U.S. Department of Energy, Office of River Protection

WASTE TREATMENT PLANT (WTP)
DESIGN OVERSIGHT REPORT

REVIEW OF TREATED LAW PROCESSING SYSTEM

March 2008

Design Oversight: D-08-DESIGN-062

Team Lead: _____
Donald H. Alexander, WTP Engineering Division (WED)

Team Member: Lloyd McClure, ORP Consultant

EXECUTIVE SUMMARY

The U.S. Department of Energy, Office of River Protection (ORP) planned to conduct a design oversight of the Waste Treatment and Immobilization Plant (WTP) Treated LAW Evaporation Process System (TLP), with the following objectives:

- Determine acceptable expansion of TLP operating conditions to support potential future WTP Pretreatment Facility process enhancements; e.g., operating at higher pressures and higher temperatures.
- Assess recovery from upset conditions, such as excessive solids formation, including downstream vessels and piping.
- Determine to what extent the TLP Evaporator can support fractional crystallization.
- Review the TLP Evaporator process flow diagrams and piping and instrumentation diagrams to verify features required for normal and alternative operating conditions are included in the WTP design.

On February 6, 2008, the Assessment Team met with the WTP Contractor (Bechtel National, Inc. [BNI]) management and staff to kick off the assessment and discuss the status of the TLP system design and control strategy. Lines of inquiry were provided to the Contractor during this assessment kickoff meeting. The answers to the specific questions were expected to provide the primary basis for the assessment. However, based on the state of project documentation and the lack of comprehensive answers to the lines of inquiry, the Assessment Team concluded that an assessment as planned is not possible at this time.

Some considerations for BNI during future updates to 24590-WTP-PL-PR-04-0001, *Integrated Sampling and Analysis Requirements Document*, piping and instrumentation diagrams, system descriptions, and other project documentation for the TLP and Treated LAW Concentrate Storage Process System are included in Section 5.0 of this report.

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LIST OF ACRONYMS

BNI	Bechtel National Inc.
DOE	U.S. Department of Energy
HLW	High-Level Waste [Facility]
ISARD	*Integrated Sampling and Analysis Requirements Document*
LAW	Low-Activity Waste [Facility]
ORP	Office of River Protection
P&ID	piping and instrumentation diagram
PFD	process flow diagram
PT	Pretreatment [Facility]
SBS	submerged bed scrubber
TCP	Treated LAW Concentrate Storage Process System
TLP	Treated LAW Evaporation Process System
WED	WTP Engineering Division
WIPSD	*WTP Integrated Processing Strategy Description*
WTP	Waste Treatment and Immobilization Plant

1.0 INTRODUCTION

The U.S. Department of Energy (DOE), Office of River Protection's (ORP) mission is to retrieve and treat Hanford's tank waste and close the tank farms to protect the Columbia River. In order to complete one major component of this mission, ORP awarded Bechtel National Inc. (BNI) a contract for the design, construction, and commissioning of the Waste Treatment and Immobilization Plant (WTP) at the Hanford Site in Richland, Washington. As part of its oversight responsibilities, ORP performs various assessments of BNI activities during the design and construction phase. This assessment evaluated the effectiveness of the design and control of the WTP Treated LAW Evaporation Process System (TLP).

2.0 BACKGROUND

The WTP Engineering Division (WED) has responsibility for design oversight of the WTP. The WTP is comprised of three primary processing facilities: Pretreatment (PT), High-Level Waste (HLW) vitrification, and Low Activity Waste (LAW) vitrification.

WTP process control strategies are documented in 24590-WTP-3YD-50-00002, *WTP Integrated Processing Strategy Description* (WIPSD), as well as system descriptions and software functional specifications. The WIPSD provides a single document that links process flowsheet and upper-tier, processing-related requirements with selected monitoring and control approaches for normal operations of the primary waste processing facilities. System descriptions provide an overview description of the system, including functions, requirements, design operating parameters and operational conditions and limits, and define the system technical basis and code requirements. Software functional specifications describe the functional design requirements of process and mechanical handling control system software.

