, not all of the welders performing Hastelloy welds were qualified to weld the Hastelloy; and
 8. Weld procedures were missing code required information and one specified an allowable interpass temperature of 450°F when BNI specification allowed a maximum of 350°F.

The quality issues described above were discussed with a BNI procurement manager who attended the inspection. He in turn, briefed the Supplier on the results of the inspection. These issues represented significant weaknesses with the implementation of essential programs to ensure tank fabrication work meets contract and referenced codes and standard requirements. Follow-up to verify the deficiencies described above are addressed, the extent of condition for the issues is considered, and improvements are implemented in the SQR oversight of suppliers will be tracked as assessment follow-up item **A-05-AMWTP-RPPWTP-002-A06**. (Inspection Note 002-70.)

- Based on a review of a dropped 6” clamp in the PT Facility on May 5, 2005, BNI had failed to adequately implement the requirements of 29 CFR 1926.501(c) to protect workers from falling objects. A red barricade was installed as required by 29 CFR 1926.501(c) but management failed to prohibit employees from entering the area and failed to keep objects far enough away from the edge to prevent them from going over the edge if they were accidentally displaced. Proper implementation of 501(c) for this activity would have included the elimination of potential falling objects by only allowing employees below overhead workers after the clamp had been secured from falling by use of a tool lanyard. BNI had identified and was implementing adequate corrective actions to address this incident. (Inspection Note 002-73.)
- BNI conducted an adequate investigation and implemented adequate corrective actions to the May 18, 2005, dropped portable electric band saw event. (Inspection Note 002-74.)
- BNI and FD Thomas was satisfactorily implementing an air monitoring program to ensure workers were not exposed to gases, vapors, fumes, dusts, and mists as required by OSHA Standards for the Construction, 29 CFR 1926.55. (Inspection Note 002-76.)
- During a welding inspection of electrical cable tray support H000020 in the LAW facility at -21’ elevation, BNI was not using all the acceptance criteria specified in the design drawing. Subsequently, BNI revised the drawing to allow the use of the inspection criteria being used on the cable tray support in question, as an option. This resolved this issue. (Inspection Note 002-81.)
- Grouting activities associated with LAW bogie rail sole plates at the -21’ elevation were performed in accordance with design and specification requirements. (Inspection Notes 002-84 and 002-95.)
- BNI accomplished hydrostatic and pneumatic testing of the underground fire service water, fire department connections, and overhead dry pipe fire protection system, and performed 24-hour air pressure tests at the Clayton Buildings A & B in accordance with BNI requirements and standards. (Inspection Notes 002-86 and 002-108.)
- BNI fire prevention and protection at the WTP were being adequately implemented. (Inspection Note 002-89.)

- BNI conducted an adequate table top drill at the HLW. (Inspection Note 002-93.)
- BNI placed three lower over pack units into the product container positions of pour cave turntable L-B-023B, in minus 21' elevation of the LAW, in accordance with design drawings and specifications. (Inspection Note 002-96.)
- BNI conducted an adequate review of a June 6, 2005, LAW incident where an electrician cut an energized 480 volt electrical cord with a pair of ratchet cutters. BNI's proposed corrective actions were adequate. (Inspection Note 002-79.)
- Controlled drawings in PT Facility welding packages did not reflect the current change status, and several work packages contained at least one drawing in use that was not the correct revision. Additionally, revisions to uncontrolled drawings used for work were not verified daily, and craft personnel were unsure of what was the current drawing revision. The following specific issues were found during the review of work packages:
 1. Work packages contained enlarged drawings without the drawing number or revision number. Without the drawing and revision number, it was not possible for the workers using the drawings to ensure they had the current drawing revision;
 2. Quality records had pen and ink changes without indication of who made the changes or the date the changes were made. Without the necessary initials and date it was not possible to determine who made the changes or when the changes were made, and if the necessary inspections had been done in accordance with the current drawing;
 3. Weld record (form WR-25) was out-of-date when QC reviewed and signed the document. The drawing revision on the form was not current when the QC Engineer signed and dated the form;
 4. Applicable change documents (FCR, NCR, ...) were not properly incorporated in the work package. Weld packages reviewed did not list change documents. Interviews with the welding department indicated the change documents were not being used; and
 5. Numerous packages contained at least one drawing that was out-of-date.

As a result of performing this inspection and identifying these issues, BNI issued CAR 24590-WTP-CAR-QA-05-122 to document these issues. Failure to adequately control design drawings and other controlled documents in work packages is considered an inspection Finding against BNI's Quality Assurance Manual Policy Q-06.1, *Document Control*, Section 3.1.1. (**A-05-AMWTP-RPPWTP-002-F012**). (Inspection Note 002-102.)

