Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

December 18, 2009

CERTIFIED MAIL

Ms. Shannon Dininny
The Associated Press
P.O. Box 1349
Yakima, Washington 98901

Dear Ms. Dininny:

FREEDOM OF INFORMATION ACT REQUEST (FOI 2010-00644)

Your Freedom of Information Act (FOIA) request dated December 2, 2009, addressed to the U.S. Department of Energy, Headquarters FOIA Office has been forwarded to this office for response as well as to the DOE Office of Environmental Management (EM), the Oak Ridge Operations Office and the Savannah River Operations Office. This response is for documents that fall under the jurisdiction of the Richland Operations Office and Office of River Protection. All other offices will respond to you directly.

In your request you asked for copies of all EM Construction Project Reviews completed since June of 2009. We have conducted a thorough search and enclosed is a document entitled, "Department of Energy Review Committee Report on the Construction Project Review of the Waste Treatment and Immobilization Plant Project at the Office of River Protection at Hanford."

If you have any questions regarding your request, please contact me at our address above or on (509) 376-6288.

Sincerely,

Dorothy Riehle
Freedom of Information Act Officer
Office of Communications
and External Affairs

OCE:DCR

Enclosure

Department of Energy
Review Committee Report

on the

Construction Project Review

of the

WASTE TREATMENT AND IMMOBILIZATION PLANT PROJECT

at the Office of River Protection at Hanford

August 2009

EXECUTIVE SUMMARY

A Department of Energy (DOE) review of the Waste Treatment and Immobilization Plant (WTP) project was conducted on August 10-13, 2009 at the request of Dr. Inés Triay, Assistant Secretary for Environmental Management (EM). The purpose of this review was to assess the project's progress towards achieving Critical Decision 4, *Approve Project Completion*, in November 2019 within the approved Total Project Cost (TPC) of $12.26 billion. Specific review areas were Technical Systems; Startup and Commissioning; Environment, Safety, Health, and Quality Assurance (ESH&Q); Cost, Schedule, and Risk; and Management.

The WTP is the Department's largest capital asset line-item construction project. Its mission is to treat and vitrify 54 million gallons of radioactive chemical waste stored in underground storage tanks at the DOE Hanford site near Richland, Washington. The project, under the DOE Office of River Protection (ORP), is an Engineer, Procure, Construct, and Commission (EPCC) cost-plus-award-fee contract with Bechtel National, Inc. (BNI). The project is approximately 49 percent complete.

The Committee was unable to validate that the project will be complete on schedule and within the approved budget. The current Estimate at Completion (EAC) does not include a complete assessment of project risks, and it assumes that a cost avoidance can be achieved for work that has not yet been approved and incorporated into the contract. In addition, the Commissioning Plan has a high degree of risk and is unlikely to be achieved without appropriate cost and schedule reserve and is being re-evaluated by the project team. These items along with other less impacting items are being addressed, and included in a revised EAC to be completed in October 2009. A follow-up review has been scheduled in November 2009 to complete the assessment effort.

The Committee found that EM Headquarters leadership has proactively required the contractor to make positive organizational and personnel changes. The runtime of recently implemented business practice changes is too short to validate potential savings; however, they appear to have great potential. The project scale and complexity requires dedicated DOE Headquarters support, unambiguous authority, clearly defined responsibility and accountability of the Federal Project Director (FPD), and realignment of the ORP site staff to more effectively support the FPD and the Project Execution Plan. A structural realignment of the project's funding constraints is necessary to increase leadership decision flexibility and opportunities for risk mitigation. The Committee strongly recommends that EM pursue eliminating the five subproject control points and termination liability reserves as soon as possible. Additionally, consideration should be given to adjusting the project's flat annual funding profile.

The Committee found that the Technical and ESH&Q processes are mature and effective. The project team must remain focused on closing outstanding technical issues in a timely fashion to mitigate cost and schedule growth. Establishing a process that factors cost, schedule, and risk considerations into the procurement of safety-related material is vital to providing the best-value solutions to these critical procurements. Finally, achievement of a clear path forward on closing out the Material at Risk (MAR) and Hydrogen in Piping and Ancillary Vessels (HPAV) issues must be completed as quickly as possible to maximize project savings.

CONTENTS

Appendices

1. INTRODUCTION

The U.S. Department of Energy (DOE) Waste Treatment and Immobilization Plant (WTP) is the cornerstone of the mission to clean up hazardous and radioactive waste contained in underground storage tanks located at the Hanford Site in eastern Washington State. The nuclear waste is the result of more than four decades of reactor operations and plutonium production for national defense. The infrastructure that supports storage of this waste is aging and poses a threat to the environment. This is DOE's largest and most complex environmental cleanup project.

1.1 Background

The WTP (Figure 1) is a $12.26 Billion construction program comprised of five separate subprojects, each of which provides a key function in treating and immobilizing waste at the Hanford Site. Bechtel National, Inc. (BNI), along with its prime subcontractor, URS-Washington Division, is responsible for designing, constructing, and commissioning the WTP.

Figure 1: Aerial View of WTP, August 2009

Nuclear waste materials from the Hanford Site's tank farms will be retrieved and pumped via transfer lines to the WTP for processing. The WTP will receive and process the waste by separating it into low-activity waste (LAW) and high-level waste (HLW) feed streams. The waste feed will be separated into soluble and insoluble fractions. Radionuclides will be removed from the soluble fraction to the maximum extent technically and economically practical. The LAW materials will then be immobilized via vitrification for onsite disposal at the Hanford Site. The radionuclides separated from the soluble and insoluble fractions will become the HLW feed and will be immobilized for ultimate disposal in a national repository.

1.2 WTP Facility Descriptions

The five subprojects of the WTP are: 1) Pretreatment (PT) Facility, 2) HLW Facility, 3) LAW Facility, 4) Analytical Laboratory (LAB), and 5) Balance of Facilities (BOF). Each facility fulfills a key function in treating and immobilizing waste, as described below.

Pretreatment Facility

The PT Facility (Figure 2) is the largest and most complex of the five subprojects. Pretreatment is the first step in treating the waste stream at Hanford. The Tank Farms Project (TFP) contractor transfers waste from the storage tanks to the PT Facility. LAW is transferred as a solution that contains precipitated salts and HLW is transferred as a slurry containing undissolved solids. The waste streams will be processed as follows:

Figure 2. The Pretreatment Facility

- LAW feeds will be blended with HLW feeds in an ultrafilter preparation tank. The blended HLW and LAW feed streams are filtered to separate the LAW liquid stream from the slurry. The LAW is then processed through an ion exchange (IX) process. The concentrated solids slurry will be caustically leached, washed, oxidatively leached, washed, and blended with cesium (Cs) concentrate from the IX and strontium (Sr)/transuranic (TRU) solids before being transferred to the HLW Facility. Feeds containing organic complexants cause the Sr and some TRU waste to remain in solution. This waste will undergo a process to precipitate the Sr and TRU before filtration. The filtration step then separates the Sr/TRU solids, manganese oxide solids and entrained solids from the low-activity waste stream. The Sr/TRU precipitate is washed and stored before high-level waste vitrification.

- After filtration, the LAW undergoes the IX process to remove Cs. The Cs eluate is concentrated by evaporation and then blended with pretreated HLW solids before transfer to the HLW Facility vitrification process. The last step in the PT Facility is to concentrate the treated LAW liquid by evaporation before transferring the waste to the LAW Facility vitrification process.

