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Office of River Protection
P.O. Box 450, MSIN H6-60
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0068385

06-WTP-010

January 31, 2006

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Addressees:

HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (HFFACO) (ALSO KNOWN AS TRI-PARTY AGREEMENT) INTERIM MILESTONE M-62-01, "SEMI-ANNUAL COMPLIANCE REPORT FOR THE WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP)," FOR JULY 2005 THROUGH DECEMBER 2005

This letter transmits the U.S. Department of Energy, Office of River Protection, Semi-Annual Compliance Report (Attachment) required by Interim Milestone M-62-01 for the period July 2005 through December 2005.

As stipulated in the M-62-01 milestone, this report includes project summaries of accomplishments, issues encountered, and actions being taken.

If you have any questions, please contact me, or your staff may contact John R. Eschenberg, Waste Treatment and Immobilization Plant, Project Manager, (509) 376-3681.

Sincerely,

Roy J. Schepens

Roy J. Schepens, Manager
Office of River Protection

WPD:JLS

Attachment

cc: See page 2

cc w/attach:
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Attachment
06-WTP-010

U.S. DEPARTMENT OF ENERGY (DOE) OFFICE OF RIVER PROTECTION (ORP) SEMI-ANNUAL PROJECT COMPLIANCE REPORT FOR THE WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP)

July 1, 2005 – December 31, 2005

WPD:JLS
January 31, 2006

U.S. DEPARTMENT OF ENERGY (DOE)
OFFICE OF RIVER PROTECTION (ORP)
SEMI-ANNUAL PROJECT COMPLIANCE REPORT FOR THE WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP)

July 1, 2005 – December 31, 2005

Office of River Protection

U.S. DEPARTMENT OF ENERGY
OFFICE OF RIVER PROTECTION
2440 Stevens Center Place
Richland Washington 99352

January 31, 2006

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U.S. DEPARTMENT OF ENERGY (DOE), OFFICE OF RIVER PROTECTION (ORP)
RIVER PROTECTION PROJECT (RPP)

Waste Treatment and Immobilization Plant (WTP) Project
Semi-Annual Compliance Report
Per Hanford Federal Facility Agreement and Consent Order (HFFACO) Milestone M-62-01

1. INTRODUCTION to M-62-01 – RPP – WTP PROJECT COMPLIANCE REPORT

As required by HFFACO Milestone M-62-01, this Semi-Annual Project Compliance Report (M-62-01L) reflects the ORP WTP Project status for the period of July 1, 2005, through December 31, 2005. As detailed in M-62-01, this report documents ORP's compliance with HFFACO Milestone M-62-00 series requirements; updates Waste Treatment and Immobilization Plant (WTP) Project progress, activities, and issues relative to those milestones; and identifies activities expected in the foreseeable future.

Hanford Site Background: The Hanford tank waste consists of approximately 190 million curies in 54 million gallons of mixed radioactive and hazardous waste stored in underground storage tanks at the Hanford Site. This tank waste will be remediated through treatment and immobilization to protect the environment and meet regulatory requirements. DOE determined through the "Tank Waste Remediation System Environmental Impact Statement Record of Decision," that the preferred alternative to remediate the Hanford tank waste is to:

- pretreat the waste to prepare it for processing and vitrification;
- immobilize the Low-Activity Waste (LAW) for onsite disposal; and
- immobilize the High-Level Waste (HLW) for ultimate disposal in the national repository.

WTP Complex Description: The RPP – WTP is a new waste treatment and immobilization complex being designed, constructed, and commissioned for DOE by Bechtel National, Inc., (BNI) at the Hanford Site in Richland, Washington under DOE Contract No. DE-AC27-01RV14136[1]. The WTP will be designed, constructed, and permitted to treat and immobilize radioactively contaminated dangerous waste to support the RPP mission.

The WTP complex will receive waste in batches from Hanford's Double-Shell Tank system, operated by the tank farm contractor, through a pipeline system interface. The pretreatment process will separate (or continue to refine) the waste into LAW and HLW fractions for vitrification. The vitrification process will combine pretreated tank waste with glass-forming materials and melt the mixture into a liquid that is poured into stainless steel containers. The hot glass cools and hardens and each container will be sealed in preparation for storage and permanent disposal. The dangerous waste and radioactive constituents will be destroyed, removed, or immobilized in this durable glass matrix through the WTP process. The immobilized low-activity, containerized glass waste will be disposed on site and the immobilized high-level containerized glass waste will be disposed at the national repository.

The WTP complex waste-processing facilities include the waste-separating Pretreatment (PT) Facility, the glass-making HLW Vitrification Facility, and the glass-making LAW Vitrification Facility. These process facilities are supported by the WTP complex Analytical Laboratory (LAB) for process testing and the WTP infrastructure services in the Balance of Facilities (BOF).

[1] Contract No. DE-AC27-01RV14136 between the U.S. Department of Energy and Bechtel National, Inc., dated December 11, 2000.

This Compliance Report reviews the WTP Project overall plus each of these functional areas. Financial data is through December 2005, unless otherwise noted. WTP Project status is also provided monthly through the Project Manager's Meeting and the Quarterly Milestone Review Meeting reports.

2. WTP PROJECT ACCOMPLISHMENTS AND ISSUES

A. PROGRESS TO DATE

i. ORP – Project Management

Estimate at Completion (EAC): As of the last WTP Compliance report dated July 31, 2005, DOE was in the process of evaluating its options on how to proceed, as the April 2005 BNI EAC represented a potentially significant increase in both cost and schedule. Because this EAC was based on rough order of magnitude estimates in key areas and only limited work had been accomplished on the revised seismic criteria, on August 18, 2005, ORP directed BNI to resubmit the EAC in much greater detail to include addressing extensive review comments on the April submittal. In the resubmission, ORP directed BNI to prepare two scenarios: 1) based on constrained project funding; and 2) based on unconstrained funding, but using a most economical and efficient project completion schedule.

ORP and the U.S. Army Corps of Engineers (USACE) are currently reviewing the estimate to ensure the basis for the estimate was correctly developed, the schedule can be accomplished, prior comments from ORP and USACE were addressed, and the risks are appropriately identified and quantified. ORP's review is scheduled to be complete in mid March 2006. The USACE will be completing its independent validation by summer 2006.

In addition, ORP required BNI to conduct, utilizing the industry's most qualified people both within and external to BNI: 1) a comprehensive review and analysis of the technical baseline focusing on the functionality of WTP process systems; and 2) a comprehensive review and analysis of the cost and schedule baseline. The technical review team is comprised of approximately 50 industry experts representing various government and commercial backgrounds including, but not limited to: Rohm Haas, DuPont, BNG America, AREVA/Cogema, Shaw/Stone-Webster, Westinghouse Electric Co., and Occidental Chemical. The technical baseline review and the cost and schedule review are scheduled to be complete by March 2006. BNI is also preparing a second submission of the EAC, due the end of May 2006, which will reflect the actual fiscal year (FY) 2006 appropriated funding of $520.4M and any changes necessary from the industry expert reviews. The EAC received in May 2006 will be the basis used to establish a new baseline for the project in the late summer of 2006. The Department will be in a position where there is sufficient confidence in the project's technical, cost and schedule estimate to serve as a firm foundation to baseline the project, start discussions with regulators, and begin contract negotiations with BNI.

