

| | | | |
|---|---|----------------------------------|--------------------------------|
| 2. AMENDMENT/MODIFICATION NO. 384 | 3. EFFECTIVE DATE (M/D/Y) See Block 16C | 4. REQUISITION/PURCHASE REQ. NO. | 5. PROJECT NO. (If applicable) |
|---|---|----------------------------------|--------------------------------|

| | |
|--|---|
| 6. ISSUED BY U.S. Department of Energy Office of River Protection P. O. Box 450, MS H6-60 Richland, WA 99352 | 7. ADMINISTERED BY (If other than Item 6) |
|--|---|

| | | |
|---|-------------------------------------|--|
| 8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code) Bechtel National, Inc. 2435 Stevens Center Place Richland, WA 99352 | <input type="checkbox"/> | 9A. AMENDMENT OF SOLICITATION NO. |
| | <input type="checkbox"/> | 9B. DATED (SEE ITEM 11) |
| | <input checked="" type="checkbox"/> | 10A. MODIFICATION OF CONTRACT/ ORDER NO. DE-AC27-01RV14136 |
| | | 10B. DATED (SEE ITEM 13) December 11, 2000 |

11. THIS ITEM APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE DATE AND HOUR SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and amendment and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS SET FORTH IN ITEM 14.

| | |
|-------------------------------------|---|
| CHECK ONE | A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. |
| <input type="checkbox"/> | |
| <input type="checkbox"/> | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO AUTHORITY OF FAR 43.103(b). |
| <input checked="" type="checkbox"/> | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO THE AUTHORITY OF: FAR 43.103 Types of Contract Modifications (a) Bilateral - Mutual Agreement of the Parties |
| <input type="checkbox"/> | D. OTHER (Specify type of modification and authority) |

E. IMPORTANT: Contractor is not, is required to sign this document and return 2 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

See following page(s)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

| | |
|---|---|
| 15A. NAME AND TITLE OF SIGNER (Type or print) Margaret G. McCullough, Project Director | 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Ronnie L. Dawson Contracting Officer |
| 15B. CONTRACTOR/OFFEROR Margaret G. McCullough <small>(Signature of person authorized to sign)</small> | 15C. DATE SIGNED 12/15/16 |
| 16B. UNITED STATES OF AMERICA Ronnie L. Dawson <small>(Signature of Contracting Officer)</small> | 16C. DATE SIGNED 12/15/16 |

Purpose of Modification:

The purpose of this contract modification is to restructure the contract for completing the Low-Activity Waste (LAW) Facility, Balance of Facilities (BOF), and Analytical Laboratory (LAB) (collectively known as LBL) work scope in the current contract to accommodate direct feed of LAW (DFLAW) in the Waste Treatment Plant Project. To incorporate the changes for restructure the following Sections of the contract are revised: Section B - *SUPPLIES OR SERVICES AND PRICES/COSTS*; update Sections C, F, H, and J (as described below); and incorporate a Contractor Statement of Waiver and Release of Claims as of the date of this modification.

Description of Modification:

The following changes are hereby incorporated into the Contract:

1. Contract Section B, *SUPPLIES OR SERVICES AND PRICES/COSTS* is replaced in its entirety with Attachment 1 – Contract Section B, Rev. Mod 384.
2. Contract Section C, *STATEMENT OF WORK* is replaced in its entirety with Attachment 2 – Contract Section C, Rev. Mod 384.
3. Contract Section F, *DELIVERIES OR PERFORMANCE* is replaced in its entirety with Attachment 3 – Contract Section F, Rev. Mod 384.
4. Under Contract Section H, *SPECIAL CONTRACT REQUIREMENTS*: is replaced in its entirety with Attachment 4 – Contract Section H, Rev. Mod 384.
5. Contract Section J, *LIST OF ATTACHMENTS*, is replaced in its entirety with Attachment 5 – Contract Section J, Attachment I, Rev. Mod 384.

Statement of Waiver and Release Claims:

1. In consideration for Modification No. 384, and except as expressly set forth below, the Contractor hereby (1) waives and releases the Government from any and all liability and responsibility for all Requests for Equitable Adjustments (REAs) or claims ("Released Claims"), and (2) waives and releases its right under Contract Clause H.34 to initiate Alternative Dispute Resolution (ADR) for such Released Claims, regarding changes in the estimated cost, fee or estimated schedule of this Contract as modified as of the effective date of this modification that were known or should have been known by the Contractor including without limitation: (1) REAs submitted, identified but not formally submitted, or withdrawn, and (2) subcontractor claims, demands, and causes of action. The foregoing waiver and release does not affect the Contractor's entitlement to payment for properly-invoiced allowable costs and earned fee as set forth in the Contract.
 - (a) This waiver and release includes, but is not limited to the following:
 - modifications to the Contract (including Government-directed and constructive changes);
 - past and current trends and Baseline Change Proposals;
 - REAs 2011-009, 2013-005, 2015-006, and 2014-003; and
 - all fee for work performed prior to the date of Modification No. 384.
 - (b) Excepted from this waiver and release are:

- i. Contractor's right to pursue equitable adjustments to the Contract for those items specifically identified in Section J, Attachment J, Sub-Attachment C to the Contract.
 - ii. Contractor's right to pursue equitable adjustments relating to performance of PT facility and HLW facility work in excess of the funding profile in Modification No. 384 or after 2022.
 - iii. These exceptions are subject to the limitations contained in Clause B.11(f) and other terms and conditions of the Contract.
2. All other terms and conditions of the Contract remain the same.

Attachments:

- 1 Contract Section B, SUPPLIES OR SERVICES AND PRICES/COSTS, Rev. Mod 384.
- 2 Contract Section C, STATEMENT OF WORK, Rev. Mod 384.
- 3 Contract Section F, DELIVERIES OR PERFORMANCE, Rev. Mod 384.
- 4 Contract Section H, SPECIAL CONTRACT REQUIREMENTS, Rev. Mod 384.
- 5 Contract Section J, LIST OF ATTACHMENTS, Rev. Mod 384.

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

TABLE OF CONTENTS

| Section | Clause | Page |
|---------|---|------|
| B.1 | TYPE OF CONTRACT | 1 |
| B.2 | ITEM(S) BEING ACQUIRED | 1 |
| B.3 | OBLIGATION AND AVAILABILITY OF FUNDS AND CONTRACT VALUE | 1 |
| B.4 | ALLOWABILITY OF SUBCONTRACTOR FEE..... | 5 |
| B.5 | INCENTIVE FEE STRUCTURE | 5 |
| B.6 | EQUITABLE ADJUSTMENTS TO COST, PERFORMANCE INCENTIVES, SCHEDULE, AND FEES..... | 5 |
| B.7 | INCENTIVE FEE ADMINISTRATION | 6 |
| B.8 | AWARD FEE ADMINISTRATION | 7 |
| B.9 | CONDITIONAL PAYMENT OF FEE, PROFIT, OR INCENTIVES | 10 |
| B.11 | FEE RISK ALLOCATION | 11 |
| B.12 | ATTACHMENTS..... | 12 |
| | B.12 - Attachment B-1, Incentive Fee Summary Table..... | 14 |
| | Attachment B-2-A, Incentive Fee A – Final Fee Determination for Work Prior to Modification No.A143..... | 15 |
| | Attachment B-2-B, Incentive Fee B – Final Fee Determination for Work from Modification No. A143 through Modification (384) | 16 |
| | Enhanced Incentive Fee – Sodium Reduction | 16 |
| | Attachment B-2-C, Incentive Fee C – Fixed Fee Payment | 18 |
| | Attachment B-2-D, Incentive Fee D – Award Fee | 19 |
| | D.1, Project Management and Cost Incentive..... | 19 |
| | Attachment B-2-E, Incentive Fee E – LBL Construction Complete Performance Based Incentives..... | 20 |
| | Attachment B-2-F, Incentive Fee F – Commission LBL in the DFLAW Configuration Performance Based Incentive | 23 |
| | Attachment B-2-G, Incentive Fee G – CLIN 1.0 Cost Share Incentives..... | 27 |
| | Attachment B-2-H, Incentive Fee H – CLIN 2.1 DFLAW Design Completion Fee..... | 29 |

SECTION B

SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 TYPE OF CONTRACT

This is a Cost-Plus Award-Fee Contract, with award and multiple fee incentives. The various incentive fee types are described in Clause B.5, "Incentive Fee Structure."

B.2 ITEM(S) BEING ACQUIRED

- (a) The Contractor shall, in accordance with the terms of this Contract, provide the personnel, materials, supplies, and services (except as may be expressly set forth in this Contract as furnished by the Government) and otherwise do all things necessary and incident to designing, constructing, and commissioning the Hanford Tank Waste Treatment and Immobilization Plant (WTP) as described in Section C, "Statement of Work." The WTP has five separate facilities: Pretreatment (PT) Facility, High-Level Waste (HLW) Facility, Low-Activity Waste (LAW) Facility, Analytical Laboratory (LAB), and Balance of Facilities (BOF). LAW, BOF, and LAB are known collectively as LBL.
- (b) For purposes of cost collection, reporting, and administration of the Contract fee structure the parties have agreed to establish separate Contract Line Item Numbers (CLIN) for sections of the work under the contract.
- (c) The following is a current listing of CLINs:
 - (1) CLIN 1.0 – Design, Construct, and Commission LBL in the Direct-Feed Low-Activity Waste (DFLAW) configuration
 - (2) CLIN 2.0 – WTP Facility Modifications necessary to support DFLAW
 - (i) Sub-CLIN 2.1 DFLAW Design
 - (ii) Sub-CLIN 2.2/2.3 DFLAW Procurement/Construction
 - (3) CLIN 3.0 – Currently HLW facility work is being performed under interim work plans that address the funding made available by DOE for this purpose. Interim work plans and changes to the plans are implemented using the Contractor's trend process and are approved by DOE.
 - (4) CLIN 4.0 – Currently PT facility work is being performed under interim work plans that address the funding made available by DOE for this purpose. Interim work plans and changes to the plans are implemented using the Contractor's trend process and are approved by DOE.
 - (5) The Contractor shall continue to perform PT Facility and HLW Facility scope as directed under interim work plans. Estimated cost and fee for work to be performed after the current period of performance for completion of HLW Facility and PT Facility with the associated support costs (i.e., Project Services), is not included in Modification No. (384)

B.3 OBLIGATION AND AVAILABILITY OF FUNDS AND CONTRACT VALUE

- (a) Subject to the Section I.66, Clause entitled, "Limitation of Funds," the amount presently obligated under this Contract is shown in the following table. Nothing in this paragraph or in the clause entitled *Limitation of Funds* is to be construed as authorizing the Contractor to exceed limitations stated in the following table established by DOE and furnished to the Contractor from time-to-time under this Contract. The following table establishes

controls on the costs to be incurred and encumbrances to be made in the performance of the Contract work.

| BUDGETARY CONTROL POINTS FOR WTP PROJECT | | | |
|---|-----------------------------|--|----------------------------|
| Description | Appropriation Symbol | B&R No. (Control Point) | Budget Authority |
| | 1250 | 1110401 | \$3,006,205,907.70 |
| LAW | 1250 | 1111183 | \$637,537,062.71 |
| LAB | 1250 | 1111184 | \$207,817,505.32 |
| BOF | 1250 | 1111185 | \$261,722,260.48 |
| HLW | 1250 | 1111186 | \$559,580,100.04 |
| PT | 1250 | 1111187 | \$840,766,807.09 |
| LAW | 1250 and 1260 | 1111241 | \$1,413,240,597.50 |
| DFLAW | 1250 and 1260 | 1111243 | \$102,063,073.13 |
| LAB | 1250 and 1260 | 1111242 | \$328,312,452.11 |
| BOF | 1250 and 1260 | 1111243 | \$492,649,525.21 |
| HLW | 1250 and 1260 | 1111244 | \$1,014,573,076.81 |
| PT | 1250 and 1260 | 1111245 | \$1,450,670,497.24 |
| Subtotal - Budgetary Controls Points for WTP Project thru Contract Modification 379 | | | \$10,315,138,865.34 |
| BUDGETARY CONTROL POINTS FOR PROGRAM DIRECTION | | | |
| Description | Appropriation Symbol | B&R No. (Control Point) | Budget Authority |
| PD | 1250 | 1110462 | \$1,280,000.00 |
| PD | 1250 | 1110458 | \$1,210,000.00 |
| Subtotal - Budgetary Controls Points, including Project Direction, thru Contract Modification 379 | | | \$10,317,628,865.34 |
| INTER-ENTITY WORK ORDER FUNDING | | | |
| IEWO Identification Numbers | | IEWO Amendment No. | Funding |
| M0SRLE60 Funding (SRNS/SRNL) | | 40 | \$73,957,217.82 |
| M0SRV00028 Funding (SRNS) | | 42 | \$7,083,536.09 |
| M0SRV00036 Funding (WSRC) | | 2 | \$186,500.00 |
| M0SRV00042 Funding (ORNL) | | 2 | \$27,599.05 |
| M0IDV00061 Funding (BEA) | | 1 | \$21,277.60 |
| M0ORV00088 Funding (ORNL) | | 2 | \$150,848.30 |
| M0NSV00089 Funding (SNL) | | 1 | \$18,030.68 |
| M0SRV00105 Funding (SRNS) | | 8 | \$4,589,760.00 |
| M0FTV00117 Funding (NETL) | | 4 | \$410,000.00 |

| | | |
|---|-----------------------|----------------------------|
| Total - IEWO Funding 379 | | \$86,444,769.54 |
| REQUEST FOR SERVICE FUNDING | | |
| RFS Number | Supplement No. | Funding |
| M14009 Funding (MSA) | 0 | \$16,446.00 |
| Total – RFS Funding 367 | | \$16,446.00 |
| Total Budgetary Control Points for WTP Project 379 | | \$10,404,090,080.88 |

BEA = Battelle Energy Alliance SRNL = Savannah River National Laboratory.
 NETL = National Energy Technology Laboratory. SRNS = Savannah River Nuclear Solutions.
 ORNL = Oak Ridge National Laboratory.. WSRC = Washington Savannah River Company.

- (a) Inter-Entity Work Orders (IEWO) have been established for work under this Contract performed at the Savannah River site by the Management and Operating contractors Washington Savannah River Company (WSRC), Savannah River Remediation (SRR), Savannah River Nuclear Solutions (SRNS), and the Savannah River National Laboratory (SRNL) on behalf of the Contractor. The work description for these IEWOs is to conduct experimental studies for flow sheet verification, optimization, integration, and scale up in support of the technical basis for design and operation of the Hanford River Protection Project Waste Treatment Plant. **(153)**

The Government owns the IEWO process; therefore, all funding under these IEWOs is approved by the DOE Office of River Protection (ORP) and work is conducted under the Contractor’s management direction. At the Contractor’s request, DOE has transferred work authority as shown in the table above. This total IEWO funding transfer is reflected in funding amounts shown in the above table, and counts toward meeting ORP Contract funding requirements set forth elsewhere in this Contract. **(153)**

- (b) Except as may be specifically provided to the contrary in this Contract (Section I.110 Clause entitled, “Nuclear Hazards Indemnity Agreement”) the duties and obligations of DOE hereunder calling for the expenditure of appropriated funds shall be subject to the availability of funds appropriated by the U.S. Congress that DOE may legally spend for such purposes.
- (c) The Total Estimated Contract Price is determined as follows:

Table B.1 – Total Estimated Contract Price

| | | Cost | | | | |
|-----|--|------|---------------------------------------|-------------------------------|----------------------------------|-------------------------|
| A | Total Estimated Contract Cost (TECC) through Mod 382 | | | | | \$10,945,307,870 |
| B | Total Estimated Contract Cost (384) | | CLIN Estimated Cost | Increased by Mod (384) | Total CLIN Estimated Cost | |
| B.1 | CLIN 1.0: Design, Construct, and Commission LBL in the DFLAW Configuration | | \$3,683,715,000 | \$2,820,889,000 | \$6,504,604,000 | \$2,820,889,000 |
| B.2 | CLIN 2.0: WTP Facility Modifications Necessary to Support DFLAW | | | | | |
| | SUB-CLIN 2.1: DFLAW Design (Target Cost) | | \$75,000,000 | 0 | \$75,000,000 | \$0 |
| | SUB-CLINS 2.2 /2.3 DFLAW Procurement/ Construction | | \$49,411,000 (Previous NTE Values) | \$313,189,000 | \$362,600,000 | \$313,189,000 |
| B.3 | CLIN 3.0 Reserved for HLW Facility | | ** | 0 | | |
| B.4 | CLIN 4.0: Reserved for PT Facility | | ** | 0 | | |
| | Revised Total Estimated Contract Cost (TECC) through Mod 384 | | | | | \$14,079,385,870 |
| Fee | | | | | | |
| | | | Available | | Earned | Total |
| A | Earned before modification (384) | | | | | |
| A1 | Final Fee Determination – Pre-Mod No. A143 | | | | \$102,622,325 | |
| A2 | Final Fee Earned Mod No. A143 – Mod. No. (384) | | | | \$131,573,553 | |
| B | Fixed Fee Payment (Attachment B-2-C)*** | | \$60,000,000 | | | |
| C | Pending Activity Milestones (Attachment B-2-B) | | \$6,667,000 | | | |
| D | Maximum Available Award Fee (CY 2016–2022) (Attachment B-2-D) | | 57,435,620 | | | |
| E | CLIN 1.0: Design, Construct, and Commission LBL in the DFLAW Configuration | | | | | |
| D1 | LBL Construction Complete Performance Based Incentives (Attachment B-2-E) | | \$68,400,000 | | | |
| D2 | Commission LBL in the DFLAW Configuration Performance Based Incentive (Attachment B-2-F) | | \$159,600,000 | | | |
| D3 | Schedule Incentive Hot Commissioning (Attachment B-2-F) | | +/- \$60,000,000 (Max) | | | |
| D4 | Cost Share Incentive (Attachment B-2-G) | | +/- \$50,000,000 (Max) | | | |
| F | CLIN 2.1: Performance-Based Incentive for DFLAW Design Completion (Attachment B-2-H) | | \$8,000,000 | | \$1,000,000 | |
| | Total Maximum Available Fee**** | | \$360,102,620 | | | |
| | Total Fee Earned | | | | \$235,195,878 | |
| | Total Estimated Contract Price (TECP) (Total Maximum Available Fee + Total Earned Fee + TECC) | | | | | \$14,674,684,368 |

** Estimated cost for interim work plans within the agreed funding profile for CLINS 3&4 is included in Total Estimated Contract Cost (TECC).

*** Payment is in satisfaction of all fee entitlement for work accomplished under the Contract from contract modification A143 through the date of this modification (384) that is not included in A2 above.

**** Exclusive of Cost Share and Schedule Incentives

B.4 ALLOWABILITY OF SUBCONTRACTOR FEE

If the Contractor is part of a consortium, joint venture, and/or other teaming arrangement, the team shall share in this Contract fee structure (i.e., separate additional "subcontractor fee" for teaming partners will not be considered an allowable cost under this Contract). If a subcontractor, supplier, or lower-tier subcontractor is a wholly owned, majority owned, or affiliate of any team member, any fee or profit earned by such entity will not be considered an allowable cost under this Contract.

B.5 INCENTIVE FEE STRUCTURE

The DOE objective under this Contract is to receive a completed WTP that meets or exceeds the contractual performance requirements. Incentives are structured to ensure a strong financial motivation for the Contractor to achieve Contract requirements.

This Contract has several incentive fee elements. In Section B.12, "Attachments," a more detailed definition and explanation of each incentive fee under this Contract is provided. Below is a short listing of their titles, which corresponds with the Section B.12 title:

- Attachment B-2-A, "Incentive Fee A – Final Fee Determination for Work Prior to Modification No. A143"
- Attachment B-2-B, "Incentive Fee B – Final Fee Determination for Work from Modification No. A143 and Modification No. 384"
- Attachment B-2-C, "Incentive Fee C – Fixed Fee Payment"
- Attachment B-2-D, "Incentive Fee D – Award Fee"
- Attachment B-2-E, "Incentive Fee E – LBL Construction Complete Performance Based Incentives"
- Attachment B-2-F, "Incentive Fee F – Commission LBL in the DFLAW Configuration Performance Based Incentive"
 - Figure B-2-F-1, "Graph CLIN 1.0 Hot Commissioning Schedule Incentive"
- Attachment B-2-G, "Incentive Fee G – CLIN 1.0 Cost Share Incentives"
 - Figure B-2-G-1, "Graph Cost Share Incentive Fee CLIN 1.0"
- Attachment B-2-H, "Incentive Fee H – CLIN 2.1 DFLAW Design Completion Fee"

B.6 EQUITABLE ADJUSTMENTS TO COST, PERFORMANCE INCENTIVES, SCHEDULE, AND FEES

- (a) Equitable adjustments to the cost, performance incentives (including fees) and the Schedule will be made when required in accordance with the Section I Clause I.82 entitled, "Changes – Cost Reimbursement - Alternate III," and as expressly provided in other Contract provisions.
- (b) For purposes of Contractor planning, the following table sets forth a funding profile with an assumption that for each fiscal year, at least 25 percent will be made available by October 31, 50 percent by January 31, 75 percent by April 30, and the remainder by July 31. The clause places no obligation on DOE to request funding in accordance with the profile. Significant deviations occurring 30 days after the dates specified above, to the funding profile, either positive or negative, may give rise to an adjustment pursuant to the changes clause.

Projected funding profile for the contract is as follows:

| Fiscal Year | Budget Authority (\$1M) |
|-------------|-------------------------|
| 2001 | \$ 348** |
| 2002 | \$ 671** |
| 2003 | \$ 676** |
| 2004 | \$ 682** |
| 2005 | \$ 695** |
| 2006 | \$ 487** |
| 2007 | \$ 614** |
| 2008 | \$ 741** |
| 2009 | \$ 673** |
| 2010 | \$ 690** |
| 2011 | \$ 734** |
| 2012 | \$ 719** |
| 2013 | \$ 600** |
| 2014 | \$ 651** |
| 2015 | \$ 634** |
| 2016 | \$ 660*** |
| 2017 | \$ 660*** |
| 2018 | \$ 660*** |
| 2019 | \$ 660*** |
| 2020 | \$ 660*** |
| 2021 | \$ 660*** |
| 2022 | \$ 660*** |

Includes Contractor fee.

** Actual Funding Amounts As of Modification No. (384)

*** Reflects projected contract funding only – excludes other DOE non-contract costs

B.7 INCENTIVE FEE ADMINISTRATION

The Contractor will notify the Contracting Officer when the Contractor believes an incentive fee activity, milestone, and/or performance measure has been met. The Contracting Officer will:

- Make a determination whether the requirements of this Contract have been met;
- Make a determination of whether fee is earned; and
- Notify the Contractor of these determinations within thirty (30) calendar days (or such other time period as mutually agreed to between the Contracting Officer and the Contractor) after receipt by the Contracting Officer of the Contractor's notification.

If the Contracting Officer determines fee has been earned, then the Contractor can invoice for the fee as outlined in the Contracting Officer determination on the next available invoice.

B.8 AWARD FEE ADMINISTRATION

Award Fee

Each Award Fee period will have a Performance Evaluation Measurement Plan (PEMP) as the method to evaluate and determine award fee earned during the respective period. Unearned award fee will not be rolled over from one period to any future period.

(a) Definitions:

Effective January 1, 2015, "Award Fee Evaluation Period" is defined as twelve (12) month evaluation periods from January 1 through December 31 (period 20xx).

(b) Award Fee: Award fee to be established prior to the beginning of each Award Fee period and will be based upon objective project goals for the HLW and PT facilities along with ORP assessment of performance in project management, environmental, safety, health and quality; and other elements as established in the PEMP. The Award Fee Evaluation Period for the Project Management Incentive will be every twelve (12) months of each calendar year, ending in CY 2022.

(c) Fee Negotiations: No later than 30 Days prior to the beginning of each award fee period, the Contracting Officer and Contractor shall enter into negotiation of the requirements to be set forth in the PEMP for the award fee period. In the event the parties fail to agree on the requirements and the evaluation areas, a unilateral determination will be made by the Contracting Officer prior to the beginning of the evaluation period.

(d) Determination of Award Fee Amount Earned:

(1) Performance will be reviewed jointly by ORP and the Contractor each quarter with a final determination of fee at the conclusion of each specified evaluation period. The Government shall evaluate the Contractor's performance of the requirements set forth in the PEMP, including incentives completed during the period, and determine the award fee amount earned for each Award Fee component: Project Management, Cost and ES&H Incentive. At the Contracting Officer's discretion, evaluation of incentivized performance may occur at the scheduled completion of specific incentivized requirements.

(2) The evaluation of Contractor performance shall be in accordance with the requirements in this section and set forth in the PEMP for the requisite time period. The Contractor shall be promptly advised in writing of the fee determination and the basis of the fee determination.

(e) Schedule for Award Fee Amount Earned Determinations: The Contracting Officer shall issue the award fee amount earned determination for each award fee incentive (Project Management Incentive and Cost Incentive) in accordance with the schedule set forth in the PEMP; or as otherwise set forth in this Contract. However, a determination must be made within sixty (60) calendar days after the receipt by the Contracting Officer of the Contractor's self-assessment, if one is provided by the Contractor, or seventy (70) calendar days after the end of the evaluation period, whichever is later, or a longer period if the Contractor and Contracting Officer agree. If the Contracting Officer evaluates the Contractor's performance of specific requirements on their completion, the payment of any earned fee amount must be made within seventy (70) calendar days (or such other time period as mutually agreed to between the Contracting Officer and the Contractor) after Contracting Officer notification of such completion, assuming the Contractor has submitted a voucher for payment within ten (10) calendars days after the Contracting Officer's determination. If the Contractor is delayed in submitting a voucher beyond the ten (10) calendar days, payment will incur a day-for-day delay.

When submitting a voucher for payment of the annual award fee earned (effective with the 2015 PEMP), the Contractor shall first deduct the amount of provisional fee previously paid by the Government for the twelve (12)-month evaluation period. In the event that fee overpayment results from the provisional fee payment provided for in this clause, the Contractor shall reimburse the unearned fee overpayment upon notification from the Contracting Officer in accordance with the Section I Clause I.65 entitled, "FAR 52.232-17, Interest."

- (f) Contractor Self-assessment: Following each evaluation period, the Contractor may submit a self-assessment, provided such assessment is submitted within ten (10) calendar days after the end of the period. This self-assessment shall address both the strengths and weaknesses of the Contractor's performance during the evaluation period. Where deficiencies in performance are noted, the Contractor shall describe the actions planned or taken to correct such deficiencies and avoid their recurrence. The Contracting Officer will review the Contractor's self-assessment, if submitted, as part of its independent evaluation of the Contractor's management during the period.
- (g) Provisional Payment of Fee:
- (1) Notwithstanding any other term or condition of this contract to the contrary, this clause applies to and has precedence over all other terms and conditions of the contract that provide for provisional payment of fee.
 - (2) The Contractor must notify the Contracting Officer immediately if it believes any incongruence exists between this clause and any other term or condition of this Contract that provides for provisional payment of fee. If a term or condition of this Contract provides for provisional payment of fee but fails to include all of the requirements of this clause, that term or condition will be considered to include the omitted requirements.
 - (3) This clause conforms to the *Federal Acquisition Regulation* and Department of Energy fee policy and constructs. The following definitions and concepts apply.
 - (i) *Price* means cost plus any fee or profit applicable to the Contract.
 - (ii) The terms *profit* and *fee* are synonymous.
 - (iii) *Incentive* means a term or condition whose purpose is to motivate the Contractor to provide supplies or services at lower costs, and in certain instances with improved delivery or technical performance, by relating the amount of profit or fee earned to the Contractor's performance.
 - (iv) *Earned fee* for an incentive means fee due the Contractor by virtue of its meeting the Contract's requirements entitling it to fee. Earned fee does not occur until the Contractor has met all conditions stated in the Contract for earning fee.
 - (v) *Available fee* for an incentive means the fee the Contractor might earn but has not yet earned.
 - (vi) *Provisional payment of fee* for an incentive means the Government's paying available fee for an incentive to the Contractor for making progress towards meeting the performance measures for the incentive before the Contractor has earned the available fee.
 - (vii) *Provisional payment of fee* has no implications for the Government's eventual determination that the Contractor has or has not earned the

associated available fee. Provisional payment of fee is a separate and distinct concept from earned fee. The Contractor could, for example, receive 100 percent of possible provisional fee payments yet not earn any fee (the Contractor would be required to return all of the provisional fee payments). The Contractor could, for example, receive zero percent of possible provisional fee payments yet earn the entire amount of available fee (it would not receive any fee payments until the Government's determination that the Contractor had earned the associated available fee for the incentive).

- (viii) *Clause* means a term or condition used in this Contract.
- (4) This Contract's price, incentives included in its price, and all other terms and conditions reflect the Government's and the Contractor's agreement to link, to the maximum extent practical, the Contractor's earning of fee to its achievement of final outcomes rather than interim accomplishments.
- (5) Certain terms and conditions of this Contract provide for provisional payment of fee for certain incentives. Other terms and conditions of this Contract provide for each such incentive the requirements the Contractor must meet to earn the fee linked to the incentive. The terms and conditions of this Contract that provide for provisional payment of fee for certain incentives include for each such incentive the requirements the Contractor must meet before the Government is obligated to pay fee, provisionally, to the Contractor and for the Contractor to have any right to retain the provisionally paid fee.
- (6) The Contracting Officer, at his/her sole discretion, will determine if the Contractor has met the requirements under which the Government will be obligated to pay fee, provisionally, to the Contractor and for the Contractor to have any right to retain the provisionally paid fee.
- (7) If the Contracting Officer determines the Contractor has not met the requirements to retain any provisionally paid fee and notifies the Contractor, the Contractor must return that provisionally paid fee to the Government within thirty (30) days:
- (i) The Contractor's obligation to return the provisional paid fee is independent of its intent to dispute or its disputing the Contracting Officer's determination; and
 - (ii) If the Contractor fails to return the provisionally paid fee within thirty (30) days of the Contracting Officer's determination, the Government, in addition to all other rights that accrue to the Government and all other consequences for the Contractor due to the Contractor's failure, may deduct the amount of the provisionally paid fee from amounts it owes under invoices; or any other amount it owes the Contractor for payment, financing, or other obligation.
- (8) If the Contractor has earned fee associated with an incentive in an amount greater than the provisional fee the Government paid to the Contractor for the incentive, the Contractor will be entitled to retain the provisional fee and the Government will pay the difference between the earned fee and the provisional fee.

Provisional Fee Procedures: Pending satisfactory performance, the Contractor is authorized to invoice for provisional fee once per month, at a rate of \$425,000 per month (calculated as one-twelfth of 50 percent of the \$10,200,000 maximum annual available PEMP fee). Beginning in 2017 through 2022 the provisional fee amount will be reduced

to \$328,025 per month (calculated as one-twelfth of 50 percent of the \$7,872,603 maximum available PEMP fee). However, the Contracting Officer may reduce the amount in accordance with Section B, Clause B.8, "Provisional Payment of Fee," paragraph (g).

B.9 CONDITIONAL PAYMENT OF FEE, PROFIT, OR INCENTIVES

In order for the Contractor to be eligible to earn all otherwise available fee under this Contract, the Contractor must meet the minimum requirements in paragraphs (a) and (b) of this section. If the Contractor does not meet the minimum requirements, the Fee Determining Official (FDO) (the Manager, U.S. Department of Energy, Office of River Protection (ORP) or designee), may make a unilateral determination to reduce the earned Award Fee under this Contract as follows:

- (a) Minimum requirements for Environment, Safety, Quality, and Health (ESQ&H) Program: The Contractor shall develop, obtain DOE approval, and implement an Integrated Safety Management System (ISMS) in accordance with the provisions of Section I.Clause I.105 entitled, "Integration of Environment, Safety and Health into Work Planning and Execution." The minimal performance requirements will be set forth in the approved ISMS description document or similar document. If the Contractor fails to obtain approval of the ISMS or fails to achieve the minimum performance requirements of the System, the FDO, at his/her sole discretion, may reduce the total earned award fee payment for Project Management Incentive and Cost Incentive (Table B-2-D-1) during the Award Fee period in which the incident occurred.
- (b) Minimum Requirements for Catastrophic Event: If, in the performance of this Contract, there is a catastrophic event (e.g., a fatality, or a serious workplace-related injury or illness to one or more Federal, Contractor, or subcontractor employees or the general public, loss of control over classified or special nuclear material, or significant damage to the environment), the FDO, at his/her sole discretion, may reduce the earned Award Fee payment for Project Management Incentive and Cost Incentive (Table B-2-D-1) during the Award Fee period in which the incident occurred. In determining any diminution of fee resulting from a catastrophic event, the FDO, at his/her sole discretion, will consider whether willful misconduct and/or negligence contributed to the occurrence and will take into consideration any mitigating circumstances presented by the Contractor or other sources.

B.10 PROJECT SERVICES ALLOCATION

Project Services costs are allocated to specific facilities (LBL, HLW, and PT) in accordance with the final actual annual cost proportion of the work performed across all facilities. The target cost for CLIN 1.0 is based on an estimation of the project services cost to be allocated to these CLINs. The actual amount of this allocation will vary based on the actual cost of work performed across all facilities in any given year. These actual costs will be reconciled on an annual basis at the end of each fiscal year to reflect actual percentage of the project services cost to be allocated to LBL (including CLIN 2.0), HLW, and PT, respectively. This reconciliation will be cost neutral to the CLIN 1.0 cost incentives. The table below is the basis for the percentages incorporated into the target costs based upon Annual Funding Profiles. Variations to these percentages after annual reconciliation will constitute a basis for equitable relief to the Contractor and/or a basis for a claim by the Government. See Clause H.53(g) for additional details.

| Project Services Allocation | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| CLINs 1.0 and 2.0 Percent of Project Services Allocation | 70% | 73% | 80% | 86% | 85% | 78% | 57% |

B.11 FEE RISK ALLOCATION

Except as set forth below, fee risks for changes under Clause I.82, "Changes – Cost Reimbursement – Alternate III," and other applicable Contract provisions addressing equitable adjustment, shall be in accordance with applicable Contract provisions(s). Equitable adjustments for the below-specified situations shall be subject to further limitations, clarifications, and modifications:

(a) Site Services and Interface Control Documents (ICD):

A contract change (subject to equitable adjustment in accordance with Clause I.82) shall be deemed to have occurred as the result of any changes in requirements regarding use of site services, including revisions to ICDs, both express (directed) and constructive. The Contractor shall use its best reasonable efforts to minimize and mitigate any such performance impacts.

(b) Waste Delivery:

A contract change (subject to equitable adjustment in accordance with Clause I.82) shall be deemed to have occurred as the result of failure by the Government to deliver waste feed in conformance to waste feed specifications, and/or failure to deliver feed in the quantity and/or timing necessary to support commissioning activities in accordance with Section C, "Statement of Work," Standard 5, "Commissioning."

(c) Changes in Laws, Regulations, Codes, Standards, and Directives:

A contract change (subject to equitable adjustment in accordance with Clause I.82) shall be deemed to have occurred as the result of any changes in laws, regulations, codes, standards, and directives (other than regulatory actions covered by paragraph (d) below) in accordance with the Changes clause.

(d) Regulatory Actions:

(1) A Contract change (subject to equitable adjustment in accordance with Clause I.82) is deemed to have occurred upon unreasonable regulatory delays/interpretations/demands/new requirements in responding to and/or approving permit and other applications ("Regulatory Actions") after reasonable collaboration with DOE to avoid such impacts. This includes, but is not limited to, impacts resulting from implementation of Maximum Available Control Technology standards.

(2) Absent Contractor's reasonable collaboration with DOE to avoid such impacts, Contractor shall not be entitled to an equitable adjustment to the Total Estimated Contract Cost or any fee for the first \$5,000,000 of impact for any such single regulatory action (per occurrence).

(e) Items Excluded from Statement of Waiver and Release of Claims for Modification A143:

The Contractor will not request, seek, or claim entitlement to any fee for the first \$350,000,000 of reasonable, allocable, and allowable costs for the items identified in paragraph (c) of the "Statement of Waiver and Release of Claims" contained in Modification A143. The Contracting Officer will determine those reasonable, allocable, and allowable costs pursuant to the applicable terms of the contract. For a list of applicable inclusions and exclusions see Section J, "List of Attachments," Attachment J, "Advance Understanding on Costs," Subattachments A and B.

(f) Items Excluded from Statement of Waiver and Release of Claims for Modification 384:

The Contractor may seek an adjustment to the TECC and contract schedule, but will not request, seek or claim entitlement to any additional fee for the first \$50,000,000 of cumulative reasonable, allocable and allowable costs incurred individually for each of the items identified in paragraphs 2 (Commercial Grade Dedication), 4 (LAW Confinement Ventilation System ("C5V") and 9 (DOE Letter of Technical Direction) of the List of Exclusions from Release and Waiver of Claims (Mod 384). For each of the individual items listed above, if the cost of the adjustment(s) exceeds \$50,000,000 for any individual item, the contractor may seek additional fee on any costs exceeding \$50,000,000. The Contracting Officer will determine those reasonable, allocable and allowable costs pursuant to the applicable terms of the contract.

(g) Disposition of Government Property Credit:

The estimated cost of the Contract assumes that the acquisition cost or salvage value, as applicable, of government property, such as and including spare parts and supplies not consumed during commissioning and limited operations and construction equipment purchased as a direct cost to support the project, would be credited against the final actual cost in accordance with FAR 52.245-5, "Government Property (Cost-Reimbursement, Time-and-Material, or Labor-Hour Contracts)", paragraph (i). This credit shall be determined upon submission of inventory schedules to the Contracting Officer. The intent of the provision is to adjust the final actual cost to eliminate the cost of Government Property that is to be or has been transferred off the Government Property records of the Contractor for the purposes of calculating the final Award Fee – Cost Incentive fee determination.

The Contracting Officer will make specific decisions as to which equipment, spare parts and supplies will be retained for future use by the Government. For equipment, spare parts and supplies which are deemed excess and not to be retained by the Government, the Contractor will dispose of those materials in a cost effective manner. The proceeds will be used to offset contract costs.

(h) RFP Deficiencies and Due Diligence Review:

Except as otherwise set forth in (a), (b), (c), (d), (e) and (f) above, the Contractor shall bear the full fee risk for cost and schedule impacts resulting from any actual or purported deficiencies, whether or not known to Contractor and whether or not such deficiencies were identified by Contractor during its due diligence review under Section C.5. , "Description of Contract Requirements and Deliverables," paragraph (a)(3), which arise out of solicitation defects, specification defects, Conceptual Design defects, or deficient historical pricing or cost estimate information in any form.

(i) Aging and Obsolescence Cost(s)

The estimated cost for CLIN 1 includes an amount of \$29,100,000 for aging and obsolescence. Should the costs be greater than \$29,100,000, the contractor shall be reimbursed all allowable costs, but the excess costs shall not be counted against the target cost for CLIN 1; i.e., the additional costs shall be fee neutral.

B.12 ATTACHMENTS

- B-1, "Incentive Fee Summary Table"
- B-2, "Incentive Fee Details"

- B-2-A, “Incentive Fee A – Final Fee Determination for Work Prior to Modification No. A143”
- B-2-B, “Incentive Fee B – Final Fee Determination for Work from Modification No. A143 through Modification No. 384”
- B-2-C, “Incentive Fee C – Fixed Fee Payment”
- B-2-D, “Incentive Fee D –Award Fee”
- B-2-E, “Incentive Fee E – LBL Construction Complete Performance Based Incentives ”
- B-2-F, “Incentive Fee F – Commission LBL in the DFLAW Configuration Performance Based Incentive ”
 - B-2-F-1, “Graph CLIN 1.0 Hot Commissioning Schedule Incentive”
- B-2-G, “Incentive Fee G – CLIN 1.0 Cost Share Incentive”
 - B-2-G-1, “Graph Cost Share Incentive Fee CLIN 1.0”
- B-2-H, “Incentive Fee H – CLIN 2.1 DFLAW Design Completion Fee.”

B.12 - Attachment B-1, Incentive Fee Summary Table

| Incentive Element | Title | Fee type | Performance Measure | Amount of Fee Available | Amount Paid |
|-------------------|--|-----------|---|-------------------------|----------------------|
| B-2-A | Final Fee Determination for work prior to Mod No. A 143 | Fixed | Determined by Contracting Officer | | \$102,622,325 |
| B-2-B | Earned Activity Milestone Completion Incentive Fees, REA Settlement Fees, Enhanced Incentive Fee, Earned Facility Milestone Completion Schedule Fee, and Award Fee earned before mod (TBD) | Fixed | Determined by Contracting Officer | | * \$131,573,553 |
| | Pending Activity Milestones | Fixed | Determined by Contracting Officer | \$6,667,000 | |
| B-2-C | Fixed Fee Payment | Fixed | | \$60,000,000 | |
| | | | TOTAL B-2-C | \$60,000,000 | |
| B-2-D | Award Fee (From Mod (TBD) to December 2022). | Award Fee | To be established prior to each calendar year. Will be based upon DOE goals set for HLW and PT and Project Management. | | |
| | | | CY 2016 | \$10,200,000 | |
| | | | CY2017 | \$7,872,603 | |
| | | | CY 2018 | \$7,872,603 | |
| | | | CY2019 | \$7,872,603 | |
| | | | CY 2020 | \$7,872,603 | |
| | | | CY2021 | \$7,872,603 | |
| | | | CY 2022 | \$7,872,605 | |
| | | | Total B-2-D | \$57,435,620 | |
| B-2-E | LBL Construction Complete Performance Based Incentives | | Interim Milestones | | |
| | | PBI | Install Caustic Scrubber Vessel Milestone | \$4,275,000 | |
| | | PBI | Complete Final Assembly of Melter Lid #1 Milestone | \$4,275,000 | |
| | | PBI | Complete Final Assembly of Melter Lid #2 Milestone | \$4,275,000 | |
| | | PBI | Complete LAW Bulk Cable EL+ 48 Milestone | \$4,275,000 | |
| | | PBI | Final Milestone | | |
| | | | Final LBL Construction Complete Milestone | \$51,300,000 | |
| | | | TOTAL B-2-E | \$68,400,000 | |
| B-2-F | Commision LBL in the DFLAW Configuration Performed Based Incentive | | Interim Milestones | | |
| | | PBI | Approval of LAW DSA | \$6,650,000 | |
| | | PBI | LAB Startup Testing Complete | \$6,650,000 | |
| | | PBI | LAW Startup Testing Complete | \$6,650,000 | |
| | | PBI | EMF Startup Testing Complete | \$6,650,000 | |
| | | PBI | LAB Readiness to Operate | \$6,650,000 | |
| | | PBI | LAW DOE HQ ORR Complete | \$6,650,000 | |
| | | PBI | Final Milestone | | |
| | | | Successful Demonstration of Hot Commissioning | \$119,700,000 | |
| | Commission LBL in the DFLAW Configuration Performance Based Schedule Incentive/disincentive | | Based upon actual completion date of Successful Demonstration of Hot Commissioning | +/- \$60,000,000 | |
| | | | TOTAL B-2-F | \$159,600,000 | |
| B-2-G | CLIN 1.0 Cost Share Incentives | IF | Cost sharing incentive/disincentive based on final CLIN 1 cost above or below the Target cost of \$3,640,400,000 | +/- \$50,000,000 | |
| B-2-H | DFLAW design completion | PBI | Complete the constructability review milestone | \$0 to \$500,000 | \$500,000 |
| | | PBI | Prepare and issue DFLAW EMF safety basis change package | \$0 to \$500,000 | \$500,000 |
| | Cost Share incentive for CLIN 2.1 | IF | DOE and the contractor will share cost on CLIN 2.1 final total cost at above or below the Target Cost of \$75M in the ratio of 80% DOE and 20% Contractor. Subject to the maximum combined fee limitation of \$9,000,000. | \$8,000,000 | |
| | | | TOTAL B-2-H | \$9,000,000 | |
| | | | TOTAL FEE AVAILABLE | \$360,102,620 | |
| | | | TOTAL FEE EARNED | | \$235,195,878 |

*This total will be adjusted to reflect pending milestones listed in Attachment B-2-B, Incentive Fee B that are currently under evaluation. (The total of the three milestones is \$6,667,000)

Note: TOTAL FEE AVAILABLE does not include cost share and schedule incentives. These incentives will be determined based up completion of CLINs 1.0 and 2.1 performance.

Attachment B-2-A, Incentive Fee A – Final Fee Determination for Work Prior to Modification No. A143

The final fee determination for all Contract performance prior to Modification No. A143 is \$102,622,325. This is composed of \$54,500,000 of previously paid fee for schedule milestones (which is considered earned), and \$48,122,325 (M147) of previously paid provisional fee. The \$48,122,325 (M147) is earned based on the completion of the significant construction milestones in the following table.

| Construction Milestones | Fee (\$) |
|--|---------------------|
| Low-Activity Waste Facility | |
| Completion of Facility Superstructure – March 2007 <u>Description:</u> Completed installation of structural steel frame, roofing and siding (dried-in). | \$25,600,000 |
| Completion of Process Vessel Installation – December 2006 <u>Description:</u> Fourteen process vessels installed and accepted in the wet process cell. | \$3,200,000 |
| Completion of Canister Handling System – March 2008 <u>Description:</u> Completed canister handling system in the melter pour caves including turntables, canister elevator, receipt conveyor, bogies and monorails. | \$2,200,000 |
| Analytical Laboratory | |
| Completion of Facility Superstructure – April 2008 <u>Description:</u> Completed installation of structural steel frame, roofing and siding. | \$10,700,000 |
| Completion of Installation of Hot Cell Structures – February 2008 <u>Description:</u> Completion on physical hot cell structure, shield window frames, monorail, and coatings. | \$2,300,000 |
| Balance of Facilities | |
| Construction Complete on Steam Plant – September 2007 <u>Description:</u> Completed construction and ready for system checks | \$1,400,000 |
| Construction Complete on Cooling Tower Facilities – March 2007 <u>Description:</u> Completed construction and ready for system checks | \$1,100,000 |
| Construction Completions on Chiller Compressor Building and Systems – March 2008 <u>Description:</u> Completed building structure, support frames, major equipment installation and process piping installation. | \$1,622,325 |

Attachment B-2-B, Incentive Fee B – Final Fee Determination for Work from Modification No. A143 through Modification 384

The final fee determination for all Contract performance from Modification No. A143 to Modification No.(384) is \$131,573,553*. This is composed of \$72,926,000 of previously paid fee for Schedule Milestones, \$268,996 for Requests for Equitable Adjustments (REA), \$4,500,000 for Enhancement Incentives, \$4,000,000 for Facility Milestone Completion, and \$49,878,557 for Award Fee Payments.

| | | | | | | |
|-----------------|------------|--------------|--|----------|------|----------------------|
| PTF-01 | 1GP14CFM01 | Engineering | DOE Approval of M-12 Closure | 12/30/09 | 2009 | \$ 3,875,000 |
| HLW-05 | 1GH13C1145 | Construction | Erect Structural Steel EL 0 Ft - EL 14 Ft | 01/20/10 | 2010 | \$ 4,428,000 |
| PTF-03 | 1GP15CFM03 | Engineering | PD Rack Design - IFC Complete | 01/28/10 | 2010 | \$ 4,428,000 |
| LAB-04 | 1GT47P1036 | Plant Equip | Receive Autosampler (ASX) Equipment | 02/23/10 | 2010 | \$ 4,428,000 |
| LAW-03 | 1GL46P1030 | Plant Equip | Melter #2 Lid+Bal of Components Ready for Assembly | 06/15/10 | 2010 | \$ 4,428,000 |
| BOF-02 | 1GB5MC1043 | Construction | Complete Construction Water Treatment Building | 07/27/10 | 2010 | \$ 4,428,000 |
| HLW-01 | 1GHZZE0941 | Engineering | Complete HVAC Design (Title II) | 09/15/10 | 2010 | \$ 4,428,000 |
| HLW-03 | 1GHZZE1043 | Engineering | Civil Engineering Design Complete (Title II) | 02/23/11 | 2011 | \$ 2,500,000 |
| LAB-03 | 1GT47C1356 | Construction | Complete Installation of Autosampler System | 10/10/11 | 2011 | \$ 2,500,000 |
| HLW-07 | 1GH15C1247 | Construction | Complete Pipe and Hanger Installation in PA06 | 12/06/11 | 2011 | \$ 2,500,000 |
| BOF-03 | 1GB5JC1046 | Construction | Complete Chiller Compressor Plant Construction | 03/22/12 | 2012 | \$ 2,858,000 |
| HLW-12 | 1GH14C1352 | Construction | Complete Annex Building Weathering | 04/30/13 | 2013 | \$ 2,500,000 |
| PTF-11 | 1GP12CFM11 | Construction | Complete 5th Lift Walls | 05/09/13 | 2013 | \$ 2,500,000 |
| SUBTOTAL | | | | | | \$ 72,926,000 |

Pending Activity Milestones

| | | | | | | |
|----------------|------------|--------------|--|----------|------|----------------------|
| BOF-01 | 1GB47P1040 | Plant Equip | Receive Anhydrous Ammonia System* | 02/25/11 | 2011 | \$ 2,500,000 |
| HLW-09 | 1GH27C1249 | Construction | Set HEPA Filter Housing Installation at EL 14 Ft* | 08/31/11 | 2011 | \$ 2,500,000 |
| BOF-05 | 1GBC2S1463 | Start Up | Complete Elec Distrib Sys Testing MVE (Site Energization) (216)* | 05/29/15 | 2015 | \$ 1,667,000 |
| TOTAL * | | | | | | \$ 79,593,000 |

*The final fee determination will be adjusted to reflect pending activity milestones noted above that are currently under evaluation; final payment will be subject to DOE approval. Evaluation for the three milestones (BOF-01, HLW-09 and BOF-05) will utilize the Section J criteria contained in the contract before modification (384). Those criteria will be used by the Contracting Officer to evaluate if milestone completion criteria have been achieved and certify payment.

The following table reflects settlement of fee-bearing REAs.

| REA Number | REA Title | Contract Modification No. | Fee Amount |
|--------------|--|---------------------------|------------------|
| 2010-011 | E-Verify | 200 | \$9,661 |
| 2010-015 | LBL 2015 | 203 | \$44,979 |
| 2010-016 | Environmental Management System (Executive Orders 13423 and 13514; DOE Orders 430.2B and 450.1A) | 251 | \$30,606 |
| 2011-004 | LSIT Phase 1 | 299 | \$183,750 |
| Total | | | \$268,996 |

Enhanced Incentive Fee – Sodium Reduction

Final Enhanced Fee for Sodium Reduction was determined based on the Bechtel National, Inc.'s (BNI) success in reducing sodium. This determination of sodium reduction by BNI was based upon completion of initial model and bench scale testing demonstrating a reduction of sodium by 25,446 metric tons or 30 percent. The DOE Contracting Officer approved fee payment of \$4,500,000 on August 6, 2015 (15-WTP-0112, "Contract No. DE-AC27-01RV14136 – Acceptance of Completion of Enhancement Incentive E.2 Sodium Reduction – Initial Model and Bench Scale Testing for Runs Demonstrating Sodium Reduction (30%)").

The following table governs the Facility Milestone Completion Incentive Fee. The fee earned and was payable when the Contracting Officer determined the milestones were completed in accordance with the "Facility Milestone Definition Sheets" set forth in the Contract prior to modification (384).

Earned Facility Milestone Completion Schedule Fee.

| Facility | Activity Code | Facility Milestone Description | Schedule Date | Fee Amount |
|----------|---------------|-------------------------------------|-------------------|--------------------|
| LAB | 4TT0999 | Substantially Complete Construction | December 31, 2012 | \$4,000,000 |
| | | Total | | \$4,000,000 |

The following table lists the available and earned Award Fee post modification A143 to Modification No.(384).

| Cal. Year (CY) | Award Fee Period | B.1 Award Fee - Project Mgmt Incentive | | B.2 Award Fee - Cost Incentive | | Total Award Fee | |
|-------------------|---------------------|--|---------------------|--------------------------------|---------------------|---------------------|---------------------|
| | | Available | Earned* | Available | Earned* | Available | Earned |
| 2009 | 2009-A | \$2,188,838 | \$1,584,719 | \$4,500,000 | \$2,925,000 | \$6,688,838 | \$4,509,719 |
| | 2009-B | \$2,188,837 | \$1,349,418 | \$4,500,000 | \$2,250,000 | \$6,688,837 | \$3,599,418 |
| 2010 | 2010-A | \$2,000,000 | \$1,379,000 | \$4,300,000 | \$2,580,000 | \$6,300,000 | \$3,959,000 |
| | 2010-B | \$2,000,000 | \$1,521,600 | \$4,300,000 | \$2,623,000 | \$6,300,000 | \$4,144,600 |
| 2011 | 2011-A | \$2,000,000 | \$1,348,000 | \$4,300,000 | \$2,795,000 | \$6,300,000 | \$4,143,000 |
| | 2011-B | \$2,000,000 | \$1,426,000 | \$4,300,000 | \$2,451,000 | \$6,300,000 | \$3,877,000 |
| 2012 | 2012-A | \$3,150,000 | \$1,571,850 | \$3,150,000 | \$1,549,800 | \$6,300,000 | \$3,121,650 |
| | 2012-B | Waived | at the | request | of the | Contractor | |
| 2013 | 2013-A | \$3,780,000 | \$1,869,210 | \$2,520,000 | \$1,254,960 | \$6,300,000 | \$3,124,170 |
| | 2013-B | \$5,300,000* | \$2,745,000 | \$1,000,000* | \$280,000 | \$6,300,000 | \$3,025,000 |
| 2014 | 2014-A | \$5,300,000* | \$3,580,000 | \$1,000,000* | \$390,000 | \$6,300,000 | \$3,970,000 |
| | 2014-B | \$3,780,000 ** | \$2,671,200 | \$2,520,000 ** | \$1,423,800 | \$6,300,000 | \$4,095,000 |
| 2015 | | \$9,100,000*** | \$5,685,000 | \$3,500,000*** | \$2,625,000 | \$12,600,000 | \$8,310,000 |
| Total | | \$42,787,675 | \$26,730,997 | \$39,890,000 | \$23,147,560 | \$82,677,675 | \$49,878,557 |

Attachment B-2-C, Incentive Fee C – Fixed Fee Payment

A \$60,000,000 fixed fee payment, in satisfaction of all fee entitlement for work done under this Contract from the date of Modification No. A143 to Modification No. (384), not included in Attachments B-2-A and B-2-B, including but not limited to, any fee entitlement due under vessel testing REAs (directed changes for HLW and PT facilities). Fee may be invoiced at the time of Modification No. 384 execution.

Includes resolution of cost and fee for vessel testing REAs:

- REA 2011-009 Large-Scale Integrated Testing (LISTT Phase II)
- REA 2013-005 Full-Scale Vessel Testing RLD-8 only
- REA 2014-003 Full-Scale Vessel and Proof of Concept Testing Beyond RLD-8.

Attachment B-2-D, Incentive Fee D – Award Fee

Award Fee: Beginning in calendar year (CY) 2016 and through the award fee periods specified below. Award fee may be earned by achieving performance objectives set forth in the WTP Performance Evaluation and Measurement Plan (PEMP). See Section B.8, “Award Fee Administration,” for award fee administration requirements under this Contract.

D.1, Project Management and Cost Incentive

The Project Management Incentive is fully described in the PEMP based on subjective and/or objective evaluation of important project management performance elements to be developed annually and set forth in the PEMP. Important emphasis areas will include a collection of diverse emphasis areas, such as general project management considerations, labor management, safety, quality management, technical issue resolution, engineering and construction performance, procurements process effectiveness, and environmental performance. Annual PEMPs will also include objective project goals for the HLW and PT facilities.