The PT Facility also contains a process vessel ventilation system, an offgas treatment system, and a stack. Liquid effluents are either recycled back into the facility or sent to the Hanford Site Liquid Effluent Retention Facility (LERF)/200 Area Effluent Treatment Facility (ETF).

High-Level Waste Vitrification Facility

Figure 3. The HLW Facility

The HLW Facility (Figure 3) is the second largest subproject. It receives pretreated high-level waste feed from the PT Facility. Treated slurry and the LAW intermediate waste products, separated Sr/TRU and Cs, make up the feed to the HLW Facility. The HLW Facility vitrification process consists of two ceramic melters fed by independent feed and blending vessel trains, a dedicated offgas treatment system for each melter, and a common secondary effluent collection system. A canister receipt system supplies canisters to the melter pouring systems that provides immobilized high-level waste (IHLW) to a canister decontamination and export system. The HLW feed concentrate is transferred from the PT Facility to the HLW Facility vitrification building. Batches of concentrate are transferred to one of the two melter feed preparation vessels. The feed concentrate is blended with glass-forming chemicals and then mixed to ensure a uniform mixture. The melter feed slurry is transferred to the melter feed vessel, where it can be fed to a dedicated HLW Facility melter.

The HLW Facility melters are designed to produce 6 metric tons of IHLW per day. The melter feed slurry is introduced at the top of the melter and forms a cold cap on the surface of the melt pool. Water and volatile components evaporate or decompose and are drawn off through the offgas system. Nonvolatile components react to form oxides, which become part of the molten glass. An airlift system inside the melter pours the molten glass into stainless-steel canisters. The filled canister is inspected, the glass within undergoes sampling, and is sealed. The sealed canister is transferred to the interim storage area for storage before being transferred to a national geological repository.

Low-Activity Waste Vitrification Facility

The LAW Facility, (Figure 4), is the third largest subproject. Treated supernatants from the PT Facility are also transferred to the LAW Facility for vitrification processing. The LAW

Facility consists of two melter systems operated in parallel. Each melter system has a set of feed preparation vessels, a large capacity ceramic melter, and an offgas treatment system. The facility also has a secondary offgas system shared by the two melter systems. Pretreated LAW feeds are transferred to receipt vessels inside the LAW Facility vitrification building. This solution is fed into the melter feed preparation vessels, where glass formers are added and blended into a slurry and sent to the melter feed vessels and ultimately to the LAW Facility melters.

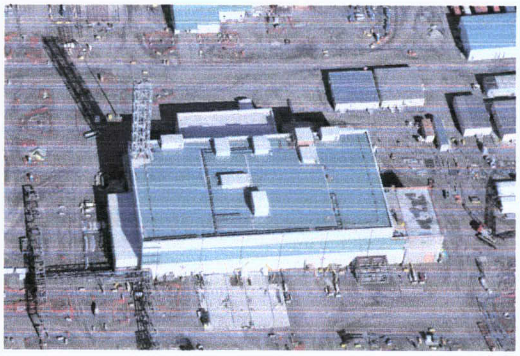


Figure 4. The LAW Facility

The LAW Facility melters are designed to produce 15 metric tons of ILAW per day. The feed enters the melter from the top and forms a cold cap above the melt pool. Volatile components in the feed are evaporated or decomposed, then drawn off through the melter offgas system. Nonvolatile components react to form oxides or other compounds dissolved in the glass matrix. Bubblers agitate the mixture to increase the glass production rate. An airlift system pours the glass from the melter into stainless-steel containers. After the container is filled, it is sealed with a lid and transported to the on-site disposal facility.

Analytical Laboratory

The principal functions of the LAB (Figure 5) are to support process control and perform waste form qualification testing, environmental analysis, and limited-technology testing. The LAB has the ability to receive, prepare, analyze, and record data for samples having low to high levels of radioactivity.

Figure 5. The Analytical Laboratory

Samples are taken from the tank farms, PT, HLW, and LAW Facilities. Several samples are also taken from the BOF. Tank farm samples are manually transferred to a laboratory outside of the WTP complex. PT and HLW samples are automatically transferred to the hot cell receipt area. LAW samples are pneumatically transferred to the radiological laboratory receipt cell. From these receipt cells, the samples are transported to the hot cells and radiological laboratories for preparation, division into subsamples, and analysis. Samples requiring preparation in the hot cells, followed by analysis in the radiochemical laboratories, are transferred manually from the hot cells to the radiochemical laboratories.

Before, during, and after analysis completion for each sample, data are recorded in the Laboratory Information Management System (LIMS). After each sample has been analyzed, the residual solid waste will be dispositioned to the hot cell waste collection cell. Liquid waste will be sent to the liquid waste collection system and will later be pumped back to the PT Facility.

Balance of Facilities

The BOF subproject is composed of 20 support facilities and 100 systems across the 65-acre WTP construction site. It provides the interconnecting utilities and other infrastructure support to the PT, HLW, LAW, and LAB. While not directly involved with the processing or vitrification of radiological material, these facilities and systems are essential to operation of the plant.

The BOF infrastructure and facilities include the following functional groups: electrical power, steam, water, air, process support, waste facilities, and miscellaneous support buildings. The electrical power group consists of three switchgear buildings and two diesel generator facilities. The steam group consists of a steam plant and a fuel oil facility. The water group consists of cooling towers, water treatment facility, chiller/compressor facility, and the firewater facility. The air group is made up of the compressors. The process support group consists of the glass former storage facility, wet chemical storage facility, and the anhydrous ammonia storage facility. The waste facilities group consists of the failed melter storage facility, and the nonradioactive effluent facility. The miscellaneous support buildings group includes the administration building, simulator facility, and warehouse; as well as roads, lighting, potable water, sanitary waste, and storm water systems.

1.3 Membership of the Committee

A Review Committee was formed comprising members (see Appendix B) selected for their independence from the project, as well as for their technical and management expertise. The Committee was organized into five subcommittees, each assigned to evaluate a particular aspect of the project corresponding to the subcommittee members' areas of expertise. The Committee was chaired by Robert B. Raines, Office of Engineering and Construction Management, and co-chaired by Daniel R. Lehman, Director, Office of Project Assessment, Office of Science.

1.4 The Review Process

WTP project personnel supplied information to the Committee several weeks in advance of, and during, the onsite review. The onsite portion of the review was held at the Office of River Protection at Hanford during the week of August 10-13, 2009. Representatives from the Committee, DOE Headquarters, and ORP developed the meeting agenda (see Appendix C).

The first day of the review consisted of a plenary session with overview presentations by principals of the Federal and BNI project teams. Committee members toured the WTP construction sites after the plenary session. Each subcommittee had a brief breakout session with project counterparts, after which the Committee convened an Executive Session at the end of the day. The second and third days were largely devoted to parallel breakout sessions of each subcommittee and their project team counterparts to more deeply explore issues of interest. Each evening the Committee reconvened an Executive Session devoted to deliberations, report writing, and drafting closeout material based on its work to date. The morning of the fourth day was used to finalize the closeout material and present preliminary results at a closeout briefing to ORP management. The final results that are contained in this report have been individually authored and collectively reviewed by Committee members.