ORP is in the process of identifying the activities required to re-baseline the WTP, work the HFFACO and Resource Conservation and Recovery Act (RCRA) permit compliance issues with the regulators, and re-negotiate the BNI contract. The tentative plan is to first complete the ORP, USACE, and industry expert reviews and receive approval of a new WTP cost and schedule from the DOE's Secretarial Acquisition Executive[2]; then work with the regulators to try and resolve the HFFACO and RCRA permit schedule issues prior to completing contract negotiations with BNI.

[2] The Deputy Secretary of Energy is the Secretarial Acquisition Executive (SAE). The SAE promulgates department-wide policy and direction, and personally will make critical decisions for Major System Projects, such as the WTP.

Project Overview: The reporting basis for the project's status to date is the December 22, 2005, EAC documents which reflect actual cost and performance data through September 2005. Design, procurement, and construction activities are continuing on the LAW, BOF, and LAB facilities. Design and limited procurements are continuing on PT and HLW, while construction has been dramatically slowed due to the reduced FY 2006 funding and the focus on creating a larger design backlog (the time between completion of design and start of construction of a given facility component). In the last quarter of FY 2006 through the first quarter of FY 2007, the focus of construction activities will shift; PT and HLW construction activities will resume while LAW, BOF, and LAB construction activities will be significantly reduced. Engineering is 60% complete and Construction is 30 % complete (based on hours). An average of 818 personnel (423 craft and 395 non-manual staff) was working on-site at the end of December, down from a peak of about 2,050 personnel in March 2005.

Safety Record: From project inception through December 2005, WTP employees have worked in excess of 28 million hours with 165 Occupational Safety and Health Administration recordable injuries. The cumulative recordable injury rate for the entire project is 1.19 per 200,000 hours worked. By comparison, the recordable rate for the construction industry nation-wide is 6.8 and for DOE construction contractors 2.2. Following an increase in the recordable rates in Calendar Year (CY) 2004, and January - March 2005, BNI initiated Safety Leadership Workshops. On October 7, 2005, BNI hosted a WTP Safety Rally at a local convention center for nearly the entire project staff. Participants included ORP, Central Washington Building and Construction Trades Council representatives, an AFL/CIO representative, staff from the offices of Congressman Hastings, Senators Murray and Cantwell, and over 1,000 BNI and subcontractor employees. The presentations highlighted the WTP site's improved safety performance during 2005 with encouragement to strive to be even better. The recent near miss events on the site demonstrated BNI management's willingness to stop work before unsafe practices resulted in injuries. BNI management encouraged all workers to take the same actions in their workplaces without fear of retribution. Participants of the Safety Leadership Workshops were recognized, and management committed to further this training among the rest of the workforce. The event culminated with the announcement of BNI's intent to apply for Star status under the Voluntary Protection Program; a status which, if achieved, will be a first on a construction project of this scale. The cumulative injury recordable rate for CY 2005 was 1.52, which is comparable to last year's rate of 1.37, but still well below both DOE and national construction rates. ORP and BNI are committed to providing a safe workplace at the WTP.

ii. WTP Complex Design and Construction

Table 1: WTP Progress on Contract & HFFACO Milestones through December 2005

Contract Milestone Description	Contract Schedule Date	Actual (A)/ Estimated Date*
Start of Construction (M1)	Jul-02	Jul-02 A
Set Feed Receipt Tanks in PT Facility (M2)	Mar-05	Aug-04 A
Move HLW Melter #1 into Bldg (M3)	Dec-07	TBD
Completion of Hot Commissioning (M5)	Jan-11	TBD
Completion of Contract Requirements (M6)	Jul-11	TBD
TPA Milestone Description	**Compliance Date**	**Actual (A)/ Estimated Date**
Start of Construction (M-62-06)	Dec-02	Jul-02 A
Initial LAW Structural Steel (M-62-07A)	Oct-03	Jul-03 A

Table 1: WTP Progress on Contract & HFFACO Milestones through December 2005

Contract Milestone Description	Contract Schedule Date	Actual (A)/ Estimated Date*
Complete Assy LAW Melter #1 and Move HLW melter #1 into Building (M-62-07B)	Dec-07	TBD TBD
Start of Cold Commissioning (M-62-09)	Feb-09	TBD
Completion of Hot Commissioning (M-62-10)	Jan-11	TBD

* Estimated dates are still to be developed through the WTP re-baseline efforts

Facility status details are reported during the Tri-Party Agreement Program Managers' Meetings and the Quarterly Milestone Review Meetings. Individual facility and WTP construction progress are summarized for this report.

PT Facility: Construction has dramatically slowed during this period due to the reduced FY 2006 funding and is focusing on creating a larger design backlog for construction so there is more time between when an item is designed and when it is constructed. Construction forces have completed placement of 100% of the concrete walls up to the 28 foot elevation and 95% of the concrete walls up to the 56 foot elevation. Structural steel is now in place up to the 56 foot elevation with the exception of an area left open for crane access and 30% of the floor slabs in the building have been placed The decking over the hot cell, with the exception of a construction opening on the east end of the hot cell, is now in place. Control and ventilation piping was installed below the decking. The piping module for one of the black cells on the northwest corner of the building has been completed to the point of being ready for placement in the black cell even though it will not be installed in the immediate future. Work on all other piping modules has been suspended. Construction work after the first of the CY will be limited to the last two 38 foot to 56 foot wall sections and some slabs at the 56 foot elevation. Materials, tools, and equipment have been removed from the building and are being returned to the warehouse or put in storage.

Engineering completed design for over 330,000 feet of the 540,000 feet of pipe in the facility before the seismic design criteria was changed. They have checked the design for about 80,000 feet of this piping to assure that it will meet the new criteria. Civil/Structural engineers are continuing to review completed design to assure adequacy in light of the new seismic design criteria and is placing emphasis on the analysis of the structural steel and concrete for the upper elevations of the building which have not been constructed. BNI is currently designing the concrete walls and structural steel from the 56 foot elevation to the 77 foot elevation. Procurement has suspended a number of actions, such as the structural steel fabrication contract, due to the reduced FY 2006 funding. Testing on an alternative cesium ion exchange resin, Resorcinol Formaldehyde (RF), has continued to provide favorable results. Nearly all tests show that RF would be superior to the baseline resin and is significantly less expensive.

LAW Facility: LAW construction placed concrete over the process and effluent cells at the +28 foot elevation. Concrete placements on the +48 foot elevation continued with two more large placements left, one is scheduled for the last week of January and one after the two melter gallery cranes are delivered. The main buildings structural steel was topped off this period and installation of roof decking started. Construction started on the container export bay building, placed under slab utilities, and installed rebar and embeds for the concrete slabs. Girts and sag-rods installation began which allows the siding to be attached to the main building. The siding contractor was scheduled to start at the end of December but has been delayed to February. The

key construction activities in the next few months will be installing girts and sag rods for the main building siding, installing siding, installing roof decking, and placing concrete for the export bay. On going construction activities include application of Special Protective Coating, installation of HVAC (heating ventilation air conditioning) ducts, cable trays, conduit, piping commodities, and installation of FREP (forms, rebar, embeds and penetrations).