The cost incentive is fully described in the PEMP based on subjective and/or objective evaluation of important cost performance elements to be developed semi-annually and set forth in the PEMP. The primary objective of the maximum available award fee – cost incentive is to incentivize the Contractor to achieve a final actual cost that is equal to or less than the Total Estimated Contract Cost (TECC). The TECC for the purposes of this incentive is defined as the Contractor’s performance management baseline plus management reserve. TECC is also referred to under earned value management system as the total allocated budget.

The cost incentive will be evaluated based on a combination of subjective and/or objective evaluation of important cost performance elements to include, but not be limited to cost performance indices, schedule performance indices, management reserve utilization, number and value of variances, and estimate at completion based on the monthly status report.

Table B-2-D-1. Incentive Fee D – Maximum Available Award Fee.

| Calendar Year | Award Fee Period | B.1 Award Fee – Project Management Incentive | | B.2 Award Fee – Cost Incentive | | Total Award Fee | | |
|---------------|------------------|--|--------|--------------------------------|--------|---------------------|--------|------------|
| | | Available | Earned | Available | Earned | Available | Earned | Unearnable |
| 2016 | 2016 | \$7,200,000 | TBD | \$3,000,000 | TBD | \$10,200,000 | TBD | |
| 2017 | | | | | | \$7,872,603 | | |
| 2018 | | | | | | \$7,872,603 | | |
| 2019 | | | | | | \$7,872,603 | | |
| 2020 | | | | | | \$7,872,603 | | |
| 2021 | | | | | | \$7,872,603 | | |
| 2022 | | | | | | \$7,872,605 | | |
| Total | | | | | | \$57,435,620 | | |

Attachment B-2-E, Incentive Fee E – LBL Construction Complete Performance Based Incentives

The following fee incentive will be earned and payable when the Contracting Officer determines the milestone has been completed in accordance with Section J, "List of Attachments," Attachment P, "Completion Definition Sheets for Incentive Fees," of this contract.

For purposes of determining fee payments, the activities, including all identified predecessor activities, listed in Section J "List of Attachments," Attachment P "Completion Definition Sheets for Incentive Fees" (the Identified Activities), describe the work to be completed to meet the associated fee milestone and describe the criteria by which DOE will evaluate the Contractor's satisfactory completion of the associated fee milestone. Activities in addition to the Identified Activities will not be used as a basis to deny payment of the associated fee. Contractor's satisfactory completion of the fee milestone requires that completion of the Identified Activities be in compliance with the terms and conditions of the contract.

1. DOE will review and either approve or reject the Contractor's declaration within thirty (30) calendar days of submission. In the event DOE rejects the Contractor's declaration, DOE will provide a detailed basis for rejection.
2. In the event the Contractor's declaration is rejected by DOE, the Contractor shall correct any deficiencies and resubmit a revised "Declaration of Completion." The final completion date for purposes of the incentive provisions contained in this attachment will become fixed as of the date of DOE's final approval, less the time consumed in the DOE approval process.
3. The fee for the Engineering, Procurement, and Construction (EPC) interim and final milestones contained in this attachment B-2-E will be earned and payable when the Contracting Officer determines the milestone has been completed as described in the milestone definition sheets contained in Section J, "List of Attachments," Attachment P, "Completion Definition Sheets for Incentive Fees."

Table B.2-E

| LBL Construction Complete Performance Based Incentive Fee | |
|--|-------------|
| LBL Construction Complete Performance Based Incentive Fee Milestones | Fee (\$) |
| LBL Construction Complete Interim and Final Milestone Completion Incentive Fee | |
| <u>A) Interim LBL Construction Complete PBI Description:</u> | |
| 1) Install Caustic Scrubber Vessel | |
| - 02/20/2017 (Milestone Date) | \$4,275,000 |
| - After 02/20/2017 and on or before 03/20/2017 | \$3,275,000 |
| - After 03/20/2017 and on or before 04/20/2017 | \$2,275,000 |
| - After 04/20/2017 and on or before 05/20/2017 | \$1,275,000 |
| - After 05/20/2017 Move unearned portion of fee to LAW Construction Complete Milestone | \$ |
| 2) Complete Final Assembly of Melter #1 | |
| - 05/13/2017 (Milestone Date) | \$4,275,000 |
| - After 05/13/2017 and on or before 06/13/2017 | \$3,275,000 |
| - After 06/13/2017 and on or before 07/13/2017 | \$2,275,000 |
| - After 07/13/2017 and on or before 08/13/2017 | \$1,275,000 |
| - After 08/13/2014 Move unearned portion of fee to LAW Construction Complete Milestone | |
| 3) Complete Final Assembly of Melter #2 | |
| - 09/22/2017 (Milestone Date) | \$4,275,000 |
| - After 09/22/2017 and on or before 10/22/2017 | \$3,275,000 |
| - After 10/22/2017 and on or before 11/22/2017 | \$2,275,000 |

| | |
|---|--|
| <ul style="list-style-type: none"> - After 11/22/2017 and on or before 12/22/2017 - After 12/22/2017 Move unearned portion of fee to LAW Construction Complete Milestone | \$1,275,000 \$ |
| 4) Complete LAW Bulk Cable EL +48 | |
| <ul style="list-style-type: none"> - 02/13/2018 (Milestone Date) - After 02/13/2018 and on or before 03/13/2018 - After 03/13/2018 and on or before 04/13/2018 - After 04/13/2018 and on or before 05/13/2018 - After 05/13/2018 Move unearned portion of fee to LAW Construction Complete Milestone | \$4,275,000 \$3,275,000 \$2,275,000 \$1,275,000 |
| <p>At the close of the three month period (90 Calendar Days after the Milestone Completion Date) any unearned Interim Performance Based Incentive fee amount will be moved to the LAW Construction Complete PBI and will be earnable if LAW Construction Complete is achieved by the contract date. If LAW is not construction complete by the contract date any unearned EPC Interim Performance Based Incentive fee is forfeited.</p> | |
| <p>B) <u>Final LBL Construction Complete Milestone Description</u></p> | |
| <p><u>LAW Construction Complete:</u></p> | |
| <p>75% of the LBL Construction Complete PBI pool will be earned upon LAW Construction Complete per Section J, "List of Attachments," Attachment P, "Completion Definition Sheets for Incentive Fees," by June 28, 2018. The LAW Construction Complete PBI is date dependent. Fee will be decreased \$3M per month for five months if date not met. For a LAW Construction Complete date later than November 28, 2018, 70% (\$35.9M) of the PBI is forfeited. The minimum fee earned amount for LAW Construction Complete is 30% or \$15.4M, which is subject to further reduction under the cost share incentive.</p> | |
| <ul style="list-style-type: none"> - June 28, 2018 (Milestone Date) - After June 28, 2018 and on or before July 28, 2018 - After July 28, 2018 and on or before August 28, 2018 - After August 28, 2018 and on or before September 28, 2018 - After September 28, 2018 and on or before October 28, 2018 - After October 28, 2018 and on or before November 28, 2018 - After November 28, 2018 | \$51,300,000 + (+ any unearned Interim EPC PBI) \$48,300,000 \$45,300,000 \$42,300,000 \$39,300,000 \$36,300,000 \$15,400,000 |
| \$15,400,000 Minimum | |
| <p>Minimum Fee under LAW, BOF and LAB EPC Incentive Fee (exclusive of any EPC Interim PBIs)</p> | |
| \$68,400,000 | |
| <p>TOTAL LBL Construction Complete Performance Based Incentive Fee</p> | |

Provisional payment of fee is authorized for the "LBL Construction Complete Performance Based Incentive Fee". Provisional fee of 50% of the total Performance Based Incentives (PBIs) will be paid monthly upon a determination by the Contracting Officer that the Contractor is making satisfactory progress toward completion of the applicable incentive. Any incentive (either cost or schedule, including milestone completion incentive and cost share incentive) shall be payable within thirty (30) days of DOE acceptance in accordance with Section J, "List of Attachments", Attachment P, "Completion Definition Sheets for Incentive Fees" of this Contract. Fifty percent of the performance based incentives, both interim and final, (pro-rated on a monthly basis) for LBL Construction Complete will be paid provisionally based upon a projection of schedule completion. Final fee earned for LBL Construction Complete will be based upon the criteria set forth in the Table B-2-E, Paragraph B, above.

Note: Any cost and/or schedule incentive provisionally paid is not finally earned by the Contractor until the Contracting Officer authorizes the Contractor to submit a final incentive invoice. If the LBL

Construction Completion is not successfully completed due to actions by the Contractor, all provisionally earned incentives will be forfeit and shall be returned to DOE within thirty (30) days of written request by the Contacting Officer, in accordance with Clause I.65 FAR 52.232-17, "Interest" (June 1996).

Attachment B-2-F, Incentive Fee F – Commission LBL in the DFLAW Configuration Performance Based Incentive

The following fee incentives and associated fee will be earned and payable when the Contracting Officer determines the milestone has been completed in accordance with Section J, "List of Attachments," Attachment P, "Completion Definition Sheets for Incentive Fees," of the contract.

For purposes of determining fee payments, the activities, including all identified predecessor activities, listed in Section J "List of Attachments," Attachment P "Completion Definition Sheets for Incentive Fees" (the Identified Activities), describe the work to be completed to meet the associated fee milestone and describe the criteria by which DOE will evaluate the Contractor's satisfactory completion of the associated fee milestone. Activities in addition to the Identified Activities will not be used as a basis to deny payment of the associated fee. Contractor's satisfactory completion of the fee milestone requires that completion of the Identified Activities be in compliance with the terms and conditions of the contract.

1. DOE will review and either approve or reject the Contractor's declaration within thirty (30) calendar days of submission. In the event DOE rejects the Contractor's declaration, DOE will provide a detailed basis for rejection.
2. Upon approval of the declaration by DOE, the Contractor shall submit a summary of the cost incurred and the incentive fee due for DOE review and approval to invoice the fee. DOE shall authorize the Contractor to invoice the final incentive fee within ten (10) calendar days or provide a detailed basis for withholding authorization. Notwithstanding the ten (10) calendar day period in the preceding sentence, DOE will conduct a comprehensive review of the contractor's summary of cost incurred within ninety (90) days of invoice receipt. The final incentive fee amount is subject to adjustment for any findings resulting from DOE's comprehensive cost review. The completion date will become fixed for purposes of the incentive provisions of "LBL Completion" (CLIN 1.0) of this Contract as the date specified by the Contractor in its declaration and approved by DOE.
3. In the event the Contractor's declaration is rejected by DOE:
 - a. With respect to the cost incentive provisions contained herein, costs incurred after submission of the Contractor's "Declaration of Completion" shall be included in the calculation of the final cost against the target cost until DOE approves the declaration.
 - b. With respect to the schedule incentive provisions contained herein, the Contractor shall correct any deficiencies and resubmit a revised "Declaration of Completion." The final completion date purposes of calculation of the schedule incentive provisions contained in this attachment will become fixed as of the date of DOE's final approval less the time consumed in DOE's approval process (the number of days from receipt of the initial and subsequent, if any, "Declaration(s) of Completion" by DOE to the date DOE accepts or rejects the declaration).

Table B-2-F. Commission LBL in the DFLAW Configuration Performance Based Incentive Fee.

| LBL Startup and Commissioning Performance Based Incentive Fee | Fee (\$) |
|--|-------------|
| A) <u>Startup and Commissioning Interim Milestone PBI Description :</u> | |
| 1) ORP (SER) Approval of LAW DSA | |
| - 08/15/2018 (Milestone Date) | \$6,650,000 |
| - After 08/15/2018 and on or before 09/15/2018 | \$5,650,000 |
| - After 09/15/2018 and on or before 10/15/2018 | \$4,650,000 |
| - After 10/15/2018 and on or before 11/15/2018 | \$3,650,000 |
| - After 11/15/2018 Move unearned portion of fee to Hot Commissioning Milestone | |
| 2) LAB Startup Testing Complete | |
| - 01/20/2020 (Milestone Date) | \$6,650,000 |
| - After 01/20/2020 and on or before 02/20/2020 | \$5,650,000 |
| - After 02/20/2020 and on or before 03/20/2020 | \$4,650,000 |
| - After 03/20/2020 and on or before 04/20/2020 | \$3,650,000 |
| - After 04/20/2020 Move unearned portion of fee to Hot Commissioning Milestone | |
| 3) LAW Startup Testing Complete | |
| - 03/13/2020 (Milestone Date) | \$6,650,000 |
| - After 03/13/2020 and on or before 04/13/2020 | \$5,650,000 |
| - After 04/13/2020 and on or before 05/13/2020 | \$4,650,000 |
| - After 05/13/2020 and on or before 06/13/2020 | \$3,650,000 |
| - After 06/13/2020 Move unearned portion of fee to Hot Commissioning Milestone | |
| 4) EMF Startup Testing Complete | |
| - 04/01/2020 (Milestone Date) | \$6,650,000 |
| - After 04/01/2020 and on or before 05/01/2020 | \$5,650,000 |
| - After 05/01/2020 and on or before 06/01/2020 | \$4,650,000 |
| - After 06/01/2020 and on or before 07/01/2020 | \$3,650,000 |
| - After 07/01/2020 Move unearned portion of fee to Hot Commissioning Milestone | |
| 5) LAB Readiness to Operate | |
| - 06/08/2020 (Milestone Date) | \$6,650,000 |
| - After 06/08/2020 and on or before 07/08/2020 | \$5,650,000 |
| - After 07/08/2020 and on or before 08/08/2020 | \$4,650,000 |
| - After 08/08/2020 and on or before 09/08/2020 | \$3,650,000 |
| - After 09/08/2020 Move unearned portion of fee to Hot Commissioning Milestone | |
| 6) LAW DOE HQ ORR Complete | |
| - 09/27/2021 (Milestone Date) | \$6,650,000 |
| - After 09/27/2021 and on or before 10/27/2021 | \$5,650,000 |
| - After 10/27/2021 and on or before 11/27/2021 | \$4,650,000 |
| - After 11/27/2021 and on or before 12/27/2021 | \$3,650,000 |
| - After 12/27/2021 Move unearned portion of fee to Hot Commissioning Milestone | |
| <p>At the close of the three-month period (90 Calendar Days after the Milestone Completion Date) any unearned Startup and Commissioning Interim Milestone Performance Based Incentive fee amount will be moved to Successful Demonstration of Hot Commissioning PBI and will be earnable if Successful Demonstration of Hot Commissioning is achieved by the milestone date. If Successful Demonstration of Hot Commissioning is not complete by the Milestone date any unearned Startup and Commissioning Interim Milestone Performance Based Incentive fee is forfeited.</p> | |

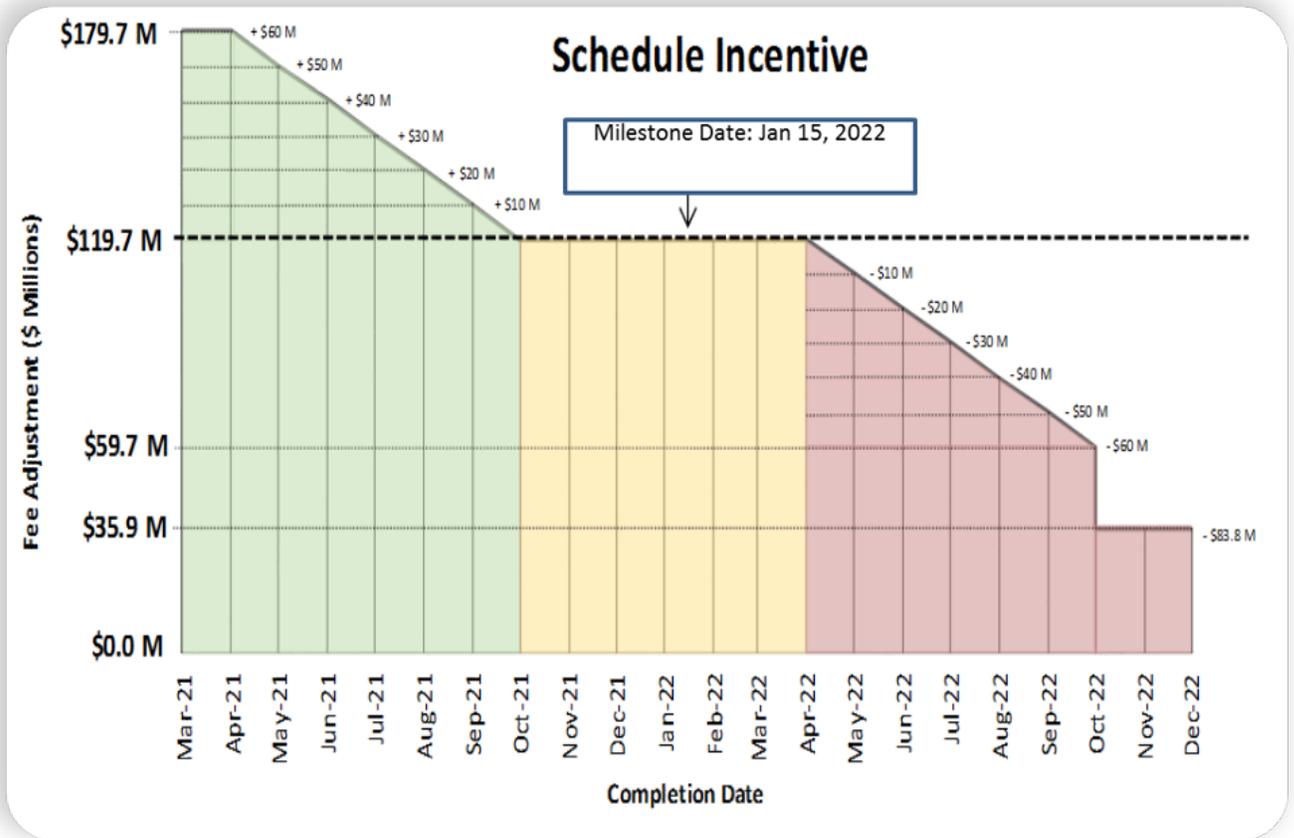
Table B-2-F. Commission LBL in the DFLAW Configuration Performance Based Incentive Fee.

| LBL Startup and Commissioning Performance Based Incentive Fee | Fee (\$) |
|---|---|
| <p>B) <u>Successful Demonstration of Hot commissioning Final Milestone PBI Description:</u></p> <p>75% of the Startup and Commissioning PBI pool will be earned upon the successful demonstration of hot commissioning by January 15, 2022. This PBI is date dependent and will have a +/- 3-month grace period.</p> <p>Schedule Incentive Fee – <u>Description:</u> For completion of the successful demonstration of LBL hot commissioning per Section J, “List of Attachments,” Attachment P, “Completion Definition Sheets for Incentive Fees,” after April 15, 2022, fee under this PBI will be reduced at a rate of \$10M/month for a six (6) month period or until October 15, 2022. For completion after October 15, 2022, fee under the successful demonstration of hot commissioning PBI will be reduced to a minimum fee of 30% or \$35.9M, which is subject to the cost share incentive of this PBI.</p> <p>For completion per Section J, “List of Attachments,” Attachment P, “Completion Definition Sheets for Incentive Fees,” earlier than October 15, 2021, the Contractor shall earn a fee incentive of \$10M/month for a six (6) month period or until April 15, 2021, subject to the maximum schedule incentive of \$60M. Any incentive earned under the successful demonstration of this PBI for early completion is conditioned on achievement of actual cost savings equal to or greater than 200% of the amount of incentive earned (i.e., if the completion date is August 15, 2021, the Contractor is entitled to a \$20M schedule incentive, provided that the total costs for CLIN 1.0 are equal to or less than \$3.600.4B, a reduction of \$40M).</p> <p>Total LBL Startup and Commissioning Performance Based Incentive Fee not including schedule incentive</p> <p>See Figure B-2-F-1 for an illustration of the mechanics of the Schedule Incentive.</p> | <p>\$119,700,000 (+ any unearned Startup and Commissioning Interim PBIs)</p> <p>\$159,600,000</p> |

Provisional payment of fee is authorized for the “LBL Startup and Commissioning Performance Based Incentive Fee”. Provisional fee of 50% of the total performance based incentives (PBIs) will be paid monthly upon a determination by the Contracting Officer that the Contractor is making satisfactory progress toward completion of the applicable incentive. Any incentive (either cost or schedule, including milestone completion incentive, schedule incentive and cost share incentive(s)) shall be payable within thirty (30) days of DOE acceptance in accordance with Section J, “List of Attachments”, Attachment P, “Completion Definition Sheets for Incentive Fees” of this Contract. Fifty percent of performance based incentives, both interim and final, (pro-rated on a monthly basis) for the Successful Demonstration of Hot Commissioning Final Milestone will be paid provisionally based upon a projection of schedule completion. Final fee earned for LBL Construction Complete will be based upon the criterial set forth in the Table B-2-F, Paragraph B, above.

Note: Any cost and/or schedule incentive provisionally paid is not finally earned by the Contractor until the Contracting Officer authorizes the Contractor to submit a final incentive invoice. If the Successful Demonstration of Hot Commissioning Final Milestone is not successfully completed due to actions by the Contractor, all provisionally earned incentives will be forfeit and shall be returned to DOE within thirty (30) days of written request by the Contracting Officer, in accordance with Clause I.65 FAR 52.232-17, “Interest” (June 1996).

Figure B-2-F-1. Graph CLIN 1.0 Hot Commissioning Schedule Incentive.

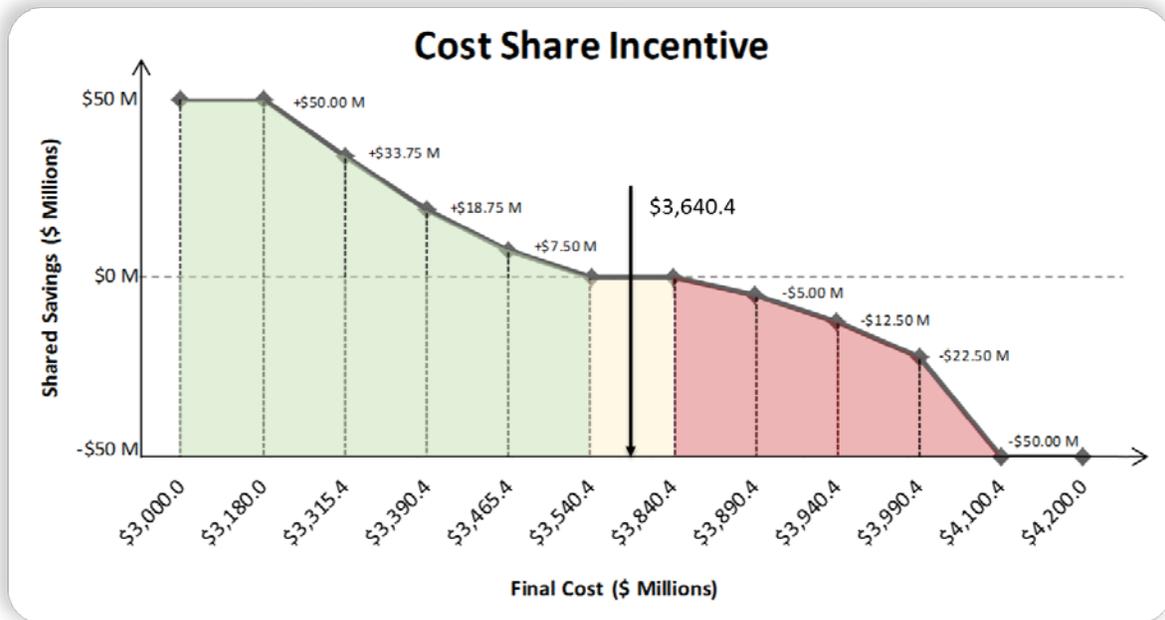


Attachment B-2-G, Incentive Fee G – CLIN 1.0 Cost Share Incentives

The Government and BNI will share cost increases/decreases above or below the target cost of \$3.640.4 billion. The final increase/decrease to earned fee will be based on the actual final cost incurred to complete CLIN 1.0 from January 1, 2014. The increase/decrease will be cumulative and the final amount will be prorated for any final cost falling between the high and low points of any of the final cost bands reflected herein.

| B-2-G | Cost Share Incentives | Description | Maximum Incremental Fee Reduction | Maximum Cumulative Fee Reduction |
|--|---|--|---|--|
| | | | | |
| | Decreases to earned fee will start after the total cost for CLIN 1.0 exceeds \$3,840.4B as follows: | Total cost for CLIN 1.0 between \$3,840.4B to \$3,890.4B, the cost increase will be shared in a ratio of 90% Government and 10% BNI. | -\$5,000,000.00 | -\$5,000,000.00 |
| Total cost for CLIN 1.0 between \$3,890.4B to \$3,940.4B, the cost increase will be shared in a ratio of 85% Government and 15% BNI. | | -\$7,500,000.00 | -\$12,500,000.00 | |
| Total cost for CLIN 1.0 between \$3,940.4B to \$3,990.4B, the cost increase will be shared in a ratio of 80% Government and 20% BNI. | | -\$10,000,000.00 | -\$22,500,000.00 | |
| Total cost for CLIN 1.0 between \$3,990.4B to \$4,100.4B, the cost increase will be shared in a ratio of 75% Government and 25% BNI. | | -\$27,500,000.00 | -\$50,000,000.00 | |
| | | Total Decrement for \$460,000,000 cost increase to price (\$4,100.4B) | -\$50,000,000.00 | |
| | Increases to earned fee will start when costs are below \$3,540.4B | | Maximum Incremental Fee Increase | Maximum Cumulative Fee Increase |
| | | Total cost for CLIN 1.0 equal to \$3,540.4B to \$3,465.4B, the cost savings will be shared in a ratio of 90% Government and 10% BNI. | \$7,500,000.00 | \$7,500,000 |
| | | Total cost for CLIN 1.0 between \$3,465.4B to \$3,390.4B, the cost savings will be shared in a ratio of 85% Government and 15% BNI. | \$11,250,000.00 | \$18,750,000 |
| | | Total cost for CLIN 1.0 between \$3,390.4B to \$3,315.4B, the cost savings will be shared in a ratio of 80% Government and 20% BNI. | \$15,000,000.00 | \$33,750,000 |
| | | Total cost for CLIN 1.0 between \$3,315.4B to \$3,180.4B, the cost savings will be shared in a ratio of 85% Government and 20% BNI. | \$16,250,000.00 | \$50,000,000 |
| | | Total Incentive for cost savings | \$50,000,000.00 | |

Figure B-2-G-1. Graph Cost Share Incentive Fee CLIN 1.0.



Attachment B-2-H, Incentive Fee H – CLIN 2.1 DFLAW Design Completion Fee

The following DFLAW fee incentives and associated fee will be earned and payable when the Contracting Officer determines the milestone has been completed in accordance with in Section J, "List of Attachments," Attachment Q, "DFLAW Design Completion Criteria Incentive Definitions," of this Contract.

For purposes of the Cost, Schedule, and Interim milestone completion incentives as set forth in this section, the Contractor will ensure all requirements as defined in Section J, "List of Attachments," Attachment Q, "DFLAW Design Completion Criteria Incentive Definitions," have been met and submit a "Declaration of Completion" to DOE.

1. DOE will review and either approve or reject the Contractor's declaration within thirty (30) calendar days of submission. In the event DOE rejects the Contractor's declaration, DOE will provide a detailed basis for the rejection.
2. Upon approval of the declaration by DOE, the Contractor shall submit a summary of the cost incurred and the incentive fee due for DOE review and approval to invoice the fee. DOE shall authorize the Contractor to invoice the final incentive fee within ten (10) calendar days or provide a detailed basis for withholding authorization. Notwithstanding the ten (10) calendar day period in the preceding sentence, DOE will conduct a comprehensive review of the Contractor's summary of cost incurred within ninety (90) days of invoice receipt. The final incentive fee amount is subject to adjustment for any findings resulting from DOE's comprehensive cost review. The completion date will become fixed for purposes of the incentive provisions of "DFLAW Design Completion" (CLIN 2.1) of this Contract as the date specified by the Contractor in its declaration and approved by DOE.
3. In the event the Contractor's declaration is rejected by DOE, costs incurred after submission of the Contractor's "Declaration of Completion" shall be included in the calculation of the final cost against the target cost until DOE approves the declaration.

Provisional payment of fee is authorized for incentive fee under CLIN 2.1. Provisional fee of 80 percent of projected fee earnings will be paid quarterly upon a determination by the Contracting Officer that the Contractor is making satisfactory progress toward completion of the applicable incentive. Any incentive (either cost or schedule, including the interim milestone schedule incentive) provisionally earned will be payable within thirty (30) days of DOE acceptance in accordance with Section J, "List of Attachments," Attachment Q, "DFLAW Design Completion Criteria Incentive Definitions," of this Contract. Eighty percent of cost and schedule incentives (pro-rated on a quarterly basis) for DFLAW design completion will be paid provisionally based upon a projection of cost and schedule at completion. Final fee earned for DFLAW design completion will be based upon the criteria as set forth in Table B-2-H-1 below.

Note: Any cost and/or schedule incentive provisionally paid is not finally earned by the contractor until the Contracting Officer authorizes the Contractor to submit a final incentive invoice. If the DFLAW design completion is not successfully completed due to actions by the Contractor all provisionally earned incentives will be forfeit and shall be returned to DOE within thirty (30) days of written request by the Contracting Officer, in accordance with Clause I.65 FAR 52.232-17, "Interest" (June 1996).

Table B-2-H-1. CLIN 2.1 DFLAW Design Completion Fee.

| DFLAW Design Completion Fee Milestones | Fee (\$) |
|--|--------------------|
| DFLAW Design Completion | |
| Interim Milestone Completion Incentive Fee – | |
| <u>Description:</u> | |
| 1) Complete the constructability review, model review and initial Hazard Analysis for the DFLAW Effluent Management Facility by- | |
| December 31, 2015 | \$500,000 |
| After March 31, 2016 and before June 30, 2016 | \$250,000 |
| After June 30, 2016 | \$0 |
| 2) Prepare and issue the DFLAW EMF Safety Basis Change Package (SBCP)/Preliminary Documented Safety Analysis (PDSA) update as an addendum to the LAW PDSA by- | |
| July 31, 2016 | \$500,000 |
| After October 30, 2016 and before January 31, 2017 | \$250,000 |
| After January 31, 2017 | \$0 |
| Cost Incentive Fee – | |
| <u>Description:</u> DOE and the Contractor will share cost under runs on completion of CLIN 2.1 of less than target contract cost (\$75M) in the ratio of 80% DOE/20% Contractor, subject to the maximum combined fee limitation. | |
| DOE and the Contractor will share cost overruns on completion of CLIN 2.1 of more than target contract cost (\$75M) in the ratio of 80% DOE/20% Contractor, subject to the minimum fee limitation. | |
| Schedule Incentive Fee – | |
| <u>Description:</u> For every full month DFLAW Design Completion is accepted as complete per Section J, "List of Attachments," Attachment Q, "DFLAW Design Completion Criteria Incentive Definitions," prior to April 30, 2018, fee will be increased by \$100,000 subject to the maximum combined fee limitation. | |
| In the event DFLAW Design Completion is accepted as complete between April 30, 2018, and July 31, 2018, fee will be reduced by \$100,000 for each full month completion occurs after April 30, 2018 per Section J, "List of Attachments," Attachment Q, "DFLAW Design Completion Criteria Incentive Definitions." | |
| In the event DFLAW Design Completion is accepted as complete per Section J, "List of Attachments," Attachment Q, "DFLAW Design Completion Criteria Incentive Definitions," after July 31, 2018, total fee available will be reduced to the minimum fee of \$750,000. | |
| | \$750,000 |
| Minimum Fee under DFLAW Design Completion <i>(exclusive of any Interim Milestone Completion Fee)</i> | |
| | \$4,500,000 |
| Target Fee under DFLAW Design Completion <i>(exclusive of any Interim Milestone Completion Fee)</i> | |
| | \$9,000,000 |
| Maximum Fee inclusive of Cost, Schedule, and Interim Milestone Completion Incentive Fee | |

SECTION C
STATEMENT OF WORK

SECTION C
STATEMENT OF WORK
TABLE OF CONTENTS

| | | |
|-----|--|-----|
| C.1 | INTRODUCTION | 1 |
| C.2 | CONTRACT APPROACH | 3 |
| C.3 | INTERACTIONS WITH THE WASTE TREATMENT AND IMMOBILIZATION PLANT CONTRACTOR | 5 |
| C.4 | ENVIRONMENT, SAFETY, QUALITY, AND HEALTH..... | 9 |
| C.5 | DESCRIPTION OF CONTRACT REQUIREMENTS AND DELIVERABLES | 12 |
| C.6 | STANDARDS..... | 23 |
| | Standard 1: Management Products and Controls | 24 |
| | Standard 2: Research, Technology, and Modeling | 36 |
| | Standard 3: Design | 45 |
| | Standard 4: Construction, Procurement, and Acceptance Testing | 57 |
| | Standard 5: Commissioning | 60 |
| | Standard 6: Product Qualification, Characterization, and Certification | 74 |
| | Standard 7: Environment, Safety, Quality, and Health | 80 |
| | Standard 8: Safeguards and Security..... | 88 |
| | Standard 9: Nuclear Safety (Table C.5-1.1, Deliverable 9.1) (257) (293) | 90 |
| C.7 | FACILITY SPECIFICATION | 92 |
| C.8 | OPERATIONAL SPECIFICATIONS | 102 |
| | Specification 1: Immobilized High-Level Waste Product..... | 103 |
| | Specification 2: Immobilized Low-Activity Waste Product..... | 107 |
| | Specification 3: Reserved..... | 113 |
| | Specification 4: Reserved..... | 114 |
| | Specification 5: Reserved..... | 115 |
| | Specification 6: Reserved..... | 116 |
| | Specification 7: Low-Activity Waste Envelopes Definition..... | 117 |
| | Specification 8: High-Level Waste Envelope Definition | 120 |
| | Specification 9: Liquids or Slurries Transferred to DOE Tanks by Pipeline | 124 |
| | Specification 10: Reserved..... | 126 |
| | Specification 11: Reserved..... | 127 |
| | Specification 12: Procedure to Determine the Waste Feed Treatment Approach | 128 |
| | Specification 13: Waste Product Inspection and Acceptance | 129 |
| C.9 | INTERFACE CONTROL DOCUMENTS | 132 |

SECTION C

STATEMENT OF WORK

C.1 INTRODUCTION

Hanford tank waste consists of approximately 190 million curies in 53 million gallons of highly radioactive and mixed hazardous waste stored in underground storage tanks at the Hanford Site. The tank waste includes solids (sludge), liquids (supernatant), and salt cake (dried salts that will dissolve in water forming supernatant). The tank waste will be remediated through treatment and immobilization to protect the environment and meet regulatory requirements.

The U.S. Department of Energy (DOE) determined that the preferred alternative to remediate the Hanford tank waste is to:

- Pretreat the waste to separate it into two fractions, low-activity waste and high-level waste;
- Immobilize the low-activity waste for on-site disposal; and
- Immobilize the high-level waste for ultimate disposal in the national repository.

The first tank waste fraction, low-activity waste, is comprised of the tank waste liquids (and dissolved salt cake) and contains the bulk of the tank waste chemicals and certain radionuclides (e.g., cesium [Cs], strontium [Sr], and transuranics [TRU]) that must be mitigated prior to immobilizing the waste. Low-activity waste is a mixed, characteristic, and listed waste regulated under the *Resource Conservation and Recovery Act of 1976* (RCRA), and must meet certain treatment standards and performance standards for on-site disposal of the final waste form in accordance with the specific requirements of this Contract.

The second tank waste fraction, high-level waste, is comprised of the long half-life radioactive tank waste solids (as well as other nonradioactive solids) and the radionuclides separated from the low-activity waste fraction. High-level waste is a mixed, characteristic, and listed waste regulated under RCRA, and must meet specific treatment and performance standards for storage and repository disposal of the final waste form in accordance with the specific requirements of this Contract.

The Waste Treatment and Immobilization Plant (WTP) is comprised of five major facilities: Pretreatment (PT) Facility, Low Activity Waste (LAW) Facility, High Level Waste (HLW) Facility, Analytical Laboratory (LAB), and Balance of Facilities (BOF). The WTP facilities shall be designed in accordance with the specific requirements of this Contract.

The Hanford tank waste treatment mission is defined by the assumptions presented in the *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site* (DOE/EIS-0391). The WTP facilities, combined with additional support from supplemental LAW and TRU treatment facilities, will be used to treat and immobilize the entire inventory of the Hanford tank waste beginning and proceeding as described in the amended Consent Decree filed March 11, 2016 (No: 2:08-CV-5085-RMP).

To perform the activities necessary to remediate the Hanford tank waste, DOE assigned responsibility to the DOE Office of River Protection (ORP) in Richland, Washington. Through this Contract, ORP will manage and oversee the design, construction, and commissioning of the WTP that will treat and immobilize a portion of the waste for ultimate disposal.

ORP will complete the Hanford tank waste treatment mission in phases, starting with the treatment of the low-activity waste fraction prior to completion of the PT and HLW Facilities. Pretreatment to separate the low-activity waste fraction will be accomplished in the Hanford tank farms, and the low-activity waste fraction will be provided directly to the LAW Facility for vitrification. This initial treatment configuration is referred to as direct-feed low-activity waste (DFLAW). Secondary waste generated during the LAW Facility vitrification process will be managed within the WTP facilities with the bulk of the liquid effluent discharged to an effluent treatment facility (ETF) and an option for a fraction to be recycled back to the tank farms. The LAB and BOF will be completed and operational to the extent necessary to operate the LAW Facility in isolation from the PT and HLW Facilities.

The Statement of Work for this Contract is divided into nine sections: (1) introduction; (2) summary of contract approach; (3) summary of interactions with the Contractor; (4) summary of environment, safety, quality, and health requirements; (5) description of Contract requirements and deliverables; (6) detailed identification of standards/requirements; (7) description of facility design specification; (8) detailed operational specifications; and (9) summary of the Interface Control Documents (ICD).

C.2 CONTRACT APPROACH

To accomplish the ORP mission, DOE established the River Protection Project (RPP). The RPP consists of two main contractors responsible for performing work necessary to complete the mission. The first is the current Tank Farm Operations Contractor, responsible for ensuring safe storage, retrieval, and disposal of the immobilized waste; decontamination and decommissioning; and initiation of post-closure monitoring of the tank farms. The second is the WTP Contractor (hereafter referred to as the “*Contractor*”) responsible for designing, constructing, commissioning, and supporting the transition of the WTP to the WTP Operating Contractor (hereafter referred to as the “*Operations Contractor*”) to be selected by DOE.

The Contractor has full responsibility for the WTP from the transition of an existing conceptual design through the completion of transition to the future operations contractor. The WTP Contract will focus on an initial Contract award for design and construction of the WTP. Schedule performance is an important consideration for RPP, and, specifically, the WTP. After successful hot commissioning by the Contractor, DOE will, under a separate contract, operate the WTP and treat and immobilize the balance of the Hanford tank waste.

The WTP Conceptual Design and supporting information are provided to the Contractor. In the interim period prior to Contract award, the Tank Farm Contractor will maintain the WTP Conceptual Design and supporting information, conduct limited additional design and optimization, and transition the WTP Conceptual Design to the Contractor. Additional information developed for the WTP Conceptual Design will be transitioned from the Tank Farm Contractor to the Contractor subsequent to Contract award.

The Contractor will review the WTP Conceptual Design and supporting information, complete process and facility design, manage construction and procurement, conduct acceptance testing, select and integrate a subcontractor into the project team to provide the necessary operability and commissioning capability, and conduct all required environmental, safety, quality, and health actions. From Contract award, the Contractor will be the design authority responsible for the WTP design. DOE will expect full Contractor accountability for performance, cost, and schedule throughout the Contract period of performance.

The WTP Conceptual Design provides a reference solution that appears to meet project requirements, but has significant potential for optimization. DOE will seek to improve the WTP by incentivizing the Contractor to optimize life-cycle performance, cost, and schedule of the WTP, including the process design, facility design, and technologies. DOE will evaluate Contractor performance against Contract requirements and review Contractor proposed changes to Contract requirements, but will not accept performance or approve changes that adversely impact overall system-level performance, life-cycle cost, or schedule. DOE reserves the unilateral right to disapprove any adverse change.

(a) Scope Summary

CLIN 1.0: Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory (LBL) completion and Direct Feed LAW (DFLAW) Startup and Commissioning work scope through Hot Commissioning.

CLIN 1.0 completes the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory (LBL) work scope necessary to facilitate Direct Feed LAW (DFLAW) Startup and Commissioning work scope through Hot Commissioning.

CLIN 2.1: Direct-Feed Low-Activity Waste (DFLAW) Facility Design.

CLIN 2.1 completes modifications of the LAW Facility, LAB, and BOF (collectively referred to as LBL) design to incorporate a permanent capability to operate LBL in the DFLAW configuration – with pretreated LAW feed delivered from the Hanford tank farms

and liquid effluent managed through recycle, return to the tank farms, shipped offsite by truck, or sent to ETF as appropriate and covered by approved ICDs. Work scope includes the design and unique permitting and licensing activities associated with the DFLAW capability in WTP. This CLIN also includes design of any additional needed facilities, establishment of new operating or security boundaries, modifications to BOF or LAB to enable operational flexibility for DFLAW, and similar requirements. **(350)**

CLIN 2.2/2.3: Direct Feed Low-Activity Waste (DFLAW) Facility Procurement and Construction.

CLIN 2.2/2.3 completes the LBL procurement and construction to incorporate a permanent capability to operate LBL in the DFLAW configuration. This CLIN includes procurement and construction of additional needed facilities, new operating or security boundaries, modifications to BOF or LAB to enable operational flexibility for DFLAW.

CLIN 3.0 – Currently HLW facility work is being performed under interim work plans that address the funding made available by DOE for this purpose. Interim work plans are implemented upon DOE approval.

Once the changes from resolution of design and technical issues and process changes are sufficiently mature, if determined to be in the best interest of the Government, ORP will issue a letter as an RFP and direction to submit a baseline change proposal. The Contractor shall develop and submit a modification proposal and an HLW facility baseline change proposal for the then to-go work scope incorporating changes from resolution of design and technical issues, and process changes. This modification proposal and baseline change proposal will be the basis for the definitization of CLIN 3.0.

CLIN 4.0 – Currently PT facility work is being performed under interim work plans that address the funding made available by DOE for this purpose. Interim work plans are implemented upon DOE approval.

Once the changes from resolution of design and technical issues and process changes are sufficiently mature, if determined to be in the best interest of the Government, ORP will issue a letter as an RFP and direction to submit a baseline change proposal. The Contractor shall develop and submit a modification proposal and a PT facility baseline change proposal for the then to-go work scope incorporating changes from resolution of design and technical issues, and process changes. This modification proposal and baseline change proposal will be the basis for the definitization of CLIN 4.0.

C.3 INTERACTIONS WITH THE WASTE TREATMENT AND IMMOBILIZATION PLANT CONTRACTOR

- (a) DOE, the Tank Farm Operations Contractor (TOC), and the Operating Contractor have specific responsibilities and defined interactions with the Contractor. DOE will use a partnering approach to manage interactions among DOE, the Contractor, the Operating Contractor, the Tank Farm Contractor, and other Hanford Site contractors. This approach will encourage a common vision with supporting goals and missions for each participant; promote the principles of teamwork, mutual respect, openness, honesty, trust, professionalism, and understanding; and include joint commitments to:
- (1) Maintain high safety performance;
 - (2) Complete the WTP on schedule and within cost;
 - (3) Complete the RPP mission to treat and immobilize the Hanford tank waste;
 - (4) Eliminate barriers to an efficient and more cost-effective project;
 - (5) Promote innovation;
 - (6) Improve communication and understanding;
 - (7) Provide early identification and recovery from performance problems;
 - (8) Resolve conflicts through a coordinated work effort that avoids adversarial relationships;
 - (9) Reinforce the partnered relationship through honest feedback and continual improvement;
 - (10) Collaboratively prepare the WTP systems, personnel, and procedures for plant operations; and
 - (11) To facilitate partnering as defined in this subparagraph for the specific interfaces between the WTP and the TOC, the Contractor shall participate with the TOC in staffing and managing a joint One System organization. The WTP and TOC shall jointly prepare and issue for DOE approval a One System organization charter outlining the scope, roles, responsibilities, and authorities of the organization. The governance structure shall include ORP management as designated by ORP. The One System charter shall include the following scope:
 - (i) Provide One System organization support to manage the coordination and integration of programmatic activities needed to more effectively and efficiently conduct the transition to WTP startup and commissioning, initially focused on DFLAW program integration. Develop and drive the implementation of programs including safety management programs across the various affected Hanford contractors.
 - (ii) Identify and implement program integration activities with TOC needed for commissioning and operating the WTP.
 - (iii) Identify changes for contract order and directive alignment with TOC and help maintain that alignment.
 - (iv) Identify and implement alignment with TOC of nuclear safety methods and assumptions.

- (v) Provide support for DFLAW work scope, including ICDs, waste feed acceptance criteria, optimization of the interfaces between TOC and WTP, operational readiness, and related activities.
- (vi) Identification and management for DOE of the integrated RPP flowsheet including gap analysis, identification of interface improvement opportunities, flowsheet optimization opportunities, and feed vector optimization opportunities.
- (vii) Provide One System organization support to help develop national laboratory knowledge of the RPP flowsheet and its components to better enable national laboratories to provide long-term support to ORP over the life-cycle mission of the WTP.
- (viii) Develop and maintain the integrated strategy and the corresponding plan and schedules for achieving initial plant hot operations. Also develop and maintain the strategy, plan, and schedule for the overall ORP mission.
- (ix) Maintain interface risk register, as derived from the WTP and TOC risk registers.
- (x) Identify and implement areas of collaboration and resource sharing that benefit DOE. This includes software and software management activities.
- (xi) Manage the ICD program.
- (xii) Perform other scope in this contract as assigned.

The Contractor shall provide the resources necessary to establish and implement the partnering approach, including the requirements of Section H Clause 34, "Alternative Dispute Resolution," throughout the Contract period of performance. The Contractor shall be responsible for actively participating in the partnering approach in a constructive manner.

- (b) DOE is responsible as the "Owner" and "Regulator" of the WTP.
 - (1) As the Owner, DOE will:
 - (i) Establish requirements, administer the Contract, and confirm that the Contractor meets Contract requirements;
 - (ii) Integrate the WTP into the overall RPP mission;
 - (iii) Approve all changes to the RPP system-level flowsheet, ICDs, feed and product specifications, design basis, safety basis, and the future WTP operations baseline(269);
 - (iv) Perform design, construction, safety and reliability/availability/maintainability/inspectability (RAMI), and operability oversight of the WTP; where required, engage other contractors to provide design, construction, RAMI, and operability oversight of the WTP;
 - (v) Perform review (and where required, engage other contractors) of Contractor environmental, safety, quality, and health (ESQ&H) actions for compatibility and integration with site-wide ESQ&H activities;

- (vi) Provide oversight and approval of the Contractor's operational readiness review **(196)** process per DOE O 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities***(190)**;
- (vii) Inspect and accept the WTP, including a determination that it is ready for safe operations with radioactive wastes;
- (viii) Certify that the immobilized high-level waste (IHLW), immobilized low-activity waste (ILAW), and secondary waste products meet DOE and regulatory requirements for additional treatment or disposal;
- (ix) Manage project progression through the critical decision process (DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, Contracts Requirements Document [CRD]) **(076) (271)**;
- (x) Provide Quality Assurance (QA) oversight; and
- (xi) Require compatibility of reporting and management systems.

DOE may utilize an Owner's Agent to perform some of the functions identified above.

- (2) As the Regulator, DOE will regulate radiological, nuclear, and process safety, as well as nonradiological worker safety and health.
- (c) The TOC will transition the WTP Conceptual Design to the Contractor upon Contract award.
- (d) DOE, the TOC, and other Hanford Site contractors provide site services to the Contractor as directed by DOE (see Section C.9, "Interface Control Documents").
- (e) DOE will provide an Operating Contractor to support facility transition and subsequent operations and maintenance of the WTP following Contract completion.
- (f) The Contractor shall:
 - (1) Perform the requirements of this Contract, integrating activities with DOE, the TOC, Operating Contractor, and other Hanford Site contractors, as needed.
 - (2) Be the design authority for the design and engineering of the WTP process and facilities. As such, the Contractor shall have authority and responsibility to ensure that:
 - (i) The design of the WTP facilities complies with all requirements in the Contract, and design requirements identified in approved deliverables and work products specified in Section C.6, "Standards"; Section C.7, "Facility Specification"; Section C.8, "Operational Specifications"; and Section C.9, "Interface Control Documents."
 - (ii) The planned operation of the WTP can achieve the capacity requirements specified in Section C.6, Standard 5, "Commissioning."
 - (iii) The Contractor shall identify, quantify, and manage process and facility equipment sizing, technical operating performance, environmental permitting, and the safety authorization basis to achieve the Contract specified requirements of the WTP.

- (3) The WTP Contractor shall construct the WTP in accordance with the detailed design, safety basis, pertinent regulations, approved regulatory permits, Section C.6, Standards, specified in the Contract, and other approved industry standards, as applicable.
 - (4) In cooperation with DOE (as lead), Tank Farm Contractor, and the other Hanford Site contractors, establish an interface management process to assure effective control of technical, administrative, and regulatory interfaces.
 - (5) Support DOE in external communications on the WTP Project with stakeholders, regulators, Tribal Nations, and other special interest groups.
 - (6) Train commissioning staff to operate and maintain the WTP in accordance with DOE O 426.2, CRD, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. **(152) (321)**
 - (7) Transition the successfully commissioned WTP to the Operations Contractor.
 - (8) Provide DOE or its designee(s) access to, and the right to, conduct assessments, audits, and/or surveillance of the Contractor (and its subcontractors/suppliers, at any level) records, premises, activities, and of radioactive materials in possession or use related to the WTP, as necessary to effectuate the responsibilities of DOE.
- (g) The Operating Contractor shall:
- (1) Participate in the development of, and concur with, the Facility Transition Plan.
 - (2) Assume management of the WTP facilities following the completion of the Contractor's Contract.

C.4 ENVIRONMENT, SAFETY, QUALITY, AND HEALTH

- (a) The Contractor will provide a WTP that processes DOE-owned highly radioactive and dangerous waste. In order to deliver the WTP within the appropriate level of controls consistent with the hazards to be encountered, the Contractor shall establish and maintain an Integrated Safety Management System (ISMS).

The Contractor shall be responsible for protecting human health and the environment from radioactive chemicals, hazardous materials, and dangerous waste contamination, as well as nonradiological worker safety and health from conventional, construction, industrial, and occupational hazards. The Contractor shall also provide safe and healthful working conditions for employees, subcontractors, and all other personnel under the Contractor's control who work in the general vicinity of the Contractor site and facilities.

The Contractor shall comply with applicable Federal, DOE, state, and local regulations and requirements for:

- (1) Nonradiological worker safety and health;
 - (2) Radiological, nuclear, and process safety;
 - (3) QA; and
 - (4) Environmental protection.
- (b) DOE will provide existing ESQ&H documentation with the WTP Conceptual Design and supporting information to allow the Contractor to review, modify, and implement required ESQ&H actions under this Contract.
- (c) The regulatory environment for this Contract is structured into four principal areas of responsibility and requirements on Contractor performance. Detailed Contractor performance requirements are provided in Section C.6, Standard 7, "Environment, Safety, Quality, and Health."
- (1) Nonradiological Worker Safety and Health: DOE will regulate nonradiological worker safety and health. The Contractor shall develop and implement the WTP-specific worker safety and health program.
 - (2) Radiological, Nuclear, and Process Safety: DOE will regulate radiological, nuclear, and process safety to ensure that the Contractor provides for and operates within the required levels of public and worker protection. The Contractor shall develop and implement a WTP-specific radiological, nuclear, and process safety program.
 - (3) Quality Assurance: DOE will oversee all Contractor performance in accordance with a Contractor-developed, DOE-approved program. The Contractor shall develop and implement an integrated WTP-specific QA Program, supported by documentation that describes overall implementation of QA requirements.
 - (4) Environmental Protection: The Contractor shall develop and implement a WTP-specific environmental protection program, prepare all required permit applications, and obtain, in conjunction with DOE, all necessary permits for the WTP.
 - (i) DOE is responsible for meeting compliance obligations under the *National Environmental Policy Act of 1969* (NEPA). If proposed Contractor actions are outside the analysis performed for the *Final*

Environmental Impact Statement for the Tank Waste Remediation System (April 1996), Record of Decision for the Tank Waste Remediation System, and/or related supplement analyses, then the Contractor shall provide technical information and support to DOE for National Environmental Policy Act of 1969 compliance on the proposed Contractor actions.

- (ii) The U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and/or the Washington State Department of Health will regulate radioactive and nonradioactive air emissions. The Contractor shall support integration within the Hanford Sitewide air compliance framework, including the Hanford Air Operating Permit.
- (iii) EPA and Ecology will regulate and administer all permits for treatment and storage operations under the RCRA and the *State of Washington Hazardous Waste Management Act (HWMA)*. Contractor actions shall support integration with the Hanford RCRA Permit (WA7890008967).
- (iv) Ecology, Washington State Department of Health, and/or local agencies will regulate liquid effluent and solid waste. The Contractor shall provide technical and regulatory support for all required permitting and compliance activities associated with WTP liquid effluent and solid waste.
- (v) EPA regulates certain substances under the *Toxic Substances Control Act of 1976 (TSCA)*. TSCA regulations are applicable to Hanford tank waste. Portions of the Hanford tank waste contain polychlorinated biphenyls (PCB) at concentrations below 50 parts per million (ppm), which are regulated under TSCA as PCB bulk remediation waste. The presence of PCBs may be concurrently regulated under other environmental regulations including RCRA, *Clean Air Act*, and *Clean Water Act*. Certain vitrification secondary waste stream disposal activities (e.g., waste water discharges to the ETF) may be subject to existing PCB discharge limitations.

DOE is pursuing a PCB regulatory strategy with EPA, Region 10, and Ecology under risk-based disposal pathway in accordance with 40 CFR 761.61(c), "PCB Remediation Waste." DOE has established an initial engineering basis of 50 ppm total PCBs as PCB bulk remediation waste for the WTP waste feed envelope. DOE is also pursuing a radiological exemption for waste under 40 CFR 761.50, "Applicability."

The Contractor shall provide technical and regulatory support for WTP activities, and product and secondary waste disposition related to TSCA regulation.

- (d) The Defense Nuclear Facilities Safety Board (DNFSB) is responsible for nuclear safety oversight authority of DOE and its activities related to the WTP. As directed by the Contracting Officer, the Contractor shall conduct activities in accordance with DOE commitments to the DNFSB, which are contained in implementation plans and other DOE correspondence to the DNFSB. The Contractor shall support preparation of DOE responses to DNFSB issues and recommendations that affect Contract scope. As directed by the Contracting Officer, the Contractor shall fully cooperate with the DNFSB and provide access to work areas, personnel, and information, as necessary. The Contractor shall maintain a document process consistent with the DOE manual on interface with the DNFSB (DOE M 140.1-1B, *Interface with the Defense Nuclear Facilities*

Safety Board) and shall ensure that these requirements flow down to the lowest-tier subcontractors.

C.5 DESCRIPTION OF CONTRACT REQUIREMENTS AND DELIVERABLES

The Contractor shall perform five major activities: (1) Design transition; (2) facility and process design; (3) construction management and procurement; (4) acceptance testing; and (5) facility commissioning. Summary-level requirements for each of these activities are provided in this section, with additional requirements provided in Sections C.6, Standards, C.7, Facility Specification, C.8, Operational Specifications, and C.9, Interface Control Documents. Best commercial practices shall apply when a standard, specification, or Interface Control Document (ICD) is not provided.