2. TECHNICAL SYSTEMS

The Technical subcommittee was charged with determining whether there are unresolved issues associated with the technology, design, nuclear safety, construction, and the potential operability and reliability forecasts that could impact project cost and schedule.

The Committee concluded that some design, safety, and technology activities will continue past September 30, 2009, that could impact project costs and schedule. Although there will be issues past September 30, 2009, the identified technical issues are well-defined and understood and should not require research and technology. Given the amount of design effort remaining, the Committee also determined that there is the potential for the identification of new technical issues.

Currently, the project design is approximately 75 percent complete, and the project team is working to resolve, by September 30, 2009, all technical issues requiring research and technology development or testing that could affect the design. To validate the ability of the project to meet this goal, the Committee reviewed the resolution process and the resolution pathways for a portion of the identified issues. The set of technical issues consisted of those identified by the External Flowsheet Review Team (EFRT); by DOE and BNI; during Technology Readiness Assessment (TRA) evaluations; and those captured on "cut sheets" (described in Section 2.2).

The Committee also reviewed the Risk Register to ensure that costs associated with resolution of issues was either captured in the baseline or identified in the Risk Register, which will capture the costs as Management Reserve.

2.1 Findings

System Descriptions are a critical component of the design process that remains to be completed. Part 1 System Descriptions describe the system design basis and function. Part 2 System Descriptions provide the mechanisms for retaining and communicating process knowledge and for feedback to the design process from design confirmation, testing and commissioning, and operations functions. Currently, System Descriptions are 37 percent complete.

A "cut-sheet" process for identifying and resolving technical issues that have substantial impact on design has been implemented by BNI and DOE over the past six months. Documentation of the issues captures cost, schedule, and design impacts. For those issues documented in the cut sheets that do not have a cost specifically identified, the costs are captured as a risk and included as management reserve. The closure of an identified issue indicates that components of the issue, which may substantially impact design completion, have been resolved and execution of the solution is tracked outside of the issue identification process; however, after the path forward is defined, follow-on research and technology development is often necessary to reduce remaining uncertainties. These uncertainties include confirmation by vendors that they can meet procurement requirements and process testing to define operating limits. As a result, residual risks to process design may remain after issue closure.

Several technology issues that can have substantial impact on process design remain open. BNI has developed reasonable resolution pathways for the issues for which they are responsible; however, the closure schedules for some of these items are aggressive and optimistic. Closure pathways and schedules for some of the ORP technology issues that are considered to be outside of BNI's responsibility are not clear.

Several major tank waste system processing modifications beyond the WTP project scope are being considered to accelerate completion of the River Protection mission. The ability to accommodate implementation of these modifications may become more difficult if not considered during the WTP design completion process.

DOE oversight effectiveness has improved and has contributed to identifying technical issues. This improvement is thought to be primarily the result of increased DOE engineering staffing.

BNI is developing a plan for accelerating the commissioning of the LAW, BOF, and LAB to 2015. This concept, known as LBL 2015, has been undertaken to reduce schedule risk and would modify the current project schedule, which reflects parallel commissioning of the five major WTP facilities in 2018 if adopted by DOE.

Because of a lack of clearly communicated, precise definitions and imprecise usage, success-oriented terminology used by BNI creates the potential for misinterpretation of project status. Examples of success oriented terminology subject to misinterpretation include "technology issue closure," "design freeze," and "100 percent design".

2.2 Comments

Many of the Part 1 System Descriptions, a description of the system design basis and function, have not been updated within the past few years to reflect current process knowledge. They are scheduled to be updated by the end of calendar year (CY) 2009. The Part 2 System Descriptions, a description of the system functionality, process knowledge, operating limits as installed, and test acceptance criteria, are not planned to be completed until 2011. Design changes may be necessary as a result of requirements for testing, maintenance, or operations of the systems after review of system descriptions by personnel responsible for these functions. In addition, long time intervals between technology research, design, and development of systems descriptions may lead to a loss of process knowledge because of personnel turnover.

Process Guide 24590-WTP-GPG-ENG-0125, Rev. 1, *Engineering Technical Issues Identification Management,* and a comprehensive summary table of issues, have been developed for issue tracking and resolution. BNI has a process for describing and prioritizing issues that were raised from any source and for tracking the issues to completion. The current technical issue identification and resolution process includes issue prioritization, tracking, and one-page issue summaries and status pages (the aforementioned cut sheets) that are used by both BNI and DOE to maintain alignment on resolution of important issues. BNI's basis for elevating medium-priority issues to active dialogue with DOE is not consistent, as not all medium-priority issues are brought to DOE for approval. Non-project issues are also captured by this process. For example, the potential for exceeding the substation capacity that supplies power to the WTP are captured in the cut sheets.

DOE oversight has been effective in identifying technical issues to BNI, as evidenced by the revisions to the LAW offgas system and the current focus on commercial-grade dedication (CGD).

Significant remaining open technical issues under the responsibility of BNI include EFRT issue closure for M3 (Inadequate Mixing System Design), prevention of solids in the Cs IX, and TRA issues on demonstrations of LAW canister lid closure and decontamination. In addition, the resolution of the solids issue in the Cs IX system needs to include a provision for removing precipitated solids from process tanks between the ultrafiltration and IX systems. BNI's chosen path forward is to rely on chemistry control to eliminate solids; however, chemistry control is not sufficient based on resolution of the same issue at the Salt Waste Processing Facility (SWPF). The design of SWPF has an analogous clarified salt solution receipt and feed tank between crossflow filtration and the solvent extraction Cs removal process with the ability to remove precipitated solids in the tanks. The SWPF tank has seven air pulse agitators (pulse jet mixers) for suspending any solids that need to be recycled back to crossflow filtration for removal. It is unlikely that all of these technical issues will be closed by September 30, 2009.

EFRT issue M3 is not closed, but the plans for resolution were presented, which included modeling and prototype testing on a four-foot-diameter platform. The experts who originally raised this issue continue to be engaged in the critique and closure of this issue. The projected closure is September 30, 2009, but post-closure testing activities will be carried out in testing that would be used for design verification. As a result, the potential for design changes to the pulse jet mixers could remain after September 30.

EFRT issue M4 (Designed for Commissioning Waste versus Mission Needs), is a closed issue, having been resolved by modeling plant performance for 14 different waste feeds that included 13 different sludge types.

The technical issues related to EFRT Issues M12, M13, and P9 (Undemonstrated Leaching, Inadequate Filter Surface Area and Flux, and Undemonstrated Sampling System) will be ready for closure prior to September 30, 2009. Although the technical issue related to Undemonstrated Leaching will be ready for closure, significant post-closure testing is planned.

Open technical issues outside the responsibility of BNI include the ability to meet process parameters for waste feed delivery and power demands required for WTP. In addition there is approximately $554 million in equipment procurement that includes design and fabrication. The ability for the vendors to meet the design constraints in the procurement specification has potential for identification of new technical issues.

Waste processing modifications currently under consideration, but beyond the scope of the WTP project, include strategies to reduce sodium usage in WTP pretreatment and near-tank separations processes. In addition, unforeseen process outages or external limitations may necessitate flexibility in accumulating outputs from individual process systems (i.e., PT, LAW vitrification, HLW vitrification) or in providing feed to individual process systems. Example outages or external limitations may include accidents or interruptions in the availability of final disposition pathways (i.e., on-site ILAW disposal). The operations reliability models focus on component and systems reliability and overall plant reliability without detailed assessment of non-technical external events (technical external events such as fires and loss of power are considered). Flexibility in the WTP design should be verified to preserve the ability to respond to such scenarios.