HLW Facility: Engineering proceeded with design of the structural components, piping systems and electrical systems. Calculations of the revised ground motion effects were performed to support the construction of walls and slabs and procurement of components. Installation of rebar and embeds proceeded with the placement of concrete accomplished only after completion of the requisite revised ground motion analysis. Nine 0 foot elevation slabs and eight 0 to 14 foot elevation walls were placed, totaling approximately 6,584 cubic yards of concrete. To support the placement of walls and slabs, construction installed 237 tons of rebar and 50 tons of embeds. Construction performance declined, due to increased difficulty in form installations and concrete placements for 0 foot elevation slabs. Vendor engineering work, and some fabrication work, continued on several major HLW components, including the structures for melters, melter components and the HEPA filter housing.

Design proceeded on piping and cable tray, and communication wiring layout designs for the -21, 0, 14 and 37 foot elevations, and the power raceway layout designs for the 37 foot elevation. The Software Functional Specifications were being prepared for several cranes and manipulators. Designs of the piping and electrical in the vertical chases, at the four corners of the facility, were underway. Fabrication of wall modules continued at West Metals. The subcontractor performed seismic analyses on twelve wall module designs. Hydrogen in Piping and Ancillary Vessels (HPAV) Design Authority changes have been marked up on Piping and Instrument Diagrams and sent to HLW Plant Design for evaluation of impacts on piping design and piping layout. The subcontractor completed pouring the last chrome fuse cast brick for the HLW and LAW Melters.

BOF: Engineering efforts focused on designing the glass former facility slab, steel for the Important to Safety switchgear facility, and completion of remaining underground duct bank and concrete drawings for the non-dangerous liquid discharge facility air stripper. Engineering issued the designs for the 13.8kv cables from Building 87 to the PT Facility and completed review of the weigh hoppers, blending bins, and trim hoppers shop detail drawings for the Glass Former Storage Facility.

BOF received the following major equipment: the balance of the compressors for the Chiller Compressor Plant (CCP) (six of seven) and four compressed air dryers (five in total).

Construction efforts were concentrated on completing underground work and commencing the efforts to bring the site to final grade. The Water Treatment Plant building shell has been installed and the subcontractor is in the process of completing miscellaneous architectural finishes. Construction completed the Important to Safety Switchgear building basemat; continued installation of underground conduit, utilities, and radiological transfer lines; set the CCP compressors; and, continued installation of the CCP large bore pipe and structural steel.

LAB: Engineering focused on the stack design and the elevated slab. Engineering completed analytical method development for conventional non-dilute and laser ablation in a non-radiological environment and is in the process of preparing task plans for validation effort in a radiological environment to be performed by 222S Laboratory; issued hot cell fill slab liner plate and wall design; and, completed review of the factory acceptance test procedure for the Hot Cell Trolley system. On July 18, 2005, Engineering discovered the LAB structural steel design did

not meet Uniform Building Code, Section 2213.9 for Specially Concentric Braced Frames, as required by the structural design criteria. Engineering issued the structural steel redesign and is awaiting the fabricators detailed shop drawings for fabrication of the first priority structural steel. The first priority steel shipment is forecast to be received on-site April 2006 in support of initial installation May 2006. Work continued on disposition of non-conformance and construction deviation reports issued on compliance with American Society of Mechanical Engineers B31.3, Paragraph 341.7, *In-Process Examination* requirements for clamshell welds.

The inability to complete negotiations on the emergency diesel generator resulted in rescinding the offer to award. A funding-constrained re-bid schedule has been included in the December 2005 EAC. The LAB/LAW roofing and siding subcontract was awarded.

Commodities Installations: Based on the construction activities summarized above, the total project commodities placed or installed as of December 2005 are summarized in Table 3.

Table 2: Key Commodity Quantity Progress

Quantity Progress	Installed To-Date Through December 2005	December 2005 EAC Planned at Completion
Concrete	159,318 CY	254,977 CY
Structural Steel	7,729 Ton	34,419 Ton
Piping (above ground)	65,302 Ft	864,608 Ft
Piping (underground)	98,061 Ft	120,666 Ft
Conduit (above ground)	67,822 Ft	718,179 Ft
Conduit (underground)	156,084 Ft	194,868 Ft
Cable Tray	8,737 Ft	95,978 Ft
Cable & Wire	190,826 Ft	4,333,937 Ft
HVAC Ductwork	421,732 LBs.	4,022,043 LBs.

iii. Environmental Permits Required for Start of Construction:

Permitting and Licensing: DOE and BNI continue to work closely with State and Federal regulatory agencies to maintain permits, licenses, and authorizations needed to support WTP construction and commissioning. Permits required to support construction are in place. Permit modifications are required and submitted on an ongoing basis to depict the evolving engineering design. The modifications to reflect the 2+2 melter design and elimination of the technetium removal system in the Dangerous Waste Permit are under review by the Washington State Department of Ecology and the license conditions for the Radioactive Air Emission License modification are in final negotiations with the Washington State Department of Health. The Dangerous Waste permit includes a compliance schedule (WA7890008967, Attachment 51, Appendix 1.0) which requires the submittal of engineering and operational information.

Commodity growth, performance deterioration in engineering and construction, hydrogen buildup in piping and vessels in the PT Facility, difficulty in mixing heavy fluids in the PT Facility, revised seismic criteria affecting structural design of the PT and HLW Facilities, and a reduced FY 2006 funding level are all contributing to drive the project to exceed the current cost and schedule baseline. As a result, the near term compliance schedule items listed in Table 3 are unrecoverable as these activities are precursors to accomplishing HFFACO Milestone M-62-10 which is unrecoverable (see Section 7). Though the work could potentially be re-sequenced to

accomplish some of the compliance schedule items listed in Table 3, this would negate the necessary consistency required between facilities as designs are advanced.

ORP is in the process of identifying the activities required to re-baseline the WTP, work the HFFACO and RCRA permit compliance issues with the regulators, and re-negotiate the BNI contract. The tentative plan is to first complete the ORP, USACE, and industry expert reviews and receive approval of a new WTP cost and schedule from the DOE's Secretarial Acquisition Executive; then work with the regulators to try and resolve the HFFACO and RCRA permit schedule issues prior to completing contract negotiations with BNI.

Table 3: Near-Term Dangerous Waste Permit (RCRA) Compliance Schedule Items

Item Number	Description	Due Date
Item 10	Submit detailed information associated with containers and container management area	03/22/06
Item 13	Submit engineering information for each dangerous waste tank and primary sump to be included in the permit	04/29/06
Item 14	Submit engineering information for each tank system ancillary equipment to be included in the permit	04/29/06
Item 19	Submit engineering information for PT Plant Miscellaneous Unit Systems	02/11/06
Item 20	Submit engineering information for PT Plant Miscellaneous Unit Systems equipment	04/12/06
Item 24	Submit engineering information for equipment for each LAW Vitrification Miscellaneous Treatment Unit subsystem	06/02/06
Item 28,	Submit engineering information for HLW Vitrification Miscellaneous Treatment Unit sub-system	06/18/06
Item 29	Submit engineering information for equipment for each HLW Vitrification Miscellaneous Treatment Unit sub-system	06/18/06

B. NEAR TERM ISSUES

i. Regaining Confidence in Project Baseline:

ORP is conducting a number of independent reviews to help re-establish confidence in the WTP baseline. First, the USACE is in the process of reviewing the December EAC to ensure the basis for the estimate was correctly developed, the schedule can be accomplished, prior comments from ORP and USACE were addressed, and the risks are appropriately identified and quantified. Second, BNI is conducting a review of the December EAC cost and schedule as well as the functionality of the WTP process systems utilizing independent industry experts. Third, the USACE and the PRT are independently reviewing the development and implementation of the revised ground motion criteria. And fourth, DOE Headquarters has established an After Action Review to assess causes of the WTP cost, schedule, scope, and project management issues, allowing for significant lessons learned to be incorporated into future management of the WTP baseline and BNI contract.