3.0 OBJECTIVES, SCOPE, AND APPROACH

3.1 Objectives

The specific objectives of this oversight were to:

- Determine acceptable expansion of TLP operating conditions to support potential future PT Facility process enhancements; e.g., operating at higher pressures and higher temperatures.
- Assess recovery from upset conditions, such as excessive solids formation, including downstream vessels and piping.
- Determine to what extent the TLP Evaporator can support fractional crystallization.
- Review the TLP Evaporator process flow diagrams (PFD) and piping and instrumentation diagrams (P&ID) to verify features required for normal and alternative operating conditions are included in the WTP design.

3.2 Scope

The scope of this assessment was a review of the processing strategy, system description, system design, PFDs, and P&IDs associated with the TLP. Interviews and discussions were conducted with cognizant BNI management and staff.

3.3 Approach

This oversight was conducted within the guidelines of ORP M 220.1, *Integrated Assessment Plan*, and ORP Desk Instruction (DI) 220.1 "Conduct of Design Oversight." The lines of inquiry planned for use during the assessment are provided in Appendix A. The approved design product oversight plan, *WTP Engineering Division Assessment of Treated LAW Processing System*" is provided in Appendix B.

4.0 RESULTS

On February 6, 2008, the Assessment Team met with Contractor (BNI) management and staff to kick off the assessment and discuss the status of the TLP design and process control strategy. Lines of inquiry were provided to the Contractor during this assessment kickoff meeting. The answers to the specific questions were expected to provide the primary basis for the assessment. The approach taken by the Contractor was to assign the questions to the appropriate BNI staff member for response. The lines of inquiry, the responsible BNI staff member, and the answers provided are attached as Appendix A.

At the February 6 meeting, the Contractor identified that the TLP system descriptions are obsolete and there have been significant changes that are not reflected. There are also planned changes to 24590-WTP-PL-PR-04-0001, *Integrated Sampling and Analysis Requirements Document* (ISARD). In addition, many details of the process control strategy, including sampling requirements for evaporation control, prevention of precipitation, and reagent additions are not defined at this time.

The Contractor also stated most of the PT P&IDs will change significantly and are in the process of being revised to incorporate required changes; P&IDs will be re-issued between late summer and October 2008. The Contractor stated that system description revisions will begin following completion of P&ID revisions.

In addition, a previous design oversight assessment of the PT Facility post-filtration precipitation (D-07-DESIGN-053[1]) identified the potential for the precipitation and accumulation of large quantities of alumina and other solids in the treated LAW evaporator (TLP-SEP-00001) and the Treated LAW Concentrate Storage Process System (TCP) concentrate storage vessel (TCP-VSL-00001). While the Contractor has acknowledged that additional sampling and analysis is required to provide a better basis for control of the evaporation process with diverse feeds, specific recommendations have not yet been made.

Based on the above information, and a lack of comprehensive answers to the lines of inquiry (Appendix A), the Assessment Team concluded that the Contractor's TLP operating strategy is not adequately documented and is in a state of flux. While engineers may have a concept of the

[1] D-07-DESIGN-053, *Waste Treatment and Immobilization (WTP) Design Assessment of Pretreatment Facility Post Filtration Precipitation*, October 2007

process control strategy, there would be questionable pedigree and no configuration control of information gathered in an assessment relying primarily on gathering information from interviews. ORP concluded the assessment could not be completed as originally planned.