- Electrical maintenance of the LAW tower crane was well conducted and adequate precautions were taken for lock & tag, zero energy checks, fall protection, and dropped item control. (Inspection Note 002-109.)
- BNI performed an adequate investigation of the May 31, 2005, LAW 240 volt cord damage event where a descending man-lift damaged the cable. (Inspection Note 002-112.)

- BNI's implementation of its Lockout/Tagout program lacked rigor. A number of examples were identified where staff was not following the procedure substantially reducing the effectiveness of the program. For example, lockout/tagout permits were not signed by the requestor; permits lacked independent verification; locks were not installed by the Tagging Authority; permits lacked adequate information regarding location of the lock and tag; permits not signed by the Tagging Authority; the Tagging Authority was using wrong revisions of drawings or not using them at all; permits not closed when tags were removed; and tag removed by the requestor instead of the Tagging Authority. An assessment follow-up item was assigned to track BNI's effort to address these issues (**A-05-AMWTP-RPPWTP-002-A15**). (Inspection Note 002-117.)
- Qualifications and certifications for QC personnel were performed and documented in accordance with BNI procedural requirements, inspection requirements were properly specified and performed, and QC personnel were knowledgeable of the requirements. (Inspection Note 001-118.)

List of Assessment Items Opened, Closed, and Discussed:

Opened

A-05-AMWTP-RPPWTP-002-A01	Assessment Follow-up Item	Follow-up on Contractor actions to address the HVAC sub-contractor quality control failure to enter the latest revision of the drawing used for acceptance on the work package. (Inspection Note 002-12.)
A-05-AMWTP-RPPWTP-002-A02	Assessment Follow-up Item	Follow-up on Contractor actions to address the failure to use AWS D1.1 for acceptance of PTF crane rail beam seats. (Inspection Note 002-36.)
A-05-AMWTP-RPPWTP-002-A03	Assessment Follow-up Item	Follow-up on Contractor actions to address Diamond B QA issues and the generic concern regarding QA oversight of non-ITS suppliers. (Inspection Note 002-44.)
A-05-AMWTP-RPPWTP-002-A04	Assessment Follow-up Item	Follow-up on Contractor actions to address the need to provide employees with information/training regarding selecting welding hood filter lens. (Inspection Note 002-45.)
A-05-AMWTP-RPPWTP-002-A05	Assessment Follow-up Item	Follow-up on Contractor actions to address the need to provide a plan for ensuring safe fall protection and overhead work practices are employed when performing LAW structural steel installation work. (Inspection Note 002-64.)
A-05-AMWTP-RPPWTP-002-A06	Assessment Follow-up Item	Follow-up on Contractor actions to address Eaton Metal Products Company QA issues and the generic concern regarding QA oversight of non-ITS suppliers. (Inspection Note 002-70.)
A-05-AMWTP-RPPWTP-002-A07	Assessment Follow-up Item	Follow-up on Contractor actions to address Dangerous Waste Permit Requirements including the PT 56-21 drain pipe slope issue. (Inspection Note 002-68.)
A-05-AMWTP-RPPWTP-002-A08	Assessment Follow-up Item	Follow-up on Contractor actions to address Steam Plant electrical issues. (Inspection Note 002-71.)

A-05-AMWTP-RPPWTP-002-A09	Assessment Follow-up Item	Follow-up on Contractor actions to address a LAW welding inspection issue regarding BNI specifying and using visual acceptance criteria NCIG-1 rather than AWS-D1.1 (required by PSAR, Section 2.4.1). (Inspection Note 002-24.)
A-05-AMWTP-RPPWTP-002-A10	Assessment Follow-up Item	Follow-up on Contractor actions to address fireproofing building transformer electrical issues. (Inspection Note 002-100.)
A-05-AMWTP-RPPWTP-002-A11	Assessment Follow-up Item	Follow-up on Contractor actions to address Occurrence Report Program problems. (Inspection Note 002-25.)
A-05-AMWTP-RPPWTP-002-F12	Finding	Failure of BNI to adequately control PTF design drawings and other documents used in the field to perform structural steel and pipe welding. (Inspection Note 002-102.)
A-05-AMWTP-RPPWTP-002-A13	Assessment Follow-up Item	Follow-up on Contractor actions to establish and implement preservation and maintenance requirements for the BOF Centrifugal Air Compressors. (Inspection Note 002-65.)
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 002-65.)
A-05-AMWTP-RPPWTP-002-A15	Assessment Follow-up Item	Follow-up on Contractor actions to address lack of rigor in implementation of the site lockout/tagout program. (Inspection Note 002-117.)
A-05-AMWTP-RPPWTP-002-A16	Assessment Follow-up Item	Follow-up on Contractor actions to address electrical issues associated with the T-46 mobile office building temporary power. (Inspection Note 002-90.)