Through these reviews, in addition to ORP's own reviews, ORP will be in a position where there will be sufficient confidence in the project's technical, cost, and schedule estimate to serve as a

firm foundation to baseline the project, start discussions with regulators, and begin contract negotiations with BNI.

ii. **Intumescent Structural Steel Fire Coating Design Issue:**
ORP continues to seek resolution to technical issues associated with the intumescent fire coating designs for WTP. To date, ORP has primarily focused on the technical data associated with performance of the coating designs under fire conditions. However, during the first week of January 2006, ORP determined that coatings already installed on the PT Facility and LAW Facility show damage from moisture accumulation from recent rains in late December. Much of the coatings have bubbled and delaminated in over one third of the columns from moisture intrusion. A seal coat applied to these coatings was designed to keep moisture from attacking the hydroscopic intumescent protection layer but was not effective. BNI is investigating and the intumescent coating manufacturer will be on site to assist in recovery of this latest development.

iii. **Revised Ground Motion (RGM):**
Based on the new site-specific data collection and reanalysis, the seismic ground motion response spectra was updated from the 1996 baseline spectra in early 2005. The RGM response spectrum increased the previous peak ground acceleration by 38 percent.

Because of the extent of the increase, the implementation of the RGM into the WTP project is a major effort. It will require significant resources and a number of years affecting many aspects of the project. Because of the magnitude of the efforts and duration, it requires multiple activities to be performed simultaneously to ensure proper and effective implementation while minimizing the risk of rework to the project. Among the measures taken for minimizing the impact to the already constructed facilities and equipment was to evaluate the excess conservatisms which already existed in the design and analysis. The results were reviewed by the DOE Peer review Team (PRT), DNFSB, and independent experts from USACE before BNI attained approval to implement them into the structural design criteria.

Some uncertainty remains in the RGM spectra regarding the soil characterization information on the interbed sequence at deeper depths, which was estimated from a limited data set. This uncertainty was compensated for by using conservative site amplification results from the original analysis. Confirmation of these results requires drilling of deep bore hole(s) at the site to a depth of 1500 ft and/or using several of the existing deep bore holes to acquire additional data. DOE has chartered the USACE to lead these confirmatory efforts, which could take up to two years to complete due to the scarcity of drilling equipment and the necessity to prevent cross-contamination of ground water when drilling.

iv. **Pulse Jet Mixers (PJM) Design Closure:**
PJM testing is currently focused on assuring hydrogen gas does not accumulate in individual pulse jet tubes in excess of the lower flammability limit (LFL). Tests indicate full PJM strokes should lead to full mixing of the residual slurry left in the pulse tubes thereby minimizing gas accumulation. A second set of tests are also being run to determine PJM control instrument sensitivity. These tests well determine if the pressure sensors in the PJMs have the ability to detect the pressure change characteristics needed for PJM operation control and to detect overblows. These tests are expected to be completed in February 2006 and the draft test report will be available in May 2006. A third set of tests is being conducted to evaluate the impact of antifoam additions on hydrogen gas generation. The current PJM air usage strategy assumes the anti-foam added due to sparging the non-Newtonian tanks will not increase the gas hold-up of these vessels. This assumption will be validated in a series of small tests at the Savannah River National Laboratory and are scheduled for completion in April 2006. The interim test results are

expected by June 2006.

v. **Hydrogen Generation:**
In January 2005, ORP directed BNI to assume solids from double shell tank (DST) 241-AY-102 as the most limiting feed to the WTP and to modify the Design Basis accordingly. This direction was provided to reduce hydrogen generation rates in waste delivered to WTP and to expedite development of the hydrogen generation calculation to support continued WTP design and construction. This direction will require blending DST 241-AZ-101 solids with other tank farm solids prior to delivery to WTP. In response to this direction, BNI recalculated hydrogen generation rates and times to the LFL for WTP hydrogen producing vessels. ORP formed a Design Product Oversight Team and issued a Design Product Oversight Plan to perform a review of the revised calculation. A draft oversight report was generated that identified thirteen open items requiring further work by BNI before the calculation could be considered adequate for use in the WTP design and incorporated into the project's Authorization Basis. ORP and BNI are working together to reach agreement on the open items.

vi. **Hydrogen in Piping and Ancillary Vessels (HPAV):**
Review and concurrence by the BNI Hydrogen Review Committee have been completed for all but one of the 10 HPAV generic solutions. The remaining generic solution (Generic Solution 10, Piping Dead Legs) is expected to be complete by the middle of February. All BNI HPAV activities are scheduled to be complete by April 2006. ORP has formed a design oversight team to perform an assessment of the HPAV generic solutions during the period February 21 - March 3, 2006. The assessment is primarily directed at the technical feasibility and effectiveness of the proposed generic solutions and includes consultants with mechanical systems/processes expertise. In addition to determining the technical feasibility and effectiveness, the design oversight team will also assess operational implications, safety/authorization basis impacts, and research and technology bases. The Design Oversight Report is scheduled for issuance the end of March.

vii. **Alternative Ion Exchange Resin Development:**
The baseline SuperLig® 644 cesium ion exchange resin is proprietary. To reduce the single-supplier risk, BNI is developing spherical resorcinol formaldehyde (RF) resin as an alternative to the reference SuperLig® 644 resin for removal of cesium from tank waste. Work to develop spherical RF ion exchange resin is continuing to make good progress. Results meet or exceed project requirements in all areas including hydraulic performance, cesium removal, and spent resin de-contamination for disposal. During the last six months multi-cycle testing with a 24-inch column (~1/2 scale) was completed and manufacture scale-up to 100-gallon lots was successful at both vendor and subcontractor facilities. BNI Research and Technology considers qualification for commissioning has a high probability. A WTP recommendation regarding spherical RF use is planned for November 2006.

viii. **Ultrafiltration System Design Review:**
WTP Engineering Division completed a design review of the PT Facility Ultrafiltration Process System (UFP) on July 6, 2004. The design oversight concluded: (1) the WTP process flowsheet was not optimized to remove soluble aluminum during caustic leaching; and (2) modification to the sizing of the filters may be required to support mission completion. ORP authorized a study in October 2004 to address caustic leaching effectiveness and UFP throughput. On July 19, 2005, BNI issued three studies evaluating approaches to improve WTP PT facility UFP performance to effectively leach aluminum from tank waste solids and increase system throughput to support mission completion.