5.0 CONSIDERATIONS

Updates to the ISARD, P&IDs, system descriptions, and other project documentation for the TLP/TCP must consider the following:

- Process upset scenarios for the TLP Evaporator and downstream equipment that could result in solids precipitation and the operational controls needed to control this risk.
- Impact of any new controls in the PT Facility on the LAW concentrate feed to the LAW Vitrification Facility.
- Effectiveness of downstream mixing systems from the TLP Evaporator to the LAW concentrate feed receipt vessel in dealing with the potential for precipitation of alumina solids (e.g., gibbsite).
- Adverse impacts from LAW submerged bed scrubber (SBS) condensate on the TLP process system with respect to both process chemistry and throughput; consider not returning the SBS recycle to the TLP.
- Considerations of not returning the Radioactive Liquid Waste Disposal System (RLD) recycle to the TLP.
- Adverse impacts from cesium ion exchange fluids on the TLP process system with respect to both process chemistry and throughput.
- Accessibility for maintenance and repair.
- Opportunities to avoid sodium additions in the TLP.
- Boundary conditions for the concentrate product as a function of the evaporator feed.
- Temperature dependence of salt solubility. If the TCP vessel is heated to retain salts in solution, the salts may plug downstream lines.
- Impact of new sampling frequency and sample analysis time on plant throughput.
- Adverse impacts (or upset conditions) that could arise within the demister spray system or the de-entrainment pads.
- Likelihood of extreme foaming within the TLP Evaporator resulting in carryover of contaminants into the process condensate.
- TLP Evaporator margin for conducting operations at higher temperatures, pressures, and densities.

6.0 PERSONNEL CONTACTED AND REFERENCES

6.1 Personnel Contacted

- Dawn Kammenzind External Interface
- Jeff Monahan Area Project Engineering Manager
- Ed Strieper Mechanical and Process
- Bob Voke Mechanical and Process
- Dennis Klein Environmental and Nuclear Safety
- Wayne Underhill Controls and Instrumentation
- Rick Brouns Process Engineering and Technology

6.2 References

D-07-DESIGN-053, *Waste Treatment and Immobilization (WTP) Design Assessment of Pretreatment Facility Post Filtration Precipitation*, October 2007

24590-WTP-3YD-50-00002, *WTP Integrated Processing Strategy Description*, Rev. 0, Bechtel National, Inc.

24590-WTP-DB-ENG-01-001, *Basis of Design*, Rev. 1J, Bechtel National, Inc.

24590-WTP-PL-PR-04-0001, *Integrated Sampling and Analysis Requirements Document*, Rev. 1, Bechtel National, Inc.

ORP DI 220.1, "Conduct of Design Oversight," Rev. 1, U.S. Department of Energy, Office of River Protection

ORP M 220.1, *Integrated Assessment Program*, Rev. 5, U.S. Department of Energy, Office of River Protection

Appendix A. TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

	ORP Question - General Section	BNI Response	Actionee
1	What upset scenarios have been evaluated for Treated LAW Process (TLP) evaporator and downstream equipment?	a) leaks in TLP/TCP vessels and piping b) hydrogen explosions in TLP/TCP vessels and piping c) contamination of TCP vessel and piping with radioactive material from upstream processes or misroutings d) rupture of TLP reboiler tubes e) overfilling TLP evaporator vessel f) extensive carryover of particulates from TLP evaporator vessel g) overfilling TLP/TCP process vessels h) PJM overblow in TLP/TCP process vessels i) siphoning of TLP evaporator vessel contents into AFR process piping Reference: 24590-WTP-PSAR-ESH-01-002-02, Rev 2b Preliminary Safety Analysis Report to Support Construction Authorization; PT Facility Specific Information Appendix A PT Hazards Assessment Report; Standards Identification Process Database Output	Dennis Klein
2	The flowsheet basis for the TLP evaporator and downstream equipment is that only small amounts of solids precipitate. Aluminate will be a major constituent of the flowsheet when the process fluids arrive at the TLP system. This is due to the objective of sending the major fraction of alumina to LAW vitrification. What upset conditions have been evaluated, given the potential for precipitation? What operational controls have been established to avoid this risk?	Higher solids levels can be an operational problem for mixing, pumping, potential scaling, and potential for erosion. The issue of controlling for these potential solids is addressed in the draft report *Solids Precipitation in the Treated LAW Evaporation Process: A Response to a Design Oversight Assessment*. Main control is to avoid overconcentration, to add caustic as needed prior to TLP, and control temperature (there are provisions for steam addition at TCP to avoid excessively low temp.)	Rick Brouns
3	What impact will these operational controls have on LAW concentrate feed to the LAW vitrification facility?	This issue is addressed in the draft report *Solids Precipitation in the Treated LAW Evaporation Process: A Response to a Design Oversight Assessment*.	Rick Brouns