- (a) Design Transition: The Contractor shall update the plan for transition submitted as part of the Contractor's proposal, install Contractor management systems, and evaluate the WTP Conceptual Design and supporting information.
- (1) Plan for Transition: The Contractor shall submit a plan for transition to DOE in accordance with Standard 1, "Management Products and Controls."
 - (2) Receive the WTP Conceptual Design: The Contractor shall receive the WTP Conceptual Design and supporting information from the Tank Farm Contractor as described in Section J, Attachment K, "Listing of WTP Conceptual Design and Supporting Information"; additional information shall also be provided.
 - (3) Due-diligence Reviews: The Contractor shall evaluate the WTP Conceptual Design and supporting information as part of the Contractor's responsibility as design authority. Key areas of review include:
 - (i) All process and facility design documentation and analyses;
 - (ii) Technology planning and testing information;
 - (iii) Waste form qualification strategies;
 - (iv) Environmental permitting documentation (e.g., Dangerous Waste Permit Application [DWPA], air permits);
 - (v) Integrated Safety Management System, hazards and safety analysis information, authorization basis, and safety standards;
 - (vi) Limited Construction Authorization Request;
 - (vii) Safeguards and Security (SAS) requirements;
 - (viii) ICDs; and
 - (ix) Cost and schedule baseline.
 - (4) The Contractor shall select and integrate a subcontractor into the WTP Project team to provide the necessary operability and commissioning capability. Selection of the subcontractor shall be completed by April 15, 2001 (Table C.5-1.1, Deliverable C5.1), and is subject to DOE approval. This deliverable shall describe the basis for selection, including the subcontractor's qualifications and experience.
 - (5) Project Baseline: The Contractor shall use the WTP Project Baseline information provided as part of the WTP Conceptual Design and supporting information and provide a WTP baseline in accordance with requirements in Standard 1, Management Products and Controls.

- (b) Facility and Process Design: The Contractor shall prepare all design documents and required supporting information.
- (1) Design Process: The Contractor shall prepare all design documents and required supporting information.
 - (2) Design Requirements: The Contractor shall ensure that the facility is designed to meet all requirements, and that these requirements are captured in the Design Criteria Database (DCD).
 - (3) Design Documents: The Contractor shall design the WTP (PT Facility, HLW Facility, LAW Facility, LAB, and BOF) consistent with the functional requirements identified in Standard 2, "Research, Technology, and Modeling"; Standard 3, "Design"; Section C.7, Facility Specifications; Section C.8, Operational Specifications; and Section C.9 Interface Control Documents.
 - (4) WTP Optimization: The Contractor shall perform optimization as described in Standard 3, Design.
 - (5) Design Reviews: The Contractor shall conduct periodic design, constructability, and operability reviews to status the design activities, and resolve design oversight comments from DOE in accordance with Standard 3, Design.

Additional requirements are provided in Standard 3, Design.

- (c) Construction Management and Procurement: The Contractor shall plan and execute all construction, procurement, and acceptance testing.
- (1) Provide a Construction, Procurement, and Acceptance Testing Plan;
 - (2) Identify all long-lead procurement actions and describe the contracting approach and method of performance;
 - (3) Procure all required material and equipment;
 - (4) Prepare bid and work packages;
 - (5) Manage or perform all required construction; and
 - (6) Manage the construction site and provide all required construction support services.

Additional requirements are provided in Standard 4, "Construction, Procurement, and Acceptance Testing."

- (d) Acceptance Testing: The Contractor shall provide integrated construction acceptance test plans and procedures for DOE approval. Additional requirements are provided in Standard 4, Construction, Procurement, and Acceptance Testing.
- (e) Facility Commissioning: The Contractor shall commission, demonstrate operational performance, and transition the WTP to the Operations Contractor.

Additional requirements are provided in Standard 5, "Commissioning."

- (f) Objectives for the amount of Contractor self-performed work are contained in Section H, Clause H.13, "Self Performed Work."

- (g) Table C.5-1.1, Deliverables, summarizes the specific deliverables the Contractor shall provide to DOE and the subsequent DOE actions. Neither the DOE review of the deliverables nor the decision of DOE to proceed with construction or commissioning shall impose any responsibility on the DOE for adequacy, quality, or completeness of the deliverables. The Contractor remains solely responsible for the adequacy, quality, and completeness of such work and the performance of the WTP under this Contract.

Unless otherwise specified, DOE will provide written comments to the Contractor within 30 days of receipt of the deliverable identified in Section C, "Statement of Work."

If requested in writing by DOE, the Contractor shall address all DOE mandatory comments and resubmit the deliverable within 30 days after receipt of DOE comments.

The contractor shall not proceed with implementation of changes to Table C.5-1.1, Deliverable 3.3(a) until 5 working days after DOE receives notification of the change.
(171)

Many of the Contract deliverables require information from engineering, procurement, construction, and commissioning activities in multiple facilities. The LBL facilities will be completed ahead of the PT and HLW Facilities. Contract deliverables may be completed in parts consistent with the facility completion sequence.

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|----------|--|---|-----------------|------------------|-------------------|--|
| C5.1 | Select a Commissioning Contractor | Section C.5 (a)(4) | A | D | COR(131) | 4/15/2001 |
| 1.1 | Plan for Transition | Section C.5 (a)(1) | A | D | COR(131) | 2/15/2001 |
| 1.2 | Project Execution Plan | Standard 1 (b)(2) | A | D | COR(131) | 12/15/2006 with updates as required |
| 1.3 | Earned Value Management System Description | Standard 1 (a) & (b)(3) | A | D | COR(131) | 4/15/2001 with updates as required |
| 1.4 | Interface Management Plan | Standard 1 (b)(1) and C.9(b) | A | D | COR(131) | 6/29/2001 with updates as required |
| 1.5 | WTP Project Baseline | Standard 1 (d)(3) | A | D | COR(131) | 4/15/2001 with updates as required |
| 1.6 | Baseline Risk Plan | Standard 1 (c)(1) | A | D | COR(131) | 7/1/2001 with annual updates as required |
| 1.7 | Monthly Status Report | Standard 1 (c)(4), (a)(2)(i)(d) & (d)(1), Standard 3 (g)(3), and Standard 4 (f)(2)] | I | D | COR(131) | First Wednesday of the second month |
| 1.8 | Occurrence Reporting | Standard 1 (d)(5) (147) | A | D | COR(131) | as required |

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|----------|---|---|-----------------|------------------|-------------------|--|
| 1.9 | ES&H Reporting | Standard 1 (d)(6)(147) | A | D | COR(131) | as required |
| 1.10 | Contract Performance Report | Standard 1 (d)(2) | I | D | COR(131) | Last Wednesday of each month(147) |
| 1.11 | Change Control Program Procedure | Standard 1 (a) & (a)(4) | A | D | COR(131) | 05/15/03 with updates as required Delivery 30 days after contract modification – implementation 60 days after Approval |
| 1.12 | Electronic Data | Standard 1 (d)(3) & (4) | I | D | COR(131) | Last Wednesday of each month(147) |
| 1.13 | LAW Construction Complete Inclusion/Exclusion List of Activities for Determination of Milestone | Standard 1(a)(2)(iii) | A | D, E | CO, COR | Submit quarterly and final list 90 days prior to completion date of milestone LAW Construction Complete in Section J of contract |
| 2.1 | Updated Research and Technology Program Plan | Standard 2 (a)(1)(ii) & C.7 Table C.7-1.1 Note 1 | A | D | COR(131) | 4/15/2001 with annual updates through 2004 and with updates as needed from 6/30/2008 through the initiation of cold commissioning |
| 2.2 | R&T Test Plans | Standard 2 (a)(2)(i) & (a)(3)(ix) | I | D | COR(131) | as required |
| 2.3 | R&T Test Reports | Standard 2 (a)(2)(ii) & (a)(3)(ix) | C | D | COR(131) | as required |
| 2.4 | Regulatory Data Quality Objective (DQO) | Standard 2 (a)(3)(i)(D) | A | D | COR(131) | 384 as negotiated |
| 2.5 | Operations Research Assessment | Standard 2 (b)(1) & Standard 3 (c)(6)(ii)(A) (c.7(b)) | C | D | COR(131) | 12/19/2008, 6/19/2010, FEBRUARY 2012, MAY of (310) 2014 and December of 2017 and after completion of cold commissioning and completion of hot commissioning(239) |

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|----------|---|--|---|------------------|-------------------|---|
| 2.6 | WTP Tank Utilization Assessment | Standard 2 (b)(2) [C.7(b)] | C | D | COR(131) | 12/19/2008, 6/19/2010, FEBRUARY 2012, AUGUST 2014 (310), (310)December 2017 (384), and after completion of cold commissioning and completion of hot commissioning (239) |
| 2.7 | DELETED | | | | | |
| 2.8 | Technical Report on Oxidative Leaching | Standard 2 (a)(3)(ix) | C | D | COR(131) | 384 |
| 2.9 | Test Report on Oxidative Leaching | Standard 2 (a)(3)(ix); Standard 5 (e)(3)(ii) | C | D | COR(131) | 384 |
| 2.10 | Proposed Process Steps for Sludge Treatment | Standard 2 (a)(3)(iii) & C.7(d)(1)(vii) | A | D | COR(131) | one year before the start of cold commissioning for the PT Facility(255) |
| 2.11 | Proposed Deminimus Organic Concentration in Received Tank Waste | Standard 2 (a)(3)(viii) | A | D | COR(131) | 12/31/2012(255) |
| 3.1 | Design Process | Standard 3 (a)(2) | I | D | COR(131) | 2/15/2001 1/15/2004 |
| 3.2 | Functional Specification | Standard 3 (b)(1) | I | D | COR(131) | 8/20/2001 with updates as required |
| 3.3 (a) | Basis of Design | Standard 3 (b)(2) & C.7(b)(1) | C(171) | D | COR(131) | 8/20/2001 with updates as required |
| 3.3 (b) | Design Criteria Database | Standard 3 (b)(3) | M | D | COR(131) | 30 days after issue of Basis of Design, with updates as required |
| 3.3 (c) | Engineering, Procurement, and Construction Code of Record | Standard 3 (b)(6) | A for initial Deliverable, Revisions, Change Notices. C for Case-by-Case Exceptions | D | COR(363) | 9/18/2015 with updates as required |

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|----------|--|-------------------------------------|---|------------------|-------------------|--|
| 3.4 | Operations Requirements Document | Standard 3 (b)(4) | A for bolded document text and M for non-bolded document text | D | COR(131) | 8/20/2001 |
| 3.5 | Master Equipment List | Standard 3 (c)(6)(i) | C | D | COR(131) | Prior to ORR completion |
| 3.6 | Analytical Laboratory Design Requirements | Standard 3 (c)(18) & C.7(a)(9)(350) | A | D | COR(131) | 10/1/2001 and as required thereafter |
| 3.7 | Site Layout Drawings | Standard 3 (c)(19) | A | D | COR(131) | 4/15/2001 and as required thereafter |
| 3.8 | Optimization Studies | Standard 3 (d) | A | D | COR(131) | 3/15/2001 |
| 3.9 | Spare Parts List | Standard 3 (c)(6)(ii, iii, & iv) | C | D | COR(131) | 12 months prior to the start of cold commissioning |
| 3.10 | Deleted | | | | | |
| 3.11 | Code of Record Case by Case Exception Report | Standard 3 (b)(6) | C | D | COR | As needed |
| 4.1 | Construction, Procurement, and Acceptance Testing Plan | Standard 4 (a), (f)(3) & (i) | A on initial Deliverable and I for any subsequent updates | D | COR(131) | As required |
| 4.2 | Purchasing System | Standard 4 (b)(2) | A | D | COR(131) | As required |
| 4.3 | Construction Bid and Work Packages | Standard 4 (c) | I | D | COR(131) | As required |
| 4.4 | Construction and Acceptance Testing Program | Standard 4 (f)(1) | A | D | COR(131) | Prior to start of construction |
| 4.5 | Construction Overview Meetings | Standard 4 (h) | M | D | COR(131) | Ongoing |
| 4.6 | Construction Emergency Response Plan | Standard 4 (j) | I | D | COR(131) | Prior to Start of Limited Construction |
| 4.7 | As-built Program Description | Standard 4 (f)(5) | C | D | COR(131) | June 2009 |

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|----------|--|---|-----------------|------------------|-------------------|--|
| 5.1 | Commissioning Plan | Standard 5 (c) | A | D | COR(131) | 36 months prior to start of cold commissioning and as required thereafter. A preliminary version delivered to DOE for comment in calendar year 2016. |
| 5.2 | DELETED | | | | | |
| 5.3 | Waste Form Qualification Tests | Standard 5 (e)(3)(i) | P | D | COR(131) | during cold commissioning |
| 5.4 | Cold Commissioning Capacity Tests | Standard 5 (e)(3)(ii) | A | D | COR(131) | during cold commissioning |
| 5.5 | DELETED (029) | | | | | |
| 5.6 | Resultant Products from Cold Commissioning | Standard 5 (e)(1) | P | D | COR(131) | during cold commissioning |
| 5.7 | Environmental Performance Test | Standard 5 (e)(3)(v) | A | D | COR(131) | during cold commissioning |
| 5.8 | Cold Commissioning Results | Standard 5 (e)(5) | A | D | COR(131) | prior to hot commissioning |
| 5.9 | Certification of Completion of Cold Commissioning | Standard 5 (e)(6) | A | D | COR(131) | when complete |
| 5.10 | Certification of Readiness for Hot Commissioning Start | Standard 5 (g)(1) | A | D | COR (131) | prior to hot commissioning |
| 5.11 | Certification of Hot Commissioning Start | Standard 5 (g)(3) | A | D | COR (131) | Upon receipt of Tank Farm waste feed |
| 5.12 | Hot Commissioning Capacity Tests | Standard 5 (g)(5) | A | D | COR (131) | during hot commissioning |
| 5.13 | Resultant Products from Hot Commissioning | Standard 5 (g)(iii & iv) | P | D | COR (131) | during hot commissioning |
| 5.14 | Hot Commissioning Results and Documentation | Standard 5 (g)(6) | A | D | COR (131) | upon completion of hot commissioning |
| 5.15 | Certification of Completion of Hot Commissioning | Standard 5 (g)(7) & 5(m)(1, 3 & 4)(350) | A | D | COR (131) | when complete |
| 5.16 | Facility Turnover | Standard 5 (m)(7) | A | D | COR (131) | after successful commissioning |
| 5.17 | DELETED | | | | | |
| 5.18 | Cold Commissioning Simulant Definition | Standard 5 (b) & Table C.6-5.1 Note 1 | A | D | COR(131) | 24 months prior to the initiation of cold commissioning |

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|----------|--|---|-----------------|------------------|-------------------|---|
| 5.19 | WTP Facility Transition Plan | Standard 5 (i); (j); & (m)(7) | A | D | COR (131) | 12 months prior to the initiation of hot commissioning |
| 5.20 | Cold Commissioning Capacity Test Criteria | Standard 5 (e)(3)(ii) & Table C.6-5.1 Note 2 | A | D | COR(131) | Prior to completion of Deliverable 5.8 |
| 5.21 | Hot Commissioning Capacity Test Criteria | Standard 5 (g)(4) & Table C.6-5.2 Note 1 | A | D | COR (131) | Prior to completion of Deliverable 5.14 |
| 5.22 | WTP Operational Readiness Support Plan (Jointly submitted with Tank Farms Operating Contractor (TOC) as TOC deliverable C.2.3.2-1) | Standard 5 (f) (i) | A | D | COR | 9/30/2013 with annual updates thereafter (285) |
| 6.1 | Secondary Wastes Compliance Plan | Standard 6 [Std. 5 (e)(1)(i) & (e)(3)(i & ii), Std. 6(b), (c)(3 & 4), C.8 Spec. 9.2.2.5] | A | D | COR(131) | 2004, 2006, 2008, and as required thereafter |
| 6.2 | IHLW Waste Form Compliance Plan | Standard 6 [Standard 2 (a) (3)(vii)(B); Standard 5 (e)(1)(i) & (e)(3)(i & ii); Standard 6 (b), (c)(2 & 4), C.7(d)(2)(i), C.8 (Spec. 1 (1.4) & Spec. 13 (13.3.2))] | A | D | COR (131) | 2004, 2005, 2007, 2009, and as required thereafter |
| 6.3 | ILAW Product Compliance Plan | Standard 6 [Std. 2 (a)(3)(v)(B), Std. 5 (e)(1)(i) & (e)(3)(i & ii); Std. 6(b) & (c)(1 & 4), C.7(d)(3)(i); C.8 Spec. 2, 2.2.2.11, & 2.4] | A | D | COR(131) | 2004, 2006, 2008, and as required thereafter |
| 6.4 | IHLW Product Qualification Report | Standard 6 (c) (5) & (6) | C/A | D | COR(131) | Plan in 2004, report in 2008 and as required thereafter |
| 6.5 | Production Documentation for IHLW Product | Standard 6 (c)(9) | A | D | COR(131) | at time of production |
| 6.6 | ILAW Product Qualification Report | Standard 6 (c)(5) Spec. 2 (2.2.7.1) | C/A | D | COR(131) | Plan in 2004, report in 2007 and as required thereafter |

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|----------|--|--|-----------------|------------------|-------------------|--|
| 6.7 | Production Documentation for ILAW Product | Standard 6 (c)(9); C.8 Spec. 2, 2.2.2.6.2 & 2.2.2.7.2 | C/A | D | COR (131) | at time of production |
| 6.8 | DELETED | | | | | |
| 6.9 | RESERVED | | | | | |
| 6.10 | Secondary Wastes Production Documentation | Standard 6 (c)(9) | C/A | D | COR(131) | at time of production |
| 6.11 | Deleted | | | | | |
| 7.0 | Non-radiological Worker Safety and Health | Standard 7 (e)(1) | R | D | COR (131) | per Standard 7.a(1) |
| 7.1 | DELETED (166) | | | | | |
| 7.2 | Quality Assurance | Standard 7 (e)(3); C.8 Spec 2, 2.3 and Spec 12, 12.3 | A/R | D | COR(131) | 4/15/2001 |
| 7.3 | Environmental Plan | Standard 7 (e)(4) & (e)(4)(vi)(A) | A | D | COR(131) | 3/15/2001 and as required thereafter |
| 7.4 | DELETED | | | | | |
| 7.5 | Dangerous Waste Permit Application | Standard 7 (e)(4)(vi)(B) | A | D | COR(131) | as required |
| 7.6 | Risk Assessment Work Plan | Standard 7 (e)(4)(vi)(C) & Std 5 (e)(3)(v) | A | D | COR(131) | as required |
| 7.7 | Notice(s) of Construction | Standard 7 (e)(4)(vi)(D) | A | D | COR(131) | 150 days prior to submission to the regulators |
| 7.8 | Prevention of Significant Deterioration Permit Application | Standard 7 (e)(4)(vi)(E) | A | D | COR(131) | 150 days prior to submission to the regulators |
| 7.9 | Petition for Exemption or Exclusion for IHLW | Standard 7 [Std 6(c)(7), Standard 7 (e)(4)(vi)(F)] | A | D | COR (131) | 06/2005 |
| 7.10 | Petition for a New Treatment Standard | Standard 7 [Standard 6 (c)(8), Standard 7 (e)(4)(vi)(G)] | A | D | COR(131) | 08/2003 |
| 8.0 | Safeguards and Security | Standard 8 [Table S8-1] | A | D | COR(131) | see Table S8-1 |
| 9.1 | Radiological, Nuclear and Process Safety(M166) | Standard 9 | R | D | COR (131) | Various (303) |

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|------------|--|--------------------------|-----------------|------------------|-------------------|--|
| C.7-1 | Procedure to Determine the Waste Feed Treatment Approach | C.7(d) (1)(vii) Spec. 12 | A | D | COR(131) | one year before the start of cold commissioning for the Pretreatment Facility(255) |
| C.8-1 | Deleted (384) | | | | | |
| C.8-2(384) | DFLAW Commissioning Waste Loading | C.8 Spec 2 (2.2.2.2) | A | D | COR | Two years before the start of hot commissioning |
| C.9.1 | Interface Control Documents | Section C.9 | A/J | D | COR(131) | 7/15/2001, 3/15/2002, and as required |
| H.1 | Environmental Permits | Clause H.26 (d) (152) | A | D | COR(131) | ongoing |
| H.2 | Litigation Management Plan | Clause H.33 | A | D | COR(131) | 4/15/2001 |
| H.3 | Deleted | | | | | |
| H.4 | Property Management System(120) | Clause H.51 | A | D | COR(131) | 10/1/2008, with annual updates thereafter |

Legend Definitions:

- A Approval — The deliverable shall be provided to DOE for review and approval. DOE will review the deliverable and provide comments in writing. Comments will be discussed through the partnering process and the Contractor is required to provide written responses using Review Comment Records. Documents shall be re-written to incorporate all DOE mandatory comments. Once a deliverable or document has been approved by DOE, it shall be placed under change control and no changes to that document shall be made without DOE approval. All documents and deliverables that previously had a “K” designation and that were concurred upon by DOE shall be deemed “approved” by DOE.
- C Review and Comment — The deliverable shall be provided to DOE for review and comment. DOE will have the option for reviewing the information and providing comment. The Contractor shall respond to all written comments in Review Comment Record forms. DOE comments that cannot be resolved in the appropriate partnering team shall be elevated to the Project Management Team for resolution.
- D DOE Office of River Protection, Contracting Officer's Representative (COR).
- E DOE Office of River Protection, Contracting Officer (CO).
- I Information — The deliverable shall be provided for information purposes only. DOE will have the option of reviewing the information and providing comments through the partnering process. Such comments do not require resolution under the Contract.
- J Jointly Developed, Review and Comment — The ICDs shall be jointly developed with DOE, the Tank Farm Contractor, and Hanford Site contractors. The deliverable shall be provided to DOE for review and comment. DOE will have the option for reviewing the information and providing comment. The Contractor shall respond to all written comments. DOE comments that cannot be resolved in the appropriate partnering team shall be elevated to the senior management for resolution.
- M Monitor — The deliverable shall be developed with input from DOE. DOE will be highly involved as the deliverable is developed, and will monitor the progress of the deliverable. DOE comments shall be discussed in the partnering teams as the deliverable develops. If DOE direction is determined to be appropriate, DOE shall provide such direction in writing.
- P Product Acceptance — As defined in Specification 13.
- R Regulatory Deliverable Approval — Will be performed in accordance with Standard 7 or Standard 9, as appropriate.

Table C.5-1.1. Deliverables.

| Item No. | Deliverable | Reference | Action Required | DOE Action Party | Point of Delivery | Contract Due Date |
|-----------------|--------------------|------------------|------------------------|-------------------------|--------------------------|--------------------------|
|-----------------|--------------------|------------------|------------------------|-------------------------|--------------------------|--------------------------|

C.6 STANDARDS

This Section consists of the following standards, which describe requirements for managing, constructing, and commissioning the WTP and related activities:

- Standard 1: Management Products and Controls
- Standard 2: Research, Technology, and Modeling
- Standard 3: Design
- Standard 4: Construction, Procurement, and Acceptance Testing
- Standard 5: Commissioning
- Standard 6: Product Qualification, Characterization, and Certification
- Standard 7: Environment, Safety, Quality, and Health
- Standard 8: Safeguards and Security
- Standard 9: Radiological, Nuclear, and Process Safety **(166)**

1.0 References

The following listed references are not included in Section J, Attachment E, "List of Applicable Directives" (List B-DEAR 970.5204-78)

- 1.1 HNF-3638. Revision 1. *Standard Electronic Format Specification for Tank Waste Characterization Data Loader: Version 2.4.*
- 1.2 PNNL-12040. Revision 0. *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project.* K.D. Wiemers, et al. Dated December 1998.
- 1.3 PL-W375-EN00003. Revision 1. *Environmental Performance Demonstration Plan,* J.R. Markillie. Dated April 28, 2000.
- 1.4 HNF-SD-WM-SP-012. Revision 6. *Tank Farm Contractor Operation and Utilization Plan.* Dated January 2007.
- 1.5 WAC 173-303. "Dangerous Waste Regulations." *Washington Administrative Code.*
- 1.6 SW-846. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.
- 1.7 ASME/NQA-1. 2000. *National Consensus Standard***(066) (143) (152)**

Standard 1: Management Products and Controls

This Standard describes the required management products and controls. The Contractor shall provide all necessary management and technical information and support necessary to meet the requirements of DOE O 413.3B, CRD, to enable DOE to meet the data requirements of the Integrated Planning, Accountability, and Budgeting System, and to ensure transparency in project performance and efficiency in project execution. The Contractor shall also support ORP in developing and maintaining the integrated RPP Baseline. All management and technical information developed under this Contract shall be accessible electronically by the Government **(271)**.

(a) Baseline Description and Requirements:

The Contractor shall develop and maintain a contract-compliant integrated and traceable technical scope, schedule, and cost baseline for the WTP Project. The baseline shall be managed in accordance with the process documented in the Earned Value Management System (EVMS) Description (Table C.5-1.1, Deliverable 1.3) and the Baseline Change Control Program Procedure (Table C.5-1.1, Deliverable 1.11) consistent with the below concepts and provisions:

Variances will be managed and approved through the Contractor's Trend Process as defined in Deliverables 1.3 and 1.11. Variances are accrued following the realization of circumstances that could have plausibly been anticipated or mitigated by the responsible control account manager(s).

Baseline Change Proposals (BCPs) will be managed and approved through the Contractor's processes as defined in Deliverables 1.3 and 1.11. BCPs are processed when circumstances could not have plausibly been anticipated or mitigated by the responsible control account manager(s). BCPs are generated and approved at the Contractor's discretion with the below exceptions:

- BCPs generated to convert project variances to budget, effectively reconciling a variance to enable improved manageability.
- BCPs generated to support the cost and schedule impacts from a Request for Equitable Adjustment (REAs). These BCPs (for REAs) will change the Total Estimated Contract Cost and may become the basis for earning additional fee.

The baseline and management thereof shall comply with this standard; ANSI/EIA-748A-1998, *Earned Value Management Systems* (EVMS); and DOE O 413.3B, CRD. The baseline shall include **(271)**:

- WTP Project technical requirements as delineated in (a)(1);
- Schedule to implement project work scope as described in (a)(2); and
- Project cost to implement project work scope on the schedule as described in (a)(3).

The technical scope, schedule, and cost baseline (WTP baseline) shall be maintained using a baseline change control process as further described in (a)(4).

- (1) Technical Baseline: The Contract technical baseline is represented by a series of documents, which define the basis for current cost or schedule estimates. Changes to these documents shall be evaluated for impact to project cost and/or schedule and captured by a baseline change proposal where necessary.

The following documents shall be viewed collectively as the baseline technical scope for the cost/schedule control system:

- (i) Contract Statement of Work;
- (ii) Approved Functional Specification pursuant to Contract Standard 3, paragraph (b)(1);
- (iii) Approved Basis of Design pursuant to Contract Standard 3, paragraph (b)(2);
- (iv) Approved Authorization Basis pursuant to 10 CFR 830;
- (v) Approved Operations Requirements Document (bolded text);
- (vi) Approved Interface Control Documents;
- (vii) Permit Requirements; and
- (viii) Approved Level 2 Work Breakdown Structure (WBS) Dictionary Sheets.

- (2) Schedule Baseline: The WTP baseline schedule shall be an activity-based, logic-driven schedule. The schedule logic shall be integrated with a networked hierarchy containing detailed tasks necessary to ensure successful project execution. The schedule shall support networked summarization at Level 1, "Project Summary Schedule"; Level 2, "Executive Level Schedule"; Level 3, "Project Intermediate Schedule"; to the Level 4, "Detailed Working Schedule." The scheduled activities shall be vertically traceable to the WBS and EVMS control accounts. The WTP schedule shall be used to verify attainability of the contract level milestone defined in Contract Section F.1(b), to evaluate progress toward meeting program objectives through tracking Activity and Facility Milestones as outlined in Section B.4(c), and to integrate the program schedule activities with all related work activities and milestones.

The following requirements shall be addressed at the appropriate level within the schedule hierarchy:

- (i) Scheduling Requirements: The WTP schedule shall be developed using a 24-month rolling schedule concept which is statused monthly and extended semi-annually. The near-term schedule shall be more detailed than activities past the 24-month cutoff.
 - a. The schedule shall include all significant external interfaces and critical items from suppliers, teammates, or other detailed schedules that depict significant and/or critical elements and Government furnished equipment or information dependencies. The determination of significant and critical Government interface requirements shall be mutually defined and documented.
 - b. The schedule shall be updated according to the Contractor's management control system and shall be submitted no less frequently than monthly. The schedule may reflect data either as of the end of the calendar month or as of the Contractor's accounting period cutoff date, provided it is consistent and traceable to the Monthly Status Report.

- c. The schedule shall contain discrete tasks/activities through contract completion including Contract milestones contained in Section B, Attachment B-2-C.
 - d. Monthly schedule analysis shall be performed to assess schedule progress to date and included as part of the monthly status report (see paragraph (d)(2)(v)b). The analysis shall include changes to schedule assumptions, variances above agreed thresholds to the baseline schedule, causes for the variances, potential impacts, and recommended corrective actions to minimize schedule delays. The analysis shall also identify potential problems and an assessment of the critical path and near-critical paths for the five subprojects and the overall contract.
 - e. The schedule shall be created using a Critical Path Method (CPM), network capable Commercially Off-The-Shelf (COTS) scheduling software application. The schedule shall be delivered electronically in the native digital format (i.e., an electronic file produced within the Contractor's scheduling tool) as part of the monthly report.
 - f. The level of detail in the schedule (including number and duration of tasks/activities) shall follow the Contractor's Project Controls System Description, program directives, etc. A sequence of discrete tasks/activities in the network that has the longest total duration through each subproject and the overall WTP Contract shall be identified as the subproject and project critical paths, respectively.
- (ii) In addition, the Contractor shall develop the necessary modeling capability at a rough order of magnitude level of accuracy to support "what-if" evaluations within five (5) working days of request. This modeling system shall provide model by dollars and reasonably represent planned expenditures by month for the first fiscal year and each fiscal year thereafter. Level of effort activities shall be added to the model as well as undistributed budget in planning packages so that each fiscal year can balance against known funding.
- (iii) LAW Construction Complete – A quarterly update shall be submitted of both the scheduled activities that have been completed/actualized and the changes made to schedule activities implemented through change control. The updates will enable incremental reviews to be conducted to verify completion of activities as well as confirming changes made through change control are reviewed by DOE that would add or delete activities from the LAW Construction Complete Milestone (Table C.5-1.1, Deliverable 1.13).
- (3) Cost Baseline: The WTP cost baseline is the latest DOE-approved Performance Measurement Baseline (PMB) and Total Allocated Budget (TAB) including any negotiated or directed changes and approved baseline change proposals, together with the following Performance Measurement Baseline supporting documentation:
- (i) Total contract cost and subproject costs including a summary description of facility design, process design, operational concept, and schedule.
 - (ii) Status of facility design, construction, and related procurements.
 - (iii) Description of the methodology of how the estimate was developed.

- (iv) A WBS dictionary, which includes a detailed technical description of the scope to be performed at the WBS Level 2, as defined in paragraph (b)(3)(ii).
 - (v) Backup materials necessary to understand the estimate shall be agreed to prior to submittal of the estimate. Examples include quantity takeoffs, equipment lists, detailed specifications, plans and drawings, calculations, databases used, historical data, cost estimating relationships, and actual quotes.
 - (vi) Details of distributable costs, methods of allocation, and a description of the work covered by distributable costs and how they were estimated and developed.
 - (vii) Explanation and description of Defense Contract Audit Agency-validated overhead and general and administrative rates used.
 - (viii) Examples of how standard base rates are burdened to arrive at estimated hourly rates.
 - (ix) Definitions and delineation for and categorization of costs into labor, material, equipment, travel, taxes, contingency, and other.
 - (x) Full delineation of any use of productivity or related factors that clearly identifies when and where used and basis for the utilization.
 - (xi) Written analysis of how cost and schedule contingency was determined. This includes all pertinent information necessary to understand and perform the calculations.
 - (xii) Estimate history; if the current estimate is a revision to an earlier estimate, provide reconciliation between estimates.
 - (xiii) Basis of escalation.
 - (xiv) Subcontractor cost estimates, traceable to the WTP cost estimate and WBS, if available, shall be provided upon request.
 - (xv) Risk mitigation plans and activities.
- (4) Baseline Change Control Process: The baseline change control process will be rigorous and disciplined to ensure that the scope, schedule, and cost baseline is accurate, up-to-date, and capable of providing meaningful data and information. In concert with DOE, the Contractor shall develop and implement a Change Control Program Procedure (Table C.5-1.1, Deliverable 1.11). The procedure shall be submitted to DOE for approval prior to implementation and shall address:
- (i) Establishing and maintaining a WTP change control board.
 - (ii) Authority levels and processes for approving variances and baseline change proposals.
 - (iii) Minimum BCP documentation requirements.
 - (iv) Cost and schedule estimate requirements.
 - (v) Advance work authorization process.

- (vi) Incorporating changes into the baseline EVMS cost and/or schedule modules.
 - (vii) Budget source and impact on project risk.
 - (viii) BCP impact on facility budgeted cost for work scheduled profiles.
 - (ix) Categorization methods for BCPs that clearly differentiate between in-scope and out-of-scope changes and variances.
- (5) Spending at Variance: In some circumstances, the Contractor may exceed authorized budget levels for a specific control account when a baseline change is not warranted, such as cost overruns. The Contractor's change control system shall track and manage changes in estimates at completion as a separate but integrated part of the overall change control process. Change control records shall maintain clear distinction between approved baseline and estimates at completion.
- (6) Reserved **(192)**.
- (7) Project Funding: The Contractor shall use the DOE-approved WTP Project cost baseline as the basis for the subproject and total project funding profile that is required to complete the Contract scope. The WTP funding profile shall comply with Congressional appropriations. The funding profile shall include engineering, procurement, construction, and commissioning baseline costs (including management reserve as well as DOE contingency), and estimated fees that will be paid. The Contractor shall provide on a monthly basis, Form DD 1586, Aug 96, DID-MGMT-81268, "Contract Funds Status Report (CFSR)," or approved equal for each control point (Table C.5-1.1, Deliverable 1.10).

Identification of management reserve shall be reported monthly and shall include the impact on the life cycle of the Contract.

- (b) Controlled Management Documents: The following documents shall be submitted for approval by DOE in accordance with the schedule in Table C.5-1-1, Deliverables:
- (1) Interface Management Plan: DOE (as lead), the Tank Farm Contractor, and the WTP Contractor shall develop and implement an interface management plan (Table C.5-1.1, Deliverable 1.4). The interface management plan shall:
 - (i) Recognize the DOE role as the owner of the WTP and as the final decision authority for any interface issues that are not resolved between the other parties.
 - (ii) Define the scope of each interface and provide a brief description of the required deliverables (e.g., products, documents, procedures, services, etc.) through ICDs.
 - (iii) Define organizational points of contact for participants.
 - (iv) Define interface requirements, controls, and applicable source documents for each interface.
 - (v) Involve appropriate RPP organizations and Hanford Site contractors in the integration, review, and approval process of ICDs and implement changes to ICDs through the appropriate change control process and, if necessary, contract changes.

- (vi) Involve individuals with the appropriate level of organizational responsibility and authority to ensure the interface is implemented and functioning. ORP will identify points of contact for each interface document.
 - (vii) Identify, track, and elevate issues for management review in the Monthly Status Report.
- (2) Project Execution Plan (PEP): The Contractor shall prepare a PEP that describes the approach for managing and controlling the project at the Contractor level. The PEP shall be approved by DOE (Table C.5-1.1, Deliverable 1.2), and shall focus on Contractor policies, methods, and approaches for the integration of project scope, schedule, and cost information in ensuring compliance with Contract and regulatory requirements. The Contractor PEP shall address the approach the Contractor will use to implement the requirements pertaining to project control processes including:
- (i) Management structure, responsibilities, and authorities;
 - (ii) Integrated safety management;
 - (iii) Quality assurance;
 - (iv) Safeguards and security;
 - (v) Permitting;
 - (vi) Construction acceptance, test, and evaluation;
 - (vii) Acquisition planning;
 - (viii) Contract management;
 - (ix) Systems engineering;
 - (x) Configuration management;
 - (xi) Waste treatment process change control;
 - (xii) Information management and reporting;
 - (xiii) External interface management;
 - (xiv) Work management;
 - (xv) Risk management;
 - (xvi) Construction project management; and
 - (xvii) Communications and stakeholder involvement.
- (3) Control System Description: The Contractor shall provide for DOE approval an Earned Value Management System Description meeting the requirements of DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD; and ANSI/EIA-748-A-1998, *Earned Value Management Systems (EVMS)* (Table C.5-1.1, Deliverable 1.3). The system description shall describe the management processes and controls that will be utilized to manage and control work and complete contract requirements. Upon approval by the

Contracting Officer, the Contractor shall fully implement the project control system. The Contractor shall obtain Contracting Officer approval prior to implementing materially significant changes to the system description. The Contracting Officer may direct compliance reviews to determine whether the Contractor is operating in accordance with the approved system description and producing accurate planning, budgeting, reporting, and change control data. The Contractor shall provide the Contracting Officer or designated representatives with access to all pertinent records, data, and plans for purposes of initial approval, approval of proposed changes, and the ongoing operation of the project control system **(271)**.

The Earned Value Management System Description shall, at a minimum, include:

- (i) A Work Breakdown Structure (WBS) including companion “*dictionary*” descriptions of work for each Level 2 WBS element. The WBS shall provide the basis for all project control system components, including estimating, scheduling, budgeting, performing, managing, and reporting, as required under this Contract.
- (ii) The authorized contract Level 2 WBS for this project is as follows:

| WBS | Title |
|-------------------|--|
| 1 | WTP Contract DE-AC27-01RL14136 |
| 1.01 | Pretreatment |
| 1.02 | Low-Activity Waste |
| 1.03 | High-Level Waste |
| 1.05 | Balance of Facilities |
| 1.06 | Analytical Laboratory |
| 1.07 (336) | Direct-Feed LAW (DFLAW) (336) |
| 1.10 (336) | LBL Facility Services (336) |
| 1.15 (336) | Project Services – effective begin date of 10/01/2014 (336) |
| 1.90 | Shared Services – effective end date 09/30/2014 (336) |

- (iii) The organizational breakdown structure with identification of key management positions. A control account shall be assigned to a manager with responsibility and authority to plan and budget the work, and control the resources and work activities within the approved technical, schedule, and cost baselines. The Contractor is also responsible to report status to allow complete rollup of technical, schedule, and cost performance for current reporting periods, cumulative to-date, and at-completion. The Contractor shall maintain and provide a current list of Control Account Managers.
- (iv) A description of the technical scope, cost, and schedule baseline development process, and the hierarchy of documents that will be used to describe and maintain that baseline.
- (v) Documentation of the process the Contractor intends to use for document control, configuration control, and change control.

- (vi) A brief summary of any supporting project control procedures that will be used.

(c) Risk Management:

- (1) The Contractor shall implement the risk management process defined in the Contractor's PEP and DOE O 413.3B, CRD. The Contractor shall provide a Baseline Risk Plan (Table C.5-1.1, Deliverable 1.6) documenting Contractor budget base risks (scope, schedule, and cost) for DOE approval. The Baseline Risk Plan shall identify the major risks to completing the project within the approved contract baseline, the Contractor's risk management strategies, and mitigation action plans. The Contractor shall submit annual updates of the status of the WTP Baseline Risk Plan. The Baseline Risk Plan shall meet the following requirements **(271)**:
 - (i) Project risks shall be identified along with their probabilities and consequences.
 - (ii) Risks identified as critical (Critical Risk List) shall be evaluated with each submittal for change in the unmitigated and residual risk levels.
 - (iii) Project risks shall be identified by facility. **(151)**
- (2) The Contractor shall provide a monthly status of work scope actions directly attributed to DOE-owned risks (i.e., technology, programmatic, and operational). The Contractor shall also support the identification, categorization, and development of risk-handling strategies for newly identified DOE-owned risks, and support the annual update to the RPP Risk Management Plan as requested by DOE.
- (3) Risk and decision management activities, for DOE owned risks, shall be coordinated on a continuing basis with DOE (as lead), Tank Farm Contractor, and Hanford Site contractors. Contractor risk analysis information pertaining to "cross-cutting" decisions shall be communicated to DOE, the Tank Farm Contractor, and Hanford Site contractors, including recommendations as to who should have the lead for managing each risk. The Contractor shall document risks associated with ICDs and prepare issue resolution plans for DOE approval.
- (4) The Contractor shall include forecasts of expected changes to risk assessment status in the Monthly Status Report (Table C.5-1.1, Deliverable 1.7).

(d) Project Reporting: The Contractor shall develop a reporting system that reports project performance on the technical scope, schedule, and cost profile. The requirements and procedures for this system shall be defined in the Earned Value Management Systems Description. The following routine reports are required:

- (1) Monthly Status Report: The Contractor shall prepare a monthly status report representing the prior month's performance and transmit it to DOE by the first Wednesday **(147)** of the second month following data cutoff (Table C.5-1.1, Deliverable 1.7). The Monthly Status Report shall be a written report that includes, but is not limited to, the following:
 - (i) Project manager narrative assessment;
 - (ii) Safety statistics;
 - (iii) Quality issues;

- (iv) Significant accomplishments and progress towards completion of project milestones and objectives;
 - (v) Monthly summarized earned value analysis for WBS Level 1;
 - (vi) Reserved **(192)**
 - (vii) Potential problems, impacts, and alternative courses of action; for example staffing issues, assessment of the effectiveness of actions taken previously for significant issues, or the monitoring results of recovery plan implementation;
 - (viii) Status of decisions, including DOE decisions, and information requirements for those decisions;
 - (ix) Change control section that summarizes the scope, technical, schedule, and cost impacts resulting from approved and implemented as well as proposed baseline change actions;
 - (x) Project and subproject cost avoidance actions taken;
 - (xi) Forecasted changes to last risk assessment;
 - (xii) Six (6)-month critical path look-ahead and milestone (Activity, Facility, and Contract level milestones) at Level 2 WBS;
 - (xiii) Report of proposed changes that impact DOE, site interfaces, or Contract level milestones; and
 - (xiv) Single driving critical path analysis derived from Level 4 Schedule for WBS 1 and 2.
- (2) Contract Performance Report: The Contractor shall prepare monthly EVMS information reports by WTP Project and subproject in the listed Office of Management and Budget Contract Status Report formats (DID-MGMT-81466) or equivalents, representing the prior month's performance and transmit the report to DOE by the last Wednesday of the month following data cutoff (Table C.5-1.1, Deliverable 1.10). Reporting requirements below shall be reviewed on an annual basis and necessary adjustments will be authorized by the Contract Officer:
- (i) Format 1, DD Form 2734/1, Mar 05, Work Breakdown Structure (WBS);
 - a. At Level 2 WBS, Control Account Level (CA)
 - (ii) Format 2, DD Form 2734/2, Mar 05, Organizational Categories;
 - a. At Level 2 Organizational Breakdown Structure (OBS), Level 3 OBS, CA
 - (iii) Format 3, DD Form 2734/3, Mar 05, Baseline;
 - a. At the Control Account Level by Contract changes, management reserve application, and internal replanning categories
 - (iv) Format 4, DD Form 2734/4, Mar 05, Staffing;
 - a. At Level 2 Organizational Breakdown Structure (OBS), Level 3 OBS, CA

- (v) Format 5, DD Form 2734/5, Mar 05, Explanations and Problem Analysis;
 - a. Variance analysis in accordance with the following thresholds:
 - 1. At the Control Account Level
 - (a) Current Period Variance: \$250,000
 - (b) Cumulative Variance: plus or minus 10 percent or \$1,000,000, whichever is less
 - (c) Variance at Completion: plus or minus 10 percent or \$5,000,000, whichever is less.
 - b. Schedule analysis in accordance with Data Item Description DI-MGMT-81650, "Integrated Master Schedule":
 - 1. WBS Level 2 critical paths against construction completion: less than zero days total float; critical paths addressed through the monthly report (paragraph (1)(xiv)) do not have to be duplicated in Format 5.
 - 2. Progress against milestones; performance against milestones addressed through the monthly report (paragraph (1)(viii)) do not have to be duplicated in Format 5.
 - 3. Performance against planned system turnover and startup sequence.
- (vi) Provide analysis native files of the following:
 - (a) The schedule activities that have slipped six (6) months (relative to their corresponding baseline activity) OR lost 50 percent of their float from the current baseline schedule.
 - (b) An analysis of the activities meeting the above criteria AND have less than or equal to 100 days of float in the current schedule will be provided in the Contract Performance Report CPR format 5 as well as electronically.
 - (c) An Early Start and Early Finish stepchart metrics will be provided that shows the number of activities in the current schedule that have moved outside their baseline schedule completion year, the number of activities that have remained in their baseline schedule completion year, and the metrics from paragraph 1 above.
 - (d) Graphical presentation of the number of activities with less than 100 days float in the current schedule compared to the number of activities with less than 100 days float in the baseline through completion of the project.
 - (e) All graphical data shall be provided in tabular form.
 - (f) Graphical presentation of cumulative number of baseline activities scheduled to be complete and number of those activities that did not complete.

- (vii) DD Form 1586, Aug 96, DID-MGMT-81268, Contract Funds Status Report or approved equal for each control point.
- (3) Baseline Revisions and Data Maintenance Report: The Contractor shall prepare monthly reports that document and reconcile the current baseline (scope, schedule, and budget elements) with the project baseline established through the May 2006 submittal of the WTP Project Baseline update (Table C.5-1.1, Deliverable 1.5) and transmit it electronically to DOE by the last Wednesday of the month following data cutoff (Table C.5-1.1, Deliverable 1.12). At a minimum, this report shall include logs and metrics that track and trend change activity by WBS Level 2 and OBS Level 3, Control Account. Include Contract Performance Report format 3 detail, Contract Budget Base Log, Performance Measurement Baseline Log, and Baseline Change Proposal Log.
- (4) Electronic Data: Earned value data provided via compact disc for the following: (a) Engineering Performance and Progress Report data files; (b) Quantity Unit Rate Report data files; (c) COBRA data files and reports; (d) baseline schedule; (e) current schedules; (f) Cost and Commitment Log; (g) Equipment Management System database; (h) Inception to Date Report for Permanent Plant Equipment Awards; (i) Bechtel Estimating Tool Kit (BETK); (j) Commodity Curves; (k) Special Purpose Charge Code Activity Log for all Not to Exceed Contracting Officer Authorizations; (l) Earned Purchase Order Value (EPOV) data; (m) Engineering Job Hour Variance Analysis Reports; (n) Work Package variance analyses, as available; and (o) Area and Project Review presentation packages. Earned value data is to be provided on the last Wednesday of the month following the data cutoff to the Contracting Officer and the Contracting Officer's Representative (Table C.5-1.1, Deliverable 1.12). **(151)**
- (5) Occurrence Reporting: The Contractor shall adhere to DOE O 232.2, *Occurrence Reporting and Processing of Operations Information*, Supplemental Contractor Requirements Documents (SCRD), with Hanford Site-specific requirements and methods for notification (Table C.5-1.1, Deliverable 1.8). The Contractor shall also adhere to the requirements of the ORP SCR D to DOE O 232.2 **(256)**.
- (6) Environment, Safety, and Health Reporting: In addition to the *Occupational Safety and Health Act of 1970* and the *Price Anderson Amendments Act of 1988* (10 CFR 820) reporting requirements, the Contractor shall report all information specified in DOE O 231.1B, *Environmental, Safety and Health Reporting*, CRD (310)(363). The Contractor process will specify this requirement in contracts down to the lowest-tier subcontractor. The Contractor process will accumulate and provide a single report responding to requirement information for both the Contractor and all subcontractors (Table C.5-1.1, Deliverable 1.9). For occurrence reporting the Contractor shall adhere to the requirements of the Supplemental Contractor Requirements Document (SCRD) of DOE O 232.2 **(256)**.
- (7) Accident Investigation: The Contractor and, as necessary, all subcontractors shall support accident investigations for accidents that may occur during Contractor activities. The Contractor and all its subcontractors shall establish and maintain readiness to respond to accidents, mitigate potential consequences, assist in collecting and processing evidence, and assist with the accident investigation. This shall include preserving the accident scene and providing support to the accident investigation board.
- (8) **Reserved (192)**

- (9) Electronic Data Upload to PARS II: Each month the contractor shall upload WTP performance data to the new DOE Project Assessment and Reporting System (PARS II), using a DOE-provided data extractor for cost and schedule data, by the last workday of the month following the fiscal month end, for the fiscal month period. Change Control and variance analysis data will be provided to PARS II by an upload of a Portable Document Format (PDF) of the appropriate monthly reports for the fiscal month period as well.

Standard 2: Research, Technology, and Modeling

This Standard describes the Research and Technology (R&T) Testing Program requirements as well as process and facility modeling requirements.

(a) Research and Technology Testing Program:

(1) Research and Technology Program Plan:

- (i) The Contractor shall maintain and update an R&T Program Plan that describes the research and testing work activities that will be conducted to support process and facility design, determine plant process operating limits, support qualification testing of the waste forms (IHLW and ILAW) and secondary wastes, and provide information to support environmental permitting and the authorization basis.
- (ii) The Contractor shall submit for DOE approval, the revised R&T Program Plan (Table C.5-1.1, Deliverable 2.1). All Contractor-proposed changes shall be clearly identified. The R&T Program Plan activities will be logically tied to the project baseline and baseline risk assessment described in Standard 1, Management Products and Controls. For each testing activity, the R&T Program Plan shall identify the following summary-level information: The purpose and scope of the test, including the extent of information known at the time the plan is issued; the performing organization; and the method(s) to test and analyze information used to support the design process, determination of operating limits, permitting, operations, and/or waste qualification activities.
- (iii) The R&T Program Plan will be updated as needed to close out technical risks. All Contractor-proposed changes to the R&T Program Plan shall be traceable to the driver for the change; for example, if an optimization change in Standard 3, Design results in the need to change planned research and technology, the driver for the change shall be identified in the revised R&T Program Plan.

(2) Research and Technology Requirements:

- (i) The Contractor shall provide DOE copies for information of the Contractor-approved draft test plans for all process verification, including the determination of process operating limits and product qualification testing, at least fifteen (15) calendar days in advance of conducting the test(s). Approved test plans shall be provided to DOE (Table C.5.-1.1, Deliverable 2.2).
- (ii) DOE will be provided draft copies of test reports for comment during the Contractor report review period, and the Contractor shall provide to DOE completed test reports for process verification testing and product qualification within two (2) months after the approval by the R&T Program Manager (Table C.5-1.1, Deliverable 2.3). At DOE's request, for tests lasting more than six (6) months, an interim report or update via presentations shall be provided at approximately the halfway point of the test. When a test is run with simulants rather than actual tank waste, the report shall compare the results to work performed with tank waste, if data is available.
- (iii) The Contractor shall utilize the results of completed and ongoing testing activities performed as part of the WTP Conceptual Design and supporting documentation in estimating facility and unit operations

performance. The Contractor shall not reinitiate or repeat a test unless the scope of the test plan is presented to DOE in writing, and DOE agrees to the conduct of the testing.

- (iv) The integrated process flowsheet and material balances shall be supported by the process verification test results. All process verification and product qualification tasks shall be conducted in accordance with the DOE-concurred upon QA Program.
- (v) All IHLW qualification work shall be conducted in accordance with a DOE-concurred upon QA Program that complies with the requirements of DOE/RW-0333P, *Quality Assurance Requirements and Description Document (QARD)*, Revision 20. No HLW glass testing scoping work will be performed without prior agreement by DOE.

(3) Required Research and Technology Testing:

- (i) Characterization of Low-Activity Waste and High-Level Waste Feeds:
The Contractor shall characterize Hanford tank waste for purposes of determining that feed meets feed specification requirements, supporting WTP environmental permitting activities, establishment of the WTP authorization basis, process verification testing, and product qualification testing. The Contractor shall request tank waste samples for this scope through ICD 23, "Waste Treatability Samples," in order to perform the studies.

The analysis requirements for the as-received and treated tank waste samples shall be defined by the Contractor in Contractor test plans. The Contractor shall provide test plans and interim reports to DOE at appropriate intermediate steps, and final reports in accordance with the requirements of Standard 2, Research, Technology and Modeling. All analytic results shall be reported to DOE in accordance with HNF-3638, *Standard Electronic Format Specification for Tank Waste Characterization Data Loader: Version 2.4*, Revision 1, Lockheed Martin Corporation, Richland, Washington.

Characterization information for the samples shall include: viscosity, density, particle size distribution (if sufficient solids are present in samples), chemical composition, radiochemical composition, hazardous materials composition consistent with the analysis requirements of the Dangerous Waste Permit, authorization basis, and solids solubility versus concentration (if sufficient solids are present in samples).

- a. The Contractor shall compare actual tank waste analytical data to waste stream-modeling results to validate modeling results. If errors in modeling are observed the models shall be adjusted appropriately.
- b. The Contractor shall use tank waste samples to analyze, test, and assess the capability of the proposed waste treatment processes to meet the requirements for producing an IHLW form that can meet the HWMA and RCRA de-listing technical requirements in accordance with Specification 1, *Immobilized High-Level Waste*, and for producing a Land Disposal Restrictions (LDR)-compliant ILAW form in accordance with Specification 2, *Immobilized Low-Activity Waste*.

- c. The Contractor shall determine if the sample materials meet Specification 7, *Low-Activity Waste Envelopes Definition*, limits for LAW samples and Specification 8, *High-Level Waste Envelope Definition*, limits for HLW samples. The entrained solids in the LAW feed samples shall be characterized (where solids of sufficient quantity are available in the treatability samples) in accordance with Specification 7.2.2.1.
 - d. The Contractor shall implement and execute the Regulatory Data Quality Objectives (DQO) entitled *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project*, K.D. Wiemers, et al., dated December 1998, Revision 0, PNNL-12040 (Table C.5-1.1, Deliverable 2.4).
 - e. During the Contract period, the Contractor shall propose DOE methods to optimize the DQO, and develop the test specifications and plans consistent with the DOE-revised DQO. As available, data and data needs identified during the treatment facility permitting process, the Risk Assessment Work Plan, and LDR/Delisting efforts will be used as inputs to the optimization process.
 - f. The DQO characterization scope for R&T testing shall include characterization of the first HLW feed and first LAW feed (AY-102 [solids and supernatant]) (unless agreed to otherwise with DOE through optimization of the DQO).
- (ii) Waste Separations Processing Testing: The Contractor shall continue to test and validate the capability of LAW pretreatment processes for removal of entrained solids (where solids of sufficient quantity are available in the treatability samples), Cs-137, Sr-90, and TRU elements, to meet ILAW product requirements. Activities shall address the ability to meet contract requirements, operating requirements, operating limits, plant throughput requirements, and information for regulatory permits and the authorization basis. Radioactive testing shall be used to validate simulants and the results from simulant testing. Process scale-up shall be demonstrated with tank waste or appropriate simulants, as described below.
- a. Ion exchange chemical and radiological durability and regeneration properties shall be demonstrated. Determination of gas generation from the columns shall be determined. Scale-up of resin manufacturing shall be demonstrated and batch-to-batch consistency requirements shall be determined and the impacts addressed.
 - b. The Sr-90 and TRU removal precipitation reaction mechanism shall be characterized via testing.
- (iii) Validation of Sludge-Washing Process: The Contractor shall conduct sludge treatment testing using radioactive samples provided by DOE, and nonradioactive testing to develop and demonstrate process flowsheets and equipment systems to perform sludge washing, caustic leaching and oxidative leaching to minimize the volume of HLW glass produced.

Development testing of the sludge treatment process steps shall include evaluation of process recycles and ultrafilter system cleaning.

The testing results shall be provided to DOE for review and comment. Proposed process steps shall be submitted to DOE for review and approval (Table C.5.1-1, Deliverable 2.10).