The studies optimized caustic leaching performance by increasing the quantity of caustic added in

the leaching process and feeding leachate forward through ion exchange instead of recycling in the process. The studies also identified options to increase throughput including increasing ultrafilter surface area and moving the leaching operation to a location upstream of the ultrafilter loop such as the evaporator system. Other changes such as filter temperature, sodium molarity, and feed sequencing can also improve performance. ORP issued a letter on November 14, 2005, requesting BNI to confirm their recommendation to enhance ultrafiltration system performance and prepare a trend to implement required process and design changes. BNI was also requested to assess assumptions and risks associated with proposed ultrafiltration system changes and confirm facility performance with the WTP Tank Utilization Model.

ix. Safety Culture:

The ORP and BNI are working together to reinforce a workforce-wide safety culture in the midst of changing work scope and significant reductions in force. In the past year, BNI and subcontractor workers experienced a number of near-miss hazardous energy related events. BNI initiated a Category R type of DOE occurrence report, used for reporting recurring events, and performed a root cause analysis. Corrective actions followed and are addressing work control issues, improving supervisory direction, and emphasizing personal responsibility. These efforts coincide with a DOE-wide effort to increase field focus on work control and work planning. ORP and contractor staffs assessed current processes and developed action plans to drive further gains in integrated safety management, including improved identification and analysis of job hazards, better engagement with workers on how to reduce risks, and timely investigation of events to more quickly address safety issues. In an effort to identify and eliminate organizational weaknesses that create opportunities for employees to fail, ORP and BNI introduced training based on the Institute of Nuclear Power Operations publication, *Excellence in Human Performance*, and has scheduled a consultant visit to evaluate workplace conditions and develop an implementation strategy. BNI intends to use this period of workforce restructuring to emphasize a strong safety culture among its workers to facilitate improved communication and training when the workforce size increases again in FY 2007.

x. Quality Issues

WTP Welding Program Concerns: On August 10, 2005, and again on October 5, 2005, ORP issued letters to BNI informing them of concerns with an apparent significant decline in quality associated with WTP welding and welding inspection activities. These concerns were based on repeat occurrences in 2005 of procedural non-compliances with welding requirements including prescribing and using the wrong weld inspection criteria or preheat requirements, loss of material and design document control, and failure to perform and/or document in-process welding inspections required by applicable welding codes. BNI was required to describe its corrective actions planned or taken to address the specific issues described in the letters and to assess the overall weld program quality. In addition, BNI was required to describe the immediate corrective actions taken and BNI's basis for continued welding operations while long-term corrective assessments and action are being formulated.

BNI met with ORP to discuss their proposed corrective actions and their basis for continued welding activities while corrective actions were being developed and implemented and later formally responded to ORP in a letter dated October 28, 2005. BNI provided detailed information regarding the actions taken or being taken to address each of the specific issues described in the letters. ORP has accepted BNI's proposed corrective action plan and is closely monitoring BNI's corrective actions and field welding activities.

Independent reviews of the structural steel and piping welding programs and the RCA of the previously identified welding issues were completed. The root cause analysis (RCA) report was issued and identified recommendations that BNI must consider for incorporation into its Corrective Action Report. The other reports should be issued soon. Also, three additional independent reviews of the WTP welding program are scheduled for the first quarter of calendar year (CY) 2006.

Welding and pipe installation program training was developed and implemented for appropriate staff; BNI plans to expand the scope of this effort to include more staff and additional information. Interim weld management changes have occurred and a permanent new Welding Manager is being sought. Until the effectiveness of these efforts have been assessed and found acceptable, periodic peer reviews by field welding engineers of ongoing welding program oversight and inspections will continue. From recent DOE construction inspections of site welding, DOE has identified improvements in this area. However, a recent issue was identified by BNI where the wrong sized weld rod was issued and used to repair tank nozzle welds indicating additional efforts are needed to improve weld program implementation.

BNI had determined outer shell coaxial pipe (pipe within a pipe) welds, requiring in process inspections (poorly documented), were acceptable (met the intent of the code) based on BNI's ongoing welding surveillance program and documented inspections performed. However, the Washington State Department of Ecology requested BNI perform limited non-destructive examinations of a portion of the completed welds to demonstrate the welds were acceptable as installed. Results of this examination identified some indications that are currently being reviewed by BNI engineering to determine if they are acceptable for their intended use.

Supplier Quality: The WTP is the first large nuclear construction project in the U.S. in the last decade or more. Because of this previous lack of demand for nuclear quality products, BNI has experienced substantial difficulty finding and qualifying suppliers to stringent nuclear quality standards. In response to this challenge, BNI has had to increase the number of resources involved communicating nuclear quality expectations to potential suppliers and overseeing suppliers with awarded purchase orders. Even with these additional resources, BNI has had problems ensuring suppliers provide products that meet WTP requirements. In addition, BNI is equally challenged to procure non-quality (non-nuclear) materials that meet purchase order requirements. This has also required increased supplier oversight to ensure these less important materials meet WTP requirements.

Because of these problems, DOE has performed supplier oversight program inspections to assess BNI's efforts to address the issues. During one of these routine ORP supplier site quarterly inspections, ORP identified significant quality assurance performance issues with the supplier for the HLW/PT Lidding Machine and other equipment. Issues included such things as inadequate procedures for conducting welding, controlling weld material, qualifying visual and non-destructive examination weld inspectors, and performing calibrations. BNI took immediate action to inform the supplier they were being removed from their Approved Supplier List, stop shipment of any completed material, and require the supplier to take actions to address the deficiencies. BNI performed a peer review of previous fabrication inspections performed by the assigned BNI supplier inspector and determined the work performed to date was technically acceptable. A quality assurance audit of the supplier started in early January. BNI is also performing a review of other suppliers to determine the adequacy of their quality programs. ORP plans to increase the number of supplier site inspections perform each calendar quarter to ensure other suppliers do not have similar weaknesses.

Preservation Maintenance Program: ORP has concerns with BNI's efforts to preserve and maintain installed equipment. A Finding was identified for failure of BNI to maintain vendor required heating of lubricating oil associated with the BOF Centrifugal Air Compressors. Preservation and maintenance of subcontractor installed equipment is not well established and exasperated by delayed turnover of subcontractor completed or near completed work. Furthermore, delays in WTP construction will challenge this program and will require BNI to develop long-term preservation and maintenance activities for equipment far beyond what was originally planned. ORP is conducting a detailed program assessment of this area and plans to closely monitor BNI's efforts to address this important area.

3. ACTIONS TAKEN OR INITIATED TO RECOVER ANY AGREEMENT SCHEDULE SLIPPAGE

USACE Review:
The Department engaged the USACE to conduct an independent review of the 2005 EAC, April 2005. The USACE issued their report on May 13, 2005 and indicated: 1) there are several high cost impact and schedule issues which are not at an adequate level of detail to validate the estimate; 2) given the conservatisms built into the seismic-related estimates and schedule, the estimate appears to be a bounding estimate; 3) a concern the estimate has not fully included potential cost growth; 4) the project requires aggressive management by the Department and the contractor, sufficient annual funding, and contract incentives to control cost and schedule growth; and 5) the estimate lacked sufficient cost and schedule details necessary to validate the estimate.

Secretary of Energy Initiatives:
On June 23, 2005 the Secretary of Energy made several key decisions to address the scope, cost, schedule, contract and management issues. The major management initiatives included:

1) Conduct an After Action Fact Finding review to assess the causes of the project cost, schedule, scope, and project management issues;
2) Assemble a new Headquarters senior level management team to oversee the project with the team comprised of at least six individuals with specialized expertise in cost, contracting, and technical design/engineering;
3) Submit the qualifications of the WTP Federal Project Director to the Department's Project Management Certification Board;
4) Submit weekly progress reports to the Principal Deputy Assistant Secretary for Environmental Management;
5) Schedule quarterly progress reviews with the Secretary; and,
6) Develop an execution plan and master schedule for all of the major activities associated with the path forward for the project.