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

4	How effective will downstream mixing systems (from the TLP evaporator to the LAW concentrate feed receipt vessel (CRV) be in dealing with the potential for precipitation of alumina solids (e.g. gibbsite)?	The Technology Maturation Plan includes a study to fully define the mixing requirements for all vessels. The design currently assumes minimal solids in the systems downstream of the TLP evaporator.	Rick Brouns
5	What changes were made to the TLP to LAW CRV systems during the Pretreatment design configuration process?	The reconfiguration of the Pretreatment building did not drive changes to the TLP evaporator flowsheet. The only physical changes that resulted from the reconfiguration were that the maintainable components, like the reboiler and the pump, were placed in the hot cell to allow for replacement during operation.	Bob Voke
6	Are there any adverse impacts from LAW SBS condensate on the TLP process system with respect to both process chemistry and throughput? Would there be any adverse impacts if there was no SBS recycle return?	The issue was considered as part of the effort behind the report *Solids Precipitation in the Treated LAW Evaporation Process: A Response to a Design Oversight Assessment*. The result is that there are no significant expected adverse impacts to TLP from the LAW recycles, since the expected composition is mostly water with some benign (chemistry wise) solids.	Rick Brouns
7	What are the adverse impacts if there is no RLD recycle?	There are none expected. Evaporator duty will be less.	Rick Brouns
8	Are there any adverse impacts from Cs Ion Exchange fluids on the TLP process system with respect to both process chemistry and throughput?	None expected.	Rick Brouns
9	What is the basis for a 40 year design life? What is the maintenance and repair program for the TLP evaporator? What accessibility systems are designed for maintenance and repair?	The requirement for a 40 year design life came from the Contract. The maintenance requirements will be provided by the evaporator vendor. Items requiring maintenance or replacement are either in C3 areas or in the Hot Cell. One exception if the demister pads which are in the black cell. These are not expected to be replaced, but if it were necessary to do so, there is a shield plug above the pads that will allow for their replacement.	Bob Voke
10	What was the basis for a single evaporator in the TLP system versus 2 evaporators in the Feed Evaporator Process (FEP) system?	Contract throughput requirements.	Bob Voke
11	Why is the TLP evaporator located in the Black Cell rather than the Hot Cell?	Components on the evaporator that are expected to require maintenance are located either in the hot cell or in C3 areas.	Bob Voke

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

12	Are there any opportunities to avoid sodium additions in the TLP system?	Sodium addition at TLP/TCP isn't planned as a normal operation. Caustic addition will normally occur upstream of TLP for precipitation control. Overconcentration (density) control will help minimize Na addition, as well as temp control. Refer to the draft report *Solids Precipitation in the Treated LAW Evaporation Process: A Response to a Design Oversight Assessment*.	Rick Brouns
13	What are the boundary conditions for the concentrate product?	Some of this has been explored and is presented in the draft report *Solids Precipitation in the Treated LAW Evaporation Process: A Response to a Design Oversight Assessment*. The concentrate product boundary conditions assume that the feed will be maintained sufficiently dilute to prevent excessive precipitation. The exact concentration will be feed specific and need to be determined in the Laboratory as part of feed prequalification to establish operational limits.	Rick Brouns
14	What controls are in place for shut down mode?	Development of the control logic for the TLP evaporator is not fully developed. The P&IDs for this system are scheduled for issue in mid summer this year and the System Description containing the control logic is scheduled to be issued in ________.	Bob Voke

