U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

03-AMWTP-144

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-03-AMWTP-RPPWTP-005 – ON-LOCATION INSPECTION REPORT FOR THE PERIOD SEPTEMBER 26 THROUGH OCTOBER 29, 2003

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 (WTP) for the period September 26 through October 29, 2003. No Findings were identified. A summary of the inspection is documented in the enclosed inspection report.

Construction performance was generally good during this inspection period. A self-identified concern regarding missing rebar at the Pretreatment Facility indicates additional management attention is needed in oversight of rebar placements. BNI is taking action to determine the root cause and subsequent corrective actions to prevent recurrence. Appropriate compensatory measures are in place pending implementation of these corrective actions. Industrial health and safety performance continued to be a strength at the WTP construction site.

If you have any questions, please contact me, or your staff may call Mike Thomas, Operations and Commissioning Team Leader, (509) 373-5014.

Sincerely,

Roy J. Schepens
Manager

AMWTP:JWM

Enclosure

cc w/encl:
G. Shell, BNI
W. R. Spezialetti, BNI

Enclosure
03-AMWTP-144
A-03-AMWTP-RPPWTP-005

U.S. DEPARTMENT OF ENERGY
Office of River Protection

INSPECTION:	On-location Inspection Report for the Period September 26, 2003, through October 29, 2003
REPORT NO.:	A-03-AMWTP-RPPWTP-005
FACILITY:	Bechtel National, Inc.
LOCATION:	2435 Stevens Center Richland, Washington 99352
DATES:	September 26 through October 29, 2003
INSPECTORS:	J. McCormick-Barger, Sr. Regulatory Technical Advisor, Inspection Lead J. Bruggeman, ORP Facility Representative B. Harkins, ORP Facility Representative S. Pfaff, ORP Facility Representative M. Evarts, Team Member J. Mohatt, Team Member D. Wallace, Team Member
APPROVED BY:	M. Thomas, Operations and Commissioning Team Leader Office of the Assistant Manager for Waste Treatment and Immobilization Plant (AMWTP)

INSPECTION REPORT

Introduction

During the period September 26, 2003, through October 29, 2003, the U.S. Department of Energy (DOE), Office of River Protection, Office of the Assistant Manager for Waste Treatment and Immobilization Plant (AMWTP) conducted inspections of important-to-safety (ITS) and non-ITS (Balance-of-Plant) activities of the construction of the Waste Treatment and Immobilization Plant. These inspections were documented on inspection notes and maintained electronically. There were 37 inspections of various construction activities summarized below. Copies of the inspection notes are available upon request. The inspection construction activities covered the following areas:

- Forms, reinforcement steel, and embedded steel items and associated concrete placements;
- Hydrostatic testing of installed piping;
- Balance-of-Plant (BOP) construction activities;
- Industrial Health and Safety (IH&S);
- Electrical equipment, including conduit and race way, installations; and
- Previously identified Assessment Follow-up Items.

Significant Observations

- Reinforcement steel installations and other attributes associated with the concrete placements for the Low Activity Waste (LAW) Facility, High Level Waste (HLW) Facility, Pretreatment Facility (PTF), and BOP were inspected. One significant deficiency was identified by the Contractor, Bechtel National, Inc., concerning 41 missing rebar in the PTF basemat. The Contractor is conducting a root cause analyses of this issue. During DOE inspections, inspectors identified two deficiencies associated with the BOF switchgear basemat. One concerned failure to install trim steel around a penetration, and the other concerned failure to ensure the 10-inch concrete depth would have been achieved had the concrete been placed. After being informed by construction management that rebar for PTF firewater pit top slab (PTF Slab 21B) was ready for inspection, the inspector identified four missing reinforcement bars, two areas where there were clearance problems, and one trim reinforcement bar laying on the steel Q-Deck. The inspector was subsequently informed quality control had not inspected the slab. For both the BOF Switchgear basemat and the PTF Slab 21B, the rebar was corrected before the placements occurred. (Inspection notes 005-04, 005-05, 005-06, 005-08, 005-09, 005-11, 005-21, 005-24, 005-25, 005-26, 005-32, 005-34, and 005-35.)

- Portions of the Non-Radioactive Liquid Waste Line, Firewater System, Chilled Water Supply Line, Chilled Water Return Line, Potable Water Line, and Plant Service Air Line were hydrostatically tested in accordance with the appropriate specification and procedure. (Inspection notes 005-01, 005-03, 005-12, 005-19, 005-20, 005-23, 005-27, and 005-36.)

- The 200 amp disconnect (fused 150 amp) installed for the pedestal crane located in the northwest corner of the HLW was installed in accordance with the 2002 National Electric Code (NEC). (Inspection note 005-02.)

- During inspection of the 100 amp disconnect, 50 KVA single phase transformer, and 200 amp panelboard, installed on the north end of the T-39 mobile office, the inspector identified an NEC violation regarding the requirement that circuit breakers be installed not more than 6'-7" above the floor or working platform. The panelboard main circuit breaker was approximately 7' above the ground. The Contractor subsequently resolved this issue. (Inspection note 005-07.)

- During inspection of work in progress on 20-amp branch circuits installed in panelboards L2(A) and L2(B) for ten tank heaters located on the east side of the O&E Shop, the inspector determined ground-fault protection of equipment (GFPE breakers) for the heating panels, required in NEC Article 427.22, were not installed. Also, a disconnecting means, capable of being locked out in the "off" position, required by NEC Article 427.55, was not installed. These items will be tracked as follow-up item A-03-AMWTP-RPPWTP-005-A01. (Inspection note 005-10.)