Actions Taken

Secretary of Energy Engagement with Contractor:
Starting in July 2005, the Secretary of Energy has met personally on several occasions with the principals of Bechtel Group Inc. concerning the status of the project and DOE expectations. The Secretary indicated Bechtel must demonstrate its world class corporate commitment and project management capabilities to this critical project by accomplishing the following:

- An approach to addressing the current technical issues, increasing the confidence in design, containing costs and developing a viable schedule;

- Personal engagement of the principals of Bechtel Group, Inc to obtain the "best and brightest" from other major firms to critically assess the current technical approach, evaluate the risks, review the cost/schedule and develop recommendations to promptly and dramatically improve project performance;
- A plan to provide the "best and brightest" site project management team (executives, engineers and technicians) for the duration of the project; and,
- A plan to develop and submit to the Department complete and credible EACs.

Headquarters Oversight Team:
On July 15, 2005, the Principal Deputy Assistant Secretary for Environmental Management named the team lead for the new Headquarters senior level management team. The team lead has over twenty-five years of project management experience with the Department of Defense and has over ten years of experience with the DOE. He is certified as a Federal Project Director at the highest level (Level IV) in accordance with DOE's *Project Management Career Development Program*. He has been the source selection official for over $8 billion of competitive procurements, the lead negotiator for the exercising of contract option periods for over $11 billion worth of contracts, and the lead negotiator for sole-source procurements of over $6.3 billion worth of contracts for first of a kind closure contracts.

On August 3, 2005, the Charter for the Headquarters' Team for the Hanford Waste Treatment Plant Project was approved by the Principal Deputy Assistant Secretary for Environmental Management. The Team is performing oversight of WTP activities that include, but are not limited to: technical processes, contract management, baseline planning and development, engineering management systems and project management processes. In addition, the Team provides recommendations on project alternatives, design optimization, contract strategy, and overall path forward.

Conduct Independent After Action Review:
On August 1, 2005, the scope of work was finalized for initiating an After-Action Fact Finding Review and was limited to the following areas of focus:

- Identify the main causes of the estimated cost increases and schedule delay;
- Identify the timeliness, accuracy, and clarity of the reporting to the Department concerning project and contract costs and potential increases thereto;
- Determine if the Department's project management and contract management policies and procedures were followed and identify impacts if they were not;
- Determine if the organizational structures of the ORP and Headquarters were appropriate, reporting relationships were clear and appropriate, both within ORP and between ORP and Headquarters;
- Determine if the staffing levels, qualifications, and experience at ORP and Headquarters have been adequate to oversee and support the WTP Project;
- Determine if the provisions of DOE O 413.3 were followed including adherence to approval authorities for changes to the project; and
- Determine if acquisition rules and regulations were followed including adherence to approval authorities for changes to the contract.

The team consists of six senior individuals, each with 20 to 40 years of experience in project management.

USACE Reviews:

The Department engaged the USACE on August 9, 2005, to perform independent technical reviews of the WTP for the following: 1) review the development and implementation of the revised seismic design criteria; 2) lead the activities to gather additional geophysical data to confirm the revised seismic design criteria; and, 3) validate the updated 2005 EAC. The USACE will complete the cost validation review by summer 2006.

Enhance Project Management:
On October 24, 2005, the Assistant Secretary for Environmental Management directed a number of actions with the goal of enhancing the management effectiveness of the project. The actions were divided into four categories:

Organization and Staffing

- Authorize the Manager, ORP to hire seven additional contracting and one attorney personnel;
- Certify Federal Project Directors in accordance with DOE's *Project Management Career Development Program* for the WTP and Tank Farm projects;
- Establish a Headquarters' Office(s) responsible for acquisition strategy and implementation, project management, project assessment and project reporting; and
- Establish a Headquarters Office of Project Recovery to put emphasis on projects at risk and where there is concern with the project's performance.

Project Management

- Ensure ORP and BNI personnel comply with DOE Orders for project management requirements;
- Modify the BNI WTP contract to incorporate Department Orders for project management and performance assessment and reporting;
- Receive frequent updates and independent assessments of progress and analysis of the site's progress reports from Headquarters' staff;
- Provide updates for the WTP project to the Deputy Secretary (as the Acquisition Executive) as part of the Quarterly Performance Reviews for Environmental Management;
- Ensure the Department's Office of Engineering and Construction Management has adequate and necessary access to WTP information; and,
- Evaluate increasing oversight staffing for large DOE projects and evaluate requiring all projects to report the percentage of contingency usage.

Reporting

- Implement an effective and compliant "Earned Value Management System (EVMS)" to determine progress compared to the baseline;
- Submit monthly EVMS-based updates of the EAC forecast to Headquarters to forewarn DOE managers of potential cost growth. A Headquarters team will evaluate the site's use of meaningful EVMS data for project status reporting and potential cost growth; and
- Establish a Headquarters' team to evaluate the progress reported by the contractor to determine actual progress as measured on the semi-annual basis, the amount of cost fee provisional payments, the pending modifications, and the expected final cost to evaluate the likelihood of the contractor in earning cost fee.

Contract Management

- The Manager, ORP, will establish the procedure to have each Federal Project Director, as the contracting officer's representative, sign non-contract correspondence and the contracting officer sign contract correspondence.

Summary

Beginning in January 2006, DOE will report on a quarterly basis to the House and Senate Committees on Appropriations on the activities and financial status of each of the five subprojects (PT, HLW, LAW, LAB, and BOF) within the WTP project including progress on items noted above. Also, the Assistant Secretary of Environmental Management will continue to meet with Congressional members and staff on a regular basis for discussion and to deliver updates on the WTP project.

In summary, the Department, along with the USACE and BNI are undertaking key initiatives to ensure there is a full understanding of what is required to successfully complete this project and begin plant operations. The Department is reviewing and evaluating all of the major project management systems, project controls, business systems, and technical processes by both internal senior professionals and outside "best and brightest" industry experts. It is again important to note that the Secretary of Energy is personally involved in the WTP project and is briefed by the Assistant Secretary of Environmental Management on a regular basis.

4. BUDGET AND COST STATUS

Status: BNI implemented an interim baseline for project performance reporting as of September 2005 which reflects more closely the current planned activities and their projected costs. The following project performance is based on that interim baseline. Through December 2006, the WTP project has a cumulative negative schedule variance of $13 million and a positive cost variance of $11 million on $2,927 million of completed work to date. The negative schedule variance is primarily attributed to reductions in engineering and construction personnel related to the reduced funding for FY 2006. The positive cost variance is primarily attributed to good productivity by the construction field craft and favorable procurements.

Budget: The Project is anticipating total FY 2006 funding of $520.4 million with $246 million of prior year carryover.

Costs: Anticipated spending, based on the BNI's December EAC is about $700 million in FY 2006.

5. DOE/DOE CONTRACTOR COMPLIANCE

Commodity growth, performance deterioration in engineering and construction, hydrogen buildup in piping and vessels in the PT Facility, difficulty in mixing heavy fluids in the PT Facility, revised seismic criteria affecting structural design of the PT and HLW Facilities, and a reduced FY 2006 funding level will drive the Project to exceed the current cost baseline and schedule milestones. DOE, BNI, and the USACE are in the process of evaluating the impact of these changes through the development of a revised cost and schedule estimate with completion tentatively scheduled for late summer 2006. ORP will be in a position where there is sufficient confidence in the project's technical, cost and schedule estimate to serve as a firm foundation for the next Semi-Annual Compliance Report due July 31, 2006. Though the resulting final cost and schedule are still not known, based on the initial revised EAC submittal from BNI December 22, 2005, the HFFACO Milestones listed in table 4 are impacted and are under review.