The Committee found no evidence of a comprehensive tracking of issues that could affect the operation of the WTP but are outside the scope of the construction project. Examples are listed below.

- Although the WTP could consume up to 70 megawatts (MW) of power, it is currently allocated 55 MW; therefore, untimely decisions could limit plant operation.
- Technology and processing features and options regarding sodium hydroxide minimization may be limited by the design stage and WTP construction, but there is no clear decision logic or milestone established for consideration of particular options.
- The WTP construction contract contains a provision that space must be maintained for potential installation of an IX process for technetium removal, with floor embeds and wall penetrations "...to ensure that the option to install the Technetium Ion Exchange System equipment is maintained." However, the Department has not established a criterion or milestone date at which installation would be impractical. It is not practical to maintain the

option to install that equipment or any other in that space beyond a particular construction stage, which has yet to be determined.

The LBL 2015 concept has been described as a potential risk reduction strategy that could result in a cost savings and a reduction of required operations manpower. This concept would commission the LAW, BOF, and LAB in 2015 (LBL 2015), which represents an early commissioning of those facilities, but would preclude simultaneous commissioning of the entire WTP complex. Commissioning involves a demonstration of throughput to meet expected demands. The LAW facility would not get feed from the PT facility, and the LAB and BOF would not service the pretreatment facility or the HLW vitrification facility during early commissioning. The LAW facility could be run with surrogate, but it would need to be maintained in a warm layup (i.e., not mothballed) status for two years unless feed could be provided through a supplemental treatment process. The LAB includes equipment and sample analysis space that is shared by the PT, HLW, and LAW facilities, but an early commissioning of the LAB may not necessarily determine if the equipment and space will be affected by the analysis turnaround requirements for all the facilities being operated simultaneously. In brief discussions, it was pointed out that the operability and reliability model included analyses of laboratory turnaround in overall system availability, that the LAW work is somewhat decoupled from the analysis of PT and HLW samples because the latter two require remote handling in hot cells and the former does not. The contract currently requires simultaneous operation of all facilities for ten days, although storage capacity would decouple the process facility operations for about a month. In conclusion, the LBL 2015 commissioning concept requires further development and external review.

Success-oriented terminology subject to misinterpretation includes "technology issue closure," "design freeze," and "100 percent design." Each of these terms implies a finality that is not necessarily attained and often requires follow-on processes that are not communicated effectively. For example, a design freeze can be followed by a "thaw" when unresolved issues are identified after the "freeze." The term "100 percent design" is used as credit for committed design, with the implicit assumption that actual design completion does not occur until verification of the actual procurement is made and commissioning is achieved.

A Process Guide (24590-WTP-GPG-ENG-0113, Rev, 2, *Design Freeze*) contains a definition of design freeze and discusses the conditions involved in the process, as well as the "thaw" process. A design freeze signifies that the design is considered mature and stable without deficiencies or uncertainties that would impact downstream processes. Prerequisites for freezing the design inputs, and a number of inputs and conditions of freeze are noted in the guide. For example, the Basis of Design (BOD) is frozen upon DOE approval. General conditions for design freeze are presented, including freezing of inputs, analyses, and calculations completed with no unverified assumptions. Design freeze does not require a formal signoff, approval, or a review by parties involved in downstream systems. Metrics reflecting the status of the design freeze are maintained by each discipline. Contrary to its common usage elsewhere, the term freeze does not imply that changes cannot be made or that process conditions that do not affect design cannot change or involve uncertainty. If it is necessary to "thaw" a design, there may be costly impacts to downstream processes that must be considered utilizing the project's change control process.

The term "closure" does not necessarily mean that all risks related to a particular issue have been resolved. Criteria have been developed that are specific for each issue that define application of the term "closure," and in many cases, these involve development of a plan for activities that will continue beyond the point at which the issue is considered to be closed.

2.3 Recommendations

1. Develop (DOE) issue resolution pathways and schedules by October 30, 2009, for all major technical issues outside of BNI's responsibility.

2. Accelerate (BNI) development of Part 2 System Descriptions to capture process knowledge and feedback from issue resolution, testing, maintenance, and operations. An accelerated schedule for Part 2 System Descriptions should be agreed upon between BNI and DOE by September 30, 2009.

3. Ensure (DOE) that management of solids in tanks between Ultrafiltration and Cesium Ion Exchange is appropriately resolved by September 30, 2009.

4. Develop (BNI) a transparent set of terminology definitions and ensure clarity of communication with constituencies (e.g., DOE at all management levels, regulators).

3. COMMISSIONING

The Commissioning subcommittee was charged with determining whether the strategies and plans for commissioning were adequate to meet the baseline cost and schedule constraints, as well as to address potential complications. The Lines of Inquiry (LOIs) evaluated the

LBL 2015 decision needs to be made in
and schedule impacts of LBL 2015 on t

3.1 Findings

The Committee determined that the star
leadership is populated with experience
procedures group, in particular, is stron
Sigma Performance Improvement Plan
reserve (MR).

The commissioning plans and pı
program are in place and well thought-o
(WBS) Level 4 contains sufficient detai
support startup testing and commissioni
Startup system scoping assumes
data entry into the Teamworks database
startup engineers and construction craft

There are only four months of to
commissioning is estimated to require tl
approximately $200M of MR risks asso

The Test Acceptance Criteria (T
needs. Agreement has not been reached
with respect to the level of specificity re

The concept for earlier completi
assumes that design engineering can sup
is implemented, plant engineering is apı

The following four items are cur

- The assumption that no startı
- Resources for implementing *health program*, are not inclı
- Startup includes only 35 plar

proposed startup and commissioning philosophies, policies, programs, and procedures to determine if they were sufficiently mature for this stage of the project. The intent was to determine whether the plans and framework exist to put a viable test program in place by the time systems are scheduled for turnover from the construction phase of the project to the operations phase.

The Committee reviewed presentations that addressed the LOIs and held in-depth discussions to ensure a clear understanding of the material presented. The Committee also asked questions they had developed from reading the preparatory material received in advance of the site visit. One subcommittee member toured the site during this visit. The other two members had toured the site shortly before the review commenced.

The Committee arrived at two major conclusions. First, the site startup and commissioning team is a strong, experienced team whose members appear to work very well together. Many members of the startup and commissioning management team have worked together successfully in other venues. Several team members have commercial nuclear experience, as well as DOE experience. The team is incorporating into its policies, programs, and procedures lessons learned (not only from the experience of its members, but also from other commissioning activities in the DOE Complex). Second, the Committee concluded that the current startup and commissioning plan has a high degree of risk and is unlikely to be achieved with the current cost and schedule reserves.

The LBL 2015 concept could ameliorate some of the above concerns. If adopted by DOE, this concept, described earlier, moves the construction completion and thus the Operational Readiness Reviews (ORRs) of these three facilities forward in time by approximately three years. Construction, turnover, and testing of these facilities should not be as challenging to complete as they will be for the PT and HLW facilities. It is expected that the LBL 2015 concept will pose the following advantages:

- Allows lessons learned from the less-complex facilities to be applied to the more complex facilities;
- Allows leveling of resources, particularly of the startup and commissioning teams, which could move from facility to facility; and
- Reduces some of the schedule risk mentioned above.