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

	ORP Question - Detailed	BNI Response	Actionee
1	The Treated LAW Concentrate Process (TCP) vessel pulse-jet mixers are designed to handle 3 wt% solids. What is the potential that the TCP vessel will experience a solids loading in excess of 3 wt%?	The potential is real, but it is proposed that the expected production rates and expected operational performance can successfully be achieved by using the existing design. Refer to the draft report *Solids Precipitation in the Treated LAW Evaporation Process: A Response to a Design Oversight Assessment*.	Rick Brouns
2	Salt solubility is temperature dependent. If the TCP vessel is heated to retain salts in solution, what is the likelihood that these salts will plug the lines to the LAW CRV?	Refer to the draft report *Solids Precipitation in the Treated LAW Evaporation Process: A Response to a Design Oversight Assessment*. The report is currently being finalized to include an additional discussion on the potential for precipitation in the CRV per the following ATS (ATS-QAIS-07-1229) item: "CCN 171078 identified a potential issue with excessive solids precipitating in the CRV's once the LAW concentrate from TCP-01 was transferred from PT to LAW and was allowed to cool down. According to ATS-QAIS-08-113, the analysis completed for the TLP Evaporator vessels TLP and TCP-01 that is cited in Action 1 for ATS-QAIS-07-1229 will be amended to include an assessment of the impact to the LAW receipt vessels once the TLP-01 contents are transferred to the LAW facility." If the potential for precipitation in the CRV after cooling is low, the potential for plugging in the transfer line due to partial cooling during transfer should also be low.	Rick Brouns
3	What burden will be placed on sampling of sodium molarity? Will the sampling frequency put a constraint on plant throughput?	Sampling is potentially important, but can be done at CXP-VSL-00026ABC such that throughput is not impacted.	Rick Brouns

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

4	The evaporator endpoint needed to prevent excessive precipitation is feed specific. Comprehensive models for early feeds have taken more than a year to develop. Will flow sheet models be required for each unique feed to determine solubility endpoints for individual feeds? What impact will this have on throughput?	Probably not required for each feed, but analysis of some pre-screened feeds will be useful to ensure performance goals with the design.	Rick Brouns
5	Are their any adverse impacts (or upset conditions) that could arise from the interface with the Process Reagents System (e.g. NaOH) on process chemistry or throughput?	None expected, particularly when caustic addition for precipitation control is planned to occur upstream of CXP.	Rick Brouns
6	Are their any adverse impacts (or upset conditions) that could arise from the interface with the Low Pressure Steam (LPS) system on process chemistry or throughput?	None expected	Rick Brouns
7	Are their any adverse impacts (or upset conditions) that could arise from the interface with the Sampling System on process chemistry or throughput?	None expected	Rick Brouns
8	Are their any adverse impacts (or upset conditions) that could arise within the demister spray system?	None identified that are not already addressed by current design.	Bob Voke
9	Are there any adverse impacts (or upset conditions) that could arise within the de-entrainment pads?	None identified that are not already addressed by current design.	Bob Voke

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

10	What is the likelihood of extreme foaming within the TLP evaporator over its design life? What is the likelihood that this would result in carry-over of contaminants into the process condensate? What operational controls are provided to mitigate this condition since the condensers and associated piping are in the C3 area?	Some foaming is likely. However, with the results of the foaming tests, the resulting design of the anti-foam system, and other evaporator foam controls (e.g. pressure sensors), foaming is not expected to adversely impact TLP system performance goals, nor to impact associated C3 areas. Not all feeds have been tested of course, so there is uncertainty about this conclusion. The assumption for design is that excess foaming of some batches may impact the design performance goals, but that solutions can be developed by the plant operator once these feed batches are identified, and that it is not cost effective to expend R&T effort at this time to minimize this potential risk. The foaming characteristics of the different feeds to the evaporator are not readily predictable at this time. Antifoam equipment is installed and the appropriate antifoam agent and concentration levels will be added when foaming is encountered.	Rick Brouns