ORP is in the process of identifying the activities required to re-baseline the WTP, work the HFFACO and RCRA permit compliance issues with the regulators, and re-negotiate the BNI contract. The tentative plan is to first complete the ORP, USACE, and industry expert reviews and receive approval of a new WTP cost and schedule from the DOE's Secretarial Acquisition Executive; then work with the regulators to try and resolve the HFFACO and RCRA permit schedule issues prior to completing contract negotiations with BNI.

Table 4: Impacted HFFACO Milestones

Milestone	HFFACO date	Description
M-062-00	12/31/2028	Complete PT Processing and Vitrification of Hanford High Level and Low Activity Tank Wastes. Compliance with the work schedules set forth in this M-62 series is defined as the performance of sufficient work to assure with reasonable certainty that DOE will accomplish series M-62 major and interim milestone requirements.
M-062-00A	02/28/2018	Complete WTP PT Processing and Vitrification of Hanford HLW and LAW Tank Waste. Tank Waste processing shall complete the WTP PT and vitrification of no less than 10% of Hanford's Tank waste by mass and 25% by activity.
M-062-07B	12/31/2007	Complete Assembly of LAW Melter #1 so that it is ready for transport and installation in the LAW vitrification building (BNI baseline schedule activity 4DL321A200 as part of DOE Contract No. DE-AC27-01RV14136).
M-062-08	06/30/2006	Submittal Of Hanford Tank Waste Supplemental Treatment Technologies Report, Draft Hanford Tank Waste Treatment Baseline, And Draft Negotiations Agreement In Principle (AIP). DOE will submit a supplemental Treatment Technologies Report that describes the technical, financial, and contractual alternatives which in combination with the WTP and any required additional LAW vitrification facilities, are needed to treat all of Hanford's Tank Wastes.
M-062-09	02/28/2009	Start Cold Commissioning - Waste Treatment Plant. DOE Will Start Cold Commissioning Of Its Tank Waste Treatment Plant. Start Of Cold Commissioning Is Defined As Introduction Of First Feed Simulant Into A Process Building.
M-062-10	01/31/2011	Complete Hot Commissioning - Waste Treatment Plant. DOE will achieve sustained throughput of PT, LAW Vitrification and HLW Vitrification Processes, and demonstrate WTP Treatment Complex Availability To Complete Treatment of no less than 10% of the tank waste by mass and 25% of the tank waste by activity by December 2018.
M-062-11	06/30/2007	Submit A Final Hanford Tank Waste Treatment Baseline. Following The Completion Of Negotiations Required In M-62-08, DOE Will Modify Its Draft Baseline As Required And Submit Its Revised Agreed-To Baseline For Treating All Hanford Tank Waste (HLW, LAW,

Table 4: Impacted HFFACO Milestones

Milestone	HFFACO date	Description
		and Transuranic [TRU]) by 12/31/2028.

6. AREAS OF NON-COMPLIANCE

There are no current areas of non-compliance

7. STATUS OF HFFACO MILESTONES

The HFFACO Milestones for the WTP, the M-62 milestone series, are listed below with full text and a status as of this report.

A. M-62-00 – Complete PT Processing and Vitrification of Hanford High Level and Low Activity Tank Wastes

Milestone Date: December 31, 2028

Description: Compliance with the work schedules set forth in this M-62 series is defined as the performance of sufficient work to assure with reasonable certainty that DOE will accomplish series M-62 major and interim milestone requirements.

DOE internal work schedules (e.g., DOE approved schedule baselines) and associated work directives and authorizations shall be consistent with the requirements of this agreement. Modification of DOE contractor baseline(s) and issuance of associated DOE work directives and/or authorizations that are not consistent with agreement requirements shall not be finalized prior to approval of an agreement change request submitted pursuant to agreement action plan section 12.0.

Status: Under review, refer to section 5.

B. M-62-00A – Complete WTP PT, Processing and Vitrification of Hanford HLW and LAW Tank Wastes

Milestone Date: February 28, 2018

Description: Tank waste processing shall complete the WTP PT and vitrification of no less than 10% of Hanford's tank waste by mass* and 25% by activity.

*[In meeting this requirement DOE will pretreat and vitrify no less than 6000 metric tons of sodium (in the instance of LAW feed) and 800 metric tons of waste oxides (in the instance of HLW feed)]

Status: Under review, refer to section 5.

C. M-62-01 – Submit Semi-Annual Project Compliance Report

Milestone Date: Semi-Annual Beginning July 31, 2000

Description: DOE's manager, ORP, will submit a "Project Compliance Report" to Ecology semi-annually (a copy of this report will also be provided to EPA's Region 10 Office of Waste and

Chemicals Management). This report will document DOE compliance with agreement requirements and shall be sequentially updated by information documenting work performed and issues encountered during the previous report period. The ORP project compliance report will be provided as part of the parties' Interagency Management Integration Team meetings, and shall document the status of progress to date, progress made during the report period, and activities expected in the foreseeable future. The report will include, but is not limited to: 1) a concise description of project accomplishments and issues including those encountered during the previous year and those expected in the near term; 2) when applicable, a description of actions initiated or otherwise taken to recover any agreement schedule slippage; 3) a budget and cost status; 4) a statement documenting whether or not DOE and DOE's contractor(s) remain in compliance with agreement requirements, i.e., whether or not "DOE and DOE's contractor(s) have completed sufficient work to allow achievement of agreement requirements;" and 5) concise descriptions of any noncompliance. Copies of all pertinent DOE work directives and/or authorizations issued to DOE's contractor(s) shall be provided on request.

Status: Ongoing and on schedule. Note: The M-62-01 milestone reoccurs on a semi-annual basis, and therefore each report is identified in the HFFACO by a unique alpha character included with the M-62-01 milestone. This report is M-62-01L. In addition to this semi-annual report, DOE provides the WTP Project accomplishments, issues, cost and schedule status, and compliance status through the monthly TPA Project Manager's Meeting and the Quarterly Milestone Review reports.

D. M-62-02 – Submittal of Hanford Tank Waste Alternatives Report
Milestone Date: March 1, 2000

Description: DOE will submit a report that describes the alternatives (technical, financial, and contractual) to treat Hanford tank waste. The report will: 1) Identify and describe credible alternatives to the current privatization approach that meet DOE commitments to achieve hot operations by December 2007, and to treat no less than 10% of the tank waste by mass and 25% of the tank waste by activity by February 2018; 2) Serve as a basis to amend the FY 2001 budget request for authority to implement a contingency option (authority to use privatization set-aside funds); and 3) Be released concurrently to Ecology, EPA, and the public.

Status: COMPLETED.

E. M-62-03 – Submit DOE petition for RCRA delisting of vitrified HLW
Milestone Date: December 31, 2006

Description: DOE will submit its petition for delisting of the immobilized HLW from the Waste Treatment Plant from RCRA and the Washington State Hazardous Waste Management Act (delisting petition) in accordance with 40 CFR 260.22 and Washington Administrative Code 173-303-072.