The positive aspects of this concept appear to outweigh the drawbacks. However, LBL 2015 assumes that design engineering can support acceleration of the affected facilities, and the

2. Expedite the approval of the Authorization Basis Amendment Request (ABAR) concerning the Departments MAR position and accelerate HPAV testing to support a decision as quickly as possible.

3. Develop a plan for maturing ESH&Q programs to support facility operation and update the project baseline with this information by December 2009.

4. Establish a process that factors cost, schedule, and risk considerations into decisions on procuring safety-related equipment and material by December 2009.

5. Review and revise procurement documents to ensure that clear direction is provided concerning NQA-1 CGD by December 2009.

5. COST, SCHEDULE, and RISK

The Cost, Schedule, and Risk subcommittee was charged with determining whether costs and schedule estimates, including the contingency and risks, are reasonable to be able to complete the project within budget and on time. The subcommittee cannot render a definitive opinion at this time. The project team is engaged in reviewing the work remaining to ensure that the cost and schedule of the work effort required for project completion is appropriately sequenced and estimated. This process, including a thorough risk assessment of the underlying estimate, is planned for completion in October 2009. The output of this process is called the Estimate at Completion, (EAC) which provides an integrated view of the Federal and contractor work scope, execution schedule, and costs; an assessment of the associated uncertainties and risks; and a derivation of the contingency required to manage the remaining execution of the project.

The contractor has replaced the senior management team over the last six months. The successor management team has instituted several new processes that are positively impacting the quality of the management data and information available. The upcoming review to validate the EAC will benefit greatly from the improved quality of the underlying project management data. The Committee judged that the enhanced transparency provided by the recent process changes and the new leadership team will enable the cost and schedule estimates to be adequately assessed and discharged by the end of the calendar year.

The Committee was also charged with determining whether construction activities are proceeding as scheduled with focused constructability reviews to continuously improve the overall effectiveness and schedule. The Committee concluded that the project has a robust process in place to conduct actionable constructability reviews to support successful field execution.

5.1 Findings

The basic project performance metrics are summarized in Table 1.

Table 1. Waste Treatment Plant Projct Status – June 30, 2009

• 49% complete; $4.981B expended project to date
• CPI: .99, SPI: 1.00
• Total Estimated Contract Cost (TECC): $10.446B
• Total Project Cost (TEC): $12.263B
• Project Completion Date (CD-4): November, 2019
• Baseline plan remaining: $5.067B
• Contingency/Management Reserve remaining: $1.527B
• Fee earned to date $111M
• Total schedule contingency is 7 months.

The Committee observed that the project has a formal risk management process in place. Both contractor and Federal risks are tracked in the system, although they are assessed separately at this time. The total identified risks for the project are separated between the contractor and DOE. Contractor risks are managed using a formal change control process and MR, as appropriate. MR funding is included in the contractor's Total Contract Performance Base. DOE risks are managed using contingency, the funding for which is included in the baseline funding profile for the project and held by DOE outside of the prime contract.

The contractor maintains an accounting of the contract termination liability as directed by DOE to ensure that costs incurred by DOE in the event of contract termination are quantified. These can include the value of outstanding second-tier contract liabilities, demobilizaton, and pre-financing costs associated with approximately one month of the contractor labor base and fixed operating costs.

The contractor uses a standard construction pricing model consistent with best industry practices and has the appropriate systems in place to measure performance and manage the construction productivity rates and indexes.

The annual funding for the project is presently appropriated by Congress using five obligation control levels that represent the highest level at which appropriated funds can be allocated amongst the major project elements. Each level represents the individual component facilities that comprise the entire project as a whole.

DOE and BNI each have Project Execution Plans in place that define the roles and responsibilities within their respective organizations and are used by each party to execute the project. These are standalone documents that are compartmentalized to their respective organizations.

BNI is presently engaged in developing an updated EAC. At the time of this review, the current state of progress for the EAC forecast was made available to the Committee. The initial data reveal a well-planned approach. The process has yet to mature to the point of enabling an integrated assessment of the EAC cost and schedule and related risks. The risk assessment and management reserve and contingency derivation based on the EAC had yet to be completed.

Various line items in over 60 purchase orders have been in a suspended status for over two years. These are presently being reviewed and assessed for future execution. The suspended items will either be renegotiated and released for production or terminated for convenience.

The project maintains a vast array of project documentation.

5.2 Comments

The risk management process has recently been revised and improved with dedicated subject matter expers now reporting directly to the Project Manager. Initial outputs of this process change are encouraging. The Risk Register is still being updated to be consistent with the forecast EAC. The cost risk assessment process is mature; however, the schedule risk assessment needs additional attention. The risk assessment output needs to be incorporated into the EAC and contingency derivation.

The emphasis on reclaiming MR may understate the expected project cost. Efforts should be focused on value engineering and on eliminating any unnecessary costs.

The Assistant Project Managers are executing their approved scope well and are integrated into the overall project execution effort. The site condition and overall housekeeping are superior, demonstrating a stewardship ethic for both the workforce and the physical site.

The Committee judged that the engineering and material backlog appears to be adequate to support the current construction plan and existing unit rates for civil construction are aggressive and achievable. The planned piping unit rates have yet to be widely achieved on this project. Future success depends on implementing process improvements in the PT and HLW subprojects to achieve the piping budget.

The present method of identifying risks related to construction productivity uncertainties in the risk register is a beneficial management strategy, as it provides focus for management attention on areas where productivity improvements have significant impact on project success.

The implementation of the Quantity Awareness Program is a best practice. Care should continue to be exercised to ensure that the evolution of the final design is responsive to and consistent with the initial requirements.

Regularly scheduled constructability reviews include safety, access, ease of construction, and work sequencing from the conceptual design to acceptance. Detailed 3-D design models enable the segregation of the components to simplify and clarify the issues related to constructability. The constructability review process ensures the inclusion of pertinent lessons learned from across the DOE complex.

The project has been funded by Congress with five separate funding control levels. Funding the project in this manner constrains project sequencing by limiting the ability to integrate work between facilities, which may result in increased cost and schedule delays.

DOE requires a significant funding setaside for contract termination liability. This requirement has constrained the execution of the project and may result in increased cost and schedule delays.

Segregating risks into DOE and contractor pools adds complexity to risk management. A fully integrated DOE and contractor approach to the risk management process, including the quantification of contingency or MR allowances, may provide a more robust process. This also applies to the related change control processes. Another possibility is that the identified risks may have more interdependencies than the present analysis indicates. There may be a degree of correlation between certain risks or groups of risks that may result in an understatement of project risk impacts on both costs and schedule. Similarly, the project maintains separate Project Execution Plans, which may preclude full integration of the DOE and contractor management teams.

Based on a limited initial review, the Committee determined that the cost and schedule forecast appears to be optimistic. The risk analysis process should be applied with this in mind. The temporal profiles of project execution risk and the funding associated with MR and contingency have yet to be analyzed concurrently. In addition, the costs associated with modification or termination of suspended procurements may be understated.

5.3 Recommendations

1. Pursue elimination of the requirement to track and reserve funding for contract termination liability.

2. Finalize the EAC and contingency and MR calculations by the end of October and present to the DOE mini-review in November. The Committee recommended that this activity include a complete and integrated plan to finish that includes Federal and contractor activities with a

consistent schedule and integrated contingency analysis and a thorough analysis of cost and schedule risk and contingency. The EAC should reflect only the approved baseline scope.