Upon completion of sludge treatment scale-up and confirmatory testing with the Pretreatment Engineering Platform, the test system shall be flushed and dried to facilitate storage and preservation for a period in excess of one year. This condition shall be dry for piping and components that were used in contact with process simulant.

(iv) Immobilized Low-Activity Waste Process Testing: The Contractor shall conduct testing to determine the appropriate operating conditions for the LAW melter. Information to be obtained shall include:

- a. Determination of maximum waste loading (including sulfate incorporation) and melter throughput rates for waste envelopes A, B, and C. The Contractor shall continue to investigate glass formulations optimized to incorporate sulfate. These glasses prepared from simulants shall be subjected to the Product Consistency Test and Vapor Hydration Test in accordance with ILAW Specification 2.2.2.17, *Waste Form Testing*. In addition, the process ability of the glass formulation shall be assessed.
- b. Determination of offgas compositions for regulatory purposes and effects on the mass material balance due to recycle streams and secondary waste streams.
- c. Confirmation of the design concept for selected offgas equipment.
- d. Determination of operating conditions or melter feed additive requirements to minimize foaming and process-upset conditions.
- e. Monitor testing to assist in estimating maximum offgas flow requirements in an upset condition.
- f. Determination that glasses produced from a continuously-fed melter meets product specifications and requirements.
- g. Ability to remotely fill and seal full scale packages to Contract requirements (Specification 2).

(v) Immobilized Low-Activity Waste Qualification Testing:

- a. The Contractor shall prepare laboratory scale samples of ILAW glasses from the waste samples provided by DOE. The waste samples shall have been pretreated in accordance with the Contractor's LAW Facility feed pretreatment processes.
- b. The Contractor shall use glasses prepared from DOE-supplied samples and Contractor prepared simulants to demonstrate that Contract requirements can be met (Specification 2). The tests shall be consistent with the DOE-concurred upon ILAW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.3). Glass composition ranges that meet operating and contract

requirements shall be identified with nonradioactive glass testing. A planned target composition shall be identified for each glass composition range.

- c. For target glass compositions, radioactive glasses prepared with pretreated tank waste shall be used to demonstrate the ILAW durability requirements of Specification 2.2.2.17, Waste Form Testing. For Specifications 2.2.2.17.1 and 2.2.2.17.3, nonradioactive glasses may be used provided that the results from 2.2.2.17.2 are consistent for the nonradioactive glass and the radioactive glass.
 - d. The Contractor shall obtain sufficient information for determining that the products meet LDR requirements in accordance with Standard 6, "Product Qualification, Characterization, and Certification," and as needed to implement the DOE-concurred upon *Final Approach for ILAW LDR Compliance*, and to support the Standard 7 Contractor-prepared petitions for Hanford tank waste treatment standards.
 - e. The Contractor shall provide samples, testing data, and compositional analysis to DOE for performance assessment analysis. Samples will only be provided when requested in advance by DOE; archiving of these samples is not required. The Contractor shall actively participate in the performance assessment effort to arrive at suitable compositions for processing and disposal purposes.
- (vi) Immobilized High-Level Waste Process Testing: The Contractor shall conduct testing to determine the appropriate operating conditions for the HLW melter. Information to be obtained shall include:
- a. Determination of maximum waste loading and melter throughput rates for waste Envelope D and the products resulting from pretreatment of the LAW feed.
 - b. Determination of offgas compositions for regulatory purposes and effects on the mass material balance due to recycle streams.
 - c. Confirmation of the appropriateness of selected offgas equipment.
 - d. Determination of operating conditions or melter feed additive requirements to minimize foaming and process-upset conditions.
 - e. Determination of maximum offgas flow requirements, in an upset condition.
 - f. Determination that glasses produced from a continuously fed melter produce glass that meets product specifications.
 - g. Ability to fill full-scale packages to Contract requirements (Specification 1).

(vii) Immobilized High-Level Waste Qualification Testing:

- a. The Contractor shall prepare laboratory scale samples of IHLW glasses from the waste samples provided by DOE. The waste samples shall incorporate pretreatment Envelope D products from the pretreatment of the low-activity waste samples provided by DOE.
- b. The Contractor shall use glasses prepared from DOE supplied samples and Contractor prepared simulants to demonstrate that Contract requirements can be met (Specification 1). The tests shall be consistent with the DOE-concurred upon IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2) and relevant documents. Glass composition ranges that meet operating and contract requirements shall be identified with nonradioactive glass testing. A planned target composition shall be identified for each glass composition range.
- c. For target glass compositions, radioactive glasses prepared with pretreated tank waste shall be used to demonstrate the IHLW durability requirements described in Specification 1.
- d. The Contractor shall provide IHLW glass properties data and information in a form that allows DOE to further develop glass properties models. These models will include (1) liquidus temperature; (2) volume fraction of crystals below the liquidus temperature; (3) viscosity as a function of temperature; (4) Toxicity Characteristic Leach Procedure; and (5) product consistency test.
- e. The Contractor shall obtain sufficient information for determining that the products meet LDR and can be delisted in accordance with Standard 6, Product Qualification, Characterization, and Certification, as needed to implement the DOE-concurred upon *Final Approach for IHLW Delisting*, and to support the Contractor-developed Standard 7 petitions for exemption or exclusion of IHLW from RCRA.

The Contractor shall prepare full-scale prototype IHLW canister waste forms composed of simulated IHLW glass within the 4.5-meter tall, austenitic stainless steel canister. After filling the canister with simulated IHLW glass and canister closure, the Contractor shall test the IHLW canister to demonstrate compliance with the *Waste Acceptance System Requirements Document* (WASRD), Specification 4.8.3, *Dimensional Envelope for HLW Canisters*, and Specification 4.8.4, *Filled HLW Canister Weights*. Drop tests shall be conducted to demonstrate compliance with WASRD Specification 4.8.8, *HLW Canister Drop*. **(047)**

- (viii) Effects of Separable Organics: The Contractor shall evaluate the effects of trace quantities (approximately 25 ppm) of separable organics (tributyl phosphate and normal paraffin hydrocarbon) in the tank waste liquid feed to the WTP and the fate of the separable organics within the system. Each potentially affected unit operation (including ion exchange elution and evaporation) shall be examined for process, safety, and permitting implications. Based upon the results of these tests, the Contractor shall

propose a de minimus concentration level for separable organics that could be sent to the WTP without adversely affecting the WTP (Table C.5-1.1, Deliverable 2.11).

- (ix) Oxidative Leaching: The Contractor shall conduct a literature review and prepare a technical report (Table C.5-1.1, Deliverable 2.8, Technical Report on Oxidative Leaching) that evaluates the treatment processes for the oxidative leaching of chemical components (principally chromium [Cr] and associated components; i.e., sulfate) that limit the loading of HLW solid oxides in the HLW glass waste form. The literature review shall summarize existing experimental results and data, and present conceptual and realistic process flowsheets including the identification of process equipment and operating conditions. Based upon the study results, the Contractor shall provide a recommendation on the preferred process to conduct required separations.

The Contractor shall conduct technology testing work using simulants and actual waste testing to provide design and process operational information on the process used to remove Cr from the HLW stream. The process should have the capability to remove Cr from the pretreated HLW stream such that this chemical component, or reagents added to remove this component does not limit the HLW loading in the glass waste form. The Contractor shall test a minimum of two (2) radioactive tank waste samples (SY-102 and a second sample that must be provided so that analysis with sample SY-102 can be run concurrently). The test shall be conducted to provide proof of process demonstration (part of Table C.5-1.1, Deliverables 2.2 and 2.3), identify operating limits for plant processes, and to determine any impacts to the facility throughput and/or availability. The Contractor shall make recommendations to ORP for the modification of Specification 12, *Procedure to Determine the HLW Feed Treatment Approach* and Specification 1, *Immobilized High Level Waste*, Table TS-1 limits for Cr₂O₃ and sulfate, based upon the results of this experimentation (Table C.5-1.1, Deliverable 2.9, Test Report on Oxidative Leaching).

(b) Process and Facility Modeling Requirements:

The Contractor shall develop and use analytical models to predict and evaluate plant performance using ORP provided tank waste characterization information, waste feed vectors, and WTP Research and Technology (R&T) data, to support WTP process and facility design, support pre-operational planning assessments, and support technical integration with Tank Farm Contractor waste feed staging and product and secondary waste acceptance activities. The Contractor shall, at a minimum, use the following models:

- (1) Operations Research Assessment of the Waste Treatment and Immobilization Plant: The Contractor shall conduct Operations Research assessments for the PT Facility, HLW Facility, LAW Facility, and LAB to determine that the WTP design incorporates appropriate design and operational features to meet integrated facility availability requirements and reduce construction and/or operations costs. The assessment shall include BOF, including the glass former facility, Effluent Management Facility, and where separate evaluations show a BOF system's predicted availability could impact integrated plant availability. Integrated facility assessments shall be performed to evaluate compliance with Contract Section C.7(b) integrated facility availability. The scope of the assessments to estimate WTP facility availability shall include:
- (i) Sampling and analysis requirements including sample turnaround times;

- (ii) Vessel capacities;
- (iii) Times to conduct individual process steps in unit operations;
- (iv) Time for mechanical handling steps;
- (v) Equipment reliability and availability time estimates;
- (vi) Failure rates of critical instrumentation and control systems;
- (vii) Time to diagnose equipment failures and preparation for repair; and
- (viii) Time estimates for maintenance and repair of facility and process systems.

The Contractor shall separately document the basis for equipment reliability including estimates of mean time before failure, mean time to repair, and probability distributions for these assumptions.

The Contractor shall use the Operations Research Model to estimate the waste treatment capacity of each of the WTP facilities and the integrated WTP facility. The confidence level for the Operations Research Model assessment waste treatment capacity results shall be presented. Key equipment components and equipment systems which influence treatment capacity shall be identified and ranked.

Spare parts determination shall include input from the Operations Research Assessment in establishing the spare parts inventory list (Standard 3(c)(6)).

Where RAMI data is not currently available, the Contractor shall make reasonable assumptions based upon best available information. The proposed configuration of the Operational Research Model, and major assumptions (e.g., process flow configuration, process flowsheet, RAMI input data) shall be presented to DOE for review and approval prior to completion of the model runs used to demonstrate Section C.7 compliance with treatment capacity requirements.

The Operations Research Model results, assumptions, model input parameters, and definition of the model output results shall be clearly documented and provided to DOE for comment (Table C.5-1.1, Deliverable 2.5). The Operations Research Model and outputs shall be updated as necessary, to support major design change assessments and reflect the latest design and information from R&T that would impact availability.

Electronic copies of the Operations Research assessments shall be provided to DOE with each completed assessment.

- (2) Waste Treatment and Immobilization Plant Tank Utilization Assessments:
The Contractor shall perform Tank Utilization Assessments under specific feed vector assumptions provided by DOE and will be based upon the compositional limits defined in Specification 7, Low Activity Waste Envelopes Definition and Specification 8, High Level Waste Envelope Definition, tank waste inventory estimates, and the results of testing with actual tank waste samples. The Contractor shall perform Tank Utilization Assessments to support assessments of design changes that would affect model outcomes. The models shall reflect the latest design and information from research and technology. DOE shall review and approve the specific assumptions when the tank utilization assessment model is used to evaluate Contract Section C.7(b) design capacity requirements. The primary software used to run the dynamic flowsheet shall be Gensym G2 or other software as agreed to by DOE. The Contractor shall assess utilization of process

tank capacity and supporting equipment capability and operational characteristics, to ensure that the tanks are appropriately sized to support process operations, sampling and analysis turnaround times, process control requirements, and waste form qualification requirements. The model assessments shall include material balance summaries of major chemical and radiochemical components to support demonstration of model assessment integrity. Results shall be provided to DOE for review and comment (Table C.5-1.1, Deliverable 2.6).

The flowsheet and material balances shall estimate the quantity of ILAW, IHLW, and relevant secondary streams on an annual basis.

The material balances will be based on three standards for chemical composition estimation. The standards are:

- (i) Best available information that is based upon the analysis of tank waste samples planned to be treated in the WTP;
- (ii) Agreed upon waste input inventory; and
- (iii) Specification 7, Low Activity Waste Envelopes Definition and Specification 8, High Level Waste Envelope Definition concentration maximums.

The Contractor should evaluate the process chemistry predictions based on the material balance results. Unresolved process chemistry predictions should be verified through additional literature reviews and process chemistry testing.

Electronic copies of the Tank Utilization Assessments shall be provided to DOE with each completed assessment.

- (3) Evaluation of River Protection Project Mission Waste Feed Vector: The Contractor shall evaluate the waste feed vector, provided by the Tank Farm Contractor, through DOE, to identify the characteristics that may limit the WTP treatment rate prior to completing Tank Utilization Assessments used to evaluate WTP performance. Comments, if any, shall be provided to the Tank Farm Contractor on any characteristics (e.g., solids concentration, chemical composition, and radiochemical composition) that can improve processability of the projected waste feed compositions. The waste feed vector shall be adjusted by the Tank Farm Contractor, prior to use by the Contractor, to evaluate WTP performance. Tank Farm Contractor adjustments to the waste feeds are constrained by data limitations, as well as waste storage and retrieval infrastructure.

Electronic copies of the Tank Utilization Assessments shall be provided to DOE with each completed assessment.

- (4) Deleted **(230)**
- (5) Configuration Control: The Contractor will establish and maintain a configuration control system to manage the models and analyses. The models and analyses will be subject to the QA and configuration control requirements imposed upon the design process in Section C.4, "Environment, Safety, Quality, and Health," and Standard 1, Management Products and Controls.

Standard 3: Design

This Standard describes the Contractor's responsibilities for conducting facility design functions, maintaining design documentation, and conducting design reviews. The intent is to ensure that the Contractor has the necessary systems, processes, information, and deliverables in place to allow DOE evaluation that the WTP Project is proceeding appropriately.

(a) Design Process:

The Contractor shall perform the following activities:

- (1) Acquire and place under configuration control all records from previous contractors within one (1) month of Contract award. The Contractor shall transition the WTP Conceptual Design and supporting information developed through Contract award.
- (2) Provide to DOE for information the Contractor's design process (Table C.5-1.1, Deliverable 3.1). The process shall meet all requirements; laws and regulations; ensure that design is performed in controlled, safe, and efficient manner; and implement best industry practices. As changes to the process are made, the changes shall be provided to DOE for information.

(b) Establish and Maintain Facility Design Requirements: The Contractor shall comply with the Contract design process and the following:

- (1) Functional Specification: The Contractor shall prepare a Functional Specification that defines the technical operational requirements of the WTP based on the WTP Conceptual Design and supporting documentation (Table C.5-1.1, Deliverable 3.2). This document shall define the waste treatment requirements, environmental compliance requirements, and authorization basis requirements of the facility as currently known and understood. The Functional Specification shall describe the process/functional requirements of the WTP, including:
 - (i) WTP feed characteristics including quantities; treatment rates; and mechanical, physical, chemical, and radiological properties (by ranges, envelopes, tanks, or transfer batches);
 - (ii) ILAW and IHLW product characteristics such as quantities, mechanical, physical, chemical, and radiological properties (by ranges, envelopes, tanks, or transfer batches);
 - (iii) Services and utility requirements, operating materials and supplies, and other inputs;
 - (iv) Estimates of effluents, emissions, solid wastes, by-products, and other outputs; and
 - (v) WTP operations limits.
- (2) Basis of Design: The Contractor shall prepare for DOE review and comment (Table C.5-1.1, Deliverable 3.3(a)), and as changes occur **(171)** a Basis of Design Document that identifies directly or by reference design requirements and design codes and standards that will serve as a basis for the continued design of the WTP. The Basis of Design shall be based on the WTP Conceptual Design, (including the Basis of Design directly developed in that phase), and supporting documentation. The Basis of Design shall be generally organized by discipline and shall at a minimum identify:

- (i) Environmental permitting requirements from State laws and regulations, the Dangerous Waste Permit Application (DWPA), Notice(s) of Construction (NOC), Prevention of Significant Deterioration (PSD), etc.;
 - (ii) Summary of the WTP site characteristics, including climatic, geotechnical, and natural phenomena data (with numerical values specifically preferred where practical; otherwise, referenced to identified source);
 - (iii) Design requirements for the WTP;
 - (iv) Allowable process and atmospheric temperatures, pressures, flow rates, for design conditions (with numerical values specifically preferred where practical; otherwise, reference to identified source); and
 - (v) Applicable codes and standards, regulations and guidelines.
- (3) The Contractor shall prepare for DOE review a Design Criteria Database (DCD) (Table C.5-1.1, Deliverable 3.3(b)). The DCD shall be used to identify potential design inputs from the design criteria contained in the source documents. The DCD shall be based on the WTP Conceptual Design and supporting documentation and updated as source documents are revised. The DCD shall contain design criteria extracted verbatim from the following source documents (and others as appropriate):
- (i) Safety analysis documents (e.g., initial safety analysis report, preliminary safety analysis report/final safety analysis report, preliminary documented safety analysis [PDSA]/documented safety analysis [DSA], etc. when submitted/approved);
 - (ii) Integrated Safety Management Plan;
 - (iii) Radiation Protection Plan for Design and Construction;
 - (iv) Safety Requirements Document-Volume II;
 - (v) Deleted **(226)**;
 - (vi) RPP-WTP Contract;
 - (vii) Basis of Design;
 - (viii) Functional Specification;
 - (ix) Operations Requirements Document;
 - (x) Deleted **(226)**;
 - (xi) Partial Construction Authorization Requests(s) (when submitted/approved);
 - (xii) Construction Authorization Request(s) (when submitted/approved);
 - (xiii) Dangerous Waste Permit Application (when submitted/approved);
 - (xiv) Notices of Construction (when submitted/approved);

- (xv) Prevention of Significant Deterioration to the Environment (when submitted/approved);
 - (xvi) Interface Control Documents; and
 - (xvii) Engineering, Procurement, and Construction (EPC) Code of Record.
- (4) Operations Requirements Document: The Contractor shall prepare an Operations Requirements Document for DOE review and approval (Table C.5-1.1, Deliverable 3.4) based on the WTP Conceptual Design and supporting documentation. The operations requirements document shall define requirements for WTP life-cycle operations, including commissioning. These requirements will influence WTP design features to ensure cost efficient operations and provide for accurate life-cycle cost estimates, planning, and informed decision-making. The Operations Requirements Document shall include at a minimum:
- (i) The operations and maintenance philosophy and requirements for the WTP, including requirements for reliability, availability, maintainability, and inspectability;
 - (ii) Description of the operations and maintenance philosophy for each of the WTP facilities (BOF, PT, HLW, and LAW);
 - (iii) Requirements for change rooms, first aid stations, decontamination facilities, lunch rooms, training facilities, control rooms, and operating galleries;
 - (iv) Requirements for facilities and computer based (simulator) training facilities;
 - (v) Equipment accessibility for maintenance and operations including both contact and remotely maintained systems, clearances and tolerances allowed in mechanical systems, and housekeeping features;
 - (vi) Instrument and control requirements for control room and local instruments;
 - (vii) General sampling and analyses requirements;
 - (viii) Ergonomics and human factors requirements for operations and maintenance;
 - (ix) Maintenance and spares philosophy and requirements (including items to be present at transition to the Operations Contractor);
 - (x) Environmental compliance requirements; and
 - (xi) Health, safety, and site emergency services requirements.

Upon approval of the Operations Requirement Document, DOE will control the bolded text in the Operations Requirement Document and will consider any proposed changes.

- (5) The Contractor shall compare R&T test results with the associated design calculations and design basis when appropriate. Any significant differences shall be reconciled. Test results and any subsequent calculations relating to the

design shall be referenced within the appropriate system descriptions and other design control documentation.

- (6) The Contractor shall prepare an EPC Code of Record for DOE review and approval (Table C.5-1.1, Deliverable 3.3(c)), listing applicable federal, state, and local laws and regulations; DOE orders and standards; and consensus national codes and standards used to engineer, procure, and construct the WTP. The EPC Code of Record shall be limited to EPC and will not list documents specific to business services, operations, maintenance, and commissioning. A Case-by-Case Exception process shall be established for an exception or deviation to the EPC Code of Record. The Case-by-Case Exception shall be approved by the Contractor and provided to DOE for review and comment (Contract Deliverable 3.11).

- (c) Establish and Maintain Design Documentation: The Contractor is required to establish a design process including design documentation and media that complies with the Design Criteria Documents identified in Standard 3(b).

Process and equipment design changes with potential impact on plant capacity, operability, or throughput shall require a technical analysis using an Operations Research model and Tank Utilization model to assess impact. (see Standard 2, Research, Technology and Modeling). Proposed design changes that impact the capacity, operability, and throughput shall be presented to DOE for review.

DOE shall have access to all Contractor-developed design documents and information, including paper and electronic files. The information shall be in the form of controlled copies updated by the Contractor. Information shall include, but not be limited to, the information described below.

Information shall contain relevant references, such as, system descriptions, process data sheets, and equipment data sheets and shall address PT, LAW, HLW, LAB, and BOF. Changes to the products shall be documented in accordance with approved engineering procedures. DOE shall be invited to attend meetings where design products are updated, revised, or changed and DOE will be provided with copies of design change documentation upon request.

- (1) System Descriptions: The system descriptions shall include, by reference or incorporation, all design documents (e.g., process flow diagrams, piping and instrumentation diagrams, engineering calculations, process data sheets, R&T development work and test reports, mechanical handling diagrams, mechanical flow diagrams, design proposal drawings, etc.) associated with the applicable systems **(241)**.
- (2) Process Data Sheets (Equipment): Provide unrestricted access to a complete file that includes every piece of equipment as an electronic sortable file of all process data sheets with all available information including: the equipment identification number; equipment name and description; the piping and instrument diagrams where the equipment is shown; capacity and operation parameters; and materials of construction.
- (3) Process Data Sheets (Instrument Database): Provide unrestricted access to a complete file that includes every instrument as an electronic sortable file of all instrumentation process data sheets, with all available information, including:
 - (i) The instrument identification number;
 - (ii) The instrument name and/or description;

- (iii) The piping and instrument diagrams where the instrument is shown; and
- (iv) The associated R&T test plan results and references to the applicable test plans tied to design decisions via the design requirements documents.
- (4) Calculations for Equipment Sizing: The calculation and technical basis for the capacity of major vessels, equipment, and piping shall be provided. The basis shall include, as applicable, sample analysis turnaround times and address reliability, availability, maintainability, and inspectability (RAMI).
- (5) General Arrangement Drawings: General arrangement drawings for the WTP (e.g., BOF, PT Facility, , LAB, HLW Facility, and LAW Facility). The general arrangement drawings shall identify plan and elevation views of the facilities in sufficient detail to understand facility layout and the preliminary layout of major equipment components.

(6) Establishment of Master Equipment List:

The Contractor shall develop a Master Equipment List and Spare Parts List to support continuous and safe operations of the WTP facilities. The Master Equipment List and Spare Parts List shall meet the following requirements:

- (i) A Master Equipment List shall be available in an electronically sortable format with sufficient associated information to provide traceability to the component's number in WTP design, and with sufficient component-identifying data to allow procurement of qualified spare parts, and to support linkage to preventative and corrective maintenance records (Table C.5-1.1, Deliverable 3.5).
- (ii) Spare Parts List shall be established to support WTP operations. The Spare Parts List shall be developed and include assessment of the following:
 - a. Importance to safety, regulatory compliance, or mission requirements (e.g., single point failure or critical to production and testing);
 - b. Component maintenance strategy (e.g., preventive, corrective, and run-to-failure);
 - c. Likelihood the component may fail or need routine replacement during planned operations;
 - d. Availability of the spare part (e.g., one-of-a-kind, delivery lead time); and
 - e. Results from reliability centered maintenance analysis and/or operations research model spare parts modeling
- (iii) Provide a spare parts list that supports WTP operations for one (1) year following completion of hot commissioning storage locations shall be identified for storage of the spare parts.
- (iv) The spare parts list and basis shall be provided to DOE for review and comment 12 months prior to cold commissioning (Table C.5-1.1, Deliverable 3.9).

- (7) 3-Dimensional Design Model: The Contractor shall provide access to all files of the 3-Dimensional Design Model. Access is required to support DOE awareness of current and contemplated changes to the design layout and assess proposed changes to the WTP and associated processes.
- (8) Process Flow Diagrams: The Contractor shall prepare process flow diagrams for the PT Facility, HLW Facility, and LAW Facility. The process flow diagrams shall identify all main process equipment including in-cell equipment and supporting equipment for cold chemical makeup. Identification shall include names, functions, capacities, identification numbers, and include material balance line identifiers in the process flow lines using the numbers traceable to the material balance deliverable. Supporting documentation shall specify the capacity and duty of the equipment systems, the process scheme and sequence description, and operating conditions.
- (9) Material Balance: See Standard 2, Research, Technology, and Modeling.
- (10) Piping and Instrument Diagrams: The Contractor shall prepare the piping and instrument diagrams for the PT Facility, HLW Facility, LAB, LAW Facility, and balance of all other facilities and systems in the WTP. The piping and instrument diagrams shall identify all process and support equipment, instrument requirements, pipe sizes, and line numbers. Simplified control system information shall be presented on piping and instrument diagrams.
- (11) Instrument and Control Documents: The Contractor shall prepare the instrument and control documents for the PT Facility, HLW Facility, LAB, LAW Facility, and balance of all other facilities and systems in the WTP. These design documents shall include control system specifications, data sheets, software design specifications, and instrument databases. This design shall include features to address process safety and process control for product quality.
- (12) Electrical Diagrams: The Contractor shall prepare electrical one-line diagrams for all process and facility systems. Electrical loads and systems, as well as the basis to support specification of the electrical systems, shall be identified.
- (13) Equipment Design/Equipment Arrangement Diagrams: The Contractor shall prepare the design of all process and mechanical handling equipment for the PT Facility, HLW Facility, LAW Facility, LAB, and BOF. Equipment design data sheets shall be completed for all process equipment components. Equipment general arrangement drawings shall specify plan and elevation views.
- (14) Equipment Arrangement and Piping Diagrams: The Contractor shall perform all physical design in the 3D-model for the PT, HLW, LAB, and LAW Facilities.
- (15) Facility Ventilation System Design: The Contractor shall prepare the ventilation flow diagrams and heating, ventilation, and air conditioning system design for the PT Facility, HLW Facility, LAW Facility, LAB, and BOF. The diagrams shall identify the individual systems, all equipment components, and flows in the facilities. Sample locations and methods shall be specified. Equipment to provide motive force and ventilation control shall be identified.
- (16) Facility Civil, Structural, and Architectural Design: The Contractor shall prepare the civil, structural, and architectural designs of the PT Facility, HLW Facility, LAW Facility, LAB, and BOF. The building sizes, location and requirements of load-bearing, shielding, and internal walls shall be identified. Major penetrations in walls and floors shall be identified. All crane structures, filter housings, and facility mechanical systems shall be identified. Seismic

analysis for the PT Facility, HLW Facility, LAW Facility, and support facilities shall be completed in accordance with DOE and Ecology requirements to support structural analysis, definition of the facility, the Limited Work Authorization Request, and Construction Authorization Request.

- (17) Mechanical Flow/Handling Diagrams: The Contractor shall prepare mechanical flow diagrams and mechanical handling diagrams for the PT Facility, HLW Facility, LAW Facility, LAB, and BOF. The diagrams shall be prepared with sufficient detail to support the hazards analysis review and the operations research model. The diagrams shall identify mechanical equipment and each step and sequence of the operation. Mechanical flow diagrams (sequence of operations) may be either maintained as a standalone document or appended to the Systems Descriptions **(241)**.
- (18) Analytical Laboratory Facility Design: The Contractor shall further develop and provide the sampling and analysis requirements to support process control, environmental compliance, and waste form qualification for DOE approval (Table C.5-1.1, Deliverable 3.6). The information shall include sample locations, sample purpose, analysis requirements, and frequency and turnaround times. Results of the assessment of process tank capacities and process operations will be used to verify and establish the specification and design of the LAB to support the WTP.

Reserve capacity in the LAB, to the extent there is any, shall be utilized for "limited technology testing" or increase throughput (e.g., PT, LAW, and HLW capacity changes). Limited technology testing includes investigation of anticipated WTP operational performance, evaluation of process upsets, process improvements, analytical methods optimization, and qualification of new instruments.

Limited technology testing capabilities shall include: Compositional and physical property analysis of the waste feeds; and small scale testing of the cross-flow filtration, sludge washing and leaching, cesium (Cs) ion exchange, and LAW and HLW glass melting processes. Testing of the waste feeds shall be completed to confirm planned operational flowsheets for the tank wastes to be treated in the WTP. Testing may be done in alternative facilities with prior DOE approval.

The Contractor shall identify samples from WTP operations that will be analyzed at non-WTP analytical facilities. The definitions of the outsourced samples shall include sample type and analyses required. The identification of the outsourced samples is to be included in the Sampling and Analyses Plan used to support the requirements definition for the LAB.

The LAB facility design shall incorporate features and capability necessary to ensure efficient WTP operations and meet all permitting, process control, authorization basis, and waste form qualification requirements. The design should be validated with information from tank utilization modeling of the process tankage, and operational research modeling of the treatment process, as appropriate.

- (19) Site Layout Drawings: The Contractor shall complete all site layout drawings, which shall include the exterior arrangement of all facilities and structures on the site in relation to one another, and their exterior interface points with all piping and electrical systems. The drawings shall identify all above-grade and below-grade structures, piping, and electrical systems. The drawings will reflect requirements during the construction and operations activities. Site drawings

and documents shall be updated and provided to DOE for review and approval (Table C.5-1.1, Deliverable 3.7).

- (20) Other Applicable Design Products Including:
- (i) Ventilation and instrumentation diagrams;
 - (ii) Instrument schedules;
 - (iii) Electrical single line diagrams;
 - (iv) Electrical load schedules;
 - (v) Deleted **(241)**;
 - (vi) Deleted **(241)**; and
 - (vii) Design proposal drawings (equipment procurement drawings).
- (21) Oxidative Leaching: The Contractor shall complete the necessary design products, including process flowsheets, material balances, and equipment designs to implement the recommended process for the oxidative leaching of HLW sludge and entrained solids.
- (22) Develop an engineering redraft process that would apply to already procured Systems, Structures, and Components (SSCs) as non-Safety to be reclassified as Safety Significant. At a minimum, the engineering redraft process should: (381)
- (i) Define and evaluate the change in functional classification of the SSCs as it relates to technical requirements,
 - (ii) Determine the adequacy of the SSCs to meet the changed requirements and the proposed safety functions, and
 - (iii) Identify any actions to be taken, such as additional testing or inspections, to provide reasonable assurance that the SSCs will reliably provide the proposed safety functions.(381)
- (d) Waste Treatment and Immobilization Plant Optimization Study: The Contractor shall prepare for DOE review and approval a proposed set of optimization studies that improve life-cycle performance, cost, and schedule of the WTP. This will include process design (e.g., improved radiochemical separations), facility design (e.g., improved space utilization), and technologies (e.g., second generation treatment and immobilization technologies that are ready for demonstration and application); these will affect the Contract requirements (Table C.5-1.1, Deliverable 3.8). Optimization studies that do not affect the Contract requirements are the Contractor's responsibility and are separate from this activity. The Contractor shall seek input from DOE and the Tank Farm Contractor in developing the list of proposed studies. DOE and the Contractor shall jointly agree upon which studies shall be performed. All optimization studies shall address the following:
- (1) Description of the item, process, system, or facility to be optimized and the basis for such optimization;
 - (2) Description of the research and technology program elements that are required to validate the required performance prior to incorporating the change into the baseline;

- (3) Description of the design changes that are required to incorporate the change into the baseline;
- (4) Effects of the proposed optimization on the tank farm operator authorization basis and the authorization basis interfaces between the WTP and the Tank Farm Contractor;
- (5) Effects on WTP cost, schedule, plant capacity, and waste loading;
- (6) Near-term impacts for Tank Farm Contractor;
- (7) Estimated life-cycle cost impacts to ORP;
- (8) An evaluation of potential impacts on long-term interfaces with the Tank Farm Contractor;
- (9) Technical risks eliminated, changed, or amplified by the proposed change;
- (10) Regulatory issues eliminated, changed, or amplified by the proposed change;
- (11) Potential changes in secondary waste and on returnable material volume and type; and
- (12) An evaluation of the potential changes in energy needs and other ORP supplies material quantity.

The Contractor shall involve all affected parties to ensure a balanced and complete picture. DOE will evaluate the studies and consider changes to the Contract requirements if they are found to be in the best interest of the Government.

- (e) U.S. Department of Energy Participation in Design Process: DOE staff and other Hanford Site contractor staff identified by DOE shall be invited to participate in all design overview activities. Design overview activities include any meeting that discusses significant issues associated with the establishment, development, and/or progress of the technical requirements for the design.

Design reviews and multi-disciplined topical overviews will be conducted on an as-mutually agreed upon basis.

- (f) Support to DOE Design Oversight Process: The Contractor shall support DOE as owner/operator of the WTP, in their independent oversight of the WTP design. This support shall include:

- (1) Acquisition of design media;
- (2) Access to key personnel involved in the development of the design;
- (3) Preparation of formal responses to questions raised in the design process;
- (4) Timely review of the DOE design oversight report; and
- (5) Formal and timely resolution of any findings and assessment followup items.

The scope of the DOE design oversights shall include all contract work.

- (g) Resolution of Technical and Design Issues identified by the External Flowsheet Review Team:

The Contractor shall manage resolution and closure of technical and design issues identified in the External Flowsheet Review Team (EFRT) report, *Comprehensive Review of the Hanford Waste Treatment Plant Flowsheet and Throughput*, March 2006. The Contractor shall:

- (1) Prepare Issue Response Plans (IRP) for the 28 technical and design issues identified in the EFRT Report. DOE approval on the issue response plans shall be obtained.
- (2) Advise DOE on progress on resolving the issue, including schedule and issues status meetings, at a frequency agreed to with DOE.
- (3) Summarize progress for each issue in the Contractor's Monthly Status Report (Table C.5-1.1, Deliverable 1.7). This shall include technical progress; identification of new issues; cost and schedule performance; and identification of potential project impacts from issue resolution.
- (4) Prepare input for Closure Packages for each EFRT Issue. The Closure Packages will be finalized by DOE and shall provide a complete reference list to the supporting documentation. Final Closure Packages shall have both DOE and contractor approval.
- (5) Design and construction changes identified by closure of the issue response plan issues shall be identified and documented using the WTP trend process.
- (6) All EFRT issues shall be resolved through the submittal of closure packages as they are completed.

(h) Vessel Mixing: (300) (304) (334)

The Contractor shall plan to perform a Full Scale Vessel Testing (FSVT) program to support design verification of the Pulse Jet Mixed (PJM) vessels to perform their mixing functions, control the operation of the PJMs, and provide a basis to update the WTP safety basis. Planning for the FSVT program shall include identification of the PJM vessels to be tested at full scale considering vessels currently installed and vessels to be installed. For vessels that have not yet been installed, the design is to be verified before installation. Computational fluid dynamics (CFD) tools may be used to verify certain vessel designs in such cases that are justified with adequate technical bases and concurred by DOE. The Contractor is required to demonstrate CFD meets the acceptability requirements for design verification prior to use.

(1) RLD-8 Testing:

The Contractor shall plan and conduct FSVT utilizing the RLD-8 test vessel. The test program shall include the following elements, as a minimum:

- (i) Development of a strategy/design guide for the approach to verify vessel designs to support their mixing, transfer and sampling functions.
- (ii) Develop test specification(s) to document the associated vessel operating/process conditions, mixing requirements, and data needs to support verification of the vessel mixing functions. The defined process conditions will serve as the specification of the requirements for the development of chemical/physical test simulants to be used in FSVT. Qualified simulant recipes are to be used. The Contractor is to ensure that the use of the simulants provides for appropriate controls to protect personnel and manage any environmental hazards.

- (iii) Ensure that appropriate environmental permits are prepared and approved.
- (iv) As the WTP design authority, develop the proposed test program planning documents (e.g., test plans, data analysis plan) for FSVT. Test plans will include identification of test objectives for FSVT to support verification of design mixing, transferring, and sampling functions.
- (v) Prepare a charter for a Joint Test Group (JTG) and lead the JTG.
- (vi) Design, construct, and prepare the FSVT facility and support equipment to conduct vessel mixing tests and PJM control tests.
- (vii) Perform FSVT using approved test plans and procedures.
- (viii) Ensure the data collected during testing meets the quality requirements for use in vessel design verification as specified in the test plan.
- (ix) Prepare design calculations and analyses based on engineering methods and test analyses/reports to verify the vessel designs for performing their mixing, transfer and sampling functions.
- (x) Retain custodial responsibility for the platform equipment and instrumentation that are used in the test program to ensure they are not damaged as part of any activities associated with testing.
- (xi) In addition to the FSVT program, the Contractor shall develop and implement an integrated test strategy and program to verify the vessel level PJM control system design(s). This test program will demonstrate adequate performance of the PJM control systems with prototypic equipment.

(2) Pretreatment Vessel Mixing Design Verification **(334)**:

The Contractor shall demonstrate the adequacy of design of PT Facility vessels using full scale vessel and proof-of-concept testing. CFD tools may be used to verify certain vessel designs in such cases that are justified with adequate technical basis and concurred by DOE.

The test program shall include the same elements identified under RLD-8 testing and:

- (i) Develop test specification(s) for the PT Facility vessels (including the standard high-solids vessel) to document the associated vessel operating/process conditions, mixing requirements, and data needs to support verification of the vessel mixing functions.
- (ii) Modify and prepare the FSVT facility, support facilities, prototypic test vessel, and support equipment to conduct vessel mixing and design verification testing as required.

(i) **(384)**

- ..(j) Supplemental analysis of HLW vessels RLD-VSL-00007 and RLD-VSL-00008: **(371)**
Conduct supplementary analysis of vessels RLD-VSL-00007 and RLD-VSL-00008 beyond the WTP Code of Record and modify the RLD-VSL-00007 and RLD-VSL-00008 vessel design as follows:

- (1) Perform supplementary structural analysis to the requirement of ASME BPVC Section VIII, Division 2 (2013), specifically:
 - a. Perform Fatigue Analysis using Structural Stress method (SSM).
 - b. Perform Buckling analysis (both global and local)
 - c. Modify the design, including all applicable models, drawings, calculations, and purchase orders as a result of the supplementary analysis. **(371)**
 - (2) Revise the process and the mechanical cyclic calculations to reduce the number of vessel Pulse Jet Mixer (PJM) operations to mitigate the risk of design changes to the ongoing fabrication. **(371)**
 - (3) Increase the PJM shell thickness, as necessary, to mitigate the risk of buckling failure. **(371)**
- (k) Generation of a revised site-specific response analysis and design response spectra for WTP as follows: **(375)**
- (1) Perform a detailed review of the PNNL Probabilistic Seismic Hazard Analysis (PSHA) calculation and data package. **(375)**
 - (2) Generate site soil amplification functions and develop updated horizontal and vertical response spectra at ground surface using approach 3 of NUREG/CR 6728. **(375)**
 - (3) Ensure software used for this assessment have documented verification and validation (V&V). **(375)**

Standard 4: Construction, Procurement, and Acceptance Testing

The purpose of this Standard is to describe additional requirements for construction, procurement, and acceptance testing. In the context of this Standard, the terms “*acceptance testing*” and “*acceptance*” refer to the Contractor’s testing and acceptance of systems, components, equipment, etc., as needed for mechanical completion of the WTP. The DOE and/or Owner’s Agent will be allowed to observe system turnover from construction to commissioning. Acceptance does not refer to DOE acceptance of the WTP from the Contractor; DOE acceptance of the WTP will not occur until “Completion of Hot Commissioning.”

- (a) Construction, Procurement, and Acceptance Testing Plan: The Contractor shall prepare and submit a Construction, Procurement, and Acceptance Testing Plan for DOE approval (Table C.5-1.1, Deliverable 4.1) and update the Plan as required after initial submission. The Plan shall include:
 - (1) Description of procurement, construction bid, and work packages;
 - (2) Construction management and force account construction;
 - (3) Construction site management;
 - (4) Acceptance testing; and
 - (5) Descriptive linkage to the Project Execution Plan (PEP) described in Standard 1 and the Environment, Safety, Quality, and Health program described in Standard 7.
- (b) Procurement:
 - (1) The Contractor shall procure all required material and equipment; prepare bid packages and solicitations; evaluate, award, and manage subcontracts; accept subcontractor materials and equipment; and verify subcontractor acceptance tests.
 - (2) The Contractor shall submit a purchasing system for DOE approval in accordance with Section I Clause, “Subcontracts” (Table C.5-1.1, Deliverable 4.2, Purchasing System).
- (c) Construction Bid and Work Packages: The Contractor shall prepare bid and work packages; solicit, evaluate, award, and manage subcontracts; accept subcontractor construction; and verify subcontractor acceptance tests (Table C.5-1.1, Deliverable 4.3).
- (d) Construction Management and Force Account Construction: The Contractor shall manage or perform all: supervision; required construction; furnish labor, equipment, materials, management, and supervise construction and acceptance testing; and provide required systems and support for environmental protection, safety, quality, labor relations, and security.
- (e) Construction Site Management: The Contractor shall manage the construction site and provide all required construction support services, construction site security, industrial hygiene, and temporary and permanent construction facilities.
- (f) Construction and Acceptance Testing:
 - (1) The Contractor shall maintain an adequate construction inspection system and acceptance testing system and perform such inspections and testing, as well as ensure that the work performed under the Contract conforms to Contract requirements. The Contractor shall maintain complete inspection and testing

records and make them available to DOE. The DOE and/or Owner's Agent shall be allowed to observe acceptance testing and system turnover. The Contractor shall develop and submit an integrated Construction and Acceptance Testing Program to DOE for approval (Table C.5-1.1, Deliverable 4.4) that includes the following elements:

- (i) Checking and approval of all vendors' shop drawings to assure conformity with the approved design and working drawings and specifications;
 - (ii) Acceptance test plans and procedures for on-site Contractor/subcontractor inspection of construction workmanship, compliance with design drawings and specifications, management of the design construction changes, and criteria for acceptance of fabricated and constructed items;
 - (iii) Identification and description of Contractor and vendor components to be tested and accepted including the identification of component, systems, and integrated facility testing;
 - (iv) Inspection of construction to assure adherence to approved working drawings and specifications;
 - (v) Identification of Contractor-proposed and DOE-specified construction witness or hold points;
 - (vi) Methods to complete field and laboratory tests to verify construction workmanship, materials and equipment, and approved working drawings and specifications;
 - (vii) Approaches and methods to troubleshoot and correct material acceptance and construction deficiencies;
 - (viii) Preparation of partial, interim, and final estimates, as well as reports of quantities and values of construction work performed, for payment or other purposes; and
 - (ix) Approach to transition from acceptance to facility cold commissioning and hot commissioning.
- (2) The Contractor shall prepare, as part of the monthly report defined in Standard 1, Management Products and Controls (Table C.5-1.1, Deliverable 1.7), a monthly Construction Inspection and Acceptance Status Report that will document the progress of construction and facility acceptance and include the following information:
- (i) Status on the deliverables of materials and fabricated items;
 - (ii) Estimates and reports on the quantities, value, and type of construction work completed for payment or other purposes; and
 - (iii) Status on the performance of the acceptance program and level of rework/nonconforming items received/constructed and identification of corrective actions.
- (3) During the construction and acceptance phase, the Contractor shall remain current on the process and facility as-built program. The status on the as-built program is to be reported in accordance with the process defined in the

Construction, Procurement, and Acceptance Testing Plan (Table C.5-1.1, Deliverable 4.1).

- (4) The Contractor shall provide all necessary labor, equipment, materials, test equipment, and any spare parts sufficient to maintain all structures, systems, and components to meet the objectives of the testing program.
- (5) The Contractor shall prepare for DOE review and comment an As-Built Program Description (Table C.5-1.1, Deliverable 4.7). The As-Built Program Description and associated procedures shall identify:
 - Description of the as-built process, including the role of DOE;
 - Drawing series to be as-built;
 - Document control process for maintaining as-built; and
 - Procedures for modification of the as-built.
- (g) Certification for Start of Construction: The Contractor shall certify to DOE that construction has been initiated. “*Start of Construction*” is defined as the first pour of structural concrete for one (1) of the three (3) WTP facilities: PT, LAW, or HLW.
- (h) U.S. Department of Energy Participation in Construction Review: The DOE staff, Tank Farm Contractor, and other Hanford Site contractor staff identified by DOE shall be invited to participate in all overview activities (Table C.5-1.1, Deliverable 4.5, Construction Overview Meetings). Construction overview activities include any meeting that discusses significant issues associated with the establishment, development, and/or progress of the WTP construction.
- (i) Certification of Facility Acceptance Completion: The Contractor shall certify to DOE that facility acceptance has been completed. Certification of facility acceptance completion will occur at two points in time. “*Completion of Facility Acceptance*” is defined when all components and systems associated with LBL for DFLAW operations and subsequently PT and HLW facilities have been installed and functionally tested, and the facility design as-built has been submitted in accordance with the Construction, Procurement, and Acceptance Testing Plan (Table C.5-1.1, Deliverable 4.1).
- (j) Construction Emergency Response Plan: The Contractor shall develop and adhere to a Construction Emergency Response Plan that is compliant with the applicable requirements of DOE/RL-94-02, *Hanford Emergency Management Plan*, and the emergency and fire prevention requirements of 29 CFR 1910, “Occupational Safety and Health Standards” and 29 CFR 1926, “Safety and Health Regulations for Construction” (Table C.5-1.1, Deliverable 4.6) **(215) (256)**.
- (k) **(384)**
- (l) **(384)**
- (m) **(384)**
- (n) **(384)**

Standard 5: Commissioning

The purpose of this Standard is to describe the requirements and deliverables for the Startup testing and Commissioning of the WTP.

Startup testing begins following turnover of systems from construction, including component and system level tests that will be performed in a planned sequence at each facility, and precedes cold commissioning of the facility.

The Startup and Commissioning process begins with Startup testing followed by Commissioning testing, which includes testing during Cold Commissioning making production runs using agreed upon simulant waste, then Hot Commissioning using actual tank waste, and continues through to turnover to the future Operations Contractor. Commissioning is supported by testing, operations, maintenance, procedure development, and training required to support the scope contained in this Standard. The Contractor may choose to commission the facilities in a sequential order or a parallel order.

Many of the Contract deliverables in this standard require information from commissioning activities in multiple facilities. Consistent with the Consent Decree, commissioning of the LBL facilities will be completed ahead of the PT and HLW facilities. Contract deliverables specified in this standard shall be completed in parts consistent with the facility commissioning sequence in the approved commissioning plan.

(a) Objectives: The Contractor shall:

- (1) Demonstrate that the waste treatment capacity performance of the WTP facilities meets the facility minimum capacity criteria as specified in Tables C.6-5.1 and C.6-5.2;
- (2) Provide a Commissioning Plan that documents how objectives of Commissioning will be met;
- (3) Demonstrate that the waste form products and secondary wastes produced in commissioning testing comply with DOE-approved compliance plans;
- (4) Demonstrate facility remotability in areas designed for remote maintenance;
- (5) Ensure WTP facilities, programs, and personnel are prepared for, and successfully complete an Operational Readiness Review (ORR) **(196)** in accordance with DOE Order 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (190)*, prior to start of Hot Commissioning; for facilities that will be commissioned as Hazard Category 3 or higher as defined in DOE-STD-1027, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*;
- (6) Complete Critical Decision (CD) 4 in accordance with DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD. Prerequisites for CD-4 will be completed prior to Hot Commissioning. Post CD-4 activities shall be completed prior to completion of Project Closeout **(271)**; and
- (7) Transition WTP facilities, programs, and operations personnel to the Operations Contractor.

(b) Simulant Testing: Simulant shall be used to demonstrate the normal flow of WTP feed material, individual facility production capability, and the ability to predict product quality, and produce acceptable ILAW and IHLW products.

Simulant(s) shall be defined to support cold commissioning performance testing. The waste feed simulant(s) shall be mutually agreed to by both DOE and the Contractor to

represent typical feeds to the WTP. For PT, this **(350)** simulant may be comprised of a baseline composition that, with spiking, will demonstrate water washing, caustic, and oxidative leaching to solubilize aluminum (Al) and chromium (Cr). For DFLAW, the simulant should represent, to the extent practical, the average of the 10-year feed vector as defined in RPP-40149, *Integrated Waste Feed Delivery Plan*, Volume 2, Revision 3. The simulant compositions will be specified in a Cold Commissioning Simulant Definition deliverable (Table C.5-1.1, Deliverable 5.18) due to DOE, 24 months prior to the start of Cold Commissioning.

The PT Facility simulant properties for demonstrating capacity shall:

- (1) Support caustic and oxidative leaching;
 - (2) Be based on the average chemical composition, solids loading, operating conditions, and leaching performance based on the design basis G2 Model Run (24590-WTP- MRR-PET-08-002, *WTP Contract Run – (G2) Dynamic Model Run Results Report*, Revision 2, August 25, 2008);
 - (3) Have average physical properties including particle size, particle density, and rheological properties;
 - (4) Contain the major chemical constituents required to cost effectively demonstrate treatment; and
 - (5) Support LAW and HLW vitrification facility melter operations.
- (c) Commissioning Plan: The Contractor shall prepare a Commissioning Plan for DOE review and approval (Table C.5-1.1, Deliverable 5.1), a minimum of twelve (12) months prior to the start of Cold Commissioning. For DFLAW a preliminary version of the Commissioning Plan will be delivered to DOE for comment in calendar year 2016. For DFLAW, the Table C.5-1.1, Deliverable 5.1 shall be submitted to DOE for approval a minimum of 36 months before the start of Cold Commissioning. Updates shall be completed on a periodic basis providing increasing detail with full content required a minimum of 12 months before the start of LAW Cold Commissioning. Table C.5-1.1, Deliverable 5.1 shall:
- (1) Meet the Commissioning objectives stated in this Standard (a);
 - (2) Define the sequence for commissioning of the WTP facilities;
 - (3) Describe the process for ensuring readiness to start cold commissioning;
 - (4) Define the WTP test control programs;
 - (5) Define the Startup, Cold Commissioning, and Hot Commissioning phase organizations; and
 - (6) Identify planned actions to ensure readiness, prior to Hot Commissioning of the associated facility, for Operational Readiness Reviews (ORRs) **(196)** per DOE O 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (190)* (e.g., facility testing, programmatic controls, qualification of personnel, and regulatory permits). Planning should be based on multiple ORRs for the WTP Project, with a single ORR for each applicable facility (LAW, PT, and HLW). For DFLAW, the LAB will complete “Start Up” as a less than Hazard Category 3 facility. **(196) (257)**.
 - (7) The Commissioning Plan shall be updated as required and provided to DOE for approval.

- (d) Joint Test Groups: The Contractor's JTGs will be responsible for:
- (1) Verifying the correct functioning of applicable systems to engineering approved test acceptance criteria;
 - (2) Testing process and facility systems to test and evaluate the design basis operating envelope;
 - (3) Demonstrating emergency procedures for recovery from simulated off-normal events using drills, tabletop exercises, or the simulator;
 - (4) Validating operating procedures and instructions during the commissioning test program;
 - (5) Completing corrective actions derived from the commissioning test programs; and
 - (6) Confirming successful conduct and performance of Technical Safety Requirements (TSR) surveillance.

The DOE, DOE's Owner's Agent, and Operations Contractor will participate in the JTG as observers.

The JTG will approve the test procedures and results for Safety Class (SC), Safety Significant (SS), environmental performance, and QARD (DOE/RW-0333P) system acceptance testing during Commissioning, as well as Contract technical performance test results as defined in this Standard, (e) for "Cold Commissioning" and (g) for "Hot Commissioning."

- (e) Cold Commissioning: The Contractor will initiate non-radioactive "cold" commissioning using nonhazardous simulants to begin testing individual facility functionality. Cold Commissioning described below follows this initial period and requires DOE approval prior to introduction of simulants that introduce significant hazards including nitrogen oxide (NO_x) and ammonia.

During the Cold Commissioning test period, the Contractor shall conduct testing operations to verify that the WTP will perform in accordance with design specifications using DOE-approved nonradioactive simulated waste feeds that demonstrate the ability of the facility to treat tank waste. Prior to Cold Commissioning, the Contractor shall have in-place required permits, licenses, necessary safety programs (including initial authorization basis), and interfaces per Section C.9, "Interface Control Documents," to support Cold Commissioning.

- (1) The Contractor shall carry out the Cold Commissioning performance tests of the PT, LAW, and HLW facilities to:
 - (i) Verify through the Waste Form Qualification Tests (e)(3)(i) that the WTP can produce qualified waste products (Specification 1, *Immobilized High Level Waste* and Specification 2, *Immobilized Low-Activity Waste*) and secondary wastes based upon DOE-approved waste compliance plans (Table C.5-1.1, Deliverable 6.1, 6.2, and 6.3).
 - (ii) Demonstrate through the Cold Commissioning Capacity Tests (e)(3)(ii) the WTP capacity for process systems as defined in Table C.6-5.1.
 - (iii) Demonstrate through the remotability test (e)(3)(iv) the remotability of components installed in areas designed for remote maintenance.

- (iv) Demonstrate through the Environmental Performance test (e)(3)(v) that the WTP is operating in accordance with applicable permit requirements.

The testing, combined with other operational readiness activities, shall be planned and conceived to provide the basis necessary to support the Certification for Readiness for Hot Commissioning Start (Table C.5-1.1, Deliverable 5.10).

The Contractor shall provide a strategy to achieve the Cold Commissioning performance test objectives specified in the WTP Commissioning Plan. Representative temporary analytical facilities may be used to perform elements of these demonstrations. Resultant products from Cold Commissioning (Table C.5-1.1, Deliverable 5.6) shall be transferred to DOE in accordance with the ICDs. During the tests, the Contractor shall provide documentation of the waste form products for DOE acceptance in accordance with Specification 13, *Commissioning Waste Product Inspection and Acceptance*.

- (2) Request for Approval to Initiate Cold Commissioning: Cold Commissioning begins with introduction of simulants that introduce significant hazards including NO_x and ammonia into the process facilities. The Contractor shall request approval from DOE to initiate Cold Commissioning following:

- The Contractor's completion of a management assessment to evaluate the readiness of facilities and personnel to initiate cold commissioning based upon the Minimum Core Requirements identified in DOE O 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (190)*. The results of the management assessment shall be provided to DOE.
- Identification of the status of the authorization basis implementation, permits and safety program implementation, and any remaining construction scope that requires completion before simulant introduction.

The Contractor shall not proceed with introduction of simulants that introduce significant hazards including NO_x and ammonia without DOE approval. The Contractor shall notify DOE that Cold Commissioning has commenced.

- (3) Testing:

- (i) Waste Form Qualification Tests (Table C.5-1.1; Deliverable 5.3): The Contractor shall complete WTP waste form qualification testing during cold commissioning to demonstrate the production of acceptable nonradioactive products (ILAW and IHLW) and secondary wastes in accordance with the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1), ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3), and IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2). Applicable process unit operations, sampling and analysis, process control systems, and operating procedures shall be utilized in these qualification tests in a manner that represents planned operations with actual wastes. Test results will be evaluated and documented as part of the waste form qualification reports identified in Standard 6, "Product Qualification, Characterization, and Certification."
- (ii) Cold Commissioning Capacity Tests: Cold Commissioning testing shall be conducted to demonstrate the capacity of the WTP as noted in Table C.6-5.1. Waste form products and secondary wastes will be produced in accordance with the qualification strategies and

requirements identified in the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1), ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3), and IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2), and meet the relevant specification and interface requirements. The results shall be provided to DOE for review and approval (Table C.5-1.1, Deliverable 5.4).

The Cold Commissioning Capacity Tests shall test the individual facility operations in terms of function and capacity. Applicable facility system components, both process and mechanical, shall be tested.