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A-03-AMWTP-RPPWTP-001-A04	Assessment Follow-up Item	Follow-up on Contractor actions to address Substation grounding issues. (Inspection Note 002-21.)
A-04-AMWTP-RPPWTP-002-A05	Assessment Follow-up Item	Follow-up on Contractor actions to address Simulator Building UPS bypass switch not being installed per listing. (Inspection Note 002-13.)
A-04-AMWTP-RPPWTP-003-A04	Assessment Follow-up Item	Follow-up on sub-contractor actions to resolve NEC code and specification issues for Cooling Tower Support Building 83S. (Inspection Note 002-11.)
A-04-AMWTP-RPPWTP-004-A05	Assessment Follow-up Item	Follow-up on Contractor actions to address the failure of the Petersen, Inc. purchase order to require the supplier to meet National Electrical Code (NEC) requirements for electrical work specified in the purchase order or to require electrical assemblies to be listed by an authorized laboratory. (Inspection Note 002-107.)
A-05-AMWTP-RPPWTP-002-A04	Assessment Follow-up Item	Follow-up on Contractor actions to address the need to provide employees with information/training regarding selecting welding hood filter lens. (Inspection Note 002-111.)
A-05-AMWTP-RPPWTP-002-A05	Assessment Follow-up Item	Follow-up on Contractor actions to address the need to provide a plan for ensuring safe fall protection and overhead work practices are employed when performing LAW structural steel installation work. (Inspection Note 002-107.)

List of Inspection Notes Issued During the Assessment Period:

<u>Inspection Note Number</u>	<u>Inspection Subject</u>
A-05-AMWTP-RPPWTP-002-01	Respiratory protection program review.
A-05-AMWTP-RPPWTP-002-02	LAW Thin film intumescent fireproofing.
A-05-AMWTP-RPPWTP-002-03	Offloading and setting of LAW WESP Vessel.
A-05-AMWTP-RPPWTP-002-04	Placement and testing of PT 56-33 slab.
A-05-AMWTP-RPPWTP-002-05	FRE inspection of PT 56-33 slab.
A-05-AMWTP-RPPWTP-002-06	HLW welding inspection of nozzle on 904 vessel.
A-05-AMWTP-RPPWTP-002-07	Pressure testing of BOF piping.
A-05-AMWTP-RPPWTP-002-08	Backfill and Compaction activities at the LAB.
A-05-AMWTP-RPPWTP-002-09	Welding inspection at PT Modular Fabrication Slab.
A-05-AMWTP-RPPWTP-002-10	Electrical inspection at south fireproofing building.
A-05-AMWTP-RPPWTP-002-11	Closure of A-04-AMWTP-RPPWTP-003-A04.
A-05-AMWTP-RPPWTP-002-12	LAW duct support installation.
A-05-AMWTP-RPPWTP-002-13	Closure of A-04-AMWTP-RPPWTP-002-A05.
A-05-AMWTP-RPPWTP-002-14	Electrical inspection of HLW temporary power.
A-05-AMWTP-RPPWTP-002-15	Rigging and placement of PT CXP-VSL-00001.
A-05-AMWTP-RPPWTP-002-16	Welding of PTF beam seats at the 52' elevation.
A-05-AMWTP-RPPWTP-002-17	Pressure testing of LAB piping.
A-05-AMWTP-RPPWTP-002-18	LAB Backfill and compaction of soil.
A-05-AMWTP-RPPWTP-002-19	Placement of PTF Vessel CNP-VSL-00003.
A-05-AMWTP-RPPWTP-002-20	Welding coaxial pipe at the LAB.
A-05-AMWTP-RPPWTP-002-21	Close A-03-AMWTP-RPPWTP-001-A04.
A-05-AMWTP-RPPWTP-002-22	FRE inspection of HLW slabs 1019 & 1031.
A-05-AMWTP-RPPWTP-002-23	Pressure testing of LAB piping.
A-05-AMWTP-RPPWTP-002-24	LAW structural steel moment connection welding.
A-05-AMWTP-RPPWTP-002-25	Review of Occurrence Reporting Program.
A-05-AMWTP-RPPWTP-002-26	LAW grouting of structural steel base plates.
A-05-AMWTP-RPPWTP-002-27	PTF welding on radioactive vessel vent piping.
A-05-AMWTP-RPPWTP-002-28	LAW -21' elevation Ductwork leak testing.
A-05-AMWTP-RPPWTP-002-29	Review of excavation permit process.
A-05-AMWTP-RPPWTP-002-30	Electrical tool safety assessment.
A-05-AMWTP-RPPWTP-002-31	PTF HVAC duct support welding.
A-05-AMWTP-RPPWTP-002-32	Electrical inspection of LAB temporary power.
A-05-AMWTP-RPPWTP-002-33	Backfill and compaction at ITS switchgear bldg.
A-05-AMWTP-RPPWTP-002-34	Backfill and compaction at LAB bldg.
A-05-AMWTP-RPPWTP-002-35	Fireproofing bldg structural steel installation.
A-05-AMWTP-RPPWTP-002-36	Welding of PTF Crane beam seats.
A-05-AMWTP-RPPWTP-002-37	Liner plate installation at the LAB.
A-05-AMWTP-RPPWTP-002-38	FRE inspection of LAW slab 119.
A-05-AMWTP-RPPWTP-002-39	FRE inspection of HLW wall 1103.
A-05-AMWTP-RPPWTP-002-40	Electrical inspection of Switchgear bldg.
A-05-AMWTP-RPPWTP-002-41	Functional test; fire detection-Switchgear bldg.
A-05-AMWTP-RPPWTP-002-42	FRE inspection of LAB C2 elevated slab.