6. MANAGEMENT

The Management subcommittee was charged with determining whether the project is being properly managed for its successful execution and whether or not the management approach is effective. The subcommittee concluded that the answer to these questions is mixed.

6.1 Findings

Intervention by senior leadership at EM Headquarters has resulted in positive organizational change and their focus on engineering and commissioning has brought good results. However, this ad-hoc intervention is not sustainable. The EM Headquarters executive sponsor for this project treats it as a part-time assignment and supports multiple large, demanding projects. This approach is ineffective.

ORP is a large organization consisting of approximately 150 people that is responsible for two mission-driven activities. Over 50 percent of the ORP staff is not directly assigned to the mission drivers. The organizational structure cannot accommodate a project of this magnitude.

With regard to the effectiveness of the management approach, the Committee found that a lack of stability and timeliness in decisionmaking negatively affects attitudes and constrains urgency and opportunities for improvement in both cost and schedule. The continuing churn driven by external influences and ineffective and fractured leadership actively contributes to the lack of effectiveness. In addition, most of the process changes by the new BNI management have less than six months of runtime on the project. The Committee judged that the process for developing a project risk profile is comprehensive and robust; however, it is a recent development. The planned use of contingency tied to risk retirement and mitigation using transparent tools is a work in progress that can become best-in-class.

The Committee found that, with DOE prompting, BNI brought significant new talent to the WTP project in the roles of Project Director; Project Manager; Assistant Project Director for Engineering, Quality, Safety, and Operations; Manager of Engineering and a Deputy; Manager of Environmental and Nuclear Safety; Issues Management Manager; Manager of Management Reserve Recovery; and the Project Risk Manager. These personnel appear to be quite effective, but have been on board for only a short time. They have reinvigorated contemporary project delivery tools, such as risk management, and established the appropriate management models and philosophy for issues identification and resolution. This team has reestablished the focus of getting approved work into the hands of the construction crews and is actively increasing the backlog of approved and released work.

The project utilizes an integrated risk management team approach. However, the project does not currently implement an integrated risk model that accurately portrays the combined effects of BNI- and DOE-held risk elements. This distribution of risks is a contract artifact that segregates risk visibility and hinders consolidated management attention on risk mitigation. While the project EAC is defined, substantial risk elements captured via both BNI and DOE risk management models have not yet been addressed.

A significant fraction of the annual funding profile is constrained as a reserve to fund potential termination liabilities with no viable risk profile definition to support such a constraint. Additionally, project funding is appropriated as five separate projects, which has inordinately constrained available funds and the project is constrained by a flat funding profile.

The Committee found that the transition of Federal Project Directors was seamless and well-executed. The relationships between the BNI Project Managers and Federal Project Directors at the subproject level are strong and effective.

Three types of acceleration are currently envisioned by the project, each with competing needs: 1) engineering transition plans; 2) LBL 2015; and 3) the creation of construction backlog.

The timeliness of project decisionmaking, for example, the delays in closing the MAR and HPAV decisions, continues to be an issue, resulting in project churn and lost momentum.

6.2 Comments

With regard to the project being properly managed, the Committee found that DOE and BNI project management had positive aspects. DOE senior management has focused on general overall management and a number of challenging aspects of the project. With DOE prompting, BNI has recently made significant changes in its management talent and approach that should lead to near-term project success. The strength of this project exists with the Project Managers, Federal Project Directors, and in the engineering interface, which has demonstrated significant progress. Because the changes in BNI management are quite recent, time will tell whether the progress exhibited in the last few months can be sustained. Despite DOE's senior leadership intervention, a significant leadership gap exists at the executive sponsor level; i.e., the senior project advocate at DOE Headquarters. Additionally, there is a lack of recognition of project scale and alignment at all levels of DOE management. The Committee concluded that, although intervention by EM management at Headquarters or at the site is important, it is not a sustainable management method.

The Committee also found that the enabling environment between ORP and BNI is challenged by role clarity. Confusion exists at ORP between complete project focus, which is what the project needs, and management and operating contract behavior, which treats the project like any other project at any site. This confusion contributes to an environment in which DOE personnel issue unfocused requests to BNI. A project of this magnitude cannot be handled as just another project at a DOE site. The finding on the clarity of roles, and staff not being directly assigned to mission drivers, deserves a more detailed explanation. ORP staff is organized so that about half of the staff is assigned to central groups that support all of the WTP and Tank Farms projects. In addition, a significant number of the staff members report directly to the WTP Federal Project Director but are matrixed to the Federal Project Directors in charge of the three major WTP projects (i.e., HLW, LAW, and PT) that are the mission drivers. The Committee judged that having matrixed staff causes a lack of focus.

The Committee found that the BNI co-located procurement and engineering teams are working effectively, especially on complex procurements. The project procurement and subcontracting organization is well structured and functions appropriately to meet project needs in material supply and acquisition. The project warehouse and material management systems are robust and effective.

The CGD process is consistent with EPRI NP-5652 guidance and proactively addresses current industry issues regarding supply chain weaknesses. However, there is confusion between the engineering and procurement processes regarding its effective implementation. Project management is aware of the issues surrounding qualified vendors and is responding to known gaps in industry availability by effectively implementing the CGD process as an equivalent (Part 21), economically viable alternative to NQA-1 sources. The project engineering process uses a structured, documented approach for the initial functional qualification of engineered systems and the determination of "Q" versus "non-Q" acquisition, including the determination of, and approach for, embedded software.

Project management should consider simplifying the procurement process by assuming more of the CGD responsibility via suppliers performing only verification activities against engineering requirements, rather than assuming responsibility for dedication. If suppliers to WTP are approved 10 CFR Part 50 Appendix B/NQA-1 suppliers, they can perform dedication activities per the direction in WTP engineering documents. In other words, WTP defines critical characteristics for acceptance and acceptance criteria for commercial grade items, design responsibility, and include them in the specifications. The supplier verifies the critical characteristics for acceptance against the WTP-defined acceptance criteria and supplies a basic component under Part 21 without having to perform commercial grade dedication or have a WTP-approved dedication program. This greatly simplifies the procurement and directly addresses identified weakness in the current supply chain regarding supplier dedication program deficiencies.

6.3 Recommendations

1. Within 60 days, establish a full–time, dedicated executive sponsor at Headquarters and reinforce his or her alignment with project objectives (e.g., Code of Record, coordination with the Defense Nuclear Facilities Safety Board, revised Order implementation, data sheet alignment)

2. Simultaneously establish the shortest lines of communication and authority between the Acquisition Executive (AE) and the Federal Project Director.

3. Restructure the ORP organization appropriately for a project of this magnitude; i.e., ensure that functional support is directly aligned with mission delivery.

4. Within 30 days, implement an integrated DOE-BNI risk management model.

5. By September 30, 2009, eliminate the practice of carrying potential contract termination liabilities as a committed reserve after the integrated risk management profile and planned contingency use are established.

6. Eliminate the fencing of funding by subproject as soon as possible.

7. By September 30, 2009, complete the planning for the orderly transition of the engineering staff and associated skills mix that is optimal for cost-effectiveness and potential end-state acceleration.