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

11	What is the likelihood of failure of radiation monitors and interlocks during the design life?	Currently no specific vendor or model has been selected for the TLP gamma monitoring instrumentation. A typical radiation monitoring instrument is expected to have reliability in the region of 5E-6 / hr equating to 0.438 failures per year. This is based on information provided in Appendix A - Table A-3, Failure rates for active components included in report 24590-WTP-U7C-50-00001, WTP Risk Analysis - Risk Goal Confirmation (sheet 113). The note indicates this data is based on information from the Savannah River site and report WSRC-TR-93-262 (table If pG 30, RST-FA1). The PTF TLP system radiation monitors presently do not perform any Safety Class or Safety Significant function and will be purchased as standard commercial equipment in accordance with specification, 24590-WTP-3PS-JR00-T0003, Engineering Specification for Liquid Effluent Gamma Monitors. Normal control logic and alarms will be designed failsafe such that any resultant interlocks and alarms will actuate on loss of instrument signals. Alarms on instrument faults will be provided to prompt maintenance. The instruments will be calibrated and tested based on the vendor recommendations. Radiation monitors are very likely to need to be replaced or upgraded during the 40 year design life of WTP.	Wayne Underhill

TREATED LAW PROCESSING SYSTEM LINES OF INQUIRY

	ORP Question - System Flexibility	BNI Response	Actionee
1	What is the TLP evaporator margin for conducting operations at higher temperatures, pressures, and densities?	Has not been defined.	Rick Brouns
2	What modifications would be required to operator the TLP evaporator as a crystallizer?	Has not been evaluated	Rick Brouns
3	Could the SBS condensate be diverted from the TLP evaporator?	This is not currently in the design.	Bob Voke

Appendix B. DESIGN PRODUCT OVERSIGHT PLAN

DESIGN PRODUCT OVERSIGHT PLAN

WTP ENGINEERING DIVISION ASSESSMENT

TREATED LAW PROCESSING SYSTEM

February 2008

Design Oversight: D-08-DESIGN-062

Submitted by:

[original signed by] _____ Date _____
D.H. Alexander, Team Lead
WTP Engineering Division

Concurrence:

_____ Date _____
J.H. Wicks, Director
WTP Engineering Division

_____ Date _____
John Eschenberg, Project Manager WTP

1.0 BACKGROUND, PURPOSE AND OBJECTIVES

1.1 Background

The U.S. Department of Energy (DOE), Office of River Protection's (ORP) mission is to retrieve and treat Hanford Site tank waste and close the tank farms to protect the Columbia River. In order to complete one major component of this mission, ORP awarded Bechtel National, Inc. (BNI) a contract for the design, construction, and commissioning of the Waste Treatment and Immobilization Plant (WTP) at the Hanford Site in Richland, Washington. In order to meet the requirements of WTP contract, DE-AC27-01RV14136, BNI (the Contractor) has established a process to establish functional criteria and deliver a technically defensible design. This process involves an objective measurement of the acceptability relative to the established design criteria.

The WTP Engineering Division (WED) has responsibility for the design oversight of the WTP Project. The WTP is comprised of three primary processing facilities: Pretreatment (PT), High-Level Waste (HLW) Vitrification, and Low-Activity Waste (LAW) Vitrification. The Treated LAW Evaporation and Concentrate Storage Process System located within the PT Facility "is designed to concentrate the treated LAW feed to the operating concentration of the LAW vitrification process without causing solids to precipitate in the treated LAW concentrate storage vessel (TCP-VSL-00001) or piping to this vessel."

The formation of solids in the evaporator concentrate is dependent on many factors pertaining to how the WTP process is operated as well as the operating set point of the Treated LAW Evaporation Process System (TLP) Evaporator. Oversaturation of salts can lead to dramatic precipitation at about 8.2 M sodium. The predominant component observed is a sodium carbonate phase during evaporation to 6 M sodium concentrations and higher.

1.2 Purpose

This design oversight assessment will review the effectiveness of the design to control evaporation conditions beyond normal operations of the TLP Evaporator and to assess expansion of the currently planned operating mode for potential future process enhancements.