Status: On schedule - BNI submitted the Delisting Petition to ORP on June 22, 2005. DOE-HQ is now reviewing the petition.

F. M-62-04T – Readiness to Proceed – Support to Phase I Treatment
Milestone Date: May 1, 2000

Description: DOE and its Hanford tank farms operations contractor will complete all necessary work and achieve readiness to proceed in support of Phase I.

Status: COMPLETED

G. **M-62-06 – Start of Construction – Phase I Treatment Complex**
Milestone Date: December 31, 2002

Description: First placement of structural concrete at one of the treatment complex principal facilities (i.e., PT, LAW vitrification, or HLW vitrification facilities).

Status: COMPLETED on July 10, 2002.

H. **M-62-07A - Initial Erection of LAW Structural Steel in the Vitrification Facility.**
Milestone Date: October 30, 2003

Description: This milestone represents the placement of the first structural steel column as part of initiation of BNI Baseline Schedule activity 4DL131B000 - "LAW - Elev –21 SS Columns, Beams & Q-Deck at +3," (Contract No. DE-AC27-01RV14136). In addition, activity 4DL121B100 "LAW - Elev –21 Place Basemat Concrete," shall be substantially completed and activities 4DL121D000 "LAW - Elev –21 Perimeter Walls FREP," and 4DL121F000 "LAW - Elev –21 Interior Walls FREP," shall have been initiated.

Completion of this milestone will be met when the first structural steel column is installed at the -21 foot elevation in the LAW facility. This milestone demonstrates significant progress in design and engineering as well as construction of the LAW facility because basemat concrete will have been poured and construction of walls will have been started. In addition, procurements will have been made, not only for this facility, but for the other major facilities. Erection of structural steel in the LAW facility will also provide lessons-learned opportunity because it will be the first facility to begin this aspect of construction.

Status: COMPLETED on July 24, 2003.

I. **M-62-07B – Complete Assembly of LAW Melter #1 so that it is ready for transport and installation in the LAW vitrification building (BNI baseline schedule activity 4DL321A3200 as part of DOE Contract No. DE-AC27-01RV14136), and complete schedule activity ID 4DH46102A2 – Move #1 melter into the HLW vitrification facility.**
Milestone Date: December 31, 2007

Description: This milestone represents: 1) the assembly of LAW Melter #1 to the point it is ready for Refractory as part of BNI Baseline activities 3EL3212A00 "Specifications and Analysis," 4DL321A000 "LAW - Procure Material & Equipment for Melters," and 4DL321A200 "LAW- Assemble Melter #1," (Contract No. DE-AC27-01RV14136). In addition, activities 4DL121U100 "LAW - Elev +3 South Melter FREP," and 4DL131D000 "LAW - Elev +28 Columns, Beams & Q-Decking at +48," shall be substantially completed; and 2) moving the first HLW melter into the HLW facility as defined in BNI baseline activities ID 4DH46102A2.

Completion of this milestone will be met when: 1) LAW melter #1 will have been fully fabricated, assembled and ready for refractory material to be installed. Assembly of the melter is scheduled to occur near the end of LAW construction when the facility is most ready to have the assembled melter moved into the LAW cell where the refractory material will be installed. Meeting this milestone therefore represents significant accomplishment of the engineering, design and construction of the LAW facility; and 2) HLW melter #1 has been fully fabricated and moved

into the HLW vitrification facility.

Status: Under review, refer to section 5.

J. M-62-08 – Submittal of Hanford Tank Waste Supplemental Treatment Technologies Report, Draft Hanford Tank Waste Treatment Baseline, and Draft Negotiations Agreement in Principle (AIP).
Milestone Date: June 30, 2006

Description: DOE will submit a supplemental treatment technologies report that describes the technical, financial, and contractual alternatives which in combination with the WTP and any required additional LAW vitrification facilities, are needed to treat all of Hanford's tank wastes. The report will identify and describe viable path(s) forward to complete treatment of all tank wastes by December 31, 2028. The report shall apply the same selection criteria to all options and include the 2nd LAW vitrification facility as an option. The report will include: the results of all waste form performance data (compared against the performance of borosilicate glass) for all the treatment technologies being considered; performance data will be adequate to make decisions as to the acceptability of any proposed waste form for the waste being considered, and description of the considered treatment technologies (including size, throughput, technical viability, and life cycle cost estimates).

This report will also include a discussion of waste treatment plant throughput commitments and the realistic potential for enhancing the throughput of currently planned melters, proposed additional melters and potential second generation melters installed at first melter change out.

The draft baseline will contain DOE's proposed approach for treating all Hanford tank wastes (HLW, LAW, and TRU) by December 31, 2028, including life cycle cost estimates that indicate projected funding requirements through completion of the RPP mission, a schedule for construction and operation of proposed new facilities and/or enhancements to the WTP, and projected throughput for each facility.

The report and baseline will be accompanied by a draft negotiations AIP and draft agreement change request containing milestones and associated agreement requirements sufficient to effectively drive all required work, including but not limited to: 1) the establishment of requirements regarding any necessary WTP modification(s); 2) the establishment of requirements scheduling the acquisition and operation of any approved treatment technology systems; 3) the establishment of production metrics for treatment complex (WTP plus any supplemental treatment system or second LAW vitrification facility) consistent with completion of treatment by December 31, 2028; and 4) the establishment of requirements scheduling acquisition and operation of feed delivery systems for any approved supplemental technology (M-47 milestones). The AIP will be finalized within 30 days of submittal and provide that negotiations will be completed within one hundred and eighty (180) days of AIP finalization, and will provide that, in the event the parties do not reach agreement within this timeframe, the negotiations will be resolved as a resolution of a dispute via final determination of the Director of Ecology pursuant to HFFACO Article VIII. Unless otherwise agreed by the parties, this final determination will be issued within seven months of AIP finalization.

Status: In jeopardy. The Bulk Vitrification Demonstration System (DBVS) is being evaluated as a supplemental tank waste treatment technology and was scheduled to begin producing boxes of vitrified wastes from Hanford tank S-109 beginning in early 2006. The DBVS Project has experienced increased costs related to engineering design, procurement, and construction that

have extended the schedule. Operational and analytical data from the production of boxes of vitrified tank wastes is necessary to support the information required by M-62-08.

K. M-62-09 - Start Cold Commissioning - Waste Treatment Plant
Milestone Date: February 28, 2009

Description: DOE will start cold commissioning of its tank waste treatment plant. Start of cold commissioning is defined as introduction of first feed simulant into a process building.

Status: Under review, refer to section 5.

L. M-62-10 - Complete Hot Commissioning - Waste Treatment Plant
Milestone Date: January 31, 2011

Description: DOE will achieve sustained throughput of PT, LAW vitrification, and HLW vitrification processes and demonstrate WTP treatment complex availability to complete treatment of no less than 10% of the tank waste by mass and 25% of the tank waste by activity by December 2018.

Status: Unrecoverable, refer to section 5.

M. M-62-11 - Submit A Final Hanford Tank Waste Treatment Baseline
Milestone Date: June 30, 2007 (See M-62-10)

Description: Following the completion of negotiations required in M-62-08, DOE will modify its draft baseline as required and submit its revised, agreed-to, baseline for treating all Hanford tank waste (HLW, LAW, and TRU) by December 31, 2028.

Status: In jeopardy, refer to section 5 and status of M-62-08