8. Conduct a mini-review in November 2009.

9. Schedule the next peer review within the next six to nine months.

APPENDIX A

CHARGE MEMORANDUM

Department of Energy
Washington, DC 20585

JUN 04 2009

MEMORANDUM FOR ROBERT RAINES
DIRECTOR
PROJECT MANAGEMENT SYSTEMS AND ASSESSMENTS
OFFICE OF ENGINEERING AND CONSTRUCTION MANAGEMENT

FROM: INÉS R. TRIAY
ASSISTANT SECRETARY FOR ENVIRONMENTAL MANAGEMENT

SUBJECT: Office of Environmental Management (EM) Construction Project Review of the Waste Treatment Project (WTP) at the Office of River Protection (ORP) at Hanford

I request that you organize and conduct an EM Construction Project Review (CPR) of the WTP at Hanford on August 9-14, 2009. The purpose of this review is to assess the project's progress towards achieving Critical Decision (CD)-4, *Approve Project Completion*, in November 2019 and within the current total estimated project cost.

The project achieved CD-3, *Approve Start of Construction*, in April 2003. You should discuss changes to the cost, schedule and technical components of the performance baseline. In carrying out its charge, the Review Committee shall respond to the following questions:

1. Technical: Are there any unresolved issues associated with technology, design, nuclear safety, construction and the potential operability and reliability forecasts that could impact project cost and schedule?

2. Cost, Schedule and Risks: Are costs and schedule estimates, including the contingency and risks, reasonable to be able to complete the project within budget and on time?

3. Management: Is the project being properly managed for its successful execution? Is the management approach effective?

4. Environment, Safety, Health and Quality Assurance: Are ES&H and Quality Assurance programs, controls and processes sufficiently mature for the project's current stage of development?

5. Construction Process: Are construction activities proceeding as scheduled with focused constructability reviews to continuously improve the overall effectiveness and schedule?

In addition to the above areas of concern, more specific lines of inquiry should be developed as part of the Committee's preparatory effort.

Mr. John Eschenberg, ORP, will serve as the site point of contact for this review. The CPR Review Committee's draft report should be submitted for my review in time to support your issuance of a final report within 60 days of the review's conclusion.

If you have any questions, please contact me at (202) 586-5216.

cc:
J. Owendoff, EM-3
F. Marcinowski, EM-10
M. Gilbertson, EM-20
M. Sykes, EM-30
J. Surash, EM-50
L. Ely, EM-53
D. Chung, EM-60
J. Arcano, EM-60
C. Lagdon, EM-60
S. Waisley, EM-64
P. Bosco, MA-50
B. Kong, MA-50
S. Olinger, ORP
J. Eschenberg, ORP
G. Olsen, ORP
P. Furlong, ORP
G. Girad, ID
I. Kolb, MA-1
D. Lehman, SC-28

APPENDIX B

COMMITTEE MEMBERS

Department of Energy Review of the
Waste Treatment Plant (WTP) Project
August 10-13, 2009

Robert Raines, DOE OECM, Chairperson
Daniel R. Lehman, DOE/SC, Vice Chairperson

WTP-1 Technical	**WTP-2 Commissioning**	**WTP-3 ESH&Q**	**WTP-4 Cost, Schedule, Risk**	**WTP-5 Management**
Ben Harp **	Dave Amerine **	Mike Mikolanis **	John Post **	Bob Iotti **
Kent Fortenberry	Tony Polk	Dr. Bob Nelson	Al Simonti	Dale Knutson
Harry Harmon	Jim Hutton	David Hathcock	Chuck Swain	Lowell Ely
Nick Machara			Chris Gruber	Steve Smith
Dave Olson			Kurt Fisher	Ralph Titus
Dave Kosson				Les Price

** Subcommittee Chair

Observers

Pat Carier	Shirley Olinger	Gary Riner
Dae Chung	Brian Kong	Mike Peek
Jason Dunn	Guy Girard	Sandra Waisley

APPENDIX C

REVIEW AGENDA

AGENDA

Department of Energy Construction Project Review
Waste Treatment Plant (WTP) Project
August 10-13, 2009

Monday, August 10, 2009

Office of River Protection Bldg. [ORP] - 2440 Stevens Center Place

7:15 a.m.	ORP Lobby	Badging

[ORP & DOE Review Team Participants Only]

8:00 a.m.	DOE Executive Session [ORP – Room 1305 A, B, C]	Bob Raines
8:30 a.m.	Welcome/Introduction/Overview	Shirley Olinger
8:45 a.m.	Background /Mission/Organization	John Eschenberg

[WTP Participants to Join]

9:00 a.m.	Welcome/Safety/Project Overview	Ted Feigenbaum
9:30 a.m.	ISMS/Safety/Quality	Bill Gay
10:00 a.m.	Engineering	Greg Ashley
10:30 a.m.	Cost/Schedule/Risk/EAC	Mike Rocha
11:00 a.m.	Break	
11:10 a.m.	IPT Team Area Overviews	
	11:10 a.m. HLW	Jeff Trent, Ty Troutman
	11:25 a.m. PT	Wahed Abdul, Leon Lamm
	11:40 a.m. LBL	Gary Olsen, Bill Clements
11:55 a.m.	Startup and Commissioning	Dennis Hayes
12:20 p.m.	Safety Brief, Site Visit	David Leeth
12:25 p.m.	Wrap-up	Ted Feigenbaum
12:30 p.m.	Lunch [Assessment Team @ ORP – Room 1305 B]	
1:00 p.m.	Travel to WTP Jobsite	
1:40 p.m.	Begin Site Tour	Dave Leeth
4:00 p.m.	Travel to ORP Building	
4:30 p.m.	DOE Subcommittee Sessions	Subcommittee Chair
5:20 p.m.	DOE Full Committee Executive Session [ORP – Room 1305 B]	Bob Raines
6:00 p.m.	Adjourn	
6:30 p.m.	Assessment Team Dinner [Anthony's Event Center]	

Tuesday, August 11, 2009
[ORP and DOE Review Team participants only]

[WTP Participants to Join]
8:00 a.m. Subcommittee Breakout Sessions [See Subcommittee Agendas] ....
12:00 p.m. Lunch [Assessment Team @ ORP - Room 1305 B] ....
1:00 p.m. Continue Subcommittee Breakout Sessions [See Subcommittee Agendas] ....
4:45 p.m. Adjourn ....
5:00 p.m. DOE Full Committee Executive Sessions [ORP – Room 1305 B] .... Bob Raines

Wednesday, August 12, 2009
[ORP and DOE Review Team participants only]

[WTP Participants to Join]
8:00 a.m. Subcommittee Breakout Sessions [See Subcommittee Agenda] ....
12:00 p.m. Lunch [Assessment Team @ ORP - Room 1305 B] ....
12:45 p.m. Continue Subcommittee Breakout Sessions [See Subcommittee Agenda] ....
4:45 p.m. Adjourn ....
5:00 p.m. DOE Full Committee Executive Session [ORP – Room 1305 B] .... Bob Raines

Thursday, August 13, 2009
[ORP and DOE Review Team participants only]

8:00 a.m. Subcommittee Breakout Sessions/Prepare for Dry Run .... Bob Raines
[ORP – Room 1305 A, B, C, 2100, 2701]
10:30 a.m. DOE Executive Session Dry Run [Room 1305 B] ....
12:00 p.m. Lunch [Assessment Team @ ORP – Room 1305 B] ....
1:00 p.m. DOE Executive Sessions [ORP – Room 1305 B] .... Bob Raines
2:00 p.m. ORP and WTP VTC Executive Outbrief [ORP – Room TBD] .... Bob Raines