The water washing, caustic, and oxidative leaching process steps shall be performed consistent with the process model used to develop Table C.6-5.1 and the process steps as defined in Standard 2, Deliverable 2.10. Leaching effectiveness is not a criterion for acceptability of Cold Commissioning Capacity Test results.

The minimum testing duration for the Cold Commissioning Capacity Testing is defined below:

- The HLW Facility shall be operated for 20 days.
- The LAW Facility shall be operated continuously for two 5-day tests.
 - Unit operations such as melter feeding and offgas ventilation shall be operated with the exception of required interruption for planned maintenance or repair.
 - Demonstrated capacity (Table C.6-5.1) shall be the average achieved production rate of nonradioactive ILAW product glass over two 5-day tests.
 - The Contractor may choose to run additional 5-day tests if necessary to achieve capacity requirements (Table C.6-5.1).
 - Credit in achieved capacity will be granted for in-process products as approved by DOE and as defined or referenced in Table C.5-1.1, Deliverable 5.1.
- The pretreatment testing duration is based on four ultrafiltration cycles (two in each ultrafiltration train).
- An ultrafiltration cycle is a series of process steps including receipt, treatment, and transfer.
- The Cold Commissioning Capacity Test is based on the measurement of waste treated between the following points:
 - For high-level waste pretreatment (i.e., solids) between UFP-VSL-00001A/B and HLP-VSL-00027A/B or HLP-VSL-00028.
 - For low-activity waste pretreatment (i.e., sodium [Na]) between UFP-VSL-00001A/B and TCP-VSL-00001.

The measure of HLW Facility pretreatment production will be based on a mass balance between the feed (UFP-VSL-00001A/B) and product vessels (HLP-VSL-00027A/B or HLP-VSL-00028) and adjusted for any changes to vessel heels. An insoluble component may be used to determine the quantity of treated solids.

The measure of LAW Facility pretreatment production will be based on a mass balance between the feed (UFP-VSL-00001A/B) and the product vessel (TCP-VSL-00001) and adjusted for any changes to vessel heels. This determination shall be based on waste Na as defined in Table C.7-1.1. The Contractor shall have the right to extend the testing period for any facility beyond the testing duration indicated above, and in such an event the Contractor may choose any consecutive window within that period to report against.

Table C.6-5.1. Cold Commissioning Capacity Testing Criteria

| Facility | Minimum Capacity | Treatment Capacity | Design Capacity |
|----------|-------------------------------------|-------------------------------------|---------------------------------------|
| LAW PT | 2,244 MT Na per year | 2,620 MT Na per year | 3,740 MT Na per year |
| HLW PT | 735 MT as-delivered solids per year | 860 MT as-delivered solids per year | 1,225 MT as-delivered solids per year |
| LAW | 18 MT glass per day | 21 (350) MT glass per day | 30 MT glass per day |
| HLW | 3.6 MT glass per day | 4.2 MT glass per day | 6.0 MT glass per day |

Notes:

1. PT and HLW Facilities production rates in are based on the facility specification treatment capacity for treating all waste feed batches from the HNF-SD-WM-SP-012, *Tank Farm Contractor Operation and Utilization Plan* (TFCOUP; Revision 6, feed vector). Characterization of the as-delivered DOE approved simulant (Table C.5-1.1, Deliverable 5.18) and an updated model reflecting changes to design, assumptions, and administrative controls affecting throughput shall be used to re-establish performance criteria in Table C.6-5.1. For example, model assumptions may change following completion of Phase I PT Engineering Platform testing. Changes to the model reflecting design, assumptions, and administrative controls shall be approved by DOE.
2. For the PT and HLW Facilities revised values for Table C.6-5.1 will be documented in cold commissioning capacity test criteria (Table C-5.1-1, Deliverable 5.20) due prior to completion of Deliverable 5.8.
3. Interface service delays in excess of that assumed in the process models used to create Table C.6-5.1 shall not be counted in the duration of the performance runs.
4. The contractor shall manage the excess treated LAW simulant from the cold commissioning tests.

(iii) Integrated Operations Demonstration: Deleted.

(iv) Remotability Test: The Contractor shall demonstrate by prototypic remotability testing, and the use of the planned operating and maintenance procedures, all normally required remote maintenance activities to support operation of the WTP during hot operations. This testing shall include verification of remote access and viewing to remotely maintain equipment including the ability to install, connect, disconnect, remove and reconnect remote replaceable components, calibration and replacement of instruments located in areas serviced by remote cranes and manipulators, and the use of remote and direct viewing technologies.

This testing may be demonstrated and documented prior to commencing Cold Commissioning and shall be completed before the end of Cold Commissioning. Any design changes required, based upon these test results, shall be corrected and the specific systems retested to verify acceptability prior to the completion of Cold Commissioning.

- (v) Environmental Performance Test: The Contractor shall complete environmental testing as required under the Dangerous Waste Permit Application, Air Permitting Requirements; and applicable Federal, state, and local laws, regulations, and permits to demonstrate the operation of the WTP in accordance with applicable legal and permit requirements. The testing requirements shall be based upon the Environmental Performance Test Plan described in the WTP conceptual design and supporting information and as modified by the Dangerous Waste Permit Application permitting process.

The Contractor shall produce an environmental performance test report(s) after the completion of each environmental performance test trial (Table C.5-1.1, Deliverable 5.7). The report shall, at a minimum, provide the required information identified in Risk Assessment Work Plan (Table C.5-1.1, Deliverable 7.6), including a description of the sampling and analysis activities conducted during the testing, definition of the simulants, and assess the performance of the LAW and HLW Melter Treatment Units. The report shall also provide recommended operating conditions for the WTP to assure compliance with required permits and statutes.

- (4) Deleted
- (5) Cold Commissioning Results and Documentation: The Contractor shall provide results from Cold Commissioning testing to DOE for review and approval (Table C.5-1.1, Deliverable 5.8). The information shall be in the form of controlled documents (hardcopy or electronic) maintained and updated by the Contractor. Information shall include, but not be limited to:
- (i) System startup plans and system verification reports;
 - (ii) Test Plans and Summary Test Reports for demonstrating and/or establishing permitting conditions; and
 - (iii) Test Plans and Summary Test Reports for process verification and product qualification.
- (6) Certification of Completion of Cold Commissioning: The Contractor shall certify to DOE that Cold Commissioning is complete and that the Contractor met the requirements contained in Standard 5(e) (Table C.5-1.1, Deliverable 5.9) or as outlined in Standard 5(h).

(f) Readiness:

Operational Readiness Support Plan (257): Prior to ORRs, the Contractor, jointly with the TOC, shall submit an Operational Readiness Support Plan (Joint WTP/TOC Contract Deliverable [Table C.5-1.1, Deliverable 5.22]). The plan will address facility operational readiness requirements for the tank farms and each of the five (5) WTP facilities (PT, HLW, LAW, LAB, and BOF). Topical areas for review may include (but are not limited to):

- Management self-assessment process;
- Startup notification report;
- Procedures;
- Training and testing activities; and
- Cold and hot commissioning

Operational Readiness Review(s)(196): The WTP Operational Readiness Review process shall be conducted in accordance with DOE O 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (190)*, prior to the start of Hot Commissioning. **(257)**.

(g) Hot Commissioning:

The objective of the Hot Commissioning phase is to:

- Demonstrate the operability of the WTP during radioactive operations;
- Achieve the capacity criteria specified in Table C.6-5.2.

The Hot Commissioning period begins upon receipt of permission to commence Hot Commissioning from the DOE Authorization Authority in accordance with DOE O 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (190)*. DOE/ORP approval is required for the introduction of radioactive waste into the WTP. The approval for Hot Commissioning will be granted by DOE/ORP following DOE Authorization Authority approval for Hot Commissioning startup.

Hot commissioning includes testing the facility using radioactive materials transferred from the tank farms. The PT Facility shall be tested to demonstrate the flow of radioactive feed material through the facility to produce LAW and HLW feed, which may be placed into lag storage or fed forward to support coincident LAW and/or HLW hot commissioning. Each WTP processing facility may be tested individually to demonstrate that the facility performs in accordance with operational, safety, and Contract performance requirements.

- (1) Certification of Readiness for Hot Commissioning Start: The Contractor shall certify to DOE that the facility is ready to receive waste feed (Table C.5-1.1, Deliverable 5.10) and all Contractor requirements in the Section C.9 are complete.
- (2) Waste Transfer Notification: For Hot Commissioning, the Contractor shall provide a written notice to the DOE Contracting Officer, specifying the date the Contractor requests the start of a transfer of a batch of feed, herein referred to as the waste transfer date. The written notice shall be provided to the DOE Contracting Officer at least two (2) months prior to the requested waste transfer date.
- (3) Certification of Hot Commissioning Start: The Contractor shall certify to DOE that the facility Hot Commissioning has started (Table C.5-1.1, Deliverable 5.11).

Start of Hot Commissioning is defined as receiving actual tank farm waste feed into one of the WTP processing facilities.

- (4) Hot Commissioning Tests (Table C.5-1.1, Deliverable 5.21): Hot Commissioning testing shall be conducted to demonstrate **(350)** capacity of the WTP as identified in Table C.6-5.2. Hot Commissioning Capacity Tests do not apply to the LAW Facility.

LAW Facility Hot Commissioning shall include operations with radioactive tank waste per Specification 7, Envelope E producing a minimum quantity of 10 ILAW glass containers from each melter. The final container shall meet waste loading criteria of Specification 2, Section 2.2.2.2.

- (5) The plant capacity test results shall be demonstrated using the plant instrumentation, and sampling, analyses, and product control systems. The JTG approved results of the Hot Commissioning Capacity Tests shall be provided to DOE for review and approval (Table C.5-1.1, Deliverable 5.12).

The Hot Commissioning **(350)** tests shall test the individual facility operations in terms of function and capacity. Applicable facility system components, both process and mechanical, shall be tested. Hot commissioning Capacity Tests do not apply to the LAW Facility.

The leaching process shall be performed as required per Specification 12 and consistent with the process model used to develop Table C.6-5.2. Leaching effectiveness is not a criterion for acceptability of Hot Commissioning capacity test results. The minimum testing duration for the Hot Commissioning Capacity Testing is defined below:

- The HLW Facility shall be operated for 20 days.
- The PT Facility testing duration is based on four ultrafiltration cycles (two in each ultrafiltration train). An ultrafiltration cycle is a series of process steps including receipt, treatment, and transfer.
- The Hot Commissioning Capacity Testing **(350)** is based on the measurement of waste treated between the following points:
 - For HLW pretreatment (i.e., solids) between UFP-VSL-00001A/B and HLP-VSL-00027A/B or HLP-VSL-00028;
 - For LAW pretreatment (i.e., Na) between UFP-VSL-00001A/B and TCP-VSL-00001.
 - The measure of HLW pretreatment production will be based on a mass balance between the feed (UFP-VSL-00001A/B) and product vessels (HLP-VSL-00027A/B or HLP-VSL-00028) and adjusted for any changes to vessel heels. An insoluble component may be used to determine the quantity of treated solids.
 - The measure of LAW pretreatment production will be based on a mass balance between the feed (UFP-VSL-00001A/B) and the product vessel (TCP-VSL-00001) and adjusted for any changes to vessel heels. This determination shall be based on waste Na as defined in Table C.7-1.1.

The Contractor shall have the right to extend the testing period for any facility beyond the testing duration indicated above, and in such event the Contractor may choose any consecutive window within that period to report against.

Processing of vitrification facility recycles will be done in parallel with continued PT Facility feed preparation during vitrification facility performance runs for at least 10 days or until pretreatment feed is no longer available, whichever is sooner.

Table C.6-5.2. Hot Commissioning Capacity Testing Criteria.

| Facility | Minimum Capacity | Treatment Capacity | Design Capacity |
|-------------------|-------------------------------------|-------------------------------------|---------------------------------------|
| LAW Pretreatment | 2,244 MT Na per year | 2,620 MT Na per year | 3,740 MT Na per year |
| HLW Pretreatment | 735 MT as-delivered solids per year | 860 MT as-delivered solids per year | 1,225 MT as-delivered solids per year |
| HLW Vitrification | 3.6 MT Glass per day | 4.2 MT Glass per day | 6.0 MT Glass per day |

Notes:

1. PT and HLW Facility production rates are based on the facility specification (Table C.7-1.1) capacity for treating all waste feed batches from the HNF-SD-WM-SP-012, *Tank Farm Contractor Operation and Utilization Plan* (TFCOUP; Revision 6, feed vector.) Characterization of the actual delivery feed to WTP and an updated model reflecting changes to design, assumptions, and administrative controls affecting throughput will be used to re-establish performance criteria in Table C.6-5.2. For example, model assumptions may change following completion of Phase I Pretreatment Engineering Platform Testing. Changes to the model reflecting design, assumptions, and administrative controls shall be approved by DOE. The revised values for Table C.6-5.2 will be documented in hot commissioning capacity test criteria (Table C-5.1-1, Deliverable 5.21) due prior to completion of Deliverable 5.14.
2. Waste feed delivery delays, and other interface service delays in excess of that assumed in the process models used to create this table shall not be counted in the duration of the capacity runs.
3. If supplemental low-activity waste treatment lag storage facilities are not available to receive the excess treated low-activity waste, the low-activity waste pretreatment rates will be adjusted to align with LAW Facility performance.
 - (i) HLW Pretreatment: The HLW pretreatment line shall be operated in order to produce feed to the HLW Facility that results in IHLW in compliance with Specification 1.
 - (ii) LAW Pretreatment: The LAW pretreatment line shall be operated to produce feed to the LAW Facility that results in ILAW in compliance with Specification 2.
 - (iii) LAW Facility: The LAW Facility shall produce containers of ILAW. Each container shall be routed through the complete process and equipment system, including level measurement, sampling as required, inert fill as required, lid closure, decontamination, and placement in position for shipment. In accordance with ICD 15, "Immobilized Low-Activity Waste" documentation requirements for the production of the ILAW containers

are described in Specification 13, and shall be transmitted to DOE per deliverable, *Resultant Products from Hot Commissioning* (Table C.5.1-1, Deliverable 5.13).

- (iv) HLW Facility: The HLW Facility shall produce canisters of IHLW. Each canister shall be routed through the complete process and equipment system, including level measurement, sampling, lid closure, decontamination, and placement of the canister in HLW storage in accordance with ICD 14, "Immobilized High-Level Waste." Documentation requirements for the production of the IHLW canisters are described in Specification 13, and shall be transmitted to DOE per deliverable, *Resultant Products from Hot Commissioning* (Table C.5.1-1, Deliverable 5.13).
- (6) Hot Commissioning Results and Documentation: The Contractor shall provide Hot Commissioning test results to DOE for review and approval (Table C.5-1.1, Deliverable 5.14). The information shall be in the form of controlled copies or electronic media as requested by DOE. The information shall include, but not be limited to:
 - (i) Test plans and test reports for demonstrating and establishing permitting conditions (e.g., RCRA, authorization basis, air, performance test plan, etc.).
 - (ii) Test plans and test reports for process verification and product qualification, including documentation and certification, that the IHLW and ILAW products meet requirements per Specification 1 and Specification 2, respectively.
 - (iii) Updated process model assessments (Standard 2, (b)) that are reconciled with Cold and Hot Commissioning test data to demonstrate that the WTP has the capability to process the waste feed compositional variations that will be provided by the tank farm.
 - (iv) Certify waste product (ILAW and IHLW) and secondary waste acceptability per Standard 6, Product Qualification, Characterization and Certification through implementation of the waste compliance plans.
 - (v) Copies of required information sent to regulators (e.g., RCRA, air, authorization basis, etc.) and as required elsewhere in the Contract.
- (7) Certification of Completion of Hot Commissioning: **(350)** The Contractor shall provide Certification of Completion of Hot Commissioning. For LAW Facility the certification shall be based on completing the initial production quantity as described in Standard 5(g)(4). The Contractor shall certify to DOE that the Hot Commissioning is complete and that the Contractor met the requirements contained in Standard 5(g) (Table C.5-1.1, Deliverable 5.15 or as outlined in Standard 5(h)).

- (h) Cold and Hot Commissioning Capacity Testing Deficiency Remedial Actions: The Contractor and DOE agree that the Contractor shall be allowed to exercise best efforts to achieve the waste treatment capacity testing levels prescribed in Tables C.6.5-1 and C.6.5-2 for each WTP facility. However, in the event that a significant deficiency is encountered during Commissioning that degrades the performance of any facility so significantly that the minimum capacity levels for cold or hot commissioning of that facility cannot be achieved, the Contractor shall notify DOE of the need to expend additional time and funds to correct the deficiency.

It is the Contractor's responsibility within the scope of Commissioning to provide a realistic estimate of the cost and schedule for any such requisite remedial response. If both parties agree that a deficiency exists and that remedial measures are necessary then:

- (1) If the deficiency results from an inadequate and/or incomplete test procedure, the Contractor shall correct the test procedure and re-test within its scope of Commissioning;
 - (2) If the deficiency results from a design or construction nonconformance, the Contractor shall correct the nonconformity and re-test within its scope of Commissioning;
 - (3) If the cause of a deficiency cannot be determined, the Contractor shall propose a reasonable investigation program to determine the cause and following ORP approval of the investigation cost and schedule, shall implement the investigation program.
 - (4) If DOE does not wish to fund additional remedial expenses, the related testing is consequently accepted as completed at the minimum level defined in Section B.12, Attachment B-2-F.
- (i) Facility Transition Plan: The Contractor shall prepare, for DOE review and approval, a WTP Facility Transition Plan (Table C.5-1.1, Deliverable 5.19) that describes the strategy, schedule, and requirements for safe and efficient transition of the WTP facilities to the Operations Contractor. The Plan shall identify, at a minimum for each facility, the proposed schedule for facility turnover and provide a checklist of requirements to be completed to ensure that the facilities can be safely transitioned and operated by the Operations Contractor. The Transition Plan shall also identify provisions to retain appropriate qualified engineering, operations, and maintenance staff to support continued safe operations of the WTP facilities at designed treatment rates of the facilities. Migration for electronic documents, records, data, and DOE-owned software will be included. The Contractor shall obtain input and concurrence on the Facility Transition Plan from the Operations Contractor, if available, before transmittal to DOE. The Facility Transition Plan is due to the DOE 12 months prior to the start of Hot Commissioning.
- (j) Transition: The following items shall be provided to the Operations Contractor at facility transition. In addition, systems and other items necessary to facilitate safe and efficient operation of the WTP shall be provided during the transition period in accordance with the WTP Facility Transition Plan (Table C.5-1.1, Deliverable 5.19).
- (i) Safety Management Programs (SMPs) to ensure safe accomplishment of work **(190)**.
 - (ii) Facility safety documentation (normally DSAs (Documented Safety Analysis) and technical safety requirements (TSRs) that describes the safety envelope of the facility **(190)**.

- (iii) Program to confirm and periodically reconfirm the condition and operability of Vital Safety Systems (VSS). This includes examinations of records of tests and calibration of these systems **(190)**.
- (iv) The facility systems and procedures, as affected by facility modifications, that are consistent with the description of the facility, procedures, and accident analysis, and assumptions included in the safety basis **(190)**.
- (v) Adequate and accurate procedures and safety limits are in place for operating the process systems and utility systems. The procedures include necessary revisions for all modifications that have been made to the facility. Facility processes ensure that only the most current revision to each procedure is in use **(190)**.
- (vi) A routine operations drill program and an emergency management drill and exercise program. Records for each program are adequate to demonstrate the effectiveness of completed drills and exercises as well as planning for future drills and exercises **(190)**.
- (vii) The formality and discipline of operations is adequate to conduct work safely and programs are in place to maintain this formality and discipline. This item is satisfied by transition of a Conduct of Operations program.
- (viii) The selection, training, and qualification programs for operations and operations support personnel **(152) (190)**.

Transition of LBL in the DFLAW configuration is currently excluded from the cost and schedule of the contract. The facility transition period shall be planned to complete transition of all facilities within ninety (90) days following DOE's acceptance of the Contractor's Certification of Completion of Hot Commissioning (Table C.5-1.1, Deliverable 5.15).

- (k) Completion of Contract Workscope Requirements: The Contractor shall complete post-Critical Decision -4 activities, "Approve Start of Operations or Project Closeout," in accordance with DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD **(271)**.
- (l) Post-Commissioning Services: Following hot commissioning, the Contractor shall conduct necessary activities to ensure that the facility is safe and ready for hot operations and facility turnover. This period ends upon DOE approval of Table C.5-1.1, Deliverable 5.15.

DOE may request the Contractor to provide additional waste treatment from the successfully commissioned facility or to maintain standby status for a period of time.

If standby status is requested, the Contractor shall maintain the necessary staff for full facility operations as determined by the Contractor.

If DOE requests standby status, or additional waste treatment, beyond that required for hot commissioning, such requests will be pursuant to the Section I, I.82, "Changes."

- (m) Project Closeout: Project closeout is complete when:
 - (1) DOE approves the Contractors Certification of Completion of Hot Commissioning (Table C.5-1.1, Deliverable 5.15).
 - (2) DOE accepts all ILAW and IHLW products produced during Hot Commissioning in accordance with Specification 13, Waste Product Inspection and Acceptance.

- (3) The Contractor responds to technical questions from the DOE or Operations Contractor, as instructed by DOE for a period not to exceed six (6) months following DOE's approval of the Certification of Completion of Hot Commissioning (Table C.5-1.1, Deliverable 5.15).
- (4) The Contractor provides support to DOE in the conduct of internal and external technical reviews and presentations for a period not to exceed six (6) months following DOE's approval of the Certification of Completion of Hot Commissioning (Table C.5-1.1, Deliverable 5.15).
- (5) The Contractor assures operations, maintenance, engineering, licensing, and purchasing activities developed under this Contract are transitioned to the Operating Contractor as instructed by DOE.
- (6) The Contractor transitions spare parts to the Operating Contractor, as instructed by DOE.
- (7) The Contractor completes transition of the WTP facilities to the Operating Contractor (Table C.5-1.1, Deliverable 5.16) **(152)** in accordance with the approved WTP Facility Transition Plan (Table C.5-1.1, Deliverable 5.19).
- (8) The Contractor assures completion of as-builts in accordance with the approved as-built program description (Table C.5-1.1, Deliverable 4.7).

Standard 6: Product Qualification, Characterization, and Certification

The purpose of this Standard is to describe the requirements for documentation that are used to qualify the immobilized waste products (IHLW and ILAW) and secondary wastes (solid waste, nonradioactive nondangerous liquid effluents, radioactive dangerous liquid effluents, and air emissions).

Product qualification, characterization, and certification activities and deliverables shall be integrated with all technical, regulatory, and operability aspects of the WTP.

- (a) The Contractor shall:
 - (1) Identify, quantify, and describe each immobilized waste product and secondary waste to be produced or generated by the WTP.
 - (2) Conduct activities necessary to qualify each immobilized waste product and to provide confidence, prior to commissioning operations, that the products will conform to the specifications and requirements in this Contract.
 - (3) Conduct activities necessary during commissioning to characterize and provide a basis for certifying that the immobilized waste products and secondary wastes conform to the specifications and requirements in this Contract.
 - (4) Issue a certification document for each filled and sealed canister that the canister meets product specifications and the basis for the certification.
 - (5) Perform all product qualification, characterization, and certification activities in accordance with the requirements of Section C.4.
- (b) The Contractor shall update the IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2), the ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3), and the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1) describing the plan for qualification, characterization, and certification of each immobilized waste product and secondary wastes included under this Contract. These plans shall provide the following information:
 - (1) Identification, quantification, and description of each immobilized waste product and secondary waste. The description shall include chemical and radiochemical composition, physical properties, and a comparison to Contract requirements.
 - (2) Planned compliance strategies, compliance activities, and documentation to qualify each immobilized waste product and secondary waste for each requirement.
 - (3) Planned methods and documentation to characterize and provide a basis for certifying that each immobilized waste product and secondary waste meets Contract requirements.
 - (4) Planned methods and documentation to comply with dangerous and hazardous waste regulations as required under law and in the Contract.
 - (5) Identification and description of documentation to be provided with each product package submitted for acceptance, and secondary waste submitted for transfer that (a) describes the product, (b) documents characterization activities, and (c) provides a basis for certifying that the product or waste conforms to the Contract requirements.

- (c) The Contractor shall complete the following activities and prepare the documentation identified below:
- (1) Update the ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3) for DOE review and approval.
 - (2) Update the IHLW (Waste Form Compliance Plan) (Table C.5-1.1, Deliverable 6.2) for DOE review and approval that addresses the requirements of the WASRD and identified in Specification 1, Immobilized High Level Waste Product, for DOE approval. The Contractor shall provide documentation and technical support to DOE during the approval process. **(047)**
 - (3) Update the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1) for DOE review and approval.
 - (4) Implement the DOE-concurred upon ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3) and IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2), and the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1), including all planned qualification, certification, and characterization activities.
 - (5) Prepare qualification documentation for DOE review and comment related to ILAW and IHLW products. Qualification documentation (Table C.5-1.1, Deliverables 6.4, IHLW Product Qualification Report and 6.6, ILAW Product Qualification Report) shall be submitted for DOE approval during the facility cold and hot commissioning activities. The qualification documentation shall address each requirement of each specification and shall compile the results of testing, analyses, demonstrations, and inspections to demonstrate that each product will comply with Section C.8, "Operational Specifications," of this Contract.
 - (6) The IHLW Product Qualification Report shall be submitted for DOE approval during the facility cold and hot commissioning activities. The Contractor shall provide documentation and technical support to DOE during the approval process.
 - (7) In accordance with Standard 7, DOE will be responsible for submitting the Contractor developed petition for exempting or excluding the IHLW product from RCRA and HWMA regulations (Table C.5-1.1, Deliverable 7.9). The Contractor shall develop the petition and support DOE in the petitioning process. If the exemption or exclusion is obtained, the Contractor shall implement the necessary procedures to provide IHLW that is exempted or excluded from RCRA and HWMA.
 - (8) In accordance with Standard 7, DOE will be responsible for submitting the Contractor-developed petition for a new treatment standard, specific to Hanford tank waste. The Contractor shall support DOE during the petitioning process, in accordance with Standard 7 (Table C.5-1.1, Deliverable 7.10). If the petition is approved, the Contractor shall implement the necessary procedures to treat the waste in accordance with the new treatment standard.
 - (9) Prepare production documentation for ILAW (Table C.5-1.1, Deliverable 6.7) and IHLW (Table C.5-1.1, Deliverable 6.5) products, and secondary wastes (Table C.5-1.1, Deliverable 6.10). The production documentation shall verify that the analyses; demonstrations; inspections; and testing to characterize each product package, canister, or liquid stream for transfer and provide a basis for certification that each product and secondary waste complies with Section C.8, Operational Specifications and requirements of this Contract.

- (10) Submit to DOE all required documentation that qualifies, characterizes, quantifies, and certifies each immobilized waste product and secondary wastes conforms to Contract requirements.
 - (11) Proposed ILAW glass composition ranges shall be provided to DOE for approval no less than two (2) years before production of glasses in that range. DOE approval (or non) will be provided within six (6) months of the proposal. The Contractor shall only produce glasses that have received DOE approval.
- (d) Dangerous and Hazardous Waste Requirements for the Immobilized High-Level Waste Product (Specification 1):
- (1) The Contractor shall plan and perform process and product development testing, sampling and analysis, reporting, and certification necessary to (1) characterize and designate the IHLW product for dangerous waste characteristics, dangerous waste criteria, and dangerous waste sources pursuant to WAC 173-303-070 and demonstrate that the IHLW product does not exhibit any dangerous waste characteristics, WAC 173-303-090, and does not meet any dangerous waste criteria, WAC 173-303-100; (2) support the petition for exemption or exclusion of the IHLW product from RCRA and HWMA and the implementing regulations; and (3) comply with required applicable laws or regulations. The sampling, preparation, and testing methods shall conform to the requirements in WAC 173-303-110.
 - (2) The Contractor shall plan, develop, obtain, report, and certify the information required (1) to demonstrate that the IHLW product does not exhibit any dangerous waste characteristics, WAC 173-303-090, and does not meet any dangerous waste criteria, WAC 173-303-100; (2) to demonstrate that the treated waste in the IHLW product is not prohibited from land disposal pursuant to WAC 173-303-140 and 40 CFR 268, "Land Disposal Restrictions"; (3) to petition EPA and Ecology for an exemption from RCRA and HWMA, and the implementing regulations; (4) to show that the IHLW meets the TSCA radioactive waste exemption criteria in 40 CFR 761.50 (b)(7)(ii); and (5) to comply with applicable laws, regulations, permits, licenses, other regulatory authorizations and approvals, and this Contract.
- (e) Dangerous and Hazardous Waste Requirements for the Immobilized Low-Activity Waste Product (Specification 2):
- The Contractor shall plan and perform process and product development testing, sampling, analysis, reporting, and certification necessary to:
- (1) Characterize, support, and designate the ILAW product for dangerous waste characteristics, dangerous waste criteria, and dangerous waste sources pursuant to WAC 173-303-070 and demonstrate that the ILAW product does not exhibit any dangerous waste characteristics, WAC 173-303-090, and does not meet any dangerous waste criteria, WAC 173-303-100.
 - (2) The Contractor shall plan, develop, obtain, report, and certify the information required to:
 - (i) Demonstrate that the treated waste in the ILAW product is not prohibited from land disposal pursuant to WAC 173-303-140 and 40 CFR 268 "Land Disposal Restrictions";

- (ii) Demonstrate that the ILAW product does not exhibit any dangerous waste characteristics, WAC 173-303-090, and does not meet any dangerous waste criteria, WAC 173-303-100;
 - (iii) Show that the ILAW meets the TSCA radioactive waste exemption criteria in 40 CFR 761; and
 - (iv) Comply with applicable laws, regulations, permits, licenses, other regulatory authorizations and approvals, and this Contract.
- (3) Support the petition for a new treatment standard for Hanford tank waste as described in Standard 7.
- (4) Comply with required applicable laws or regulations.
- (5) The sampling preparation and testing methods shall conform to requirements in WAC 173-303-110.
- (f) The Contractor shall be responsible for characterizing the HLW and LAW feed. The characterization may be based upon the available historical data and will use analysis of DOE-provided splits of representative samples of the waste feed to support compliance with regulatory, authorization basis, and technical requirements for the WTP and as otherwise required by this Contract. The Contractor shall perform analyses of the waste feed based on the analyses and requirements in the applicable DQO.
- (g) The Contractor shall qualify and characterize the immobilized waste products, and secondary wastes using analysis, testing, inspection, and demonstration as defined for each specification or requirement shown in Table S6-2, "Qualification and Characterization."

Table S6-2. Qualification and Characterization.

| Requirement | Qualification | Product Characterization |
|--|---------------|--------------------------|
| Chemical and Radiochemical Composition | A, D, I, T | A, D, I, T |
| Dangerous and Hazardous Wastes | A, D, I, T | A, D, I, T |
| Waste Loading | A, D, T | A, D, T |
| Waste Form Leaching/Durability | A, T | A, T |
| Waste Form Stability | A, D, T | D |
| Free Liquids, Explosivity, Pyrophoricity, Organic Materials, and Gases | A, D, I | A, D, I |
| Heat Generation and Surface Temperature | A | A |
| Dose Rate and Criticality | A | A, I |
| Package and Canister Dimensions | D, I | D, I |
| Weight and Mass | A, D, I | D, I |
| Void Space and Fill Height | D | D, I |
| Package and Canister Materials | D, I | D, I |
| Package and Canister Mechanical Strength | A, D, T | D |
| Labeling | D, I | I |
| Package and Canister Handling Features | D, I | D, I |
| Package and Canister Closure and Sealing | D, I | D, I |
| Surface Contamination | D | D, I |

Legend:
 A = Analysis
 D = Demonstration
 I = Inspection
 T = Testing

Definition of Terms: The following terms and definitions shall apply to this standard.

Analysis (A)—As used in the specifications, an analysis is a set of engineering or scientific calculations that demonstrate that a product meets or exceeds a specification requirement. These calculations are typically based upon available data and assumptions regarding process operating conditions or materials. Analysis is required to identify conditions or assumptions, which might limit validity, and to identify specific documentation or measurements made during production to ensure validity (e.g., waste loading, container material, process additives, process measurements, etc.). Analyses shall be conducted and documented in sufficient detail in such a way that a knowledgeable technical person can review and concur in their accuracy and validity. Evidence of peer review for accuracy for each analysis shall be provided. An analysis will be considered to demonstrate compliance with specification requirements when (1) approved by DOE; and (2) when the conditions for validity or assumptions are verified by independent means (e.g., process control records, raw material certifications).

Demonstration (D)—A demonstration is the proof-of-principle of a specimen, article, or process test used to verify conformance to the conditions of an analysis or product specification. Demonstrations are conducted where analysis is insufficient to provide proof-of-product acceptability or where analysis indicates the need for verification of assumptions (e.g., waste loading, explosivity, scale-up, process control). Demonstration reports shall identify (1) the demonstration being conducted; (2) the limits of the demonstration's validity; and (3) those inspections or tests that will be conducted during operations to confirm that the demonstration results are still applicable to the product being produced. Proposed demonstrations will be submitted as part of the compliance plans. A demonstration will constitute verification of compliance with a specification requirement

when (1) it has been approved by DOE; and (2) when the conditions for validity or assumptions have been verified by independent means (e.g., process control records, raw material certifications) during operation.

Inspection (I)—Inspection is a nondestructive examination or measurement of a product characteristic that confirms compliance with product specifications. Inspections are conducted when product characteristics can be easily determined by direct measurement (e.g., weight, dimensions, labeling, external temperature, etc.) or where the results of the calculations leave some doubt as to satisfaction of the product requirements.

Test (T)—A test is the evaluation of a product characteristic in which representative samples are destructively examined or measured to confirm compliance with product specifications. Tests are typically conducted where product characteristics cannot be readily determined by inspections, or where an inspection by itself, does not provide adequate confirmation of compliance (e.g., chemical composition, radionuclide release rate). Upon request by DOE, the Contractor shall split and provide DOE samples obtained from or representative of the delivered products. The Contractor is responsible for defining what constitutes a statistically representative sample (e.g., based on the extent of process control achieved for that product).

Qualification—Qualification is composed of activities conducted by the Contractor to provide confidence, prior to full-scale production operations, that the planned immobilized waste products and secondary wastes will conform to the specifications in the Contract.

Characterization—Characterization is composed of activities conducted by the Contractor to provide confidence that the actual immobilized waste products and secondary wastes produced during production operations conform to the specifications and requirements in the Contract.

Certification—Certification is the endorsement or guarantee by the Contractor that an immobilized waste product or secondary waste conforms to the Contract requirements and specifications.

Validation—Validation is composed of activities conducted by the Contractor with actual wastes or with full-scale process equipment to confirm that the results of the analyses, demonstrations, inspections, and test(s) conducted by the Contractor to qualify a product or process are representative of the product and process characteristics.

Verification—Verification is composed of activities conducted by DOE to confirm that each immobilized waste product or secondary waste conforms to the Contract requirements and specifications.

Standard 7: Environment, Safety, Quality, and Health

The purpose of this Standard is to (1) define Contractor responsibilities for conventional nonradiological worker safety and health; radiological, nuclear, and process safety; environmental protection; quality assurance; and (2) identify specific deliverables the Contractor shall submit to DOE.

Where this Contract or references contained in this Contract, makes reference to the "DOE Regulatory Unit," in place of "DOE Regulatory Unit," read "DOE" (as the regulator of radiological, nuclear, and process safety).

(a) The primary objectives of ESQ&H are to:

- (1) Demonstrate compliance with established requirements;
- (2) Apply best commercial practices to provide conventional nonradiological worker safety and health protection; radiological, nuclear, and process safety; and environmental protection; and
- (3) Implement a cost-effective program that integrates environmental protection, safety, quality, and health in all Contractor activities.

Environmental protection, safety, quality, and health program activities and deliverables shall be integrated with all technical and regulatory aspects of the WTP Project.

- (b) The Contractor shall integrate safety and environmental awareness into all activities, including those of subcontractors at all levels. Work shall be accomplished in a manner that achieves high levels of quality; protects the environment, as well as the safety and health of workers and the public; and complies with all requirements. The Contractor shall identify hazards; manage risks; identify and implement good management practices; and make continued improvements in ESQ&H performance.
- (c) The Contractor is responsible for providing safe and healthful working conditions for employees and all other persons under the Contractor's control who work in the general vicinity of the Contractor site, including subcontractors. The Contractor shall develop and implement integrated programs for conventional nonradiological worker safety and health; radiological, nuclear, and process safety; and environmental protection. The Contractor shall implement its program, and submit the deliverables described in paragraphs (d) and (e) of this Standard.
- (d) The Contractor shall develop and implement an integrated standards-based safety management program to ensure that radiological, nuclear, and process safety requirements are defined, implemented, and maintained. The Contractor shall conduct work in accordance with the Contractor developed and DOE approved Safety Requirements Document (SRD). The SRD is the set of ESQ&H tailored requirements as referenced in Section I, Clause, "Laws, Regulations, and DOE Directives."
- (e) The specific deliverables and program requirements are divided into four categories: (1) Nonradiological worker safety and health protection; (2) radiological, nuclear, and process safety; (3) QA; and (4) environmental protection. The deliverables shall reflect

the current degree of design and project maturity. The following information is provided to support development of deliverables required in each area of the ESQ&H program:

- (1) Nonradiological Worker Safety and Health (Table C.5-1.1, Deliverable 7.0):
 - (i) The Contractor shall develop and implement an integrated standards-based safety management program. The Contractor's safety management program shall reflect proven principles of safety management and work planning that promotes accident prevention, employee involvement, and sound hazard analysis and control.
 - (ii) The Contractor's nonradiological worker safety and health program shall conform to 10 CFR 851, "Worker Safety and Health Program," at the effective implementation date of May 15, 2007. **(114) (215)**
 - (iii) DOE is responsible for the conduct of worker safety and health inspections and granting variances. **(114)**
 - (iv) Proposed changes that impact cost and/or schedule will be analyzed under RL/REG-98-14, *Regulatory Unit Position on New Safety Information and Back-fits*, and if implemented, will be dispositioned in accordance with Section I Clause entitled, "Changes."
 - (v) Deleted **(215)**
- (2) Deleted **(166)**

Table S7-1. Environment, Safety, Quality, and Health Deliverables.

| Regulatory Action | Deliverable | References | During Construction | Start of Hot Commissioning |
|-------------------------------------|-------------------------------------|---|---------------------|----------------------------|
| Standards Approval | Safety Requirements Document | ORP letter 01-OSR-0311, dated September 17, 2001 | Revision | Revision |
| | Quality Assurance Program | 10CFR830.120, NQA-1 2000 | Revision | Revision |
| Authorization for Hot Commissioning | Emergency Response Plan | DOE/RL-94-02 | Draft | Final |
| | Nuclear Maintenance Management Plan | WAC246-247 | Draft | Final |
| | Occurrence Reporting Plan | SCRD O 232.2 Occurrence Reporting and Processing of Operations Information (332) | Draft | Final |
| | Environmental Protection Program | 29CFR1910, 40CFR68 | Draft | Final |
| | Radiation Protection Program | 10 CFR 835 | Revision | Final |

(Entire Table revised M166)

(3) Quality Assurance (Table C.5-1.1, Deliverable 7.2):

Contract Section J, Attachment E, "List of Applicable Directives," describes applicability of DOE O 414.1C and DOE O 414.1D, Change 1.

The Contractor shall develop a QA Program, documented in a QA program manual(s), and supported by documentation that describes overall implementation of QA requirements. Supporting documentation shall include procedures, instructions, plans, and manuals used to implement the Contractors QA program within the Contractors scope of work. Specific requirements for process development, waste form qualification and testing are described in Standards 2 and 6. The Contractor's QA program manual(s) shall be submitted to DOE for review and approval (Table C.5-1.1, Deliverable 7.2). The Contractor shall utilize a technically defensible graded approach to develop the QA program based upon the requirements of:**(066)**

- (i) QA for radiological, nuclear, and process safety shall be conducted in accordance with 10 CFR 830.120, "Nuclear Safety Management," Subpart A, "Quality Assurance Requirements," and DOE O 414.1C, *Quality Assurance*. **(066)**
- (ii) QA for process development, waste form qualification, and testing shall be conducted as described in Standards 2 and 6. QA program requirements for all IHLW and ILAW work shall be covered by the approved QA program. The QA program manual(s) shall address the following requirements:**(066):**

- a. The Contractor shall implement the Office of Civilian Radioactive Waste Management's, *Quality Assurance Requirements and Description Document* (QARD). The QARD (DOE/RW-0333P), Revision 20, for elements of the Contractor's scope that may affect the IHLW product quality, including but not limited to, waste form development, qualification, characterization, production process control, and certification of the IHLW products.
 - b. The Contractor shall implement the National Consensus Standard ASME NQA-1-2000, *Quality Assurance Requirements for Nuclear Facility Applications*, Part I and Part II, Subpart 2.7 for elements of the Contractor's scope that may affect product quality of the ILAW product, entrained solids, and sludge washing, including, but not limited to, waste form development, qualification, characterization, production process control, certification of ILAW product, entrained solids, and sludge washing. Furthermore, all research and technology activities (other than IHLW – see a above) shall be conducted in accordance with NQA-1. **(066)**
 - c. The estimated cost and schedule in Contract Mod **(384)** is based on the current DOE approved Quality Assurance Manual and procedures currently implemented by the Contractor.
- (iii) QA for permitting activities shall be conducted in accordance with all applicable laws and regulations, including RCRA, TSCA (if later directed by DOE), and WAC 173-303 QA requirements.
 - (iv) QA for facilities, projects, and secondary wastes not subject to the above requirements shall be done in accordance with DOE O 414.1C. The Contractor shall maintain its QA program in accordance with DOE O 414.1C. The Contractor has the option to not incorporate the elements of ANSI/ASQ Q9001-2000, *Quality Management Systems Requirements Standard*, requirements (for non-nuclear activities), which is referenced in DOE O 414.1C, CRD. **(066) (143) (152)**
 - (v) The Contractor may be required to use additional consensus standards in order to describe and implement a fully functional, systematic QA program for nuclear facility construction or for nuclear safety-related work. The RPP adopted the NQA-1-2000 as the primary QA reference document and the Contractor shall utilize this Standard to help achieve the quality objectives of this Contract, as necessary. **(066)**
 - (vi) DOE or its designee(s) shall have access to and the right to conduct assessments, audits, and/or surveillances of the Contractor (and its subcontractors/suppliers, at any level) activities to ensure compliance with the appropriate requirements and the Contractor's QA program, at DOE discretion.
- (4) Environmental Protection (Table C.5-1.1, Deliverable 7.3):
- (i) The Contractor shall develop and implement an integrated environmental protection program. The Contractor shall design, construct, manage, and commission the WTP to assure compliance with environmental requirements, permits, licenses, and other regulatory approvals and agreements.

- (ii) The Contractor shall develop and implement an integrated program to provide environmental protection and compliance. The Contractor shall integrate all permitting and compliance actions with the future WTP operator.
- (iii) The Contractor shall identify all necessary permits, licenses, and other regulatory approvals and authorizations for the design, construction, commissioning, and operation of the WTP, unless otherwise identified in this Contract. The Contractor shall develop the necessary permit applications, license applications, requests for other regulatory authorizations, and supporting materials and documentation in accordance with Clause H.26, *Environmental Permits*. The Contractor shall provide all technical and regulatory information, documentation, and support to ensure that permits, licenses, and other regulatory authorizations and approvals are obtained in a timely manner to support the design, construction, commissioning, and operation of the WTP and other Hanford Site facilities that support the WTP.
- (iv) The Contractor shall implement a program to track and address environmental compliance issues, and to implement and comply with all requirements (including, but not limited to, permitting, environmental reports, enforcement actions, consent decrees, *Hanford Federal Facility Agreement and Consent Order* milestones/reports/management commitments, *National Environmental Policy Act of 1969*, pollution prevention, and waste minimization).
- (v) The Contractor shall work with the appropriate Hanford Site Contractor in providing legally and regulatory required air and liquid effluent and near-facility environmental monitoring. The Contractor shall collect, compile, and/or integrate air and liquid effluent monitoring data from operations and activities under their control. The Contractor shall compare the monitoring data with regulatory and/or permit standards applicable to their activities and/or operations and provide the data and analyses to the appropriate Hanford Site Contractor for use in preparing the mandatory state and Federal environmental reports for the Hanford Site in a timely manner. In addition, the Contractor shall provide appropriate environmental data for the WTP to support Hanford Site assessments and preparation of the Hanford Site Environmental Report.
- (vi) The Contractor shall prepare and submit to the Contracting Officer for review and action the following environmental protection deliverables. The deliverables shall be consistent with the design and schedule for construction and commissioning the WTP. Identification of the following deliverables does not modify or affect the Contractor's responsibilities for environmental permitting, compliance, and protection identified in the Contract or as required under applicable law or regulation. The Contractor shall have the responsibility to identify and develop any necessary modifications to existing permit applications, license applications, requests for regulatory authorizations/approvals, and supporting materials to support the design, construction, commissioning, and operation of the WTP.
 - a. Environmental Plan (Table C.5-1.1, Deliverable 7.3):
The Contractor shall develop a detailed plan that identifies the Contractor's structured approach for environmental protection, compliance, and permitting, including (1) planned environmental permitting and compliance activities for design, construction, and

commissioning the WTP; (2) detailed permitting and compliance schedule integrated and linked to the technical baseline; and (3) environmental monitoring and reporting requirements. The Contractor shall review permit applications, license applications, and other requests for regulatory authorizations/approvals, and supporting materials that are in draft form and/or were submitted to regulatory agencies and identify any modifications necessary to support the design, construction, commissioning, and operation of the WTP in the Environmental Plan.

The Environmental Plan (Table C.5-1.1, Deliverable 7.3) shall be submitted for DOE review and approval, and include identification of where and when DOE or other site contractor action is anticipated or required. The Plan shall be submitted within three (3) months after contract award. The Plan shall be updated as significant changes to the permitting schedules warrant.

- b. Dangerous Waste Permit Application (Table C.5-1.1, Deliverable 7.5): Prepared as a chapter to the *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage and Disposal of Dangerous Waste at the Hanford Facility* (Permit No. WA7890008967).

Dangerous Waste Codes are identified in Part III, Operating Group 12, DST System/204 AR Waste Unloading Station, Dangerous Waste Permit Application Part A Form. The Contractor facilities shall be permitted to assure that the facility may manage and treat all waste codes applicable to the Hanford Double-Shell Tank system, except for ignitable and reactive waste codes, D001 and D003, that will not be present in direct feed LAW pursuant to ICD-30. **(376)**

The Contractor shall develop and implement a plan for DOE review and approval for revising the Dangerous Waste Permit Application and obtaining the final status permit modification. The plan shall be developed in cooperation with DOE and the regulatory agencies. The Contractor shall revise the Dangerous Waste Permit Application (Table C.5-1.1, Deliverable 7.5), support the dangerous waste permitting process, and work with the regulatory agencies and DOE to obtain final status under the dangerous waste regulations to support WTP construction and commissioning activities. Construction of the treatment facility may commence prior to a final status permit being issued provided the regulatory agencies agree.

- c. Risk Assessment Work Plan (Table C.5-1.1, Deliverable 7.6): The Contractor shall implement the Risk Assessment Work Plan as agreed to with DOE and the regulatory agencies, and conduct environmental performance tests during commissioning to validate the risk assessment and demonstrate WTP performance. The Risk Assessment Work Plan shall be the documented outcome of the Contractor's negotiated agreement with regulators to demonstrate that WTP will meet required environmental performance standards for a thermal treatment

facility. The Risk Assessment Work Plan (Table C.5-1.1, Deliverable 7.6) may be a supplement to the Dangerous Waste Permit Application.

- d. Notice(s) of Construction (Table C.5-1.1, Deliverable 7.7):
The Contractor shall prepare Notice(s) of Construction (NOC) for both radioactive and nonradioactive air emissions related to Contractor activities in accordance with applicable regulations. NOCs (Table C.5-1.1, Deliverable 7.7) shall be submitted for DOE approval no less than 150 days prior to scheduled submission to the regulators. The Contractor shall also provide draft permit modification language for the air-operating permit to the appropriate site contractor based on regulator approvals of NOC and consistent with the project schedule, Environmental Plan, and provisions of this Contract.
- e. Prevention of Significant Deterioration Permit Application (Table C.5-1.1, Deliverable 7.8): The Contractor shall prepare a Prevention of Significant Deterioration (PSD) Permit Application for air emissions related to Contractor activities in accordance with applicable regulations. The permit application (Table C.5-1.1, Deliverable 7.8) shall be submitted for DOE review, comment, and approval no less than 150 days prior to scheduled submission to the regulators. The Contractor shall also be responsible for providing draft permit modification language to the appropriate site contractor for the air-operating permit consistent with the project schedule and provisions of this Contract.
- f. Petitions for Exemption or Exclusion for Immobilized High-Level Waste (Table C.5-1.1, Deliverable 7.9): The Contractor shall develop a set of documents for DOE use in petitioning Ecology and EPA to exempt or exclude the IHLW from regulation under HWMA and RCRA and their implementing regulations, respectively. The petitions and supporting technical and regulatory materials shall be developed in accordance with applicable law, regulation, and permit. The Contractor shall include DOE-provided information in the petitions, and shall be responsible for establishing a schedule with DOE for when such information is needed. The Contractor shall collect and analyze characterization data and demonstration-scale treated waste product data to support the petition and compliance demonstration. The Contractor shall support DOE in the petitioning process and interactions with the regulators. The petition (Table C.5-1.1, Deliverable 7.9) shall be submitted to DOE for review and approval.
- g. Petition for a New Treatment Standard for Hanford Tank Waste (Table C.5-1.1, Deliverable 7.10): The Contractor shall develop a petition for submittal to the regulatory agencies that proposes vitrification as the specified treatment technology for Hanford tank waste. The Contractor shall collect and analyze characterization data and demonstration-scale treated waste product data to support the petition and compliance demonstration. The Contractor shall support DOE in the petitioning process and interactions with the regulators.

The Contractor shall obtain, report, and certify required information to DOE to demonstrate that the ILAW product is acceptable for land disposal. The petition (Table C.5-1.1, Deliverable 7.10) shall be submitted to DOE for review and approval.

Standard 8: Safeguards and Security

The purpose of this Standard is to describe the Safeguards and Security (SAS) requirements relevant to the WTP facility and operations.

- (a) The Contractor shall develop and implement an SAS Program to ensure the protection of DOE-owned material, property, and information. The Contractor shall maintain and update all relevant aspects of the SAS Program that was previously concurred upon by DOE or part of the WTP Conceptual Design and supporting documentation.
- (b) The SAS Program shall ensure the protection of DOE-owned material, property, and information.
 - (1) The scope of DOE SAS requirements includes:
 - (i) Physical protection;
 - (ii) Material control and accountability if found applicable throughout the period of the Contract;
 - (iii) Protection of DOE information and the Hanford Site access requirements; and
 - (iv) Government property protection.
 - (2) The Contractor's program shall comply with the applicable regulations, DOE orders, and DOE-provided top-level SAS requirements stipulated in the DOE approved *Hanford Tank Waste Treatment and Immobilization Plant Safeguards and Security Plan*, 24590-WTP-PL-SS-02-001. The Contractor shall design the facility in a manner to provide adequate response time for the Hanford Patrol.
 - (3) The SAS deliverables shall be updated per Table S8-1 and as required to reflect known changes.
- (c) The Contractor shall comply with the "Richland Regional Office Site Counterintelligence Support Plan Hanford Site - Bechtel National, Inc." (SCSP), and subsequent ORP approved revisions of the SCSP. The SCSP incorporates requirements listed in DOE O 475.1, *Counterintelligence Program* and its CRD O 475.1. **(071)**

Table S8-1. Safeguards and Security Deliverables (Table C.5.1-1, Deliverable 8.0)

| Deliverable Description | Reference | Contract Award | Start of Construction | Start of Cold Commissioning | During Hot Commissioning |
|---|---------------------------------------|---|-----------------------|-----------------------------|--------------------------|
| Safeguards and Security Program Plan consisting of: | | | | | |
| MC&A Plan | Standard 8 and 24590-WTP-PL-SS-02-001 | Not Required ¹ | NA | NA | NA |
| Security Plan | Standard 8 and 24590-WTP-PL-SS-02-001 | Existing DOE approved preliminary draft | See Note 2 | Annual Revision | Annual Revision |
| Vulnerability/Risk Assessment Data | Standard 8 and 24590-WTP-PL-SS-02-001 | NA | Ongoing, See Note 3 | Ongoing | Ongoing |
| Internal Assessment Reports | Standard 8 and 24590-WTP-PL-SS-02-001 | NA | NA | Final | Annual |
| External Assessment Reports | Standard 8 and 24590-WTP-PL-SS-02-001 | Submission of Corrective Action Plan within 30 days of receipt of external review report. | | | |

1. Based upon material condition, it was confirmed that a separate MC&A plan is not required. MC&A requirements (if any) shall be tracked in the security plan. Submit final security plan for DOE approval within 45 days of receipt of DOE comments to the preliminary draft plan.
2. Submit final Security Plan for DOE approval within 45 days of receipt of DOE comments to the preliminary draft plan.
3. Provide vulnerability/risk assessment data for the HLW, LAW, PT, LAB, and BOF at the 60 percent and 90 percent design stages.

Standard 9: Nuclear Safety (Table C.5-1.1, Deliverable 9.1) (257) (293) (384)

- (a) The Contractor's safety basis documents and maintenance process shall be developed and implemented to comply with the specific nuclear safety requirements established in 10 CFR 830, Subpart B, *Safety Basis Requirements*, DOE-STD-3009-94 CN3, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, and the ORP technical direction on nuclear safety methodology as reflected in the approved Implementation Plan documented in item (g).
- (b) The Contractor shall prepare and submit to DOE for review and approval the nuclear safety-related deliverables required by 10 CFR 830, Subpart B, as well as the following:
 - (1) Safety Evaluation Process procedure,
 - (2) Change Packages for Preliminary Documented Safety Analysis (PDSA) [previously known as Authorization Basis Amendment Requests (ABAR)] which require DOE approval as defined in the Safety Evaluation Process procedure,
 - (3) An Implementation Plan to manage PDSAs and to develop, review, and implement DSAs and TSRs,
 - (4) DSA specific Implementation Plans, and
 - (5) A Criticality Safety Program Description Document.

The Contractor shall prepare and submit to DOE for information the following:

- (1) An annual letter summarizing the changes made to each PDSA in the previous 12 months,
 - (2) Quarterly listings of screenings, evaluations and PDSA changes, and
 - (3) Criticality Safety Evaluations thirty (30) days prior to their approval by the Contractor.
- (c) The Contractor shall submit the Documented Safety Analysis (DSA) for each facility no less than six (6) months prior to the need for ORP approval, and associated hazards analysis documents for information, to support commissioning activities for those facilities.

A 10 CFR 830 compliant USQ process shall be implemented by the Contractor concurrent with the submittal of the first DSA for DOE review and approval to manage changes to the DSA prior to the effective date of the DSA and TSRs. The effective date for the DSA and associated TSRs will be identified for each DSA in the DSA specific Implementation Plan.

- (d) The Contractor shall establish and implement a program to maintain PDSAs current as defined in item (e). The program shall consist of a process to screen and evaluate proposed changes to the design of facilities based on the potential to impact the hazards and accident analyses, and structures, systems and components (SSCs) as defined in the PDSAs. The Contractor shall facilitate ORP access for review of engineering documents reviewed by the Contractor for safety design basis impacts. The Safety Evaluation Process procedure that implements this program shall be approved by DOE.
- (e) The Contractor shall identify and maintain the list of documents that constitute the PDSA safety design basis for each facility. This list will be used by qualified screeners and evaluators to determine if a proposed design change requires DOE approval. Changes that are determined to require DOE approval in accordance with the DOE approved Safety Evaluation Procedure shall be submitted to DOE for review and approval prior to implementation.