A-05-AMWTP-RPPWTP-002-43	Supplier inspection of ABW in Arlington, WA.
A-05-AMWTP-RPPWTP-002-44	Supplier inspection of Diamond B in Bellingham.
A-05-AMWTP-RPPWTP-002-45	Review of eye protection program.
A-05-AMWTP-RPPWTP-002-46	Pressure testing of LAB piping.
A-05-AMWTP-RPPWTP-002-47	Pressure testing of BOF piping.
A-05-AMWTP-RPPWTP-002-48	LAW HVAC ductwork testing inspection.
A-05-AMWTP-RPPWTP-002-49	PTF vessel ring beam liner plate installation.
A-05-AMWTP-RPPWTP-002-50	Pressure testing of PTF piping.
A-05-AMWTP-RPPWTP-002-51	Pressure testing of BOF piping.
A-05-AMWTP-RPPWTP-002-52	Placing PTF vessels.
A-05-AMWTP-RPPWTP-002-53	PTF liner plate installation for ring beam of vessel.
A-05-AMWTP-RPPWTP-002-54	Electrical inspection at the Steam Plant.
A-05-AMWTP-RPPWTP-002-55	Review UT of PTF Waste Feed System weld.
A-05-AMWTP-RPPWTP-002-56	BOF ITS conduit inspections.
A-05-AMWTP-RPPWTP-002-57	Placement of PTF vessel RLD-VSL-00017A.
A-05-AMWTP-RPPWTP-002-58	FRE inspection of PTF slab 56-22.
A-05-AMWTP-RPPWTP-002-59	Electrical inspection of HLW temporary lighting.
A-05-AMWTP-RPPWTP-002-60	HLW inspection of C5 duct welding.
A-05-AMWTP-RPPWTP-002-61	Pressure testing of LAB piping.
A-05-AMWTP-RPPWTP-002-62	Review of WTP falling object protection program.
A-05-AMWTP-RPPWTP-002-63	FRE inspection of HLW slab 1015.
A-05-AMWTP-RPPWTP-002-64	LAW fall protection issues.
A-05-AMWTP-RPPWTP-002-65	Equipment Preservative and Maintenance Program.
A-05-AMWTP-RPPWTP-002-66	Electrical inspection of LAW +28' weld rack.
A-05-AMWTP-RPPWTP-002-67	BOF buried cable damage during excavation.
A-05-AMWTP-RPPWTP-002-68	Dangerous Waste Permit Compliance inspection.
A-05-AMWTP-RPPWTP-002-69	Electrical inspection of Steam Plant.
A-05-AMWTP-RPPWTP-002-70	Eaton Metal Products inspection.
A-05-AMWTP-RPPWTP-002-71	Electrical inspection of Steam Plant.
A-05-AMWTP-RPPWTP-002-72	FRE inspection of LAB slab 0011.
A-05-AMWTP-RPPWTP-002-73	Review of PTF falling object incident - 6" clamp.
A-05-AMWTP-RPPWTP-002-74	Review of PTF falling object incident-portable saw.
A-05-AMWTP-RPPWTP-002-75	LAW HEPA ductwork testing.
A-05-AMWTP-RPPWTP-002-76	WTP air monitoring program and coating MSDS.
A-05-AMWTP-RPPWTP-002-77	LAB liner plate inspection for the C3 Vessel cell.
A-05-AMWTP-RPPWTP-002-78	Electrical inspection of LAW temporary power.
A-05-AMWTP-RPPWTP-002-79	June 6, 2005, LAW incident-cut 480v cord.
A-05-AMWTP-RPPWTP-002-80	Hydrostatic and Pneumatic testing of LAB piping.
A-05-AMWTP-RPPWTP-002-81	Welding inspection of LAW cable tray supports.
A-05-AMWTP-RPPWTP-002-82	Hydrostatic and Pneumatic testing of PTF piping.
A-05-AMWTP-RPPWTP-002-83	Electrical inspection of Steam Plant.
A-05-AMWTP-RPPWTP-002-84	LAW grouting of bogie rail sole plates.
A-05-AMWTP-RPPWTP-002-85	Hydrostatic and Pneumatic testing of BOF piping.
A-05-AMWTP-RPPWTP-002-86	Dry pipe fire protection hydro test of Clayton Bldg.
A-05-AMWTP-RPPWTP-002-87	FRE inspection of LAB slab 0013A.
A-05-AMWTP-RPPWTP-002-88	Electrical inspection of Clayton Bldg.