[WTP Participants to Join]
3:00 p.m. ORP and WTP Closeout [ORP – Room 1305 A, B, C] .... Bob Raines

APPENDIX D

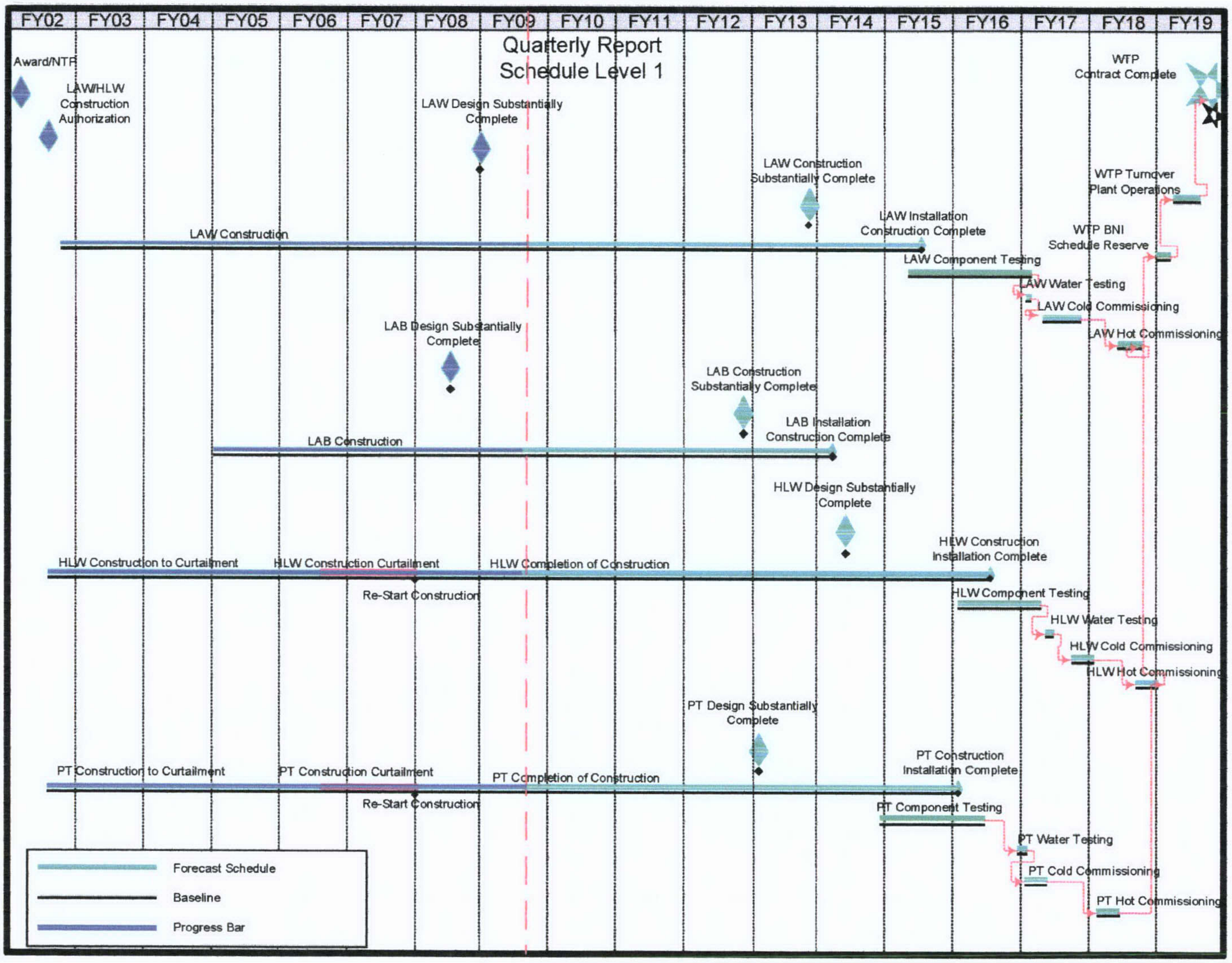
COST TABLE

	March 2003 Baseline ($M)	December 2006 Baseline ($M)
Base Cost	**$4,856**	**$8,786**
Management Reserve Contract Contingency Fee	550 0 225	1,351 400 527
Contract Scope Cost	**$5,631**	**$11,064**
Project Contingency Other Project Costs	100 0	1,014 135
Transition Cost (from Privatization Contract)	50	50
Total Project Cost	**$5,781**	**$12,263**
Completion Date	**July 2011**	**November 2019**

	March 2003 Baseline ($M)	December 2006 Baseline ($M)
Base Cost	**$4,856**	**$8,786**
Management Reserve/Contract Contingency/Fee	775	2,278
Contract Scope Cost	**$5,631**	**$11,064**
Project Contingency Other Project Costs	100 0	1,014 135
Transition Cost (from Privatization Contract)	50	50
Total Project Cost	**$5,781**	**$12,263**
Completion Date	**July 2011**	**November 2019**

APPENDIX E

SCHEDULE


FY02 FY03 FY04 FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16 FY17 FY18 FY19
Quarterly Report
Schedule Level 1
Award/NTP
LAW/HLW Construction Authorization
LAW Design Substantially Complete
WTP Contract Complete
LAW Construction Substantially Complete
WTP Turnover Plant Operations
LAW Installation Construction Complete
WTP BNI Schedule Reserve
LAW Construction
LAW Component Testing
LAW Water Testing
LAW Cold Commissioning
LAW Hot Commissioning
LAB Design Substantially Complete
LAB Construction Substantially Complete
LAB Installation Construction Complete
LAB Construction
HLW Design Substantially Complete
HLW Construction Installation Complete
HLW Construction to Curtailment
HLW Construction Curtailment
HLW Completion of Construction
Re-Start Construction
HLW Component Testing
HLW Water Testing
HLW Cold Commissioning
HLW Hot Commissioning
PT Design Substantially Complete
PT Construction Installation Complete
PT Construction to Curtailment
PT Construction Curtailment
PT Completion of Construction
Re-Start Construction
PT Component Testing
PT Water Testing
PT Cold Commissioning
PT Hot Commissioning
Forecast Schedule
Baseline
Progress Bar

APPENDIX F

FUNDING

Project FY Carry-Over into FY 2010

$ Millions

Funding Available	
Prior Year Carryover	336
FY09 Presidents Budget	690
FY09 Expected DOE HQ/ORP Holdback	(17)
Total Expected FY 2009 Available Funding	**1,009**
FY 2009 Total Spend Forecast	**(737)**
Expected FY 2009 Carryover	**272**
Termination Liability for Suppliers/subs and Leases	**(112)**
Termination Liability for Bechtel labor w/ relocation	**(52)**
Carryover to FY 2010 for October 2009	**(54)**
Procurement Commitments Above Term. Liability (1)	**(54)**
Total Set Asides & Liabilities	**(272)**
Remaining Funds	**(0)**

Notes:

(1) Procurement commitments above Termination Liability is the adjusted uncosted commitments from CoCo less the Procurement Termination Liability forecast at the end of FY09