Maintaining PDSAs current means that all Contractor approved changes (i.e., those within the analyzed safety design basis document) will be incorporated into each PDSA via a direct page

change within 60 days of contractor approved design changes. Annually, the Contractor shall submit a letter to ORP summarizing all changes made to the PDSA in the previous 12 months.

- (f) DOE shall have access to all Contractor nuclear safety related document development activities. DOE may observe Contractor design reviews and question the presenters as ex-officio members. These observations provide DOE with continuing information concerning the safety aspects of the evolving design and do not constitute ORP approval of the matters discussed.
- (g) The Contractor shall submit to DOE for review and approval an Implementation Plan to manage PDSAs, DSAs and TSRs completion and implementation. The Implementation Plan shall identify and reflect the current ORP technical direction on nuclear safety methodology and shall identify the process for reviews of PDSAs, DSAs and TSRs. The Implementation Plan shall be updated and submitted for approval when deemed appropriate by BNI or as directed by DOE.
- (h) The Contractor shall submit to DOE for review and approval a DSA and TSR Implementation Plan. The Plans will be submitted with the initial submittal of each DSA and TSR to DOE for approval. The Implementation Plan for each DSA will identify when the DSA and TSRs are to be implemented. The Implementation Plans shall be updated and submitted for approval when deemed appropriate by BNI or as directed by DOE.
- (i) The Contractor shall provide quarterly, a listing of screenings, evaluations and PDSA changes prepared in accordance with the Safety Evaluation Process procedure discussed above.
- (j) The Contractor shall maintain the Safety Requirements Document (SRD) consistent with the design of WTP facilities. Changes to the SRD will be processed consistent with the Safety Evaluation Process procedure or USQ procedure discussed above as applicable to each WTP facility.
- (k) The Contractor shall develop a Criticality Safety Program Description Document consistent with 10 CFR 830, Subpart B, applicable DOE orders and standards, and national standards, and shall submit the document to ORP for review and approval. Criticality Safety Evaluations shall be submitted to ORP for review and comment thirty(30) days prior to their approval by the Contractor.
- (l) Contractor shall develop and submit to DOE for approval a Safety Strategy Summary Document (SSSD) for the Melter Off-gas Release Event Control to designate the secondary confinement as safety significant using the following approach:
 - (1) The C5V safety function is to mitigate the chemical hazard posed by NO_x for a two-hour duration of cold cap burn-off in the event the melter off-gas system fails under normal operating conditions. The two-hour period is based on current time estimates for the cold-cap burn off period.
 - (2) The C5V safety function is not required to be performed during LAW facility loss of electrical power or design basis natural phenomena events because the melter off-gas system (primary confinement) is designed to perform its safety function during these events.
 - (3) Physical requirements and the process for crediting the C5V SS confinement boundary will be documented in the SSSD by BNI and approved by DOE.

[NOTE: PREVIOUS TABLE S9-1 IS DELETED IN ITS ENTIRETY]

C.7 FACILITY SPECIFICATION

The Facility Specification provides minimum functional requirements for the process and facility design and the waste treatment capacity requirements. Additional requirements are contained in Section C.6, "Standards." DOE will consider changes to the facility specifications that improve life-cycle performance, cost, and schedule.

- (a) Functional Design Requirements: The WTP is comprised of five major facilities, PT, LAW, HLW, LAB, and BOF. The WTP shall be designed to:
- (1) Have a forty (40)-year operating life for the operating facilities (PT, HLW, LAW), LAB, and BOF exclusive of ancillary facilities (i.e., warehouses, construction support facilities, and administrative offices).
 - (2) Separately receive and store LAW feed (defined in Specification 7, Low Activity Waste Envelopes Definition) and HLW feed (defined in Specification 8, High Level Wastes Envelope Definition) in appropriately designed vessels. The DOE will provide waste transfer lines to an interface point described in ICD 19, "Waste Feed." The DOE will also provide adequate pumping motive force to transfer the waste to the WTP receipt vessels.
 - (3) For CLIN 2.1, LAW Vitrification shall be designed to receive treated LAW feed (Specification 7, Envelope E) from a Low-Activity Waste Pretreatment System provided by DOE. The DOE will provide waste transfer lines to an interface point described in ICD 30, "Direct LAW Feed." The DOE will also provide adequate pumping motive force to transfer the waste to the WTP receipt vessels.**(350)**
 - (4) Treat and immobilize the LAW feed (Specification 7, Envelopes A, B, C, and E) **(350)** and provide the final waste products described in Specification 2, Immobilized Low-Activity Waste Product, for return to DOE.
 - (5) Implement the sludge treatment process steps as proposed by the Contractor, and approved by DOE in accordance with Standard 2, (a), (3), (iii), for solids washing, caustic leaching, and oxidative leaching; immobilize the HLW feed and radionuclides separated from LAW feed, and provide the final waste products described in Specification 1, Immobilized High Level Waste Product, for return to DOE.
 - (6) Disposition all secondary wastes in accordance with ICD requirements; secondary wastes are identified in Section C.9, Interface Control Documents and Standard 6, Product Qualification, Characterization and Certification.
 - (7) The PT Facility shall have the capability to return to the Hanford Double-Shell Tank Farm process streams in accordance with Specification 9, *Liquids or Slurries*, transferred to DOE tanks by pipeline.
 - (8) Provide for safeguards and security of DOE owned materials, property, and information in accordance with Standard 8, "Safeguards and Security."
 - (9) Include a Radiochemical Analytical Laboratory to support the operations of the facilities, including process control, waste form qualification testing, environmental analyses, and limited technology testing. The capacity of the LAB shall be sufficiently sized and scoped to support the waste treatment capacity of the facilities. The technical basis to support the definition of the LAB facility shall be defined in the LAB design requirements (Table C.5-1.1, Deliverable 3.6).

- (10) Have the ability to receive and process slightly contaminated sodium hydroxide (NaOH) with trace quantities of radionuclides (Na-22, Cs-137, H-3) for use as a process chemical. This sodium (Na) will be converted to sodium hydroxide (NaOH) prior to use at the WTP. The quantity and radionuclide content of the Na is provided in ICD 29, "Waste Na."
 - (11) Capability to obtain samples of ILAW and IHLW glass to support process and product control needs for WTP.
 - (12) Include process and facility design features to safely and efficiently facilitate deactivation, decontamination, decommissioning, and RCRA closure of the facilities.
 - (13) Comply with applicable Federal, state, and local requirements, including environmental permits and other regulatory approvals and authorizations. The WTP shall be designed and operated to ensure that exposure to the maximally exposed off-site individual (non-acute) is as low as reasonably achievable but not more than 1.5 mrem per year and hazardous organic emissions are as low as reasonably achievable but not more than 0.375 tons per year from components regulated under 40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," Subpart AA, "Air Emission Standards for Process Vents."
 - (14) Include office space at the WTP site sufficient for the exclusive use of eight full-time DOE personnel and temporary space for ten (10) transient DOE personnel.
 - (15) Identify fifteen (15) acres on the WTP site, north of the PT Facility, to allow for the expansion of the LAW Facility capacity, by the addition of a Supplemental LAW Treatment Facility. Interface details and project impacts (including scope adjustments) will be established if a decision is made to use this space.
 - (16) Include process and facility design features that will efficiently minimize the use of services and utilities, as well as the generation of secondary wastes and waste products consistent with the constraints specified in this Contract. Achievement of this requirement is demonstrated through research and technology, design reviews, and DOE's design oversight:
 - (i) Use of services and utilities including: ICD 1, "Raw Water"; ICD 2, "Potable Water"; ICD 11, "Electricity";
 - (ii) Generation of secondary wastes, including: *Radioactive Solid Wastes, Dangerous Wastes, Non-Radioactive, Non-Dangerous Liquid Effluents; Radioactive, Dangerous Liquid Effluents;* and
 - (iii) Primary product volumes through improved waste loading greater than the Contract minimums: Specification 1, Immobilized High Level Waste Product and Specification 2, Immobilized Low Activity Waste Product.
 - (17) Include the capability to manage tank waste streams to prevent or minimize undesirable precipitation. This capability shall include mitigation of precipitation following ultrafiltration using techniques including maintaining the post-filtration process stream above the filtration temperature. Approaches should minimize the need for sodium (Na) addition to provide life-cycle mission benefit.
- (b) Waste Treatment Capacity Requirements: Waste treatment capacity requirements are specified below:

- (1) The required WTP facility design capacity for each of the WTP facilities is defined in Table C.7-1.1. Supplemental LAW immobilization will be provided by a separate contract to support WTP treatment.

The waste treatment capacity for each major facility is defined as a product of the facility design capacity (facility nameplate design capacity) multiplied by the integrated facility availability factor.

Table C.7-1.1. Waste Treatment and Immobilization Plant Facility Design Capacity.

| Facility | Design Capacity | Treatment Capacity |
|-----------------------|---|--|
| LAW Pretreatment (1) | 3740 MT Na per year | 2620 MT Na per year |
| HLW Pretreatment (2) | 1225 MT as-delivered solids per year | 860 MT as-delivered solids per year |
| LAW | 30 MT Glass per day | 21 MT Glass per day |
| HLW | 7.5 MT Glass per day | 5.25 MT Glass per day |
| Analytical Laboratory | Support all WTP Facilities at Design Capacity | Support all WTP Facilities at Treatment Capacity |
| Balance of Facilities | Support all WTP Facilities at Design Capacity | Support all WTP Facilities at Treatment Capacity |

Notes:

1. The LAW waste treatment capacity is based on waste sodium (Na). Waste Na is defined as Na from the following sources: Na from the LAW Feed Envelopes in accordance with Specification 7, *Low Activity Waste Envelopes Definition* and soluble Na from the HLW envelope in accordance with Specification 8, *High Level Waste Envelope Definition*. In addition, the chemical Na added to wash and leach the solids defined in the sludge treatment flowsheet, approved by DOE (Table C.5-1.1, Deliverable 2.1) and any Na required to maintain chemical stability of the ultrafiltration system permeate is included in the definition of waste Na.
2. As delivered solids represents the mass of the solid cations and anions delivered in the waste feed batches provided by the TFCOUP (HNF-SD-WM-SP-012), Revision 6, Feed Vector.
3. For the 2008 integrated WTP design configuration, confirmation that the WTP design will achieve the listed design capacities was contained in 24590-WTP-MRR-PET-08-002, Revision 2, August 25, 2008.
4. Confirmation that the DFLAW configuration will achieve listed design capacity will be based on tank utilization assessment model runs and update to Table C.5-1.1, Deliverable 2.6.

The Contractor shall evaluate the design capacity of the PT Facility, LAW Facility, and HLW Facility using Standard 2, (b), (2), WTP Tank Utilization Assessment Model. The design capacity is determined by the estimated average processing rate when treating all waste as defined by TFCOUP (HNF-SD-WM-SP-012), Revision 6.

The Contractor shall evaluate the design capacity of LBL in the DFLAW configuration using the WTP tank utilization assessment model. The design capacity is determined by the estimated average processing rate when treating LAW in the DFLAW configuration. The DFLAW operating window for capacity determination purposes shall be defined consistent with the amended Consent Decree filed March 11, 2016, as the time between LAW Facility hot commissioning complete (2023) and HLW Facility hot commissioning complete (2033) milestones.

ILAW loading shall be based on Specification 2.2.2.2, *Waste Loading*, and the IHLW loading shall be based on Specification 1, Table TS-1, Minimum Component Limits in High Level Waste Glass. For purposes of predicting PT Facility throughput rates and total treatment times at those rates, modeling assumptions shall be used such that the PT Facility throughput is not limited by the LAW and HLW facilities.

The Contractor is to estimate the integrated facility availability factor from the Operations Research Assessment as defined in Standard 2 (b) (1). The determination of integrated facility availability for the purpose of WTP facility design compliance shall be based on estimates of the total time to treat all tank wastes, with no reliability/availability/ maintainability/inspectability (RAMI) failures applied, divided by the total time to treat all tank wastes, with all RAMI failures applied. The minimum integrated facility availability and the individual facility availabilities shall be equal to or greater than 70 percent.

The Contractor shall estimate the integrated availability of the WTP operating in the DFLAW configuration. The minimum DFLAW integrated facility availability shall be equal to or greater than 70 percent.

The integrated facility availability assessment shall be based on modeling for the expected duration of the treatment mission.

ORP approval shall be obtained on all assumptions used for waste treatment capacity determinations using the WTP Tank Utilization Assessment and Operations Research Assessment models. For example, model assumptions may change following completion of Phase I Pretreatment Engineering Platform testing. These assumptions shall be documented in the WTP Basis of Design (Table C.5-1.1, Deliverable 3.3(a)).

- (2) The LAW Facility shall be designed to support a facility design capacity of 30 MTG/day for both integrated WTP and DFLAW configurations.

The LAW Facility shall be capable of vitrifying treated LAW Envelopes A, B, C, and E **(350)** in compliance with the waste loading specifications identified in Specification 2.2.2.2.
- (3) The HLW Facility shall be designed with two HLW melter systems to support a combined design capacity of 6 MTG/day with the original melters and up to 7.5 MTG/day with replacement melters.
- (4) The PT Facility shall have the capability to receive and store 1.5 Mgal of LAW feed. The design shall include the capability to receive, without interruption, 1.125 Mgal of LAW feed while processing from the remaining capacity of 0.375 Mgal of LAW feed. The tanks shall be connected to allow blending.
- (5) The PT Facility shall have sufficient HLW feed storage volume to support HLW operations at its design capacity as specified in Table C.7-1.1, WTP Facility Design Capacity. HLW feed batch receipt facilities shall be designed to allow receipt without interruption to waste feed processing. Pretreatment pulse jet mixed (PJM) vessel designs for waste slurry storage should be standardized to the extent possible.
- (6) The PT Facility shall have the capability to prepare, sample, and store blended HLW feed in a sufficient volume to operate the HLW Facility at its design capacity as specified in Table C.7-1.1. Pretreatment pulse jet mixed vessel designs for waste slurry storage should be standardized to the extent possible.

- (7) The PT Facility shall have the established capability to conduct sludge washing, caustic leaching, and oxidative leaching on HLW sludge and entrained solids. The PT Facility shall include the following capabilities to permit operational flexibility for sludge washing, caustic leaching, and oxidative leaching flowsheet and treatment capacity:
- (i) Provide two ultrafiltration trains to support solid-liquid separation, sludge washing, caustic leaching, and oxidative leaching. The ultrafilter surface area for each train shall be approximately 1,500 square feet, unless the Contractor demonstrates that greater average filter flux rates can be achieved with an alternative design.
 - (ii) Provide the capability to mix chemical reagents used in the leaching processes, in line with ultrafiltration vessel recirculation pumps, to shorten mixing times.
 - (iii) Perform caustic leaching between 80°C and 90°C to enhance leaching kinetics.
 - (iv) Include the capability to remove heels from the ultrafiltration feed vessels to move treated solids forward in the process and minimize recycle.
 - (v) Operate filtration at 45°C or higher to increase filter flux rates and potentially reduce caustic required in leaching.
 - (vi) Add caustic to ultrafilter permeate vessels to minimize the potential for post-filtration precipitation of aluminum (Al) species and reduce the volume of permeate that must pass through the ultrafilters.
 - (vii) Increase the capacity of the cesium (Cs) ion exchange system to a nominal 30 gallons/minute flowrate. This shall accommodate the increased waste volume resulting from caustic increases required to effectively conduct sludge washing, caustic leaching, and oxidative leaching on HLW sludge and entrained solids.
 - (viii) Provide the capability to perform caustic leaching in the ultrafiltration feed preparation vessel in addition to the ultrafiltration feed vessel.
- (c) Waste Treatment and Immobilization Plant Expandability Requirements: The Contractor shall design the WTP to ensure that the plant is designed and built with features to provide increased waste treatment capacities (items (3) and (10) below), or which allow for expansion to support increased treatment capabilities (items (1), (2), and (4) through (9) below), as follows:
- (1) The LAW Facility design shall not preclude the installation of a third melter; melter power and control systems; melter feed; offgas treatment; container handling; heating, ventilation, and air-conditioning; and other systems and components not initially installed. The capacity to expand the waste treatment shall be consistent with an increase in the design capacity of 30 MTG/day to 45 MTG/day.
 - (2) PT Facility can connect to a potential new facility designed to receive and treat the Hanford cesium (Cs) and strontium (Sr) capsules prior to incorporation into the HLW feed for immobilization in the HLW Facility. The scope shall be limited to the installation of process piping between an appropriately identified HLW feed process vessel and a location adjacent to the PT Facility where connections to a potential new facility could be easily accomplished.

- (3) LAB capabilities shall be included in the initial design to support an increase in LAW treatment capacity described in (b)(1) above.
 - (4) HLW Facility can connect to a potential new facility for the interim storage of IHLW canisters. Space on the facility site plan shall be provided to accommodate this additional storage capacity.
 - (5) Provide four piping stub-outs from the PT Facility **(225)** tunnel to route HLW slurry feed to and from a potential future HLW slurry feed concentration facility.
 - (6) Tank farm feed delivery routing capability, within the PT Facility, to connect a potential new facility ahead of the feed receipt tanks, and the ability to feed the potential new facility from the feed receipt tanks**(225)**, shall be provided. This routing capability shall include the installation of piping that will allow for tie-in at a later date.
 - (7) Routing capability, from the PT Facility to transfer treated and concentrated LAW feed to a potential new facility shall be provided. This routing capability shall include the installation of piping exterior to the pretreatment building that will allow for tie-in at a later date.
 - (8) Provide the capability to install future alternative solids filtering technologies in PT Facility hot cell areas used for the ultrafiltration system (PT Facility areas 34 and 35). This capability shall be accomplished by the addition of spare wall penetrations and associated piping or conduit runs into accessible areas to the extent practical.
 - (9) The glass former feed capability shall be designed to support LAW Facility operations at a design capacity of 30 MTG/day, and HLW Facility at a design capacity of 7.5 MTG/day. The glass former facility shall be capable of being expanded to support operation at 45 MTG/day.
 - (10) Provide HLW Facility systems and permits to support the future operation of the HLW Facility at a design capacity of 7.5 MTG/day including melter power supplies, pour cave cooling, and support for additional melter bubblers as necessary. The dangerous waste permit shall be modified to support the operation of the HLW Facility at 7.5 MTG/day. Melter demonstration trials may be limited to the design capacity of the HLW melter system available at the time of these trials. The expanded HLW vitrification capacity will be achieved by a second generation HLW melter.
- (d) Waste Treatment and Immobilization Plant Unit Operation: The WTP treatment process shall include PT Facility Unit Operations, HLW Vitrification Unit Operations, and LAW Vitrification Unit Operations.
- (1) Pretreatment Unit Operations: PT Facility shall include the following major process functions:
 - (i) Ultra-Filtration: This operation separates solids from supernatant. Separation is required to allow subsequent treatment of the waste fractions as IHLW and ILAW, respectively.
 - (ii) Strontium/Transuranic Removal: This operation removes Sr-90 and TRU elements to allow for production of an ILAW product that meets Specification 2.2.2.8, *Radionuclide Concentration Limitations*. The technology for the removal of Sr-90 is an isotopic dilution process that uses nonradioactive Sr as the reagent. The removal of TRU is accomplished

using sodium (Na) permanganate for de-complexation and adsorption of the TRU elements.

- (iii) Cesium (Cs) Removal: This operation removes Cs-137 from the filtered supernatant to allow for production of an ILAW product that meets the Specification 2.2.2.8, Radionuclide Concentration Limitations. In addition, Cs-137 will be further removed, to achieve a 0.3 Ci/m³ in the ILAW product, to facilitate the maintenance concept established for the ILAW melter system. The Cs removal process shall use an elutable ion-exchange resin. Resin selection shall consider technical acceptability and life-cycle costs. Ion-exchange resins shall be qualified for WTP operations and may include SuperLig® SL-644 resin, spherical resorcinol formaldehyde, or other qualified resins.
- (iv) Technetium Removal: This operation removes technetium (Tc)-99 (in the Na pertechnetate form) from the filtered supernatant to allow for production of an ILAW product that meets the Specification 2.2.2.8, Radionuclide Concentration Limitations. The Contractor shall not design or procure equipment relating to the Tc ion-exchange system. However, the Contractor shall provide space within the PT Facility for such equipment should it become necessary to provide Tc removal capability in the future. Contractor shall place floor embedments and wall penetrations within the facility to ensure that the option to install the Tc ion-exchange system equipment is maintained. Should Tc removal be required in the future, the Tc removal process shall use the elutable SuperLig® SL-639 resin (registered trademark of IBC Advanced Technologies, Inc.) or DOE-approved equivalent. The Contractor shall not conduct additional research on alternative resins for use in this process.
- (v) Waste Concentration: This operation concentrates the main process stream (Envelope A, B, and C supernatants and Envelope D solids as required) and dilute internal facility recycles recovered from the wash and leach steps that are part of the HLW sludge treatment. Radionuclides recovered from the supernatant fraction in the Cs ion-exchange process are concentrated for reagent recovery and to minimize the liquid volume of feed to HLW.
- (vi) Liquid Effluent Treatment: This operation collects the WTP effluent and provides for the discharge to the Hanford Site 200 East Area ETF or allows for the re-use of liquid effluent as process water with the WTP. Treated effluent will be transferred to the Hanford Site ETF as required.

- (vii) Washing, Caustic Leaching, and Oxidative Leaching of High-Level Waste Solids: The PT Facility shall have the capability to conduct washing, leaching, and oxidative leaching of HLW solids. Washing, caustic leaching, and oxidative leaching shall be performed using the process steps proposed by the Contractor. The objective of the water washing process step is to remove soluble Na and sulfate so that the HLW glass waste oxide loading is not limited by Na and/or sulfate. Water washing is defined as the dilution of dissolved waste constituents either with process water or very diluted caustic solution. The objective of the caustic leaching process step is to remove aluminum (Al) from the feed to HLW vitrification so that the HLW glass waste oxide loading is not limited by Al. The objective of the oxidative leaching process is to remove Cr from the feed to HLW vitrification so that the HLW glass waste oxide loading is not limited by Cr. These objectives are not absolute requirements, but will be balanced as described in Specification 12 with other operational parameters. For example, if the approved flowsheet or process steps (Standard 2(a)(3)(iii)) results in glass limited by Al, Cr sulfate, or Na it is acceptable.

The proposed process steps for sludge treatment, developed using data from the testing described in Standard 2(a)(3)(iii), shall be submitted to DOE for review and approval (Table C.5.1-1, Deliverable 2.10).

The Contractor shall evaluate their proposed procedure for Specification 12, Procedure to Determine Waste Feed Treatment Approach, against the results obtained in sludge treatment testing. The procedure shall provide projections of IHLW and ILAW quantities produced consistent with the sludge treatment testing and proposed process steps. The Contractor shall recommend the specific test procedure (e.g., testing and modeling) for Specification 12, for DOE review and approval (Table C.5.1-1, Deliverable C.7-1).

- (2) High-Level Waste Vitrification Unit Operations: HLW vitrification shall include the following major process functions:
- (i) High-Level Waste Feed Preparation: HLW melter feed will be prepared from treated HLW solids, concentrates from radionuclide recovery processes, and glass forming chemicals. The HLW feeds will be prepared, sampled, and qualified prior to the HLW Facility operation. The qualification strategy is to be developed and documented in the IHLW Form Compliance Plan (Table C.5-1.1, Deliverable 6.2).
 - (ii) High-Level Waste Facility: HLW feed shall be converted to a borosilicate glass in a ceramic lined, joule heated melter. The glass product shall meet Specification 1, Immobilized High Level Waste Product.
 - (iii) High-Level Waste Melter Offgas Treatment: Offgas treatment system shall be designed to meet environmental permitting requirements. The primary offgas treatment system consists of a submerged bed scrubber (SBS), a wet electrostatic precipitator (WESP), and high-efficiency particle absorber (HEPA) filters. Before exiting the facility, the offgas is treated by a secondary offgas treatment system consisting of activated carbon adsorbers, a silver mordenite column, a thermal catalytic oxidizer (TCO), and a selective catalytic reducer (SCR).

- (iv) High-Level Waste Canister Closure, Decontamination, and Inspection: The HLW canister is sealed via welding. The canister is decontaminated using a chemical etching process that uses cerium (Ce) (IV) as the chemical reagent. **(047)**
- (3) Low-Activity Waste Vitrification Unit Operations: LAW vitrification shall include the following major process functions:
 - (i) Low-Activity Waste Feed Preparation: LAW melter feed will be prepared from the pretreated supernatant and glass forming chemicals. The qualification strategy shall be developed and documented in the ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3).
 - (ii) Low-Activity Waste Facility: LAW feed shall be converted to a glass that meets Specification 2, Immobilized Low Activity Waste Product, in a ceramic-lined, joule-heated melter.
 - (iii) (384)
 - (iv) Low-Activity Waste Melter Offgas Treatment: The offgas treatment system shall be designed to meet environmental permitting requirements.
 - (v) Low-Activity Waste Container Closure, Decontamination, and Inspection: Container closure, decontamination, and inspection shall be conducted in accordance with Specification 2, Immobilized Low Activity Waste Product. The ILAW product container is sealed, decontaminated, and then the container is weighed and checked for dimensionality. The container is decontaminated using a solid carbon dioxide abrasion process. Temperature and gamma dose rate measurements will be taken on selected containers.
- (4) Direct-Feed Low-Activity Waste: DFLAW shall include the following major functions and modifications: **(384)**
 - (i) Balance of Facilities Utility Modifications: The current BOF utility facilities are designed for full WTP operation; therefore modification of these facilities will be required to support operations of BOF facilities isolated from PT and HLW. This includes BOF system modifications for effective reduced throughput during DFLAW operation. Design modifications shall include equipment, piping, plant configuration and control and instrument systems changes necessary to operate in the DFLAW configuration. BOF equipment and components not needed for DFLAW operations shall be evaluated for aging and obsolescence and determinations documented for discontinued maintenance and abandonment. Safety evaluations, permitting, and hazard analyses to perform the modifications are included in the scope of work. **(384)**
 - (ii) Balance of Facilities Effluent Management Facility: A modification to BOF shall include an Effluent Management Facility (EMF) to store and disposition effluents that meet ICD interface acceptance criteria for discharge. The EMF shall have capabilities to discharge to the Liquid Effluent Retention Facility, ETF or the the tank farm double-shell tank system. The facility shall be designed to concentrate the effluent and allow for the recycling/blending of this concentrated effluent back into the LAW stream. The EMF will also provide the capability to truck this concentrated effluent, if deemed feasible at a later date. **(384)**

- (iii) Balance of Facilities: The current BOF infrastructure is designed to support full WTP operations; therefore modification to the yard to support DFLAW operation will be required. Modifications of the BOF yard include an operating island fence, modified roadways, final grade within the operating island, stormwater drainage, sanitary sewer system, utility isolations, underground utilities, effluent and waste transfer lines, and a Na hydroxide offloading pad. These are permanent plant modifications that allow operation of the LAW Facility in a standalone fashion with a direct-feed capability as well as integrated facility operations **(384)**
- (iv) LAB modifications: The LAB is designed to receive and analyze samples from the HLW, PT, LAW and BOF facilities. Modifications shall be made to the LAB to allow operations for LAW and BOF samples only. These modifications include temporary changes to the ventilation and waste collection systems necessary to function in the DFLAW configuration. **(384)**
- (e) Plant Operator Qualification and Training Facility Design (simulator): The Contractor shall develop a “limited” full scope simulator. The simulator may be located off site. The simulator facility will include three (3) control room replications (main PT Facility control room, LAW Facility control room, and HLW Facility control room), along with the associated infrastructure and offices to support the simulator facility operations.

The “limited” full scope simulator is defined as a training environment that closely models the process and associated equipment located in the actual control rooms. This simulator will provide an environment for understanding the process and control strategies to optimize plant performance and to provide training for situations that would not normally be experienced during normal plant operations.

C.8 OPERATIONAL SPECIFICATIONS

This section provides the WTP Operational Specifications including LAW and HLW feed characteristics, intermediate waste product requirements, final waste product requirements, and waste product inspection and acceptance:

- Specification 1: Immobilized High-Level Waste Product
- Specification 2: Immobilized Low-Activity Waste Product
- Specification 3: Entrained Solids
- Specification 4: Reserved
- Specification 5: Reserved
- Specification 6: Reserved
- Specification 7: Low-Activity Waste Envelopes Definition
- Specification 8: High-Level Waste Envelope Definition
- Specification 9: Liquids or Slurries Transferred to U.S. Department of Energy Tanks by Pipeline
- Specification 10: Reserved
- Specification 11: Reserved
- Specification 12: Procedure to Determine the Waste Feed Treatment Approach
- Specification 13: Waste Product Inspection and Acceptance

Specification 1: Immobilized High-Level Waste Product

- 1.1 Scope: This Specification defines requirements for the IHLW product, a waste product. The IHLW product is a vitrified borosilicate glass waste form for ultimate disposal in the proposed geologic repository.
- 1.2 Requirements:
- 1.2.1 References:
- 1.2.1.1 CRD. DOE/RW-0406. Revision 8. September 12, 2007. *Civilian Radioactive Waste Management Systems Requirements Document*, Interim Change Notice 1. U.S. Department of Energy, Office of Civilian Radioactive Waste Management. Washington, D.C.
 - 1.2.1.2 DOE M 435.1-1. July 9, 1999. *Radioactive Waste Management Manual*. U.S. Department of Energy, Washington, D.C.
 - 1.2.1.3 WASRD. DOE/RW-0351. Revision 5. May 31, 2007. *Waste Acceptance System Requirements Document (WASRD)*. U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C. **(047) (114)**
 - 1.2.1.4 WAPS. DOE/EM-0093. Revision 2. December 1996. *Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms*, U.S. Department of Energy, Washington D.C. **(047) (114)**
 - 1.2.1.5 IICD. DOE/RW-0511. Revision 4. March 7, 2008. *Integrated Interface Control Document, Volume 1. High-Level Radioactive Waste and U.S. Department of Energy and Naval Spent Nuclear Fuel to the Civilian Radioactive Waste Management System*. U.S. Department of Energy, Washington D.C.
 - 1.2.1.6 MOA. Revision 2. February 2007. *Memorandum of Agreement for Acceptance of Spent Nuclear Fuel and High-Level Nuclear Waste (MOA) between Environmental Management (EM) U.S. Department of Energy (DOE), Washington, DC. and Office of Civilian Radioactive Waste Management (DOE-RW or OCRWM)*. U.S. Department of Energy, Washington, D.C. **(114)**
 - 1.2.1.7 QARD. DOE/RW-0333P. Revision 20. January 2008. *Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program (QARD)*. U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.
 - 1.2.1.8 40 CFR 268. "Land Disposal Restrictions." *Code of Federal Regulations*. U.S. Environmental Protection Agency, Washington, D.C.
 - 1.2.1.9 WAC 173-303. "Dangerous Waste Regulations." *Washington Administrative Code*, as amended.
 - 1.2.1.10 HWMA. *Hazardous Waste Management Act*.
 - 1.2.1.11 RCRA. *Resource Conservation and Recovery Act*.

1.2.2 Product Requirements:

1.2.2.1 Immobilized High-Level Waste:

1.2.2.1.1 Product and Disposal Requirements: The IHLW product shall meet the requirements established in the Waste Acceptance Product *Specifications* (WAPS) and the supporting documents, *Waste Acceptance Systems Requirements Document* (WASRD), and Integrated Interface Control Document (IICD). The WAPS, WASRD, and IICD identify the requirements of DOE Office of Civilian Radioactive Waste Management (DOE-RW) for acceptance of IHLW for disposal at a federal geologic repository. A *Memorandum of Agreement for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Nuclear Waste*, (MOA) sets forth, specifies, and lists the programmatic protocols, technical data, specifications, and requirements for producing an acceptable IHLW form for disposal at a federal geologic repository. The *Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program* (QARD) establishes the minimum QA requirements for compliance with the DOE-RW. These requirements must be met before the IHLW glass canisters will be accepted by the ORP for onsite interim storage and later formal acceptance by DOE-RW for final disposal.

1.2.2.1.2 Canister System: The reference canister system used to contain the IHLW product shall be a 4.5-meter long by 0.61-meter diameter canister system with a neck and flange design similar to that used at the West Valley Demonstration Project.

1. "Fill Height: Fill height shall be equivalent to at least 87 percent of the volume of the empty canister. The average fill height over all the canisters shall be at least 95 percent of the volume of the empty canister."
2. "Maximum Heat Generation Rate: The maximum heat generation rate for any single canister shall not exceed 1500 watts per canister when delivered to DOE."
3. "Surface Contamination Limitations: Removable contamination on the external surfaces of the package shall not exceed 3,670 Bq/m² for alpha and 36,700 Bq/m² for beta-gamma.(M047)

1.2.2.1.3 Condition at Delivery: At time of delivery to DOE, the HLW form shall stand upright without support on a flat horizontal surface and properly fit into a right-circular, cylindrical cavity (64-centimeter diameter and 4.51-meter length).

1.2.2.1.4 Dangerous and Hazardous Waste Requirements: The WTP shall be designed, constructed, and operated so that the IHLW product does not designate as characteristic or criteria for dangerous waste or extremely hazardous waste pursuant to WAC 173-303-070, and is not restricted from land disposal pursuant to WAC 173-303-140 and 40 CFR 268, "Land Disposal Restrictions."

1.2.2.1.5 **Product Loading:** Loading of nonvolatile components in Envelope D shall be achieved such that the concentration of at least one of the waste components or waste component combinations in Table TS-1.1, Minimum Component Limits in High Level Waste Glass, exceeds its minimum weight percent in HLW glass as identified in Table TS-1.1 (e.g., for a high-iron waste, the waste product shall incorporate at least 12.5 weight percent [wt%] iron oxide from the waste into the glass). The product loading shall not cause the limits in any other requirement of this specification to be violated. Product waste loading shall be calculated on an average basis for each batch transfer of Waste Envelope D. The waste loading may be adjusted downward if necessary to comply with Universal Treatment Standards leaching requirements.

1.2.3 **Handling Requirements:**

1.2.3.1 **Product Handling:** The canister shall have a point of connection that allows vertical upward, vertical downward, and horizontal motion while attached to a hoist and grapple.

1.3 **Quality Assurance:** A QA Program for the IHLW form development, qualification, characterization, and certification is required and shall be consistent with DOE/RW-0333P.(152)

1.4 **Inspection and Acceptance:** The DOE-approved IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2), described in Standard 6, Product Qualification, Characterization and Certification, defines the content and delivery of documentation required to demonstrate compliance with the requirements of this specification. Product inspection and acceptance shall be performed in accordance with Specification 13, *Waste Product Inspection and Acceptance* and the required IHLW QA Program.

Table TS-1.1. Minimum Component Limits in High-Level Waste Glass.

| Component | Weight Percent in HLW Glass |
|--------------------------------------|-----------------------------|
| Fe ₂ O ₃ | 12.5 |
| Al ₂ O ₃ | 11.0 |
| Na ₂ O + K ₂ O | 15.0 |
| ZrO ₂ | 10.0 |
| UO ₂ | 8.0 |
| ThO ₂ | 4.0 |
| CaO | 7.0 |
| MgO | 5.0 |
| BaO | 4.0 |
| CdO | 3.0 |
| NiO | 3.0 |
| PbO | 1.0 |
| TiO ₂ | 1.0 |
| Bi ₂ O ₃ | 2.0 |
| P ₂ O ₅ | 3.0 |
| F | 1.7 |

Table TS-1.1. Minimum Component Limits in High-Level Waste Glass.

| Component | Weight Percent in HLW Glass |
|--|------------------------------------|
| Al ₂ O ₃ + ZrO ₂ | 14.0 |
| Al ₂ O ₃ + ZrO ₂ + Fe ₂ O ₃ | 21.0 |
| MgO + CaO | 8.0 |
| Cr ₂ O ₃ | 0.5 |
| SO ₃ | 0.5 |
| Ag ₂ O | 0.25 |
| Rh ₂ O ₃ + Ru ₂ O ₃ + PdO | 0.25 |
| Any single waste oxide (exclusive of Si) not specifically identified in Specification 8, TS-8.1 and TS-8.4 | 0.2 |
| Total of all other waste oxides (exclusive of Si) not specifically identified in this table. | 8.0 |

Specification 2: Immobilized Low-Activity Waste Product

2.1 Scope: This Specification defines the requirements for the ILAW product, a final waste product. The ILAW product is a glass waste form for disposal on the Hanford Site.

2.2 Requirements:

2.2.1 References:

- 2.2.1.1 10 CFR 61. "Licensing Requirements for Land Disposal of Radioactive Waste." *Code of Federal Regulations*. U.S. Nuclear Regulatory Commission, Washington, D.C.
- 2.2.1.2 40 CFR 268. "Land Disposal Restrictions." *Code of Federal Regulations*. U.S. Environmental Protection Agency, Washington, D.C.
- 2.2.1.3 49 CFR 172.101. "Table 2 - Radionuclides." *Code of Federal Regulations*. U.S. Department of Transportation, Washington, D.C.
- 2.2.1.4 49 CFR 173. "Shippers-General Requirements for Shipments and Packaging. Subpart I - Radioactive Materials." *Code of Federal Regulations*. U.S. Department of Transportation, Washington, D.C.
- 2.2.1.5 DELETED (310)
- 2.2.1.6 ANSI/ANS-16.1. April 14, 1986. *Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short Term Test Procedure*. American National Standards Institute/American Nuclear Society, La Grange Park, Illinois.
- 2.2.1.7 ANSI/ANS-55.1. July 28, 1992. *Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants; Appendix B - Testing for Free Liquids in Solidified Matrices*. American National Standards Institute/American Nuclear Society, La Grange Park, Illinois.
- 2.2.1.8 ASTM B553-79. May 25, 1979. *Standard Test Method for Thermocycling of Electroplated Plastics*. American Society for Testing and Materials, Easton, Maryland.
- 2.2.1.9 ASTM C39/C39M-01. July 2001. *Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens*. American Society for Testing and Materials, Easton, Maryland.
- 2.2.1.10 ASTM C1285-02. October 2002. *Standard Test Methods for Determining Chemical Durability of Nuclear Waste Glasses: The Product Consistency Test (PCT)*. American Society for Testing and Materials, Easton, Maryland.
- 2.2.1.11 ASTM G21-96. July 10, 1999. *Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi*. American Society for Testing and Materials, Easton, Maryland.
- 2.2.1.12 ASTM G22-76 (R1996). November 26, 1976. *Standard Practice for Determining Resistance of Plastics to Bacteria*. American Society for Testing and Materials, Easton, Maryland.
- 2.2.1.13 DOE M 435.1-1. July 9, 1999. *Radioactive Waste Management Manual*. U.S. Department of Energy, Washington, D.C.

- 2.2.1.14 NRC. January 1995. *Branch Technical Position on Concentration Averaging and Encapsulation*. Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C.
 - 2.2.1.15 NRC. January 1991. *Technical Position on Waste Form, Revision 1, Low-Level Waste*. Division Management Branch, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C.
 - 2.2.1.16 NUREG/BR-0204. July 1998. *Instructions for Completing NRC's Uniform Low-Level Radioactive Waste Manifest*. U.S. Nuclear Regulatory Commission, Washington, D.C.
 - 2.2.1.17 SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.
 - 2.2.1.18 WA 7890008967. Revision 2. August 1995 (as modified). *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage and Disposal of Dangerous Waste at the Hanford Facility*. Washington State Department of Ecology, Olympia, Washington.
 - 2.2.1.19 WAC 173-303. "Dangerous Waste Regulations." *Washington Administrative Code*, as amended.
 - 2.2.1.20 Vitreous State Laboratory, 1998. *Glass Formulation and Testing with TWRS LAW Simulants*. The Catholic University of America, Washington, D.C.
 - 2.2.1.21 *Appendix I.7: ILAW Special Packaging Authorization of the Hanford Sitewide Transportation Safety Document, Revision 1-E, DOE/RL-2001-36, May 2011. (293)*
- 2.2.2 Product Requirements:
- 2.2.2.1 Package Description: The ILAW product shall be in the form of a package. The constituent parts of each package are a sealed stainless-steel container enclosing a poured glass waste form and an optional filler material of sand or glass. If an optional filler is used, DOE approval on the filler composition is required.
 - 2.2.2.2 Waste Loading: The loading of waste sodium (Na) from Envelope A in the ILAW glass shall be greater than 14 wt% based on Na₂O. The loading of waste Na from Envelope B in the ILAW glass shall be greater than 3.0 wt% based on Na₂O. The loading of waste Na from Envelope C in the ILAW glass shall be greater than 10 wt% based on Na₂O.

The Contractor shall calculate the minimum waste loading based upon Na₂O for Envelope E utilizing the preliminary glass algorithm for LAW (24590-LAW-RPT-RT-04-0003, Rev. 001) and the glass model developed by the Contractor. Consistent with Standard 6 c (10), the proposed ILAW glass composition ranges shall be provided to DOE for approval no less than two (2) years before hot commissioning as Table C.5-1.1, Deliverable C.8-2. DOE approval (or non) will be provided within six (6) months of receipt of the proposal. The Contractor shall only produce glasses that have received DOE approval.

- 2.2.2.3 Size and Configuration: The package shall be a 304L stainless-steel right circular cylinder. The height of the package shall be 2.286 m (90 inches), and the diameter shall be 1.22 m (48 inches). At the time of acceptance, the ILAW package shall stand without support on a flat, horizontal surface.
- 2.2.2.4 Mass: The mass of each package shall not exceed 10,000 kilograms.
- 2.2.2.5 Void Space: The void space in the container shall not exceed 10 percent of the total internal volume at the time of filling, excluding void space internal to the glass waste form (e.g., small bubbles in the glass). After cooling, if necessary, the container shall be filled with suitable inert dry filler such that the void space meets the requirements of Dangerous Waste Regulation WAC 173-303-665 (12) (i.e., the container shall be at least ninety (90) percent full when placed in the landfill).
- 2.2.2.6 Chemical Composition Documentation: The chemical composition of the waste form, filler, and package shall be identified.
- 2.2.2.6.1 DELETED
- 2.2.2.6.2 Chemical Composition During Production: The production documentation (Table C.5-1.1, Deliverable 6.7) shall provide the chemical composition of each waste form, optional filler, and package. The reported composition shall include elements(excluding oxygen) present in concentrations greater than 0.5 percent by weight and elements and compounds required to meet regulatory or Contract requirements.
- 2.2.2.6.3 DELETED
- 2.2.2.7 Radiological Composition Documentation: The radionuclide composition of the waste form shall be documented. Radionuclides shall be identified that are significant as defined in NUREG/BR-0204, *Instructions for Completing NRC's Uniform Low-Level Radioactive Waste Manifest* and 49 CFR 172.101, "Purpose and use of hazardous materials table" (Table 2). Technetium Tc-99 shall be considered to be significant at concentrations greater than 0.003 Ci/m³ in the ILAW form. The inventories shall be indexed to December 31, 2002. The documentation shall be consistent with the radiological description format described in NUREG/BR-0204.
- 2.2.2.7.1 Radionuclide Composition Qualification: The ILAW Product Qualification Report (Table C.5-1.1, Deliverable 6.6) shall identify the estimated radionuclide concentration in the waste form.
- 2.2.2.7.2 Radionuclide Composition During Production: The ILAW production documentation (Table C.5-1.1, Deliverable 6.7) shall identify the radionuclide inventory in each ILAW package produced. The actual inventory indexed at the month of product transfer and the inventory indexed to December 31, 2002, shall be reported.
- 2.2.2.8 Radionuclide Concentration Limitations: The radionuclide concentration of the ILAW form shall not exceed Class C limits as defined in 10 CFR 61.55, "Waste classification." In addition, the average glass concentrations of cesium Cs-137 and strontium Sr-90 shall be limited as follows: Cs-137 < 3 Ci/m³ and Sr-90 < 20 Ci/m³. The method used to perform concentration averaging should be identified in the ILAW Product Compliance Plan.

- 2.2.2.9 Surface Dose Rate Limitations: The dose rate at any point on the external surface of the package shall not exceed 500 mrem/hr.
- 2.2.2.10 Surface Contamination Limitations: Removable contamination on the external surfaces of the package shall be maintained as low as reasonably achievable (49 CFR 173.443, "Contamination control") as defined by DOE/RL-2001-36, *Hanford Sitewide Transportation Safety Document*, Appendix I.7. **(293)**
- 2.2.2.11 Labeling: Each package shall have an identification number on the shoulder and side of the package as described in the ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3). The lettering on the label shall be at least 5.0 cm high, and characters shall have a width of at least 3.5 cm. The label shall contain a unique identification (e.g., serial number), which shall be assigned to each package and the corresponding documentation. Labels and markings shall have a predicted service life of 50 years assuming that the packages are stored in a ventilated enclosure at ambient temperatures.
- 2.2.2.12 Closure and Sealing: The fully loaded package shall be closed and sealed. The closure system shall be sealed to prevent the dispersal of radioactive material during the most severe conditions encountered during normal use and handling. The closure system shall be designed to ensure that the seal remains intact for a storage period of 50 years in an ambient-temperature, ventilated enclosure.
- 2.2.2.13 External Temperature: The temperature of the accessible external surfaces of the package shall not exceed 465°F (alternating pour) or 550°F (single pour) when returned to DOE. This temperature constraint shall assume a shaded, still air environment at an ambient temperature of 38°C.
- 2.2.2.14 Free Liquids: The package shall contain no detectable free liquids as defined in ANSI/ANS-55.1 or SW-846 Method 9095.
- 2.2.2.15 Pyrophoricity or Explosivity: The package contents shall not be pyrophoric, readily capable of detonation, or readily capable of explosive decomposition or reaction (including reaction with water) at normal pressure and temperature. The waste form and any optional filler materials shall not be ignitable or reactive as defined in WAC 173-303-090(5) and WAC 173-303-090(7).
- 2.2.2.16 Explosive or Toxic Gases: The package shall not contain or be capable of generating quantities of explosive (e.g., hydrogen) or toxic gases, vapors, or fumes harmful to persons handling the waste.
- 2.2.2.17 Waste Form Testing:
- 2.2.2.17.1 DELETED
- 2.2.2.17.2 Product Consistency Test: The normalized mass loss of sodium, silicon, and boron shall be measured using a seven-day product consistency test run at 90°C as defined in ASTM C1285-98. The test shall be conducted with a glass to water ratio of 1 gram of glass (-100 +200 mesh) per 10 milliliters of water. The normalized mass loss shall be less than 2.0 grams/m². Qualification testing shall include glass samples subjected to representative waste form cooling curves. The product consistency test shall be conducted on waste form samples that are statistically representative of the production glass.

- 2.2.2.17.3 Vapor Hydration Test: The glass corrosion rate shall be measured using at least a seven (7)-day vapor hydration test run at 200°C as defined in the DOE-concurred upon ILAW Product Compliance Plan. The measured glass alteration rate shall be less than 50 grams/(m² day). Qualification testing shall include glass samples subjected to representative waste form cooling curves. The vapor hydration test shall be conducted on waste form samples that are representative of the production glass.
- 2.2.2.18 Compressive Strength: The mean compressive strength of the waste form shall be determined by testing representative non-radioactive samples. The compressive strength shall be at least 3.45E6 Pascal when tested in accordance with ASTM C39/C39M-99 or an equivalent testing method.
- 2.2.2.19 DELETED
- 2.2.2.19.1 DELETED
- 2.2.2.19.2 DELETED
- 2.2.2.19.3 DELETED
- 2.2.2.19.4 DELETED
- 2.2.2.20 Dangerous Waste Limitations: The ILAW product shall be acceptable for land disposal under the State of Washington *Dangerous Waste Regulations*, WAC 173-303, and RCRA LDR in 40 CFR 268.
- 2.2.2.21 Compression Testing: Each fully loaded package shall be able to withstand a compression load of five (5) times the weight of the filled container. Compliance with this specification shall be established by using the compression (stacking) test described in 49 CFR 173.465(d) or evaluated against this test by any of the methods authorized by 49 CFR 173.461(a). The integrity of the package shall be demonstrated by showing that the seal remains intact in accordance with Specification 2.2.2.12, *Closure and Sealing*.
- 2.2.2.22 Container Material Degradation: The container and handling appurtenances shall be designed to allow safe lifting and movement (in accordance with Specification 2.2.3.1) after a storage period of fifty (50) years.
- 2.2.2.23 Manifesting: A shipping manifest shall be prepared for delivery with each shipment of ILAW product. Information on the manifest shall satisfy the requirements in DOE M 435.1-1, *Radioactive Waste Management Manual*, Chapter IV, Section I.(2), and NUREG/BR-0204. Any package containing dangerous waste must be labeled and manifested in accordance with WAC 173-303-370 and the *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Wastes* (Permit No. WA7890008967).
- 2.2.3 Handling Requirements:
- 2.2.3.1 Package Handling: The package shall be compatible with crane lifting and movement. The package shall be equipped with lifting and other handling appurtenances designed to allow safe lifting, and movement, when fully loaded. The package shall maintain its integrity during handling, and transportation.

- 2.3 Quality Assurance: A QA Program (Table C.5-1.1, Deliverable 7.2) for ILAW product development, qualification, characterization, and certification is required and shall be based upon NQA-1-2000. The QA Plan shall address the QA/quality control requirements addressed in SW-846 and WAC 173-303-806. **(066)**
- 2.4 Inspection and Acceptance: The DOE-approved ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3), described in Standard 6, *Product Qualification, Characterization, and Certification*, defines the content and delivery of documentation required to demonstrate compliance with the requirements of this specification. Product inspection and acceptance shall be performed in accordance with Specification 13, *Waste Product Inspection and Acceptance*, and the required ILAW QA Program. In addition to Specification 13 requirements for ILAW, the Contractor shall conform to the Contractor Certification Program as described in DOE M 435.1-1, Chapter IV, Section J.(1).

Specification 3: Reserved

Specification 4: Reserved

Specification 5: Reserved

Specification 6: Reserved

Specification 7: Low-Activity Waste Envelopes Definition

7.1 Scope: This Specification establishes four **(350)** (4) LAW feed envelopes, Envelopes A, B, and C (feed from the tank farms per ICD 19) and envelope E (Direct Feed from LAWPS, per ICD 30) **(350)**. Each waste envelope provides the compositional limits for chemical and radioactive constituents in the waste feed to be provided to the WTP. The WTP shall be designed to treat the waste envelopes with the limits established in this specification. Waste composition information from TFCOUP Revision 6 is used to establish overall WTP design capacity as defined in Section C.7 and is not otherwise used for design. Specification 7.2.2, "Envelope Requirements" described below apply to Envelopes A, B, and C. Envelope E requirements are described in ICD 30.

7.2 Requirements:

7.2.1 References:

- 7.2.1.1 HNF-SD-WM-SAR-067, Revision 1-I. March 2000. *Tank Waste Remediation System Final Safety Analysis Report*. CH2M HILL Hanford Group, Inc., Richland, Washington.
- 7.2.1.2 HNF-SD-WM-TSR-006, Revision 1-HE. March 2000. *Tank Waste Remediation System Technical Safety Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.
- 7.2.1.3 OSD-T-151-00007, Revision H-22. June 14, 2000. *Operating Specification for 241-AN, AP, AW, AY, AZ, and SY Tank Farms*. CH2M HILL Hanford Group, Inc., Richland, Washington.
- 7.2.1.4 Deleted **(376)**

7.2.2 Envelope Requirements:

7.2.2.1 Composition: This specification lists the concentration limits for the LAW Envelopes A, B, and C **(350)** ~~E~~ **(384)** feed to be transferred by DOE to the Contractor for LAW services in Table TS-7.1, Low Activity Waste Chemical Composition, Soluble Fraction Only, and Table TS-7.2, Low Activity Waste Radionuclide Content, Soluble Fraction Only. The concentration limits apply to the soluble fraction only. The Na concentration limits for the LAW feeds are identified below.

| Waste Feed | Na (mole per liter) |
|--|---------------------|
| Envelope A, B, C (350) E (384) | 4 – 10 |
| AZ-101 Supernatant | 2 – 5 |
| HLW Slurry and other HLW Liquids (Defined in Specification 8, <i>High-Level Waste Envelope Definition</i>) | 0.1 – 10* |

*The feed delivery batch size shall be such that, after receipt in WTP and blending with pre-existing receipt tank contents, the sodium (Na) molarity will not exceed **7(183)**.

:

The LAW feeds may contain up to 3.8 weight percent (wt%) solids and will be delivered to the WTP after there has been sufficient settling time to ensure solids that settle faster than 0.03 ft/min have settled below the transfer location within the tank farms feed tank(183). Solids are defined as the product of centrifuging the LAW feed, separating and drying the solids, and removing the dissolved solids contribution. The insoluble fraction characterization will include measurements of Al, Cr, Fe, Mn, Na, P, S, Si, U, TIC, TOC, Co-60, Sr-90, Tc-99, Cs-137, Eu-154, Pu-239/240, Am-241, and total alpha concentrations. Trace quantities of unspecified radionuclides, chemicals, and other impurities may be present in the waste feed.

All LAW feed (soluble and insoluble components) will meet the Tank Farm Operations specifications given in OSD-T-151-00007 (except for free hydroxide), the *Tank Waste Remediation System Final Safety Analysis Report*, and *Technical Safety Requirements*, as applicable.

The radiochemical inventory of the LAW feed at the time of delivery shall be compared to the specification limits to assess compliance. The specifications for Co-60, and Eu-154 shall apply at the time of delivery for ILAW immobilization.

The LAW feed provided shall not contain a visible separate organic phase.

The LAW feed provided will generate gases, including hydrogen and ammonia, at a nearly constant rate and a nearly uniform composition. The Contractor is responsible for the management of changes in gas release rate and distribution resulting from their waste processing activities.

Dangerous waste codes are identified in Part III, Operating Group 12, DST System/204 AR Waste Unloading Station, Dangerous Waste Permit Application Part A Form. Multi-source leachate (F039) is included as a waste derived from non-specific source wastes F001 through F005. (376)

7.2.2.2 Radioactive Material Concentration: The maximum Cs-137 concentration equivalent in the transferred Envelopes A, B, and C wastes feeds shall not exceed 1.2 Ci/l. The maximum Cs-137 concentration equivalent in the liquid fraction of Tanks AZ-101 and AZ-102 feeds shall not exceed 3.0 Ci/l.

Table TS-7.1. Low-Activity Waste Chemical Composition, Soluble Fraction Only.

| Chemical Analyte | Maximum Ratio, Analyte (Mole) to Sodium (mole) | | |
|------------------|--|------------|-------------------------|
| | Envelope A | Envelope B | Envelope C ³ |
| Al | 2.5E-01 | 2.5E-01 | 2.5E-01 |
| Ba | 1.0E-04 | 1.0E-04 | 1.0E-04 |
| Ca | 4.0E-02 | 4.0E-02 | 4.0E-02 |
| Cd | 4.0E-03 | 4.0E-03 | 4.0E-03 |
| Cl | 3.7E-02 | 8.9E-02 | 3.7E-02 |
| Cr | 6.9E-03 | 2.0E-02 | 6.9E-03 |
| F | 9.1E-02 | 2.0E-01 | 9.1E-02 |
| Fe | 1.0E-02 | 1.0E-02 | 1.0E-02 |
| Hg | 1.4E-05 | 1.4E-05 | 1.4E-05 |

Table TS-7.1. Low-Activity Waste Chemical Composition, Soluble Fraction Only.

| Chemical Analyte | Maximum Ratio, Analyte (Mole) to Sodium (mole) | | |
|------------------|--|------------|-------------------------|
| | Envelope A | Envelope B | Envelope C ³ |
| K | 1.8E-01 | 1.8E-01 | 1.8E-01 |
| La | 8.3E-05 | 8.3E-05 | 8.3E-05 |
| Ni | 3.0E-03 | 3.0E-03 | 3.0E-03 |
| NO ₂ | 3.8E-01 | 3.8E-01 | 3.8E-01 |
| NO ₃ | 8.0E-01 | 8.0E-01 | 8.0E-01 |
| Pb | 6.8E-04 | 6.8E-04 | 6.8E-04 |
| PO ₄ | 3.8E-02 | 1.3E-01 | 3.8E-02 |
| SO ₄ | 1.0E-02 | 7.0E-02 | 2.0E-02 |
| TIC ¹ | 3.0E-01 | 3.0E-01 | 3.0E-01 |
| TOC ² | 5.0E-01 | 5.0E-01 | 5.0E-01 |
| U | 1.2E-03 | 1.2E-03 | 1.2E-03 |

Notes:

1. Mole of inorganic carbon atoms/mole sodium (Na).
2. Mole of organic carbon atoms/mole sodium (Na).
3. Envelope C LAW is limited to complexed tank wastes from Hanford tanks AN-102 and AN-107.