A-05-AMWTP-RPPWTP-002-89	WTP fire protection inspection.
A-05-AMWTP-RPPWTP-002-90	Electrical inspection of the T-46 mobile building.
A-05-AMWTP-RPPWTP-002-91	Electrical inspection of Bldg 87 temporary power.
A-05-AMWTP-RPPWTP-002-92	FRE inspection of PTF 56-23.
A-05-AMWTP-RPPWTP-002-93	HLW Emergency table top drill.
A-05-AMWTP-RPPWTP-002-94	FRE inspection of HLW slab 1004.
A-05-AMWTP-RPPWTP-002-95	LAW bogie rail sole plate grouting.
A-05-AMWTP-RPPWTP-002-96	Placement of LAW turntable lower over-pack units.
A-05-AMWTP-RPPWTP-002-97	Electrical inspection of PTF modular pad.
A-05-AMWTP-RPPWTP-002-98	PTF liner plate inspection for vessel ring beams.
A-05-AMWTP-RPPWTP-002-99	Hydrostatic and Pneumatic testing of LAB piping.
A-05-AMWTP-RPPWTP-002-100	Electrical inspection of Clayton Building.
A-05-AMWTP-RPPWTP-002-101	Electrical inspection of T-4A Building.
A-05-AMWTP-RPPWTP-002-102	PTF document and work package control.
A-05-AMWTP-RPPWTP-002-103	Hydrostatic and Pneumatic testing of BOF piping.
A-05-AMWTP-RPPWTP-002-104	PTF liner plate inspection of vessel ring beams.
A-05-AMWTP-RPPWTP-002-105	FRE inspection of LAB slab 0013B.
A-05-AMWTP-RPPWTP-002-106	Placement and testing of LAB basemat 013B.
A-05-AMWTP-RPPWTP-002-107	Closure of A-05-AMWTP-RPPWTP-002-A05 and A-04-AMWTP-RPPWTP-004-A05.
A-05-AMWTP-RPPWTP-002-108	Hydrostatic and Pneumatic testing of Clayton Bldg.
A-05-AMWTP-RPPWTP-002-109	Electrical maintenance of LAW tower crane.
A-05-AMWTP-RPPWTP-002-110	Electrical inspection of HLW temporary power.
A-05-AMWTP-RPPWTP-002-111	Closure of item A-05-AMWTP-RPPWTP-002-A04.
A-05-AMWTP-RPPWTP-002-112	May 31, 2005, LAW 240v cord pinched by a lift.
A-05-AMWTP-RPPWTP-002-113	FRE inspection of HLW Slab 1003.
A-05-AMWTP-RPPWTP-002-114	Electrical inspection of LAW temporary power.
A-05-AMWTP-RPPWTP-002-115	Hydrostatic and Pneumatic testing of BOF piping.
A-05-AMWTP-RPPWTP-001-116	FRE inspection of LAW slab 109.
A-05-AMWTP-RPPWTP-002-117	Review of Lockout/Tagout Program.
A-05-AMWTP-RPPWTP-002-118	Quality Control Program review.