1.3 Objectives

The following are specific objectives of this assessment:

- Determine acceptable expansion of operation conditions to support potential future PT Facility process enhancements; e.g., operating at higher pressures and higher temperatures.
- Assess recovery from upset conditions, such as excessive solids formation, including downstream vessels and piping.
- Determine to what extent the TLP Evaporator can support fractional crystallization.
- Review the TLP Evaporator process flow diagrams (PFD) and piping and instrumentation diagrams (P&ID) to verify features required for normal and alternative operating conditions are included in WTP design.

2.0 SCOPE

This assessment shall be conducted within the guidelines of ORP M 220.1, *Integrated Assessment Plan*, Rev. 5, and the ORP DI 220.1, "Conduct of Design Oversight," Rev. 1, issued January 26, 2006.

This scope of this assessment will include review of the TLP processing strategy, system description, system design, PFDs and P&IDs associated with the PT Facility.

The Assessment Team will be comprised of three WED staff members:

- D. Alexander
- L. Holton
- L. McClure

3.0 PREPARATION

1. Identify Contractor Point of Contact for review.
2. Confirm with Contractor staff that documentation being reviewed is the most current approved revision.
3. Prepare detailed lines of inquiry (LOI).

4.0 ASSESSMENT

The assessors will review the requested documentation (see Table 1) to assess each of the objectives identified in Section 1.3 of this plan. Based on this assessment, specific LOIs for use in discussion and interviews will be prepared. Notes will be retained identifying the document title and number reviewed and results of the review for use in preparing assessment notes (detailed responses and assessment of LOIs), which will be written by each team member as input to the assessment report.

Table 1 – Initial Information Requirements

1. Point of contact for the assessment
2. Latest revisions of the TLP Design Documents
3. Latest revision of the TLP PFDs and P&IDs
4. Latest revision of TLP System Descriptions and Functional Specifications

5.0 REPORTING

The Assessment Team Lead will periodically brief ORP management and provide the Contractor POC the opportunity for a daily briefing as necessary during the assessment. The Team Lead, with assistance from the team, will prepare a final assessment report that summarizes review activities, results, conclusions, and recommendations.

6.0 SCHEDULE OF ACTIVITIES

Table 2 summarizes the schedule of this assessment.

7.0 DOCUMENTATION

The final assessment report shall contain the sections and content as summarized in ORP DI 220.1, "Conduct of Design Oversight." The final report will be formally issued once draft review comments have been resolved. Any Findings, Assessment Follow-up Items, or Open Issues identified in the report will be assigned a number, and tracked to resolution through the Corrective Action Reporting System (CARS) by DOE ORP. These assigned numbers shall also be tracked to resolution by the Contractor through the Correspondence Control Number (CCN) that will be assigned to the transmittal of the report from ORP to the Contractor.

8.0 CLOSURE

The Team Lead, with concurrence of the Director, shall confirm that follow-up items and findings from this oversight, if any, are adequately resolved.

Table 2 – Schedule

Activity Description	Responsibility	Complete By
Develop Design Oversight Plan	Alexander	1/15/08
Provide Design Oversight Plan to Contractor	Alexander	1/18/08
Identify Point of Contact (POC)	WTP	1/24/08
Obtain Contractor documentation defined in Table 1 to support review and provide to team members	Alexander WTP POC	1/30/08
Qualify Team members	Alexander	1/31/08
Kick-off meeting with Contractor to outline objectives, scope, schedule, and establish POCs	WTP POC Alexander	2/7/08
Review documents from Contractor and provide oversight strategy, lines of inquiry, and interview requests to Team Lead	Team	2/7/08
Review Contractor documents, participate in relevant Contractor internal meetings, and meet with Contractor as required	Team	2/29/08
Complete Design Oversight Notes	Team	3/7/08
ORP and Contractor Exit Briefing	Alexander WTP POC	3/21/08
Draft Report	Alexander	3/21/08
Resolve Comments and place Final Report into concurrence including factual accuracy review with Contractor	Alexander	3/28/08
Approve Final Report	ORP	3/31/08