Table TS-7.2. Low-Activity Waste Radionuclide Content, Soluble Fraction Only
 Maximum Ratio, Radionuclide to Sodium (Mole).

| Radionuclide | Envelope A | | Envelope B | | Envelope C | |
|--------------|------------|----------|------------|----------|------------|----------|
| | Bq | uCi | Bq | uCi | Bq | uCi |
| TRU | 4.80E+05 | 1.30E+01 | 4.80E+05 | 1.30E+01 | 3.00E+06 | 8.11E+01 |
| Cs-137 | 4.30E+09 | 1.16E+05 | 2.00E+10 | 5.41E+05 | 4.30E+09 | 1.16E+05 |
| Sr-90 | 4.40E+07 | 1.19E+03 | 4.40E+07 | 1.19E+03 | 8.00E+08 | 2.16E+04 |
| Tc-99 | 7.10E+06 | 1.92E+02 | 7.10E+06 | 1.92E+02 | 7.10E+06 | 1.92E+02 |
| Co-60 | 6.10E+04 | 1.65E+00 | 6.10E+04 | 1.65E+00 | 3.70E+05 | 1.00E+01 |
| Eu-154 | 6.00E+05 | 1.62E+01 | 6.00E+05 | 1.62E+01 | 4.30E+06 | 1.16E+02 |

Notes:

1. The activity limit shall apply to the feed certification date.
2. TRU is defined as: Alpha-emitting radionuclides with an atomic number greater than 92 with half-life greater than 20 years.

Some radionuclides, such as Sr-90 and Cs-137, have daughters with relatively short half-lives. These daughters have not been listed in this table. However, they are present in concentrations associated with the normal decay chains of the radionuclides.

$$1\text{Bq} = 2.703 \text{ e-}5 \text{ uCi}$$

Specification 8: High-Level Waste Envelope Definition

8.1 Scope: This Specification establishes the HLW slurry composition and the unwashed solids composition (Envelope D). This waste envelope provides the compositional limits for chemical and radioactive constituents and physical properties in the waste feed to be provided to the WTP. The WTP shall be designed to treat the feed envelope with the limits established in this specification. Waste composition information from TFCOUP Revision 6 is used to establish overall WTP design capacity as defined in Section C.7 and is not otherwise used for design.

8.2 Requirements:

8.2.1 References:

- 8.2.1.1 HNF-SD-WM-SAR-067, Revision 1-I. March 2000. *Tank Waste Remediation System Final Safety Analysis Report*. CH2M HILL Hanford Group, Inc., Richland, Washington.
- 8.2.1.2 HNF-SD-WM-TSR-006, Revision 1-HE. March 2000. *Tank Waste Remediation System Technical Safety Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.
- 8.2.1.3 OSD-T-151-00007, Revision H-22. June 14, 2000. *Operating Specification for 241-AN, AP, AW, AY, AZ, and SY Tank Farms*. CH2M HILL Hanford Group, Inc., Richland, Washington.
- 8.2.1.4 DELETED **(376)**
- 8.2.1.5 RPP-7475, Revision 0. December 7, 2000. *Criticality Safety Evaluation of Hanford Tank Farms Facility*, CH2M HILL Hanford Group, Inc., Richland, Washington.
- 8.2.1.6 CPS-T-149-00012, Revision A-3. March 14, 2002. *Criticality Prevention Specification - Tank Farms Operations*.

8.2.2 High-Level Waste Slurry Description and Envelope Requirements:

8.2.2.1 Composition: The HLW slurry will contain a mixture of liquids (Envelopes A, B, or C) and solids (Envelope D). The compositional range of the liquid fraction is defined in Specification 7, Low Activity Waste Envelope Definition. For liquid fractions with a sodium (Na) molarity of less than three (3), the liquid shall be treated as if 3 molar sodium (Na) were present for feed certification purposes. The *Radioactive Material Concentration* specification contained in Specification 7.2.2.2 does not apply to Envelope A, B, or C liquids. The composition range of the Envelope D unwashed solids is given in Tables TS-8.1, TS-8.2, TS-8.3, and TS-8.4. The feed concentration will be between 10 and 200 grams of unwashed solids/liter, except for feeds from waste Tanks AZ-101 and AZ-102, where minimum-solids content does not apply. The feed delivery batch size will be such that, after receipt in WTP and blending with pre-existing receipt tank contents, the concentration will not exceed a linear range of 107 grams of unwashed solids/liter at 0.1 molar sodium (Na) up to 144 grams/liter at 7 molar sodium (Na) **(183)**.

Compositions for Envelope D unwashed solids (Tables TS-8.1, TS-8.2, TS-8.3, and TS-8.4) are defined in terms of elemental or anion concentrations and radionuclide activities per 100 grams equivalent nonvolatile waste oxides. The nonvolatile waste oxides include sodium (Na) oxide and silicon oxide.

The HLW feed components identified in Tables TS-8.1, TS-8.2, and TS-8.3 are waste components important to establishing the waste oxide loading in the HLW glass. Only these components have concentration limits, which will be used to provide the basis for certification that the HLW feed is within specification limits.

The HLW feed components identified in Table TS-8.4 are also important to HLW glass production. The concentrations of these components in the waste are not expected to exceed the maximum values listed in Table TS-8.4. Information on these components will be provided to support product and process qualification but will not be used as a basis for determining if the feed meets specification requirements.

All HLW feed (soluble and insoluble components) will meet the Tank Farm Operations specifications given in OSD-T-151-00007 (except for free hydroxide), the *Tank Waste Remediation System Final Safety Analysis Report* (HNF-SD-WM-SAR-067), and *Technical Safety Requirements* (HNF-SD-WM-TSR-006, Revision 1-D) as applicable. The radiochemical inventory of the waste feed at the time of delivery shall be compared to the specification limits to assess compliance.

Trace quantities of unspecified radionuclides, chemicals, and other impurities may be present in the waste feed. Feed will be delivered by pipeline in batches. Limits apply to the total retrievable contents of waste from a feed tank. Some elements, components, and isotopes are determined by calculation and not analytic measurement.

The HLW feed provided will not contain a visible separate organic layer.

The HLW provided will generate gases due to radiolysis including hydrogen and ammonia at a nearly constant rate and nearly uniform composition. The Contractor is responsible for the management of changes in gas release rate and distribution resulting from their waste processing activities.

Applicable dangerous waste codes are identified in Part III, Operating Group 12, DST System/204 AR Waste Unloading Station, Dangerous Waste Permit Application Part A Form. Multi-source leachate (F039) is included as a waste derived from non-specific source wastes F001 through F005. **(376)**

Table TS-8.1. High-Level Waste Feed Unwashed Solids Maximum Nonvolatile Component Composition (grams per 100 grams non-volatile waste oxides).

| Nonvolatile Element | Maximum (grams/100 grams waste oxides) | Nonvolatile Element | Maximum (grams/100 grams waste oxides) |
|---------------------|--|---------------------|--|
| As | 0.16 | Pu | 0.054 |
| B | 1.3 | Rb | 0.19 |
| Be | 0.065 | Sb | 0.84 |
| Ce | 0.81 | Se | 0.52 |
| Co | 0.45 | Sr | 0.52 |
| Cs | 0.58 | Ta | 0.03 |
| Cu | 0.48 | Tc | 0.26 |
| Hg | 0.1 | Te | 0.13 |
| La | 2.6 | Tl | 0.45 |
| Li | 0.14 | V | 0.032 |
| Mn | 6.5 | W | 0.24 |
| Mo | 0.65 | Y | 0.16 |
| Nd | 1.7 | Zn | 0.42 |
| Pr | 0.35 | | |

Table TS-8.2. High-Level Waste Feed Unwashed Solids Maximum Volatile Component Composition (grams per 100 grams non-volatile waste oxides).

| Volatile Components | Maximum (grams/100 grams waste oxides) |
|-------------------------------|---|
| Cl | 0.33 |
| CO ₃ ⁻² | 30 |
| NO ₂ | 36 (total NO ₂ /NO ₃) as NO ₃ |
| NO ₃ | |
| TOC | 11 |
| CN | 1.6 |
| NH ₃ | 1.6 |

Table TS-8.3. High-Level Waste Feed Unwashed Solids Maximum Radionuclide Composition
 (Curies per 100 grams non-volatile waste oxides).

| Isotope | Maximum (Ci/100 grams waste oxides) | Isotope | Maximum (Ci/100 grams waste oxides) | Isotope | Maximum (Ci/100 grams waste oxides) |
|---------|---|---------|--|------------|---|
| H-3 | 6.5E-05 | I-129 | 2.9E-07 | Np-237 | 7.4E-05 |
| C-14 | 6.5E-06 | Cs-137 | 1.5E00 | Pu-238 | 3.5E-04 |
| Co-60 | 1E-02 | Eu-152 | 4.8E-04 | Pu-239 | 3.1E-03 |
| Sr-90 | 1E+01 | Eu-154 | 5.2E-02 | Pu-241 | 2.2E-02 |
| Tc-99 | 1.5E-02 | | | Am-241 | 9.0E-02 |
| Sb-125 | 3.2E-02 | U-233 | 4.5E-06 (all tanks except AY-101/C- 104)(2.0E-04 for AY-101/C-104 only) | Cm-243+244 | 3.0E-03 |
| Sn-126 | 1.5E-04 | U-235 | 2.5E-07 | | |

Table TS-8.4. Additional High-Level Waste Feed Unwashed Composition for Nonvolatile Components
 (grams per 100 grams non-volatile waste oxides)

| Nonvolatile Element | Maximum (grams/100 grams waste oxides) | Nonvolatile Element | Maximum (grams/100 grams waste oxides) |
|---------------------|--|---------------------|--|
| Ag | 0.55 | Ni | 2.4 |
| Al | 14 | P | 1.7 |
| Ba | 4.5 | Pb | 1.1 |
| Bi | 2.8 | Pd | 0.13 |
| Ca | 7.1 | Rh | 0.13 |
| Cd | 4.5 | Ru | 0.35 |
| Cr | 0.68 | S | 0.65 |
| F | 3.5 | Si | 19 |
| Fe | 29 | Ti | 1.3 |
| K | 1.3 | U | 14 |
| Mg | 2.1 | Zr | 15 |
| Na | 19 | | |
| Th | 5.0 | | |

Specification 9: Liquids or Slurries Transferred to DOE Tanks by Pipeline

- 9.1 Scope: This Specification defines the requirements for return of any feed material to the Hanford tanks, and the requirements for return of any LAW process stream recycle materials during direct feed LAW operations per CLIN 2.1. **(350)**
- 9.2 Requirements:
- 9.2.1 References:
- 9.2.1.1 Greenburg, A.E., L.S. Clesceri, and A.D. Eaton, eds. *Standard Methods for the Examination of Water and Wastewater*. 19th edition 1995, American Public Health Association, Washington, D.C.
- 9.2.2 Product Requirements:
- 9.2.2.1 Product Composition: The elemental composition of the product shall be provided: (1) for all elements (excluding oxygen) constituting more than 0.5 weight percent (wt%) of the product on a dry basis; (2) for all radionuclides present in concentrations greater than five percent of the total activity; and (3) for all elements and compounds required to meet regulatory or Contract requirements.
- 9.2.2.2 Composition Limits and Transport Properties: The composition and transport properties shall comply with all applicable Hanford Site tank farms waste acceptance criteria.
- 9.2.2.3 Criticality: The plutonium (Pu) concentration in the returned material shall meet all applicable Hanford Site tank farm criteria. The isotopic concentration of the fissile materials in the returned product shall be provided to DOE prior to transfer.
- 9.2.2.4 Storage: A visible separate organic phase shall not develop during prolonged storage of the product materials in the Double-Shell Tank System.
- 9.2.2.5 Heat Generation: The Contractor shall determine and report the heat generation rate for product in the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1).
- 9.2.2.6 Physical Parameters: The Contractor shall determine and report the specific gravity, viscosity, solids content, particle size distribution and particle density, pH, and temperature of the product at the time of transfer to DOE. Procedure 2540F, *Settled Solids*, from *Standard Methods for the Examination of Water and Wastewater*, or an equivalent methodology shall be used to determine the volume of solids in the liquid or slurry.
- 9.2.2.7 Radioactive Material Concentration: The returned intermediate product shall not contain more than 6 curies per liter (Ci/l) equivalent of Cs-137. The Contractor shall dilute the returned product, if necessary, to achieve this concentration limit.
- 9.2.2.8 Prevention of Exothermic Reaction: The returned intermediate product shall not have the potential for an exothermic reaction.

9.2.3 Handling Requirements: None

- 9.3 Inspection and Acceptance: The Secondary Wastes Compliance Plan, described in Standard 6, Product Qualification, Characterization, and Certification defines the content and delivery documentation required to demonstrate compliance with the requirements of this specification. Product inspection and acceptance shall be performed in accordance with Specification 13., Waste Product Inspection and Acceptance.

Specification 10: Reserved

Specification 11: Reserved

Specification 12: Procedure to Determine the Waste Feed Treatment Approach

- 12.1 Scope: This Specification defines requirements to develop a procedure to determine the waste feed treatment approach for a batch of feed slurry. Waste feed treatment requirements to caustic leach, or oxidative leach shall be established based on results of this testing.
- 12.2 Requirements:
- 12.2.1 References: None.
- 12.2.2 Waste Treatment Flowsheet: The process flowsheet for waste feed caustic leaching, and oxidative leaching shall be approved by DOE as required by Standard 2 (a)(3)(iii). The Contractor shall implement the approved process flowsheet during facility operations.
- 12.2.3 Procedure:
- 12.2.3.1 Procedure Objective: During WTP operations, including hot commissioning, testing shall be performed to predict the quantity of IHLW and ILAW product produced in WTP as a result of (1) solids washing; (2) caustic leaching and washing; and (3) caustic leaching, washing, and oxidative leaching.
- 12.2.3.2 Procedure Definition: The Contractor shall establish a laboratory test procedure to prescribe waste treatment within the given design and operating capabilities of the WTP. The procedure shall take a representative sample of slurry, characterize the initial sample, characterize the sample after treatment, forecast the quantity of IHLW product and ILAW product produced as a result of the plant process, and prescribe the process conditions for optimizing facility performance during the treatment process. The prescribed process shall consider all reagents, process parameters, and recycle impacts associated with waste treatment. The Contractor shall define the process location from where the representative sample of slurry is taken. Definition of this point shall consider representativeness of the sample, heel blending, recycle, and requirements for process control. The procedure shall be submitted to DOE for review and approval.
- 12.2.4 Criteria: The Contractor shall propose specific criteria to determine the required waste treatment approach for DOE's approval. These criteria will be based on objectives to reduce the number of IHLW canisters, shorten WTP processing mission duration, and reduce WTP operations cost. Minimization of IHLW produced will have greater importance than minimization of ILAW produced.
- 12.3 Quality Assurance: A QA Program (Table C.5-1.1, Deliverable 7.2) for the work to be performed is required. The QA Program shall be based upon NQA-1. **(066)**

Specification 13: Waste Product Inspection and Acceptance

13.1 Scope: This specification defines the protocol for acceptance and transfer of waste products (ILAW product and IHLW product) to DOE and defines the contents of Deliverable 5.13 (Resultant Products from Hot Commissioning), per requirements in Standard 5.

13.2 ILAW Product and Production Acceptance Requirements:

13.2.1 Acceptance of ILAW Product for On-Site Disposal

Acceptance of ILAW product shall be based on certification by the Contractor that the ILAW product (i.e., containerized waste form) has been provided in compliance with the requirements of Standard 6, Product Qualification, Characterization, and Certification and Specification 2, Immobilized Low Activity Waste. The certification and acceptance of ILAW product shall be done on a lot basis. The lot size shall be proposed by the Contractor, and agreed to by DOE. The lot size shall consider the compliance strategy for process/product control of the ILAW product to comply with applicable Specification 2 requirements, capacity for lag storage, and requirements for the interface with the on-site transportation and disposal operations.

Physical transfer of the ILAW product shall be conducted in accordance with ICD 15.

13.2.2 Compliance of ILAW Product with Hot Commissioning Testing Criteria

The Contractor shall submit the production records to comply with Table C.5-1.1, Deliverable 5.13 to certify that the ILAW product complies with the requirements for the Hot Commissioning testing identified in Standard 5. The content of the ILAW production documentation shall include, but not be limited to, the following information:

- Number of ILAW glass-filled product containers produced (lot basis);
- Number of ILAW glass-filled product containers transferred to on-site disposal;
- Certification of compliance for each ILAW glass-filled product container (lot basis); and
- Summaries of the following information for each ILAW product unit produced during commissioning (lot basis):
 - Na waste loading
 - Radionuclide content
 - Nonradionuclide chemical composition
 - Glass weight and percent fill per container.

In the event the ILAW glass-filled product is identified as not meeting all requirements of Specification 2, the ILAW product will be classified as nonconforming. The Contracting Officer shall be notified within twenty-four (24) hours after the Contractor has determined that a nonconforming product has been produced.

A corrective action plan shall be prepared that describes how to convert the nonconforming condition to a non-standard condition, with the latter condition enabling the product to be acceptable for on-site disposal.

The corrective action plan shall also describe how to prevent recurrence of the nonconforming condition.

DOE acknowledges that during the transition between cold commissioning and hot commissioning that a limited number of ILAW containers will be produced that do not meet the waste loading requirements as identified in Specification 2.2.2.2. DOE will accept these containers and provide credit for these containers in the Hot Commissioning test. The Contractor shall describe the approach to minimize the number of containers that do not meet waste loading requirements in the commissioning plan.

(384)

13.2.3 DOE Acceptance of Production Documentation

The DOE Contracting Officer will be responsible for reviewing the submitted production documentation for compliance with Specification 2 and notifying the Contractor, within thirty (30) days, as to whether compliance was achieved.

13.3 IHLW Product and Production Acceptance Requirements:

13.3.1 Acceptance of IHLW Product for On-Site Interim Storage

Acceptance of IHLW product for on-site interim storage shall be based on certification by the Contractor that the subject IHLW product (i.e., containerized waste form) has been provided in compliance with the requirements of Standard 6, Product Qualification, Characterization, and Certification and Specification 1, Immobilized High Level Waste. The certification and acceptance of IHLW product shall be done on a lot basis. The lot size shall be proposed by the Contractor and agreed to by DOE. The lot size shall consider the compliance strategy for process/product control of the IHLW product to comply with applicable Specification 1 requirements, capacity for lag storage, and requirements for the interface with the on-site transportation and on-site interim storage operations.

Physical transfer of the IHLW product shall be conducted in accordance with ICD 14.

13.3.2 Compliance of IHLW Product with Hot Commissioning Capacity Testing Requirements

The Contractor shall submit the production records to comply with Table C.5-1.1, Deliverable 5.13 (Resultant Products for Hot Commissioning) to certify that the IHLW product complies with the requirements for the hot commissioning capacity testing identified in Standard 5 (Hot Commissioning Capacity Tests). The content of the IHLW production documentation shall be consistent with the IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2) and include, but not be limited to the following information:

- Number of IHLW glass-filled product canisters produced (lot basis);
- Number of IHLW glass-filled product containers transferred to on-site disposal;
- Certification of compliance for each IHLW glass-filled product container (lot basis); and
- Summaries of the following information for each IHLW product unit produced during commissioning (lot basis):
 - Waste loading
 - Radionuclide content
 - Nonradionuclide chemical composition
 - Glass weight and percent fill per container.

In the event the IHLW glass-filled product is identified as not meeting all requirements of Specification 1, the IHLW product will be classified as nonconforming. The Contracting Officer shall be notified within twenty-four (24) hours after the Contractor has determined that a nonconforming product has been produced.

The nonconforming IHLW product shall be clearly identified. A corrective action plan shall be prepared that describes how to convert the nonconforming condition to a nonstandard condition, with the latter condition enabling the product to be acceptable for on-site interim storage.

The corrective action plan shall also describe how to prevent recurrence of the nonconforming condition.

DOE acknowledges that during the transition between cold commissioning and hot commissioning that a limited number of IHLW product canisters will be produced that do not meet the waste loading limits as identified in Specification 2.2.2.2, "Waste Loading." DOE will accept these canisters and provide credit for these canisters in the hot commissioning test. The Contractor shall describe the approach to minimize the number of canisters that do not meet waste loading requirements in the commissioning plan.

Nonconforming IHLW product other than noted above will not be credited for determination of the WTP production capability, per the hot commissioning performance testing.

13.3.3 DOE Acceptance of Production Documentation

The DOE Contracting Officer will be responsible for reviewing the submitted production documentation for compliance with Specification 1 and notifying the Contractor, within thirty (30) days, as to whether compliance was achieved.

C.9 INTERFACE CONTROL DOCUMENTS

This Section provides the requirements for ICDs that describe the physical and administrative interfaces among DOE, ORP, the Tank Farm Contractor, and other Hanford Site contractors.

The RPP involves two or more contractors, under contract to ORP that carry out the functions necessary to achieve the RPP mission. The WTP facilities are located on the Hanford Site and will rely upon other organizations to provide support services. In order to assure that the efforts and facilities are coordinated, a formal system of interface management was developed by RPP. The objective of the interface management system is to assure documentation and management of shared responsibilities for (1) transfer of energy, data, or materials; and (2) development, operation, and maintenance of physically compatible facilities and subsystems.

The approach to managing the interfaces is based upon development of ICDs that identify the requirements, roles, and responsibilities for all parties to the interface.

(a) (1) An initial set of ICDs was prepared as part of the WTP Conceptual Design:

| | |
|---------|---|
| ICD 1: | Raw Water |
| ICD 2: | Potable Water |
| ICD 3: | Radioactive Solid Wastes |
| ICD 4: | Reserved |
| ICD 5: | Non-Radioactive, Non-Dangerous Liquid Effluents |
| ICD 6: | Radioactive, Dangerous Liquid Effluents |
| ICD 7: | Reserved |
| ICD 8: | Reserved |
| ICD 9: | Land for Siting |
| ICD 10: | Reserved |
| ICD 11: | Electricity |
| ICD 12: | Roads |
| ICD 13: | Reserved |
| ICD 14: | Immobilized High-Level Waste |
| ICD 15: | Immobilized Low-Activity Waste |
| ICD 16: | Reserved |
| ICD 17: | Reserved |
| ICD 18: | Reserved |
| ICD 19: | Waste Feed |
| ICD 20: | Reserved |
| ICD 21: | Reserved |
| ICD 22: | Reserved |
| ICD 23: | Waste Treatability Samples |
| ICD 24: | Reserved |
| ICD 25: | Inactive |
| ICD 26: | Reserved |
| ICD 27: | Inactive |

(2) Post-award ICDs:

| | |
|---------|---|
| ICD 28: | Pit 30 Aggregate Supply for Construction |
| ICD-29: | Waste Na |
| ICD 30: | Direct LAW Feed |
| ICD 31: | DFLAW Effluent Returns to Double-Shell Tanks (350) |

- (b) The Contractor shall update the ICDs as required throughout the period of Contract performance. ICDs shall reflect all interfaces and services needed in the construction and performance testing phases, and projected interface and services needed for the future commissioning and operating phases. The ICDs shall be managed in accordance with the Interface Management Plan (Table C.5-1.1, Deliverable 1.4).
- (c) The Contractor shall ensure that the ICDs include, at a minimum, details on the following areas consistent with the maturity of the project:
 - (1) Physical Interfaces:
 - (i) Location and description of each hand-off point;
 - (ii) Interface block diagrams and schematics that clearly define organizational responsibilities for each interface (e.g., ownership, construction, and maintenance);
 - (iii) Type, quantity, and composition of material;
 - (iv) Packaging requirements;
 - (v) Design drawings (as appropriate); and
 - (vi) Operations and maintenance requirements.
 - (2) Administrative Interfaces:
 - (i) Procedures that define the administrative transfer of interface items (e.g., who, what, when, where, and how).
 - (ii) Linkage to the integrated RPP and individual Contractor project baseline. These schedules and logic must contain detail that demonstrates that the key ICD events or milestones are achievable.
 - (iii) Documentation necessary for official hand-off of interface items.
 - (iv) Authorization basis and permitting integration.
 - (3) Acceptance Criteria shall be developed for every hand-off item.
- (d) Changes to ICDs will be made in accordance with Standard 1, Management Products and Controls.

SECTION F
DELIVERIES OR PERFORMANCE

SECTION F
DELIVERIES OR PERFORMANCE

TABLE OF CONTENTS

| Section | Clause | Page |
|---------|--|------|
| F.1 | PERIOD OF PERFORMANCE AND DELIVERY DATES..... | 1 |
| F.2 | PRINCIPAL PLACE OF PERFORMANCE | 1 |
| F.3 | FAR 52.242-15 STOP-WORK ORDER (AUG 1989) -- ALTERNATE I (APR 1984) | 1 |

SECTION F

DELIVERIES OR PERFORMANCE

F.1 PERIOD OF PERFORMANCE AND DELIVERY DATES

This contract is a completion contract. The period of performance for this Contract shall extend from the date of Contract award in SF-33, *Solicitation, Offer, and Award*, through December 31, 2022. The completion date for HLW and PT will be considered in a future contract modification.

F.2 PRINCIPAL PLACE OF PERFORMANCE

The principal location of performance for construction management, procurement, acceptance testing, and commissioning under the Contract will be land on the Government's Hanford Site near Richland, Washington, as described in Interface Control Document (ICD) 9, *Land for Siting*.

F.3 FAR 52.242-15 STOP-WORK ORDER (AUG 1989) -- ALTERNATE I (APR 1984)

- (a) The Contracting Officer may, at any time, by written order to the Contractor, require the Contractor to stop all, or any part, of the work called for by this Contract for a period of 90 days after the order is delivered to the Contractor, and for any further period to which the parties may agree. The order shall be specifically identified as a stop-work order issued under this Clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allowable to the work covered by the order during the period of work stoppage. Within a period of 90 days after a stop-work order is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, the Contracting Officer shall either-
- (1) Cancel the stop-work order; or
 - (2) Terminate the work covered by the order as provided in the Termination clause of this Contract.
- (b) If a stop-work order issued under this clause is canceled or the period of the order or any extension thereof expires, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule, the estimated cost, the fee, or a combination thereof, and in any other terms of the contract that may be affected and the contract shall be modified, in writing, accordingly, if--
- (1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allowable to, the performance of any part of this contract; and
 - (2) The Contractor asserts a claim for the adjustment within 30 days after the end of the period of work stoppage; provided, that, if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon the claim asserted at any time before final payment under this Contract.
- (c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

- (d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

SECTION H
SPECIAL CONTRACT REQUIREMENTS

SECTION H
SPECIAL CONTRACT REQUIREMENTS
TABLE OF CONTENTS

| Section | Clause | Page |
|---------|---|------|
| H.1 | TECHNICAL DIRECTION | 1 |
| H.2 | MODIFICATION AUTHORITY..... | 2 |
| H.3 | KEY PERSONNEL | 2 |
| H.4 | SMALL BUSINESS SUBCONTRACTING PLAN | 2 |
| H.5 | REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF THE OFFEROR | 2 |
| H.6 | DISPLACED EMPLOYEE HIRING PREFERENCE -- This section deleted. | 2 |
| H.7 | IMPLEMENTATION OF SECTION 3161 POLICY ON WORK FORCE RESTRUCTURING AND PREFERENCE IN HIRING -- This section deleted. | 2 |
| H.8 | LABOR RELATIONS | 2 |
| H.9 | IMPLEMENTATION OF THE HANFORD SITE STABILIZATION AGREEMENT | 3 |
| H.10 | DETERMINATION OF APPROPRIATE LABOR STANDARDS | 4 |
| H.11 | AGE DISCRIMINATION IN EMPLOYMENT | 5 |
| H.12 | OPERATIONS AND ENGINEERING MULTI-EMPLOYER PENSION PLAN | 5 |
| H.13 | SELF-PERFORMED WORK | 5 |
| H.14 | PAYMENT BONDS AND PERFORMANCE BONDS..... | 5 |
| H.15 | GUARANTEE OF PERFORMANCE | 5 |
| H.16 | DOE ACCESS TO CONTRACTOR MANAGEMENT AND CONTRACT DOCUMENTATION..... | 5 |
| H.17 | WASTE TREATMENT AND IMMOBILIZATION PLANT CONCEPTUAL DESIGN AND SUPPORTING INFORMATION..... | 6 |
| H.18 | RESPONSIBLE CORPORATE OFFICIAL | 6 |
| H.19 | ASSIGNMENT OF SUBCONTRACTS..... | 7 |
| H.20 | OTHER GOVERNMENT CONTRACTORS | 7 |
| H.21 | ASSIGNMENT | 7 |
| H.22 | SUBCONTRACTOR ENVIRONMENT, SAFETY, QUALITY, AND HEALTH REQUIREMENTS..... | 7 |
| H.23 | TRI-PARTY AGREEMENT | 8 |
| H.24 | EMERGENCY CLAUSE | 8 |
| H.25 | STOP WORK AND SHUTDOWN AUTHORIZATION | 9 |
| H.26 | ENVIRONMENTAL PERMITS..... | 11 |
| H.27 | CONTRACTOR ACCEPTANCE OF NOTICES OF VIOLATION OR ALLEGED VIOLATIONS, FINES, AND PENALTIES | 14 |
| H.28 | ALLOCATION OF RESPONSIBILITIES FOR CONTRACTOR ENVIRONMENTAL COMPLIANCE ACTIVITIES | 14 |
| H.29 | HAZARDOUS MATERIALS..... | 14 |
| H.30 | PRESERVATION OF ANTIQUITIES AND LAND AREAS | 15 |
| H.31 | INFORMATION..... | 15 |
| H.32 | COSTS ASSOCIATED WITH WHISTLEBLOWER ACTIONS | 16 |
| H.33 | LITIGATION MANAGEMENT PLAN | 17 |
| H.34 | ALTERNATIVE DISPUTE RESOLUTION | 17 |
| H.35 | LOBBYING RESTRICTION (ENERGY AND WATER DEVELOPMENT APPROPRIATION ACT, 2000)..... | 18 |
| H.36 | COOPERATION DURING TRANSITION TO OPERATIONS | 18 |
| H.37 | ADVANCE UNDERSTANDING ON COSTS..... | 18 |
| H.38 | ADDITIONAL RIGHTS IN INVENTIONS AND TECHNICAL DATA..... | 19 |

| | | |
|------|---|----|
| H.39 | PATENT INDEMNITY – SUBCONTRACTS..... | 19 |
| H.40 | GOVERNMENT-FURNISHED PROPERTY AND GOVERNMENT-FURNISHED EQUIPMENT | 19 |
| H.41 | THIRD PARTIES | 19 |
| H.42 | CONTRACT DUE DATES | 19 |
| H.43 | U.S. DEPARTMENT OF ENERGY MENTOR-PROTÉGÉ PROGRAM | 20 |
| H.44 | USE OF THE U.S. DEPARTMENT OF ENERGY SECURITY BADGE AT CONTRACTOR WTP FACILITIES | 20 |
| H.45 | RESERVED (A143) | 20 |
| H.46 | DOE O 226.1B, <i>IMPLEMENTATION OF DEPARTMENT OF ENERGY OVERSIGHT POLICY</i> | 20 |
| H.47 | PROTECTION OF PERSONALLY IDENTIFIABLE INFORMATION | 20 |
| H.48 | DELETED | 21 |
| H.49 | CORPORATE OPERATING EXPERIENCE DOE O 210.2A, DOE CORPORATE OPERATING EXPERIENCE PROGRAM..... | 21 |
| H.50 | OFFICIAL USE ONLY INFORMATION | 21 |
| H.51 | PROPERTY MANAGEMENT SYSTEM | 21 |
| H.52 | REPORT AND APPROVAL REQUIREMENTS FOR CONFERENCE RELATED ACTIVITIES | 21 |
| H.53 | LBL/DFLAW COMPLETION (CLINS 1.0 AND 2.0) (384)..... | 23 |
| H.54 | SAFETY CONSCIOUS WORK ENVIRONMENT | 25 |

SECTION H

SPECIAL CONTRACT REQUIREMENTS

H.1 TECHNICAL DIRECTION

- (a) Performance of the work under this Contract shall be subject to the technical direction of U.S. Department of Energy (DOE) Contracting Officer's Representative (COR). The term "technical direction" is defined to include, without limitation:
- (1) Provision of written information to the Contractor, which assists in the interpretation of drawings, specifications, or technical portions of the work description.
 - (2) Review and, where required by the Contract, approval of technical reports, drawings, specifications, and technical information to be delivered by the Contractor to the Government under the Contract.
- (b) Technical direction must be within the scope of work stated in this Contract. The COR does not have the authority to, and may not, issue any technical direction which:
- (1) Constitutes an assignment of additional work outside the *Statement of Work*;
 - (2) Constitutes a change as defined in this Contract Section I Clause entitled, "Changes";
 - (3) Changes any of the express terms, conditions, or specifications of this Contract; or
 - (4) Interferes with the Contractor's right to perform the terms and conditions of this Contract.
- (c) All technical direction shall be issued in writing by the COR.
- (d) The Contractor shall proceed promptly with the performance of technical direction duly issued by the COR in the manner prescribed by this clause and within its authority under the provisions of this clause. If, in the opinion of the Contractor, any instruction or direction by the COR falls within one of the categories defined in (b)(1) through (b)(4) above, the Contractor shall not proceed but shall notify the Contracting Officer in writing within ten (10) working days after receipt of any such instruction or direction and shall request the Contracting Officer to modify this Contract accordingly. Upon receiving the notification from the Contractor, the Contracting Officer shall:
- (1) Advise the Contractor in writing within thirty (30) days after receipt of the Contractor's letter that the technical direction is within the scope of the contract effort and does not constitute a change under the Contract Section I Clause.
 - (2) Advise the Contractor in writing within a reasonable time that the Government will issue a written change order.
- (e) A failure of the Contractor and Contracting Officer to agree that the technical direction is within the scope of this Contract, or a failure to agree upon the contract action to be taken with respect thereto shall be subject to the provisions of the Section H Clause entitled, "Alternative Dispute Resolution."

H.2 MODIFICATION AUTHORITY

Notwithstanding any of the other clauses of this Contract, the Contracting Officer shall be the only individual authorized to:

- (a) Accept nonconforming work,
- (b) Waive any requirement of this Contract, or
- (c) Modify any term or condition of this Contract.

H.3 KEY PERSONNEL (291)

A listing of key personnel on this Contract is provided as Section J, Attachment F, "Key Personnel." These key personnel are considered to be essential to the work being performed on this Contract. Prior to adding or deleting positions, changing position titles, diverting any of the employees in these positions to other positions, or substituting any of the employees in specified Key Personnel Positions, the Contractor shall notify the Contracting Officer in writing at least thirty (30) days in advance and shall submit justification (including proposed substitutions) in sufficient detail to permit evaluation of the impact on the work being performed under this Contract. No diversion or substitution shall be made by the Contractor without the prior written consent of the Contracting Officer, provided that the Contracting Officer may ratify in writing such diversion or substitution and such ratification shall constitute the consent of the Contracting Officer required by this Clause. Unless approved in writing by the Contracting Officer, no Key Personnel Position will remain unfilled by a permanent replacement for more than sixty (60) days. The Key Personnel Positions list may be modified during the course of the Contract to add or delete Key Personnel Positions as appropriate and as approved by the Contracting Officer.

H.4 SMALL BUSINESS SUBCONTRACTING PLAN

The Small Business Subcontracting Plan submitted by the Contractor and approved by the Contracting Officer (via contract award) is incorporated into this Contract as Section J, Attachment D, "Small Business Subcontracting Plan." Any revisions thereto shall be approved by the Contracting Officer and incorporated into this Contract by a separate contract modification. Plans shall provide strong consideration for local and Washington and Oregon state businesses.

H.5 REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF THE OFFEROR

The Representations, Certifications, and Other Statements of the Offeror submitted with the offer for this Contract are, by reference, hereby incorporated in and made a part of this Contract.

H.6 DISPLACED EMPLOYEE HIRING PREFERENCE -- This section deleted.

H.7 IMPLEMENTATION OF SECTION 3161 POLICY ON WORK FORCE RESTRUCTURING AND PREFERENCE IN HIRING -- This section deleted.

H.8 LABOR RELATIONS

- (a) The Contractor, and its major subcontractors, will respect the rights of employees, (1) to organize, form, join, or assist labor organizations; bargain collectively through representatives of the employees own choosing; and engage in other protected concerted activities for the purpose of collective bargaining; or (2) to refrain from such activities.
- (b) To the extent required by law, the Contractor and its major subcontractors shall give notice to any lawfully designated representative of its employees for purposes of collective bargaining and, upon proper request, bargain to good faith impasses or agreement, or otherwise satisfy applicable bargaining obligations.

- (c) The Contractor shall promptly advise the Contracting Officer of, and provide all appropriate documentation regarding, any labor relations developments at the prime or subcontract level that involve or appear likely to involve:
- (1) Possible strike situations affecting the facility;
 - (2) Referral to the Energy Labor-Management Relations Panel;
 - (3) The National Labor Relations Board at any level;
 - (4) Recourse to procedures under the *Labor-Management Act of 1947*, as amended, or any other Federal or state labor law; and
 - (5) Any grievance that may reasonably be assumed to be arbitrated under a Collective Bargaining Agreement.

The Contractor shall meet with the Contracting Officer or designee(s) for the purpose of reviewing the Contractor's bargaining objectives prior to negotiations of any collective bargaining agreement or revision thereto and shall consult with and obtain the approval of the Contracting Officer regarding appropriate economic bargaining parameters prior to the Contractor entering into the collective bargaining process. During the collective bargaining process, the Contractor shall notify the Contracting Officer before submitting or agreeing to any collective bargaining proposal, which can be calculated to affect allowable costs under this Contract or which could involve other items of special interest to the Government.

The costs associated with grievance processing and settlements, arbitration, and arbitration awards shall be allowable in accordance with the provisions of this Contract Section I Clause entitled, "Insurance – Litigation and Claims."

H.9 IMPLEMENTATION OF THE HANFORD SITE STABILIZATION AGREEMENT

- (a) The Hanford Site Stabilization Agreement (HSSA) for all construction work for DOE at the Hanford Site, which is referenced in this Clause, consists of a Basic Agreement dated September 10, 1984, plus Appendix A, both of which may be periodically amended. The HSSA is hereby incorporated into this Contract by reference.
- (b) Deleted.
- (c) This Section applies to employees performing work, under contracts (or subcontracts thereunder) administered by the DOE, which are subject to the *Davis-Bacon Act*, in the classifications set forth in the Hanford Site Stabilization Agreement (HSSA) for work performed at the Hanford Site.
- (d) Contractors and subcontractors at all tiers who are parties to an agreement(s) for construction work with a local union having jurisdiction over DOE construction work performed at the Hanford Site, or who are parties to a national labor agreement for such construction work, shall become signatory to the Hanford Site Stabilization Agreement (HSSA) and shall abide by all of its articles, including all current appendices thereto. Subcontractors at all tiers who have subcontracts with a signatory contractor or subcontractor shall become signatory to the HSSA and shall abide by all of its articles, including all current appendices thereto.

Contractors and subcontractors at all tiers who are not signatory to the Hanford Site Stabilization Agreement (HSSA) and who are not required under this Section to become signatory to it, shall pay not less and no more than the wages, fringe benefits, and other employee compensation set forth in Appendix A thereto and shall adhere, except as otherwise directed by the Contracting Officer, to the following Articles of the HSSA:

- (1) Article VII, Employment, Section 2 only;
 - (2) Article XII, Non-Signatory Contractor Requirements;
 - (3) Article XIII, Hours of Work, Shifts, and Overtime;
 - (4) Article XIV, Holidays;
 - (5) Article XV, Wage Scales and Fringe Benefits, Sections 1 and 2 only;
 - (6) Article XVII, Payment of Wages – Checking In & Out, Section 3 only;
 - (7) Article XX, General Working Conditions; and
 - (8) Article XXI, Safety and Health.
- (e) The obligation of the Contractor and its subcontractors to pay fringe benefits shall be discharged by making payments required by this Contract in accordance with the Articles of the amendments to the *Davis-Bacon Act* contained in the Act of July 2, 1964 (Public Law 88-349-78, Statutes 238-239), and the U.S. Department of Labor regulations in implementation thereof (29 *Code of Federal Regulations* [CFR] Parts 1, 3, 5).
- (f) DOE may from time to time provide notice to the Contractor of any changes in wages, fringe benefits, and the parties may modify other employee compensation as the Hanford Site Stabilization Agreement, including all current appendices thereto from time to time. The Contractor shall not be entitled to any change in fee **(155)** due to any change in wages or fringe benefits under the Hanford Site Stabilization Agreement during the term of the Contract.
- (g) The requirements of this Section are in addition to, and shall not relieve the Contractor of any obligation imposed by other sections or subsections of the Contract.
- (h) The Contractor agrees to maintain its bid or proposal records showing rates and amounts used for computing wages and other compensation, and its payroll and personnel records during the course of work, and to preserve such records for a period of three (3) years thereafter, for all employees performing such work. Such records will contain the name and address of each such employee; the employee's correct classification; rate of pay; daily and weekly number of hours worked; and dates and hours of the day within which work was performed, deductions made, and amounts for wages and other compensation covered in this Section. The Contractor agrees to make these records available for inspection by the Contracting Officer and will permit him/her to interview employees during working hours on the job.
- (i) The Contractor agrees to insert the clauses of this Section in all subcontracts for the performance of work subject to the *Davis-Bacon Act* administered by DOE at the Hanford Site.
- (j) The rights and remedies of the Government provided in this Clause shall not be exclusive and are in addition to any other rights and remedies of the Government provided by law or under this Contract.

H.10 DETERMINATION OF APPROPRIATE LABOR STANDARDS

The U.S. Department of Energy (DOE) shall determine the appropriate labor standards in accordance with the *Davis-Bacon Act*, which shall apply to work performed under this Contract. Where requested by DOE, the Contractor shall provide whatever information is relevant to labor standards determinations, in the form and timeframe required by DOE, as may be necessary for

DOE to make such labor standards determinations. The Contractor will then be responsible for ensuring that the appropriate labor standards provisions are included in subcontracts.

H.11 AGE DISCRIMINATION IN EMPLOYMENT

The Contractor shall not discriminate against any employee, applicant for employment, or former employee on the basis of age. The Contractor shall comply with the *Age Discrimination in Employment Act*, with any state or local legislation regarding discrimination based on age, and with all applicable regulations thereunder.

H.12 OPERATIONS AND ENGINEERING MULTI-EMPLOYER PENSION PLAN

- (a) The Contractor will be a sponsoring employer and ensure participation by its teaming partners, if any, in the existing Hanford Operations and Engineering Pension Plan, a multi-employer pension plan (hereinafter MEPP). The MEPP will cover only those individuals who were employed by the Tank Farm Contractor on the Waste Treatment and Immobilization Plant (WTP) at the time of Contract award and who are existing participants in the plan as of the date of their initial employment on the WTP Project by the Contractor (or its teaming partner(s), if any). Individuals covered by the Hanford Site Stabilization Agreement are not eligible to participate in the MEPP. Employees will earn credit for their service with the Contractor (and any teaming partner) only for services performed by them under this Contract.
- (b) At the request of the Plan Administrator, the Contractor will provide such documents, information, and representations necessary to insure that the Contractor's participation (or that of any teaming partners) in the MEPP has not and will not adversely affect the MEPP's exempt status under the Internal Revenue Code and/or the *Employee Retirement Income Security Act*. The MEPP documents and subsequent amendments are subject to the DOE approval.

H.13 SELF-PERFORMED WORK

The objectives for the amount of self-performed work by the Contractor is 60 percent of the Total Estimated Contract Cost. Self-performed work by the Contractor includes any teaming partner(s) and any parent, wholly-owned subsidiary or affiliated organizations. It is the expectation of DOE that the remainder of the work shall be performed through competitive procurements with an emphasis on fixed price subcontracts.

H.14 PAYMENT BONDS AND PERFORMANCE BONDS

The Contractor will not be required to furnish payment bonds and performance bonds. However, all fixed price subcontractors will be required to submit the necessary payment bonds and performance bonds as required by the *Miller Act*. Specific requirements and penal amounts can be found in *Federal Acquisition Regulation (FAR) 28.102*.

H.15 GUARANTEE OF PERFORMANCE

The Contractor or the Contractor's parent organization(s) has (have) provided a Performance Guarantee Agreement in a manner and form acceptable to the Contracting Officer assuring the performance, duties, and responsibilities of the Contractor, including repayment of unearned provisional fee, will be satisfactorily fulfilled. The Performance Guarantee Agreement dated December 11, 2000, is incorporated herein by reference and made part of this Contract.

H.16 DOE ACCESS TO CONTRACTOR MANAGEMENT AND CONTRACT DOCUMENTATION

- (a) In order to facilitate interactions with the U.S. Department of Energy (DOE), support safe and efficient performance of this Contract and effective contract administration, the Contractor shall locate Contractor offices on the Hanford Site or in the Tri-Cities,

Washington area for, at a minimum, senior level management responsible for the following major project management functions: Project Management; Environment, Safety, Quality and Health (ESQ&H); Project Cost and Schedule Control; Procurement/Contracting; Environmental Compliance; Technology Management; Labor Relations; Human Resources; Engineering; Construction Management; and Design Management for Systems, Facilities, and/or Engineering Disciplines.

- (b) Although not all work is required to be performed in the Tri-Cities area, the Contractor shall use judgment in relocation of project staff to the Tri-Cities to facilitate the objectives of cost efficiency, project integration and meeting DOE's needs for frequent and informative interactions.
- (c) The design process must have the capability for efficient electronic integration. Video teleconferencing shall also be used to facilitate communications with satellite work locations where critical work is to be performed.
- (d) All major design reviews shall be held in the Tri-Cities area unless otherwise approved by the Contracting Officer.

H.17 WASTE TREATMENT AND IMMOBILIZATION PLANT CONCEPTUAL DESIGN AND SUPPORTING INFORMATION

The Waste Treatment and Immobilization Plant (WTP) Conceptual Design and supporting information are provided to the Contractor. Additional information developed for the WTP Conceptual Design will be transitioned from the Tank Farm Contractor to the Contractor subsequent to Contract award. The Contractor is responsible for designing, constructing, and commissioning the WTP in a manner that meets all Contract specifications and requirements, and results in an operating facility that meets or exceeds all functional and performance specifications and requirements. The U.S. Department of Energy (DOE) makes no warranties as to the accuracy, reliability, completeness or usefulness of the WTP Conceptual Design materials. The Contractor shall have no recourse against DOE, or the individuals, or contractors who prepared such information for DOE, for impacts resulting from the Contractor's use or reliance upon WTP Conceptual Design or supporting information. The Contractor shall perform such reviews and evaluations, as it deems necessary for the Contractor to satisfy itself as to the accuracy, reliability, usefulness and completeness of any WTP Conceptual Design or supporting information, which it may utilize in performing this Contract. Any reference to the contractor(s) who prepared the WTP Conceptual Design and supporting information shall not be carried forward by the Contractor in any work products, permits, presentations, or deliverables produced under this Contract except where necessary to comply with applicable laws or comply with proprietary data requirements. A listing of the WTP Conceptual design and supporting information is provided in Section J, Attachment K, "Listing of WTP Conceptual Design and Supporting Information."

H.18 RESPONSIBLE CORPORATE OFFICIAL

The Contractor shall guarantee performance as evidenced by the "Guarantee of Performance Agreement" (Clause H.15). If a separate business entity is established for this Contract, the Contractor's parent company shall guarantee performance as evidenced by the "Guarantee of Performance Agreement (Clause H.15). If the Contractor is a joint venture or other similar entity where more than one company is involved, the parent companies shall assume joint and several liability for the performance of the Contractor. In the event any of the signatories to the "Guarantee of Performance Agreement" enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish written notification of the bankruptcy to the Contracting Officer. Notwithstanding the provisions of this Clause, the Government may contact, as necessary, the single responsible corporate official identified below, who is at a level above the Project Manager for the Contractor and who is accountable for the performance of the Contractor, regarding Contractor performance issues. Should the responsible corporate official

change during the period of this Contract, the Contractor shall promptly notify the Contracting Officer in writing of the change of the individual to this Contract.

Name: Barbara Rusinko
Position: President
Company/Organization: Bechtel National, Inc.
Address: 12011 Sunset Hills Road, Reston, Virginia 20190-5919
Telephone: 703-429-6300
Facsimile: 703-429-6045
Email: berusink@bechtel.com

H.19 ASSIGNMENT OF SUBCONTRACTS

The Government reserves the right to direct the Contractor to assign to the Government or another Contractor any subcontract awarded under this Contract.

H.20 OTHER GOVERNMENT CONTRACTORS

The Government may undertake or award other contracts for additional work or services. The Contractor agrees to fully cooperate with such other Contractors and Government employees and carefully fit its own work to such other work as may be directed by the Contracting Officer. The Contractor shall not commit or permit any act, which will interfere with the performance of work by any other Contractor or by Government employees. If the U.S. Department of Energy (DOE) determines that the Contractor's activities may interfere with another DOE Contractor, the Contracting Officer shall so notify the Contractor and the Contractor shall comply with any instructions the Contracting Officer may provide.

H.21 ASSIGNMENT

Neither this Contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor except as expressly authorized in writing by the Contracting Officer.

H.22 SUBCONTRACTOR ENVIRONMENT, SAFETY, QUALITY, AND HEALTH REQUIREMENTS

The U.S. Department of Energy (DOE) and the Contractor are committed to zero accidents on the WTP. To that end, unless expressly approved by the Contracting Officer, the Contractor is required to subcontract only with subcontractors that have an acceptable Environmental, Safety, Quality, and Health (ESQ&H) program and that satisfy the following minimum requirements:

- (a) An ESQ&H program that is compliant with applicable local, State, Federal and DOE regulatory requirements.
- (b) Employees are properly trained and equipped to perform their assigned work. The subcontractor has established an orientation program for new hires, which includes ESQ&H.
- (c) Policies and procedures are in place to eliminate accidents, injuries/illnesses, and damage to property and equipment.
- (d) ESQ&H records are adequately and properly maintained.
- (e) Accidents/Incidents are investigated promptly and required reports are generated. If the investigation discovers inadequacies in either the work process or the policies and procedures, the appropriate processes are put in place to avert the accident/incident in the future and personnel are provided proper training.
- (f) Hazards are identified and appropriate measures are taken to ensure that personnel and equipment are adequately protected as a result of identified hazards.

- (g) Employees have the right to report unsafe conditions and to interrupt or stop work without fear of reprisal.
- (h) The frequency of ESQ&H meetings with employees to discuss the work to be performed and the hazards associated with the work is based on the scope of work and commensurate with the work hazards.
- (i) ESQ&H inspections/audits are conducted to evaluate effectiveness of the program.
- (j) ESQ&H reviews subcontractor supplied information. Such as:
 - (1) The subcontractor has provided its Experience Modification Rate (EMR), for the previous three (3) years, and Occupational Safety and Health Administration (OSHA) Total Recordable and Lost Workday case rates for the previous three (3) years.
 - (2) The subcontractor has an Experience Modification Rate of 1.0 or better and an average not greater than the most currently published rates by the Bureau of Labor and Statistics for the Construction Industry for OSHA Total Recordable and Lost Workday case rates for the previous three (3) years.
 - (3) The subcontractor has provided an explanation for the increase should the subcontractor's rates exceed the above stated rates and a documented mitigation plan. All mitigation plans shall be submitted to the BNI Safety Assurance Manager or designee for review and concurrence. **(204)**
- (k) The subcontractor has an established written Hazard Communication Program and a system within the program to maintain Material Safety Data Sheets (MSDS).
- (l) The subcontractor has had no significant willful citations from OSHA or other regulatory organizations during the previous three (3) years.
- (m) The subcontractor has received no citations, other than those determined to be minor violations, or fines for *Price-Anderson Amendments Act* noncompliances during the previous three (3) years.
- (n) The subcontractor has received no fines for Nuclear Regulatory Commission noncompliances during the previous three (3) years.

The Contractor shall flow down all applicable ESQ&H program criteria to the lowest tier subcontractor performing construction, equipment fabrication, or commissioning.

H.23 TRI-PARTY AGREEMENT

The U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency Region 10 (EPA), and the Washington State Department of Ecology (Ecology) have entered into the Hanford Federal Facility Agreement and Consent Order; referred to as the Tri-Party Agreement (TPA) to ensure compliance with the *Resource Conservation and Recovery Act* (RCRA) and the *Comprehensive Environmental Response, Compensation, and Liability Act*, as amended (CERCLA). The TPA sets forth certain requirements and milestones for cleanup activities at the Hanford Site. The Contractor agrees to plan and perform the work under this Contract in accordance with DOE direction concerning implementation of the TPA and achievement of current and future milestones in the TPA.

H.24 EMERGENCY CLAUSE

- (a) The DOE Office of River Protection (ORP) Manager, or designee shall have sole discretion to determine when an emergency situation exists as a result of facility

operations within the physical boundaries defined by this Contract affecting personnel, public health, safety, the environment, or security. The DOE Richland Operations Office (RL) Manager, or designee has the discretion to determine when an emergency condition exists elsewhere on the Hanford Site that may affect ORP employees. In the event that either the ORP or RL Manager or designee, determines that an emergency exists, the ORP Manager or designee will have the authority to direct any and all activities of the Contractor and subcontractors necessary to resolve the emergency situation. The ORP Manager or designee may direct the activities of the Contractor and subcontractors throughout the duration of the emergency.

- (b) The Contractor shall include this Clause in all subcontracts at any tier for work performed at the Hanford Site.
- (c) Deleted. **(256)**

H.25 STOP WORK AND SHUTDOWN AUTHORIZATION (162)

- (a) Definitions:

Imminent Danger: Any condition or practice such that a hazard exists that could reasonably be expected to cause death, serious physical harm, or other serious hazard to employees, unless immediate actions are taken to mitigate the effects of the hazard and/or remove employees from the hazard.

Adversely Affects Safe Operation of Facility or Serious Facility Damage: A condition, situation, or activity that if not terminated or mitigated could reasonably be expected to result in nuclear criticality, facility fire/explosion, major facility or equipment damage or loss, or a facility evacuation response.

Stop Work Criteria:

1. Conditions exist that pose an imminent danger to the health and safety of workers or the public; or
2. Conditions exist, that if allowed to continue, could adversely affect the safe operation of, or could cause serious damage to, the facility; or
3. Conditions exist, that if allowed to continue, could result in the release from the facility to the environment of radiological or chemical effluents that exceed applicable regulatory requirements or approvals.