- During a follow-up inspection of Chicago Bridge and Iron (CB&I) temporary power distribution installed on the south center side and the north center side of the PTF, the inspector was able to close Items 2, 3, 4, 5, 6, and 9 of Assessment Follow-up Item A-03-AMWTP-RPPWTP-003-A01 and Items 1, 2, 4, 5, 6, and 9 of A-03-AMWTP-RPPWTP-003-A02. The Contractor had taken appropriate actions to address these items. (Inspection notes 005-13 and 005-15.)

- During an IH&S review of activities at the Simulator Building construction site, the inspector observed excavations not conforming to the 1.5:1 sloping requirements nor the 2' set back requirement for spoil piles. These conditions were subsequently addressed by the subcontractor. (Inspection note 005-16.)

- Overall, the Contractor was adequately reviewing and addressing omissions and inconsistencies with subcontractor IH&S plans. However, several minor issues were identified with the Simulator subcontractor's IH&S plan. The Contractor was addressing these issues. (Inspection note 005-17.)

- The Contractor adequately flushed the 8" firewater line inside switchgear Building 87. (Inspection note 005-18.)

- CB&I adequately assessed the issue regarding deep punch marks on the shell of a CB&I fabricated tank concluding the depth of the punch marks conformed to ASME pressure vessel requirements. Based on a review of this evaluation, Assessment Follow-up Item A-03-AMWTP-RPPWTP-004-A03 is closed. (Inspection note 005-22.)

- During a previous inspection, an inspector was unable to verify the potential temporary installation of split-bolts, used with multiple conductors, because they were taped up and would have to be disassembled for verification. The Contractor determined these installations, even if they were split bolts, posed little or no safety risk to personnel and no further investigation was warranted. The Contractor stated the installations would be checked for compliance with the referenced NEC standard if it becomes accessible or during routine maintenance. Based on the above, Assessment Follow-up Item A-03-AMWTP-RPPWTP-002-A05 is considered closed.

- 120/240 volt, 100 amp panelboard L-1-2, conduit, and receptacles in the LAW Rod Trailer located west of Tool Room #5 were installed in accordance with the 2002 NEC. (Inspection note 005-30.)

- 2/0 AWG bare ground conductors, installed at the Simulator Building did not conform with the Contractor's Performance Specification, which required 4/0 AWG. Follow-up on this deficiency will be tracked as follow-up item A-03-AMWTP-RPPWTP-005-A02. (Inspection note 005-31.)

- The Contractor had energized the underground propane system in accordance with established requirements, made proper notifications, and established a safe configuration. (Inspection note 005-37.)

- The Simulator Building Performance Specification, section 16050 paragraph 3.3-F4, requires transition from nonmetallic conduit to rigid steel conduit, or intermediate metal conduit before rising above the floor. The sub-contractor installed PVC schedule 40 conduit and did not change to rigid metal conduit prior to rising above the slab. The concrete slab had not been poured at the time of the inspection. This item will be tracked as follow-up item A-03-AMWTP-RPPWTP-005-A03.

- The equipment grounding conductors (#4 AWG) called out with the various parallel conductors on the LAW 480V Switchboard drawings were not sized correctly per Table 250-122 (based on the ampere rating of the overcurrent device). The rating of the overcurrent devices ranged from 400-amp to 1200-amp, a #4 is the minimum size equipment grounding conductor required for a 300 amp overcurrent device. The Contractor is in the process of initiating a design change to correct the above drawings. This item will be tracked as follow-up item A-03-AMWTP-RPPWTP-005-A04.

- List of Assessment Items Opened, Closed, and Discussed

Opened

A-03-AMWTP-RPPWTP-005-A01	Assessment Follow-up Item	Follow-up on Contractor actions to resolve NEC issues regarding the need for ground fault and lock-out protection on breakers associated with O&E shop tank heaters. (Inspection note 005-10.)
A-03-AMWTP-RPPWTP-005-A02	Assessment Follow-up Item	Follow-up on Contractor actions to resolve issue with Simulator Building ground conductor, which was installed as 2/0 AWG when the Performance Specification required 4/0 AWG. (Inspection note 005-31.)
A-03-AMWTP-RPPWTP-005-A03	Assessment Follow-up Item	Follow-up on Contractor actions to resolve issue with Simulator Building nonmetallic conduit rising above the floor (contrary to specification). (Inspection note 005-33.)
A-03-AMWTP-RPPWTP-005-A04	Assessment Follow-up Item	Follow-up on Contractor actions to resolve electrical issue regarding LAW design drawings calling out undersized equipment grounding conductors to be installed with the various parallel conductors (not sized correctly per NEC Table 250-122). (Inspection note 005-14.)

Closed

A-03-AMWTP-RPPWTP-002-A05	Assessment Follow-up Item	Follow-up on Contractor actions to address possible Split Bolt used for multiple conductors. (Inspection note 005-28.)
A-03-AMWTP-RPPWTP-004-A03	Assessment Follow-up Item	Follow-up on Contractor actions to address a concern with deep punch marks on CB&I fabricated Feed Receipt Tanks. (Inspection note 005-22.)

Partial Closure

A-03-AMWTP-RPPWTP-003-A01	Assessment Follow-up Item	Follow-up on Contractor's actions to address CB&I NEC Code violations at the south center side of the PTF (Items 2, 3, 4, 5, 6, and 9). (Inspection note 005-13.)
A-03-AMWTP-RPPWTP-003-A02	Assessment Follow-up Item	Follow-up on Contractor actions to address CB&I NEC violations at the north center site of the PTF (Items 1, 2, 4, 5, 6, and 9). (Inspection note 005-15.)
A-03-AMWTP-RPPWTP-003-A05	Assessment Follow-up Item	Follow-up on Contractor's actions to address CB&I NEC Code violations at the tank fabrication facility (Items 1 and 2). (Inspection note 005-29.)