- (b) DOE Stop Work Order:

In accordance with Section I, *Contract Clauses*, I.105, DEAR 952.223-71, "Integration of Environment, Safety, and Health into Work Planning and Execution," the DOE Contracting Officer has the ability to issue a DOE Stop Work Order in whole or in part if:

1. The Contractor fails to provide resolution of any noncompliance with applicable requirements and Safety Management System or if,
2. At any time the Contractor's acts or failure to act causes substantial harm or an imminent danger to the environment or health and safety of employees or the public.

In addition, a DOE Stop Work Order can be initiated if the Stop Work Criteria as defined in Section H.25 (a) is met dependent on the severity and extent of the condition.

(c) DOE Stop Work Action:

DOE personnel provide safety oversight of contractor operations and have the authority to initiate a DOE Stop Work Action if the Stop Work Criteria as defined in Section H.25 (a) is met. DOE personnel have the authority to shut down an entire facility, activity, or job. Following a DOE Stop Work Action the contractor shall:

1. Immediately stop the identified activity or activities (up to and including entire plant shutdown);
2. Place the area, activity, facility, etc. into a safe condition;
3. Determine actions necessary to address the unsafe condition;
4. Provide proposed corrective actions to the DOE initiator of the DOE Stop Work Action;
5. Prior to restarting work, inform the DOE initiator that the corrective actions allowing for restart have been completed;
6. Restart work only after the unsafe condition is mitigated and the DOE has given verbal direction to allow restart; and
7. If requested, provide DOE a corrective action plan subsequent to the resumption of work in accordance with contractual requirements.

(d) Contractor Stop Work Action:

1. The contractor shall establish a stop work process/procedure that:
 - a. Meets the requirement of 10 CFR 851.20, "Management responsibilities and worker rights and responsibilities";
 - b. At a minimum uses the Stop Work Criteria defined in Section H.25 (a) for when a Contractor Stop Work Action is required; and
 - c. Meets the tenets of the "Stop Work Policy."
2. Upon initiating a Contractor Stop Work Action the contractor shall:
 - a. Immediately stop the identified activity or activities (up to and including entire plant shutdown);
 - b. Place the area, activity, facility, etc. into a safe condition;
 - c. Notify the DOE Facility Representative if the Contractor's Stop Work Action meets the Stop Work Criteria defined in Section H.25 (a), or notification of facility management is required for the issue;
 - d. Determine actions necessary to address the unsafe condition; and
 - e. Restart work only after the unsafe condition is mitigated.

(e) Stop Work Policy:

The following represents the site's Stop Work Policy:

Stop Work Responsibility: Every Hanford site employee, regardless of employer, has the responsibility and authority to stop work IMMEDIATELY, without fear of reprisal, when the employee is convinced:

1. Conditions exist that pose a danger to the health and safety of workers or the public; or
2. Conditions exist, that if allowed to continue, could adversely affect the safe operation of, or could cause serious damage to, a facility; or
3. Conditions exist, that if allowed to continue, could result in the release from the facility to the environment of radiological or chemical effluents that exceed applicable regulatory requirements or approvals.

Reporting Unsafe Conditions: Employees are expected to report any activity or condition which he/she believes is unsafe. Notification should be made to the affected worker(s) and then to the supervisor or designee at the location where the activity or condition exists. Following notification, resolution of the issue resides with the responsible supervisor.

Right to a Safe Workplace: Any employee who reasonably believes that an activity or condition is unsafe is expected to stop or refuse work without fear of reprisal by management or coworkers and is entitled to have the safety concern addressed prior to participating in the work.

Stop Work Resolution: If you have a "stop work" issue that has not been resolved through established channels, immediately contact your employer's Safety Representative or your Union Safety Representative. Alternatively, you may contact the employer's Employee Concerns Program or the DOE Employee Concerns Program.

H.26 ENVIRONMENTAL PERMITS

The Contractor is required to comply with all environmental laws, regulations, and procedures applicable to the work being performed under this Contract. This includes, but is not limited to, compliance with applicable Federal, state, and local laws and regulations, interagency agreements such as the *Hanford Federal Facility Agreement and Consent Order*, consent orders, consent decrees, and settlement agreements between DOE and Federal and state regulatory agencies.

- (a) Environmental Permits: The Contractor shall accept as co-operator assignment or transfer of permits currently held by the DOE and its existing contractor for the Waste Treatment and Immobilization Plant (WTP). The Contractor is responsible to DOE for operation of the treatment, storage, and/or disposal unit known as the WTP in compliance with the laws, regulations, etc., as stated in the paragraph above and in accordance with the terms of the environmental permits.
- (b) Contractor and DOE as Joint Permittees: Where appropriate, required by law, or required by applicable regulatory agencies, DOE shall sign permits as owner or co-operator with the Contractor as the operator or co-operator. DOE will co-sign Hazardous Waste and State Dangerous Waste Permit Applications as owner/co-operator where required by applicable law. In this scenario, the Contractor must coordinate its actions with DOE. The Contractor shall accept assignment as co-operator of the State Dangerous Waste Permit Application, which has been submitted to the Washington State

Department of Ecology for the WTP. DOE is responsible for timely notification to the Contractor of any issues or changes in the regulatory environment that impact or may impact Contractor implementation of any permit requirement. The Contractor is responsible for timely notification to DOE of any issues or changes in the regulatory environment that impact or may impact Contractor implementation of any permit requirement.

- (c) Multiple Contractors as Permittees: Where appropriate, in situations where multiple contractors are operators or co-operators of operations requiring environmental permits, DOE shall sign such permits as owner or co-operator and affected contractors shall sign as operators or co-operators. In this scenario, the Contractor must coordinate as appropriate with DOE and other contractors affected by the permit.
- (d) Permit Applications: The Contractor shall provide to DOE for review and comment in draft form any permit applications and other regulatory materials and permits necessary to be submitted to regulatory agencies for the purposes of obtaining a permit for construction or operation of the WTP. In the event the permit application is required to be co-signed, submitted by DOE, or is related to a permit in which DOE is a permittee, the Contractor shall provide the application for review and comment. Whenever reasonably possible, all such materials shall be provided to DOE initially not later than 150-days prior to the date they are to be submitted to the regulatory agency. The Contractor shall normally provide final regulatory documents to DOE at least 30-days prior to the date of submittal to the regulatory agencies for DOE's final review and signature or concurrence that shall be performed by DOE in a prompt manner. Special circumstances may require permits to be submitted in a shorter time frame. The Contractor may submit for DOE's consideration, requests for alternate review, comment, or signature schedules for environmental permit applications or other regulatory materials covered by this Clause. Any such requests shall be submitted 180-days prior to the date the materials are to be submitted to the regulatory agencies. Any such schedule revision shall be effective only upon approval from the Contracting Officer (Table C.5-1.1, Deliverable H.1). **(152)**

In case of permit applications that are co-signed by DOE with the Contractor, DOE may sign the application through either the Manager of the Richland Operations Office or the Manager of the Office of River Protection, or the Manager's authorized designees, as determined by DOE in its sole discretion.

- (e) Financial Responsibility: DOE agrees that if bonds, insurance, or administrative fees are required as a condition for permits obtained by the Contractor under this Contract, such costs shall be allowable. In the event such costs are determined by DOE to be excessive or unreasonable, DOE shall provide the regulatory agency with an acceptable form of financial responsibility. Under no circumstances shall the Contractor or its parent be required to provide any corporate resources or corporate guarantees to satisfy such regulatory requirements.
- (f) Copies of Technical Information: The Contractor shall provide DOE with copies of environmental permits, authorizations, and regulatory approvals issued to the Contractor by regulatory agencies. DOE shall provide the Contractor access to copies of environmental permits, authorizations, and approvals issued by the regulatory agencies to DOE that the Contractor may need to comply with applicable law.

The Contractor and DOE shall provide to the each other, copies of documentation, such as letters, reports, or other such materials transmitted either to or from regulatory agencies relating to the Contract work.

The Contractor and DOE shall maintain all necessary technical information required to support applications for revision of DOE or other Hanford Site Contractor environmental permits when such applications or revisions are related to the Contractor's operations.

- (g) Certifications: The Contractor shall provide a written certification statement attesting that information DOE is requested to sign was prepared in accordance with applicable requirements. If required by law, regulation, or DOE order, the Contractor shall include the following or similar certification statement in the submittal of such materials to DOE:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

The certification statement shall be signed by the individual who is authorized, in writing, by the Contractor to sign such certification statements submitted to Federal or State regulatory agencies under the applicable regulatory program.

- (h) Negotiations: DOE may elect to be in charge of, and direct, all negotiations with regulatory agencies regarding permits, fines, penalties, and any other proposed notice, notice, administrative order, and similar type of notice. As directed or required by DOE, the Contractor shall participate in negotiations with regulatory agencies; however, the Contractor shall not make any commitments or offers to regulators purporting to bind or binding the Government in any form or fashion, including monetary obligations, without receiving written authorization or concurrence from the Contracting Officer or his/her authorized representative prior to making such offers/commitments. Failure to obtain such advance written approval may result in otherwise allowable costs being declared unallowable and/or the Contractor being liable for any excess costs to the Government associated with or resulting from such offers/commitments. In the event DOE elects to allow the Contractor to conduct such negotiations without direct DOE participation, the Contractor shall keep DOE fully advised as to the progress of such negotiations.
- (i) Permit Transfer Upon Contract Termination or Expiration: In the event of expiration or termination of this Contract, DOE may require the Contractor on an allowable cost basis to take all necessary steps to transfer to DOE some or all environmental permits held by the Contractor. DOE will assume responsibility for such permits, with the approval of the regulating agency, and the Contractor shall be relieved of all liability and responsibility to the extent that such liability and responsibility results from the acts or omissions of a successor contractor, DOE, or their agents, representatives, or assigns. The Contractor shall remain liable for all unresolved costs, claims, demands, fines, and penalties, including reasonable legal costs arising prior to the date such permits are transferred to another party in accordance with other provisions of the Contract. The Contractor shall not be liable for any such claims occurring after formal transfer of this Contract unless said claims result from Contractor's action or inaction.

H.27 CONTRACTOR ACCEPTANCE OF NOTICES OF VIOLATION OR ALLEGED VIOLATIONS, FINES, AND PENALTIES

- (a) The Contractor shall accept, in its own name, service of notices of violation or alleged violations (NOVs/NOAVs) issued by Federal or State regulators to the Contractor resulting from the Contractor's performance of work under this Contract, without regard to liability. The allowability of the costs associated with fines and penalties shall be subject to the other provisions of this Contract.
- (b) The Contractor shall notify the U.S. Department of Energy (DOE) promptly when it receives service from the regulators of notices of violation or alleged violations and fines and penalties.

H.28 ALLOCATION OF RESPONSIBILITIES FOR CONTRACTOR ENVIRONMENTAL COMPLIANCE ACTIVITIES

- (a) This Clause allocates the responsibilities of the U.S. Department of Energy (DOE) and the Contractor, referred to collectively as the "parties" for implementing the environmental requirements at facilities within the scope of the Contract. In this Clause, the term "environmental requirements" means requirements imposed by applicable Federal, State, and local environmental laws and regulations, including, without limitation, statutes, ordinances, regulations, court orders, consent decrees, administrative orders, or compliance agreements including the *Hanford Federal Facility Agreement and Consent Order*, consent orders, permits, and licenses.
- (b) Liability and responsibility for civil fines or penalties arising from or related to violations of environmental requirements shall be borne by the party that caused the violation irrespective of the fact that the cognizant regulatory authority may assess any such fine or penalty upon either party or both parties without regard to the allocation of responsibility or liability under this Contract. This contractual allocation of liability for any such fine or penalty is effective regardless of which party signs permit applications, manifests, reports, or other required documents, is a permittee, or is the named subject of an enforcement action or assessment of a fine or penalty.
- (c) Regardless of which party to this Contract is named subject of an enforcement action for noncompliance with environmental requirements by the cognizant regulatory authority, provisions of this Contract related to allowable costs will govern liability for payment of any fine or penalty. If the named subject of an enforcement action or assessment of a fine or penalty is DOE and the fine or penalty would not otherwise be reimbursable under the allowable cost provisions of this Contract if the Contractor was the named subject of the enforcement action, the Contractor will either pay the fine or penalty or reimburse the DOE (if DOE pays the fine or penalty).

H.29 HAZARDOUS MATERIALS

In implementation of the Section I Clause entitled, *Hazardous Material Identification and Material Safety Data*, the Contractor shall obtain, review, and maintain a Material Safety Data Sheet (MSDS) in a readily accessible manner for each hazardous material (or mixture containing a hazardous material) ordered, delivered, stored, or used; and maintain an accurate inventory and history of use of hazardous materials at each use and storage location. After Contract award the Offeror shall submit the information required by paragraph (b) of the Section I Clause referenced above. The MSDS shall conform to the requirements of 29 Code of Federal Regulations (CFR 1910.1200 (g), "Hazard Communication." MSDS shall be readily accessible during each work shift to employees when they are in their work areas.

H.30 PRESERVATION OF ANTIQUITIES AND LAND AREAS

Federal law provides for the protection of antiquities located on land owned or controlled by the U.S. Department of Energy (DOE). Antiquities include Indian graves or campsites, relics, and artifacts. The Contractor shall control the movements of its personnel and its subcontractors' personnel at the job site and provide appropriate training to ensure that any existing antiquities discovered thereon will not be disturbed or destroyed by such personnel. It shall be the duty of the Contractor to report to the Contracting Officer the existence of any antiquities so discovered. The Contractor shall also preserve all vegetation except where such vegetation must be removed for survey or construction purposes. Any removal of vegetation shall be in accordance with the terms of applicable habitat mitigation plans and permits.

H.31 INFORMATION

- (a) Release of Information
 - (1) The Contractor shall be responsible for developing, planning, and coordinating timely dissemination of information regarding performance of work under this Contract.
 - (2) The Contractor shall be responsible for following the U.S. Department of Energy (DOE) guidelines and/or procedures for all oral, written and audio/visual information material prepared for public use, including technical information.
- (b) Unclassified Controlled Nuclear Information (UCNI): Documents originated by the Contractor or furnished by the Government to the Contractor, in connection with this Contract, may contain unclassified controlled nuclear information as determined pursuant to Section 148 of the *Atomic Energy Act of 1954*, as amended. The Contractor shall be responsible for protecting such information from unauthorized dissemination in accordance with applicable DOE regulations, directives, and orders.
- (c) Confidentiality of Information: To the extent that the work under this Contract requires that the Contractor be given access to confidential or proprietary business, technical, or financial information belonging to the Government or other companies, the Contractor shall, after receipt thereof, treat such information as confidential and agrees not to appropriate such information to its own use or to disclose such information to third parties unless specifically authorized by the Contracting Officer in writing. The foregoing obligations, however, shall not apply to:
 - (1) Information, which, at the time of receipt by the Contractor, is in the public domain.
 - (2) Information that is published after receipt thereof by the Contractor or otherwise becomes part of the public domain through no fault of the Contractor.
 - (3) Information that the Contractor can demonstrate was in its possession at the time of receipt thereof and was not acquired directly or indirectly from the Government or other companies.
 - (4) Information that the Contractor can demonstrate was received by it from a third party that did not require the Contractor to hold it in confidence.

The Contractor shall obtain the written agreement, in a form satisfactory to the Contracting Officer, of each employee permitted access to such information, whereby the employee agrees that he/she will not discuss, divulge, or disclose any such information or data to any person or entity except those persons within the Contractor's organization directly concerned with the performance of this Contract.

The Contractor agrees, if requested by the Government, to sign an agreement identical, in all material respects, to the provisions of this subparagraph (c), with each company supplying information to the Contractor under this Contract, and to supply a copy of such agreement to the Contracting Officer. From time to time upon request of the Contracting Officer, the Contractor shall supply the Government with reports itemizing information received as confidential or proprietary and setting forth the company or companies from which the Contractor received such information.

The Contractor agrees that upon request by DOE, it will execute a DOE-approved agreement with any party whose facilities or proprietary data it is given access to or is furnished, restricting use and disclosure of the data or the information obtained from the facilities. Upon request by DOE, Contractor personnel shall also sign such an agreement.

- (d) The Government reserves the right to require the Contractor to include this Clause or a modified version of this clause in any subcontract as directed in writing by the Contracting Officer.

H.32 COSTS ASSOCIATED WITH WHISTLEBLOWER ACTIONS

- (a) Definitions:

Covered Contractors and subcontractors for the purposes of this Section means those contractors and subcontractors with contracts for an excess of \$500,000.

Employee whistleblower action encompasses any action filed by an employee in Federal and State court for redress of a retaliatory act by a contractor and any administrative procedure brought by an employee under 29 Code of Federal Regulations (CFR) Part 24, "Procedures for the Handling of Retaliation Complaints under the Employee Protection Provisions of Six Environmental Statutes and Section 211 of the Energy Reorganization Act of 1974"; 48 CFR subpart 3.9, "Whistleblower Protections for Contractor Employees"; 10 CFR Part 708, "DOE Contractor Employee Protection Program"; or 42 United States Code (USC) 7239, "Whistleblower protection program."

Retaliatory acts means discharge, demotion, reduction in pay, coercion, restraint, threat, intimidation, or other similar negative action taken against an employee by a contractor as a result of an employee's activity protected as a whistleblower activity by a Federal or state statute or regulation.

Settlement and award costs means defense costs and costs arising from judicial orders, negotiated agreements, arbitration, or an order from a Federal agency or board and includes compensatory damages, underpayment for work performed, and reimbursement for a complainant employee's legal counsel.

- (b) For costs associated with employee whistleblower actions where a retaliatory act is alleged against a covered contractor or subcontractor, the Contracting Officer:
 - (1) May authorize reimbursement of costs on a provisional basis, in appropriate cases;

- (2) Must consult with the DOE Office of General Counsel whistleblower cost point of contact before making a final allowability determination; and
 - (3) Must determine allowability of defense, settlement, and award costs on a case-by-case basis after considering the terms of the contract, relevant cost regulations, and the relevant facts and circumstances, including Federal law and policy prohibiting reprisal against whistleblowers, available at the conclusion of the employee whistleblower action.
- (c) Covered contractors and subcontractors must segregate legal costs including costs of in-house counsel, incurred in the defense of an employee whistleblower action so that the costs are separately identifiable.
- (d) If a Contracting Officer provisionally disallows costs associated with an employee whistleblower action for a covered contractor or subcontractor, funds advanced by the U.S. Department of Energy (DOE) may not be used to finance costs connected with the defense, settlement, and award of an employee whistleblower action.
- (e) Contractor defense, settlement, and award costs incurred in connection with the defense of suits brought by employees under Section 2 of the *Major Fraud Act of 1988* are excluded from coverage of this Section.

H.33 LITIGATION MANAGEMENT PLAN

The Contractor shall prepare a Litigation Management Plan that shall be submitted to the Contracting Officer for approval within ninety (90) days following Contract award. The purpose of the Plan will be to control the cost of litigation and implement the DOE policy favoring the use of Alternative Dispute Resolution (ADR) techniques where appropriate and beneficial to the Government. The Litigation Management Plan should, at a minimum, follow the procedures and cost guidelines in the policy statement published in the Federal Register on April 3, 1996 (61 FR 147.63). The Plan should also cover legal costs not connected with litigation. The Plan will be revised from time to time to conform to litigation management and ADR policies established by DOE (Table C.5-1.1, Deliverable H.2). **(152)**

H.34 ALTERNATIVE DISPUTE RESOLUTION

The U.S. Department of Energy (DOE) and the Contractor both recognize that methods for fair and efficient dispute resolution are essential to the successful and timely achievement of critical milestones and completion of all Contract requirements. To facilitate the prevention and early resolution of disputes, the parties agree to the following Alternative Dispute Resolution (ADR) provisions:

- (a) Dispute Avoidance:
- (1) DOE and the Contractor agree to participate in a partnering workshop to be conducted by an experienced professional jointly agreed upon by the parties, within 60 days after Contract award.
 - (2) The parties agree to jointly select a "standing neutral" within 30 days of completion of the partnering workshop. The "standing neutral" will be available to help resolve disputes, as they arise. This can be an individual, a board comprised of three independent experts, or a company with specific expertise in the Contract area. If a "standing neutral" cannot be agreed upon, the DOE Office of Dispute Resolution will make a selection. The specific ADR processes and procedures, as well as the process for selecting the "standing neutral" will be determined at the partnering workshop.

(b) Early Resolution of Disputes:

- (1) DOE and the Contractor shall use their best efforts to informally resolve any dispute, claim, question, or disagreement by consulting and negotiating with each other in good faith, recognizing their mutual interests, and attempting to reach a just and equitable solution satisfactory to both parties. If an agreement cannot be reached through informal negotiations after 30 days, then such agreement shall be referred to the "standing neutral," pursuant to the procedures jointly developed in the partnering workshop.
- (2) The "standing neutral" will not render a decision, but will assist the parties in reaching a mutually satisfactory agreement. In the event the parties are unable after thirty (30) days to reach such an agreement either party may request, and the neutral will render a nonbinding advisory opinion. Such opinion shall not be admissible in evidence in any subsequent proceeding. All costs incurred by the Contractor in connection with this mediation procedure, shall if reasonable, be an allowable cost under this Contract. Section J, Attachment N, "Alternative Dispute Resolution" provides mutual agreement for Standing Neutral procedures. **(147)**

(c) Formal Complaint:

If the dispute is not resolved through the "standing neutral" process, no later than thirty (30) days after the completion of said process either party may proceed under the Section I Clause, "Disputes."

H.35 LOBBYING RESTRICTION (ENERGY AND WATER DEVELOPMENT APPROPRIATION ACT, 2000)

The Contractor agrees that none of the funds obligated on this award shall be expended, directly or indirectly, to influence Congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in the *Anti-Lobbying Act* (18 United States Code (USC 1913). This restriction is in addition to those prescribed elsewhere in statute and regulation.

H.36 COOPERATION DURING TRANSITION TO OPERATIONS

The Contractor shall cooperate with U.S. Department of Energy (DOE) and other contractor(s) as the Contracting Officer directs in planning for and carrying out the transition from the Waste Treatment and Immobilization Plant (WTP) to a future operations contractor. The Contractor shall take all necessary steps to effectuate a smooth transition of responsibility for operation of the WTP to such entity(s) and to transfer to such entity all permits, WTP operating documentation, other technical data, and government furnished property and equipment in the possession of the Contractor in accordance with direction of the Contracting Officer. The Contractor shall prepare, as directed by the Contracting Officer, a plan for smooth transition of property, documentation, and WTP personnel necessary for operation of the WTP to such contractor as the Contracting Officer directs. The transition will occur upon completion of commissioning activities as approved by the Contracting Officer.

H.37 ADVANCE UNDERSTANDING ON COSTS

The U.S. Department of Energy (DOE) and the Contractor will, within 60 days after Contract award, reach advance understandings regarding certain costs under this Contract. Such advance understandings enable both DOE and the Contractor to determine the allocability, allowability, and reasonableness of such costs prior to their incurrence, thereby avoiding subsequent disallowances and disputes, and facilitating prudent expenditure of public funds. It is expected that costs covered by such advance understandings will include employee travel and relocation, corporate home office, employee compensation and benefits, and facilities capital costs of money. Generally, DOE expects the incurrence of costs to be consistent with the

Contractor's corporate-wide policies consistently and uniformly applied throughout its domestic operations subject to the specific limitations, conditions, and exclusions of FAR subpart 31.2 of FAR, "Contracts with Commercial Organizations," as supplemented by *Department of Energy Acquisition Regulation (DEAR) 931.2*, "Contract with Commercial Organizations," and such understanding shall be consistent with DOE Order 350.1, *Contractor Human Resource Management*. Such policies will be summarized and submitted to DOE for approval. Advance understandings will be appended to this Contract in Section J, Attachment J, "Advance Understanding on Costs."

H.38 ADDITIONAL RIGHTS IN INVENTIONS AND TECHNICAL DATA

In addition to rights specified elsewhere, the Contractor agrees that it will, upon request by the Government, grant to the Government, and others acting on behalf of the Government, an irrevocable, nonexclusive, paid-up license in and to any inventions or discoveries regardless of when conceived or actually reduced to practice or acquired by the Contractor and any other intellectual property, including technical data, which are owned or controlled by the Contractor, at any time through the completion of this Contract. The right of the Government shall apply to inventions, discoveries, and intellectual property, including technical data that are incorporated or embodied in the construction or design of the Waste Treatment and Immobilization Plant (WTP) or which are utilized in the operation of the WTP or which cover articles, materials, or products manufactured at the WTP. The acceptance or exercise by the Government of the aforesaid rights and license shall not prevent the Government at any time from contesting the enforceability, validity, or scope of, or title to, any rights or patents or other intellectual property herein licensed.

The Contractor shall take all necessary steps to assign permits, authorizations, leases, and any licenses in any third party intellectual property for design, construction, operation, and closure of the WTP to U.S. Department of Energy (DOE) or such other third party as DOE may designate.

H.39 PATENT INDEMNITY – SUBCONTRACTS

Except as otherwise authorized by the Contracting Officer, the Contractor must obtain indemnification of the Government and its officers, agents, and employees against liability, including costs, for infringement of any United States patent (except a patent issued upon an application that is now or may hereafter be withheld from issue pursuant to a secrecy order by the Government) from the Contractor's subcontractors for any contract work subcontract in accordance with Federal Acquisition Regulation (FAR) 52.227-3, "Patent Indemnity."

H.40 GOVERNMENT-FURNISHED PROPERTY AND GOVERNMENT-FURNISHED EQUIPMENT

A list of government-furnished property and government-furnished-equipment is provided in Section J, Attachment C, "Government-Furnished Property and Government-Furnished Equipment."

H.41 THIRD PARTIES

Nothing contained in this Contract or its amendments shall be construed to grant, vest, or create any rights in any person not a party to this Contract. This provision is not intended to limit or impair the rights, which any person may have under applicable Federal Statutes.

H.42 CONTRACT DUE DATES

All due dates for deliverables, submittals, or any other requirement in this Contract that fall on a non-Federal workday and/or a Hanford Site closure day shall be deemed to be due on the next Federal/Hanford workday.

H.43 U.S. DEPARTMENT OF ENERGY MENTOR-PROTÉGÉ PROGRAM

The Contractor may participate in the Department of Energy Mentor-Protégé Program to encourage it to assist firms certified under Section 8(a) of the *Small Business Act* by U.S. Small Business Administration, other small disadvantaged businesses, women-owned small businesses, Historically Black Colleges and Universities and Minority Institutions, other minority institutions of higher learning, and small business concerns owned and controlled by service disabled veterans in enhancing their business abilities. The applicable regulations governing the Contractor's participation in this Program are provided at 48 CFR 919.70, "The Department of Energy Mentor-Protégé Program."

H.44 USE OF THE U.S. DEPARTMENT OF ENERGY SECURITY BADGE AT CONTRACTOR WTP FACILITIES

DOE security badges are required to be conspicuously worn above the waist by all personnel accessing the Contractor WTP Facilities located in the Tri-Cities, Washington area.

H.45 RESERVED (143)

H.46 DOE O 226.1B, IMPLEMENTATION OF DEPARTMENT OF ENERGY OVERSIGHT POLICY (069) (108) (128) (310) (352)

The Contractor shall comply with the Contractor Requirements Document of DOE O 226.1B, and provide timely notification to the DOE Contracting Officer regarding significant assurance system changes prior to the changes being made. DOE O 226.1B will be implemented within the limitations of DOE-approved assumptions and direction for prior revisions (referenced in the following: CCN: 137766, "Contract No. DE-AC27-01RV14136 – Implementation of U.S. Department of DOE O 226.1, 'Implementation of Department of Energy Oversight Policy', Bechtel National, Inc. Plan and Schedule," dated April 14, 2006; CCN: 141622, "Contract No. DE-AC27-01RV14136 – Approval of Bechtel National, Inc. (BNI) Plan and Schedule for Implementation of U.S. Department Energy (DOE) O 226.1, 'Implementation of Department of Energy Oversight Policy.'" dated June 26, 2006; CCN: 143142, "Contract No. DE-AC27-01RV14136 – Response to Comments on Hanford Tank Waste Treatment and Immobilization Plant Assurance Program Description," dated August 9, 2006; and CCN: 144316, "Contract No. DE-AC27-01RV14136 – Approval of Bechtel National, Inc. (BNI) Assurance System Description," dated August 18, 2006).

H.47 PROTECTION OF PERSONALLY IDENTIFIABLE INFORMATION (073)

(a) Definitions:

- (1) *Personally Identifiable Information (PII):* Any information about an individual maintained by DOE or its contractors, (e.g., medical, education, financial, criminal or other employment history and information, etc.), which can be used to distinguish or trace an individual's identity, (e.g., name, social security numbers, date and place of birth, mother's maiden name, biometric records, etc.), and any other personal information which is linked or linkable to an individual.
- (2) *PII Incident:* Any suspected or confirmed cyber security or physical security incident involving PII.

(b) Requirements:

- (1) All suspected or confirmed cyber security and physical security incidents involving PII are to be reported to the DOE Joint Cybersecurity Coordination Center – Cyber Incident Response Capability (JC3-CIRC) within 45 minutes of discovering the incident. Reports to the JC3-CIRC may be sent via email to

circ@jc3.doe.gov or by phone to 1-866-941-2472. The JC3-CIRC website is <http://energy.gov/cio/services/incident-management>.

- (2) All JC3-CIRC Incident Reports must be immediately provided to the DOE Richland Operations Office Safeguards and Emergency Services Division and DOE Office of River Protection Manager or designee.
- (3) All suspected or confirmed cyber security and physical security incidents involving PII shall be reported telephonically within 45 minutes of discovering the incident to (i) the EM-3 Chief Operating Officer; and (ii) the ORP Manager, ORP Deputy Manager, or off-hours duty officer.
- (4) While an informal, telephonic notice may occur, all notices must be in writing and signed by a senior Contractor official. Notices must at a minimum contain factual information describing both the circumstances surrounding the loss and the information that was compromised. All notifications shall include the name and telephone number of a contact person.
- (5) Appropriate steps shall be taken to minimize identity theft risks to the affected individuals.
- (6) The Contractor shall notify all employees and others affected by the PII loss unless after consultation with law enforcement officials, the Assistant Secretary for Environmental Management determines that notification will significantly compromise the investigation.

H.48 DELETED (175)

H.49 CORPORATE OPERATING EXPERIENCE DOE O 210.2A, (077) (128) (310) DOE CORPORATE OPERATING EXPERIENCE PROGRAM

The Contractor is responsible for complying with the Contractor Requirements Document of DOE O 210.2A, *DOE Corporate Operating Experience Program*.

H.50 OFFICIAL USE ONLY INFORMATION (087) (091)

- (a) Official Use Only information is certain unclassified information that may be exempt from public release under the *Freedom of Information Act* and has the potential to damage governmental, commercial, or private interests if disseminated to persons who do not need to know the information to perform their jobs or other DOE authorized activities.
- (b) The Contractor shall comply with the Contractor Requirements Documents of DOE O 471.3, *Identifying and Protecting Official Use Only Information*, and DOE M 471.3-1, *Manual for Identifying and Protecting Official Use Only Information*, to determine whether unclassified documents created and/or handled in the performance of this Contract are Official Use Only information, and ensure that documents determined to contain Official Use Only information are marked appropriately.

H.51 PROPERTY MANAGEMENT SYSTEM (120)

The Contractor shall provide major changes/revisions to the approved Property Management System to the Office of River Protection (ORP) for review prior to implementation. In addition, a copy of the Property Management System shall be provided to ORP annually (Table C.5-1.1, Deliverable H.4). **(152)**

H.52 REPORT AND APPROVAL REQUIREMENTS FOR CONFERENCE RELATED ACTIVITIES

The Contractor agrees that:

- (a) The Contractor shall ensure that contractor-sponsored conferences reflect the DOE/National Nuclear Security Administration's commitment to fiscal responsibility, appropriate stewardship of taxpayer funds, and support the mission of DOE/National Nuclear Security Administration as well as other sponsors of work. In addition, the Contractor will ensure conferences do not include any activities that create the appearance of taxpayer funds being used in a questionable manner.
- (b) For the purposes of this clause, "conference" is defined in Attachment 2 to the Deputy Secretary's memorandum of August 17, 2015 entitled "Updated Guidance on Conference-Related Activities and Spending."
- (c) Contractor-sponsored conferences include those events that meet the conference definition and either or both of the following:
 - (1) The Contractor provides funding to plan, promote, or implement an event, except in instances where a contractor:
 - (i) Covers participation costs in a conference for specified individuals (e.g., students, retirees, speakers, etc.) in a total amount not to exceed \$10,000 (by individual contractor for a specific conference); or
 - (ii) Purchases goods or services from the conference planners (e.g., attendee registration fees, renting booth space).
 - (2) The Contractor authorizes use of its official seal, or other seals/logos/ trademarks to promote a conference. Exceptions include non-Management and Operations M&O contractors who use their seal to promote a conference that is unrelated to their DOE contract(s) (e.g., if a DOE IT contractor were to host a general conference on cyber security).
- (d) Attending a conference, giving a speech, or serving as an honorary chairperson does not connote sponsorship.
- (e) The Contractor will provide information on conferences they plan to sponsor with expected costs exceeding \$100,000 in the Department's Conference Management Tool, including:
 - (1) Conference title, description, and date;
 - (2) Location and venue;
 - (3) Description of any unusual expenses (e.g., promotional items);
 - (4) Description of contracting procedures used (e.g., competition for space/support);
 - (5) Costs for space, food/beverages, audio visual, travel/per diem, registration costs, recovered costs (e.g., through exhibit fees); and
 - (6) Number of attendees.
- (f) The Contractor will not expend funds on the proposed contractor-sponsored conferences with expenditures estimated to exceed \$100,000 until notified of approval by the Contracting Officer.
- (g) For DOE-sponsored conferences, the Contractor will not expend funds on the proposed conference until notified by the Contracting Officer.

- (1) DOE-sponsored conferences include events that meet the definition of a conference and where the Department provides funding to plan, promote, or implement the conference and/or authorizes use of the official DOE seal or other seals/logos/trademarks to promote a conference. Exceptions include instances where DOE:
 - (i) Covers participation costs in a conference for specified individuals (e.g., students, retirees, speakers, etc.) in a total amount not to exceed \$10,000 (by individual contractor for a specific conference); or
 - (ii) Purchases goods or services from the conference planners (e.g., attendee registration fees; renting booth space); or provide funding to the conference planners through Federal grants.
 - (2) Attending a conference, giving a speech, or serving as an honorary chairperson does not connote sponsorship.
 - (3) The Contractor will provide cost and attendance information on their participation in all DOE-sponsored conferences in the DOE Conference Management Tool.
- (h) For non-contractor sponsored conferences, the Contractor shall develop and implement a process to ensure costs related to conferences are allowable, allocable, reasonable, and further the mission of DOE/National Nuclear Security Administration. This process must at a minimum:
- (1) Track all conference expenses.
 - (2) Require the Laboratory Director (or equivalent) or Chief Operating Officer approve a single conference with net costs to the contractor of \$100,000 or greater.
- (i) Contractors are not required to enter information on nonsponsored conferences in DOE'S Conference Management Tool.
 - (j) Once funds have been expended on a nonsponsored conference, contractors may not authorize the use of their trademarks/logos for the conference, provide the conference planners with more than \$10,000 for specified individuals to participate in the conference, or provide any other sponsorship funding for the conference. If a contractor does so, its expenditures for the conference may be deemed unallowable. **(356)**

H.53 LOW-ACTIVITY WASTE FACILITY, BALANCE OF FACILITIES, AND ANALYTICAL LABORATORY/DIRECT-FEED LOW-ACTIVITY WASTE COMPLETION (CLINS 1.0 AND 2.0) (384)

- (a) The following provisions pertain to Contract Line Item Number (CLIN) 1.0, Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory completion and CLIN 2.0, direct-feed low-activity waste (DFLAW), only. Nothing included below shall be construed in such a manner as to modify or supersede any term and/or condition of this Contract, which remain in full force and effect. Any inconsistency between provisions in Deliverable H.53 and any other term or condition of this Contract shall be resolved pursuant to Contract Clause I.12, FAR 52.215-8, "Order of Precedence—Uniform Contract Format" (October 1997).
- (b) **Government Furnished Services and Information.** The parties acknowledge that provision of these services and information is essential to the Contractor's ability to

perform CLINs 1.0 and 2.0 and recognize that either party's failure to comply may constitute as basis for equitable relief pursuant to the "Changes" clause of this Contract.

- (1) All Contractor requested approvals and/or requests for information will be provided and/or replied to by DOE within 30 calendar days, except as otherwise stated in this Contract.
 - (2) DOE will prioritize CLIN 1.0 and 2.0 regulatory reviews for permits, Temporary Authorization (TA) requests, clarifications, and regulatory approvals in support of the baseline schedule. The baseline project schedule shall reflect typical DOE time allotments for these items. DOE will assert its best efforts to support a total review cycle by ORP and Ecology of one (1) year. DOE will support prioritization of regulatory reviews of Temporary Authorizations (TAs) to facilitate a response within sixty (60) days of receipt of an acceptable request from the Contractor.
 - (3) All Contractor requests for code deviations and Basis of Design Change Notices (BODCN) will be responded to by DOE within thirty (30) calendar days.
 - (4) Any requirements, codes, standards, and regulations and modifications to performance requirements invoked after modification (384) is signed will be provided for the Contractor to assess cost and schedule impacts consistent with the terms and conditions of this Contract.
- (c) Critical Design Inputs. The following design parameters form a basis for the cost and schedule targets as set forth in Section B-2-F. It is acknowledged by the parties that changes to these critical design inputs may materially impact the Contractor's ability to complete CLIN 2.1 and give rise to relief pursuant to the "Changes" Clause of this Contract.
- (1) Preliminary Hazard Category 3 (HC-3) designation of the Direct Feed Low Activity Waste (DFLAW) Effluent Management Facility (EMF) and preliminary Seismic Category IV (SC-IV) designation of the EMF, low point drain tank, valve/jumper vault, and transfer lines.
 - (2) The Waste Acceptance Criteria (WAC) and design inputs per 15-WTP-0023, "Contract No. DE-AC27-01RV14136 – Transmittal of the Revised Design," dated March 17, 2015, are the inputs to support design of DFLAW. The flow design inputs represent an acknowledgement of the ability to handle the stated transfer volumes from EMF to either the Liquid Effluent Retention Facility/Effluent Treatment Facility or return to the double-shell tank.
- (d) Assessments. DOE recognizes that numerous assessments impact the Contractor's ability to perform. This Contract's pricing is predicated on the number of assessments remaining generally constant with the actual experience during 2012–2015. Based on this the DOE WTP Federal Project Director will implement assessment schedule guidance that provides parameters to reduce disruption to project execution. The DOE WTP Federal Project Director will approve all internal ORP assessments prior to implementation on the WTP.
- (e) Issue Resolution. DOE and Contractor recognize that protracted issue resolution impedes progress to timely issue resolution that may have cost or schedule impact. If issue resolution is not achieved within thirty (30) working days at the Contractor/DOE working level the issue will be raised to the Contractor's Project Manager and DOE's Federal Project Director for input and resolution.
- (f) Funding Profile Deviation. Funding consistent with the funding profile, Section B, Clause B.6, "Equitable Adjustments to Cost, Performance Incentives, Schedules and

Fees," is essential to the Contractor's ability to meet DOE's goals and objectives contained within this agreement. Deviations from the funding profile resulting in a material impact to the Contractor's ability to perform may form a basis for equitable relief pursuant to Section B, Clause B.6. In such an event, the Contractor agrees to promptly notify DOE of such impacts and DOE agrees to assert its best effort to equitably resolve said impacts within 180 days of receipt. In addition, if significant increases to the project funding profile are realized the available award fee amounts will be adjusted accordingly.

- (g) Project Services Allocation Administration. Project Services (PS) consists of WTP Project scope that is not directly attributable to one of the end-product facilities (Pretreatment, High-Level Waste, Low-Activity Waste, Balance of Facilities and Analytical Laboratory.). PS is traditionally level of effort supporting scope, such as, Project Management, Human Resources, Project Controls, Accounting, Information Systems and Technology, ES&H, Quality Assurance, Administrative Services, Security, Support Services, etc.

The current control point funding process that aligns to the end-product facilities drove the establishment of a methodology to allocate the PS costs to the funding sources. The allocation process considers the actual costs in each end-product facility and proportionally allocates the PS costs to each facility for funds management and invoicing purposes.

Effective with Contract Modification (384) and the establishment of the CLIN structure, an annualized PS allocation value has been incorporated into the total estimated contract cost value for CLIN 1.0, which incorporates the associated PS allocation for both CLIN 1.0 and CLIN 2.0. Table 1 in Clause B. 10 identifies the contract basis for the PS allocation to CLIN 1.0. The actual annual PS allocation percentage to CLIN 1.0 is dependent upon multiple variables, such as, funding availability and relative value of facility scope and costs driven by project priorities. An annual contract alignment adjustment resulting from the actual CLIN 1.0 PS allocation being a greater or lesser percentage than that shown in Table 1 is allowable, to align Contract value with the actualized annual fiscal year-end PS allocation to CLIN 1.0.

H.54 SAFETY CONSCIOUS WORK ENVIRONMENT

The Contractor shall establish, maintain, and promote a strong safety culture and Safety Conscious Work Environment, including utilization of programs for Employee Concerns, Integrated Safety Management, and Differing Professional Opinions. Emphasis shall be placed on Leadership, Employee Engagement, and Organizational Learning behaviors and values consistent with DOE G 450.4-1C, *Integrated Safety Management System Guide*, Attachment 10. Policies and processes that promote a work environment where employees are encouraged to raise safety concerns shall be rigorously enforced and actions taken to mitigate the potential for a chilling effect.

SECTION J
LIST OF ATTACHMENTS

SECTION J

LIST OF ATTACHMENTS

TABLE OF CONTENTS

| Section | Description |
|----------------|---|
| Attachment A | List of Acronyms |
| Attachment B | Reserved |
| Attachment C | Government-Furnished Property and Government-Furnished Equipment |
| Attachment D | Small Business Subcontracting Plan |
| Attachment E | List of Applicable Directives (List B-DEAR 970.5204.78) |
| Attachment F | Key Personnel |
| Attachment G | Performance Guarantee Agreement |
| Attachment H | Tank Farm Contractor Staff and Subcontractors Employed on the WTP Project |
| Attachment I | Reserved |
| Attachment J | Advance Understanding on Costs |
| Attachment K | Listing of WTP Conceptual Design and Supporting Information |
| Attachment L | Small Disadvantaged Business Participation Program Targets |
| Attachment M | Davis-Bacon Wage Determination |
| Attachment N | Alternative Dispute Resolution |
| Attachment O | List of Exclusions Under FAR 52.225-11 (b)(3) Buy American Act — Construction Materials Under Trade Agreements |
| Attachment P | Completion Definition Sheets for Incentive Fee C.1 Activity Milestone Completion Incentive |
| Attachment Q | DFLAW Design Completion Criteria Incentive Definitions (350) |

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT A – LIST OF ACRONYMS

The following list of acronyms may be used in this contract.

| | |
|---------|--|
| ACWP | Actual Cost of Work Performed |
| ADR | Alternative Dispute Resolution |
| AFL-CIO | American Federation of Labor-Congress of Industrial Organizations |
| ALARA | As Low As Reasonably Achievable |
| ASME | American Society of Mechanical Engineers |
| ANSI | American National Standards Institute |
| BCWP | Budgeted Cost of Work Performed |
| BCWS | Budgeted Cost of Work Scheduled |
| B&R | Budgeting and Reporting |
| CD-ROM | Compact Disc-Read Only Memory |
| CERCLA | <i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i> |
| CFR | Code of Federal Regulations |
| CO | Contracting Officer |
| COR | Contracting Officer Representative |
| CPI | Cost Performance Index |
| CPIF | Cost Plus Incentive Fee |
| CRD | Contracts Requirements Document |
| CSPI | Cost and Schedule Performance Index |
| DEAR | Department of Energy Acquisition Regulation |
| DFLAW | Direct-Feed Low-Activity Waste |
| DNFSB | Defense Nuclear Facilities Safety Board |
| DOE | U.S. Department of Energy |
| DQO | Data Quality Objective |
| ECOLOGY | Washington State Department of Ecology |
| EMR | Experience Modification Rate |
| EPA | U.S. Environmental Protection Agency |
| EPCRA | <i>Emergency Planning and Community Right-To-Know Act of 1986</i> |
| ERISA | <i>Employee Retirement Income Security Act of 1974</i> |
| ES&H | Environment(al), Safety, and Health |
| ESQ&H | Environment(al), Safety, Quality and Health |
| FAR | Federal Acquisition Regulation |
| FOCI | Foreign Ownership, Control or Influence |
| FY | Fiscal Year |
| HCA | Head of the Contracting Activity |
| HLW | High-Level Waste |
| HUBZone | Historically Underutilized Business Zone |
| HWMA | <i>Hazardous Waste Management Act</i> |
| ICD | Interface Control Document |
| ISMS | Integrated Safety Management System |
| JOBBS | Job Opportunities Bulletin Board System |
| LAW | Low-Activity Waste |
| LDR | Land Disposal Restrictions |
| MEPP | Multiple Employer Pension Plan |
| MS | Mail Stop |
| MSDS | Material Safety Data Sheet |
| MTG | Metric Tons of Glass |
| NEPA | <i>National Environmental Policy Act of 1969</i> |
| NQA | Nuclear Quality Assurance |
| NOC | Notice of Construction |
| NOV | Notice of Violation |

| | |
|-------|--|
| NOAV | Notice of Alleged Violation |
| NRC | Nuclear Regulatory Commission |
| NTE | Not to Exceed |
| OCI | Organizational Conflict of Interest |
| OPSEC | Operations Security |
| ORP | U.S. Department of Energy, Office of River Protection |
| OSHA | Occupational, Safety and Health Administration |
| PBS | Project Breakdown Structure |
| PSD | Prevention of Significant Deterioration |
| PAAA | <i>Price Anderson Amendments Act of 1988</i> |
| PL | Public Law |
| PCB | Polychlorinated biphenyls |
| PPA | <i>Pollution Prevention Act of 1990</i> |
| ppm | Parts Per Million |
| QARD | Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program |
| RCRA | <i>Resource Conservation and Recovery Act of 1976</i> |
| RFP | Request for Proposal |
| RL | U.S. Department of Energy, Richland Operations Office |
| ROD | Record of Decision |
| RPP | River Protection Project |
| SAS | Safeguards and Security |
| SEB | Source Evaluation Board |
| SF | Standard Form |
| SIC | Standard Industrial Classification |
| SPI | Schedule Performance Index |
| SRD | Safety Requirements Document |
| TBD | To Be Determined |
| TIN | Taxpayer Identification Number |
| TPA | <i>Hanford Federal Facility Agreement and Consent Order</i> (also known as Tri-Party Agreement) |
| TRU | Transuranic (waste) |
| TSCA | <i>Toxic Substances Control Act of 1976</i> |
| TSR | Technical Safety Requirements |
| UCNI | Unclassified Controlled Nuclear Information |
| USC | United States Code |
| WAC | Washington Administrative Code |
| WBS | Work Breakdown Structure |
| WDOH | Washington State Department of Health |
| WTP | Waste Treatment and Immobilization Plant |

**SECTION J – LIST OF ATTACHMENTS
ATTACHMENT B**

Reserved

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT C
GOVERNMENT-FURNISHED PROPERTY AND GOVERNMENT-FURNISHED EQUIPMENT

Government-Furnished Property and Government-Furnished Equipment as referenced in Section C.9,
“Interface Control Documents.”

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT D – SMALL BUSINESS SUBCONTRACTING PLAN

Attachment to
CCN 290519

Attachment

Waste Treatment Plant Project
Small Business Subcontracting Plan

6 Pages
(including coversheet)

**Waste Treatment Plant Project
 SMALL BUSINESS SUBCONTRACTING PLAN**

1. Name of Prime Contractor: Bechtel National, Inc. (BNI)
 Address: 2435 Stevens Center Place
 Richland, WA 99354

2. Prime Contract Number: DE-AC27-01RV14136
 Total Estimated Contract Cost (TECC): \$14,062,312,153
 Contract Period of Performance: 12/11/2000 through 12/31/2022
 Place of Performance: Hanford Site, Richland, WA

Description of Contract Requirements: Bechtel National, Inc. (BNI) is leading a project to design, build, and start up the world's largest complex of waste treatment facilities. The plant will use a process known as vitrification to immobilize some of the 56 million gallons of chemical and radioactive waste now stored in Hanford's 177 aging tanks. The Project team is divided into Engineering, Construction, Operations, and Business areas.

In execution of BNI's responsibilities under the contract for the Hanford Tank Waste Treatment and Immobilization Plant (WTP) Project, BNI will comply with Public Law 95-507, FAR 52.219-8, and FAR 52.219-9 to maximize the utilization of small business (SB) concerns for purchasing goods and services. In compliance with DOE Acquisition Letter 2005-06, dated 3/11/05, the subcontracting base excludes subcontracts involving performance outside of the United States and purchases from Bechtel Corporation and its affiliates. Data sources will be the Bechtel Procurement System (BPS), the B-Card System, and the Bechtel Accounts Payable System.

The following plan provides the WTP Project's Small Business Subcontracting Plan as a percent of the total planned subcontracting effort and the subcontracting effort available:

Total estimated dollars available for subcontracting: \$5,624,924,861 (40% of TECC)

| Category | Subcontracting Planned Dollar Amount | Percentage of Total Estimated Subcontracting Effort |
|---|--------------------------------------|---|
| Total planned and available for subcontracting to SB concerns | \$2,272,469,643 | 40.4% |
| Total planned and available for subcontracting to Small Disadvantaged Business (SDB) concerns (included in SB concern numbers) | \$196,872,370 | 3.5% |
| Total planned and available for subcontracting to Woman-Owned SB (WOSB) concerns (included in SB concern numbers) | \$224,996,994 | 4.0% |
| Total planned and available for subcontracting to Historically Underutilized Business Zone (HUBZone) SB concerns (included in SB concern numbers) | \$89,998,797 | 1.6% |
| Total planned and available for subcontracting to Native American Owned (NAB) concerns (includes both Large Business (LB) and SB NABs; SB NAB number are included in SB concerns; LB and SB NAB numbers are included in SDB concerns) | \$56,249,248 | 1.0% |
| Total planned and available for subcontracting to Veteran-Owned SB concerns (included in SB concern numbers) | \$281,246,243 | 5.0% |
| Total planned and available for subcontracting to Service-Disabled Veteran-Owned SB concerns (included in SB concern numbers) | \$8,437,387 | 0.15% |
| Total planned and available for subcontracting to Washington and Oregon-based businesses (includes large and small businesses) | \$1,968,723,701 | 35.0% |

3. Potential Subcontracting Opportunities for Small Business

Items to be subcontracted under this contract and the types of business supplying them are:

| Subcontracting Items | Large Business | Small Business | Disadvantaged Small Business | Woman-Owned Small Business | HUBZone Small Business | Veteran-Owned Small Business | Service-Disabled Veteran-Owned |
|---|----------------|----------------|------------------------------|----------------------------|------------------------|------------------------------|--------------------------------|
| Construction | X | X | X | X | X | X | X |
| <i>Roofing/Siding</i> | X | X | X | | | X | |
| <i>Architectural Specialties/Casework</i> | X | X | X | X | | X | |
| <i>NDE/Other Testing</i> | X | X | | | | | |
| <i>Equipment/Piping Insulation</i> | X | X | X | X | | | |
| <i>Surfacing/Paving</i> | X | | | | | | |
| <i>Surveying</i> | X | X | X | X | X | X | |
| <i>Elevators</i> | X | | | | | | |
| <i>Gas Systems</i> | X | | | | | | |
| <i>Transportation/Freight</i> | X | X | | | | | |
| <i>Misc. Construction Services</i> | X | X | X | X | X | X | X |
| <i>Misc. Construction Equip.</i> | X | X | X | X | X | X | X |
| Pipe/Valve/Fittings | X | X | X | X | X | X | X |
| Civil/Structural/Architectural | X | X | X | X | X | X | |
| <i>Concrete Anchors</i> | X | X | | X | X | | |
| <i>Fabricated Metal Embeds</i> | X | | | | | | |
| Electrical | X | X | X | X | X | X | |
| <i>Fiber Optic/Power Cable</i> | X | X | X | X | | X | |
| <i>ITS Fused Panels</i> | X | | | | | | |
| <i>Through Wall Lighting</i> | X | X | | | | X | |
| Instrumentation & Controls | X | X | X | X | X | X | |
| <i>Laboratory Equipment</i> | X | X | X | X | X | X | |
| <i>Flow Instruments</i> | X | X | | | | | |
| <i>Process Gauges</i> | X | X | | | | | |
| <i>Instrument Hoses</i> | X | X | X | X | | | |
| <i>Transmitters</i> | X | X | | | | | |
| <i>Cesium/Air/Seismic/Contamination Monitors</i> | X | X | | X | | X | |
| Jumpers/Melters | X | X | X | X | | X | |
| <i>Rigid Process Jumpers/Fab</i> | X | | | | | | |
| <i>Pulse Pot Frames</i> | X | | | | | | |
| <i>Gaskets/Connectors</i> | X | X | X | X | | X | |
| <i>Heat Exchangers</i> | X | X | X | X | | X | |
| Mechanical/HVAC | X | X | X | X | X | X | X |
| <i>Cranes/Lift Beams</i> | X | X | | | | | |
| <i>Pressure Vessels/Pumps</i> | X | X | X | X | X | X | X |
| <i>Metal Fabrication</i> | X | X | X | X | X | X | X |
| <i>Piping Racks/Specialty Items</i> | X | X | | X | X | X | X |
| <i>Chiller Plant/Cooling Tower</i> | X | X | X | X | X | X | X |
| <i>Bulges/Absorbers/Tanks</i> | X | X | X | X | X | X | X |
| <i>HEPA/Inline Filters</i> | X | X | | X | | X | |
| <i>Demisters/Humidifiers</i> | X | X | | | | | |
| <i>Expansion Joints/Compressors</i> | X | X | | X | | | |
| <i>Chemicals/Storage</i> | X | X | X | | | X | X |
| Technical/Engineering Services & Office Products | X | X | X | X | X | X | X |

4. Method Used to Develop Subcontracting Goals

The method used to develop the subcontracting goals for small business (SB), small disadvantaged business (SDB), woman-owned small business (WOSB), HUBZone small business (HUBZone), veteran-owned small business (VOSB), and service-disabled veteran-owned small business (SDVOSB) concerns is described as follows:

To establish the subcontracting goals and commitments, the WTP Project gathered available Project information, forecasted probable acquisition needs, and analyzed Project estimates. The Project also used its collective DOE experience to determine potential requirements and contingencies. The Project's subcontracting goals are both realistic and attainable. The goals will be reached by:

- Utilizing acquisition procedures to ensure participation by small business concerns
- Requiring the inclusion of participation by appropriate small business concerns as a proposal/bid requirement in future procurements.

5. Methods Used to Identify Potential Sources for Solicitation

The method used to identify potential sources for solicitation purposes is as follows:

- Utilize the System for Award Management (SAM.gov) and the Small Business Administration's Dynamic Small Business Search Database.
- Utilize Bechtel's Global Supplier Information System (GSIS).
- Coordinate with other Hanford Site Prime Contractors to seek information on small, small disadvantaged, woman-owned, HUBZone, veteran-owned, and service-disabled veteran-owned small businesses.
- Coordinate with the State and Regional Small Business Administration representatives and resources.
- Participate in various regional small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small businesses trade associations.
- Sponsor and participate in trade fairs to inform small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small businesses about upcoming procurement opportunities.

6. Indirect Costs

Indirect costs are () are not (X) included in the above goals.

7. Administrator of Small Business Subcontracting Plan

The following individual will administer the subcontracting program:

Name: Frank R. Salaman, Acquisition Services Manager
Address: 2435 Stevens Center Place
Richland, WA 99354
Telephone: (509) 371-9561
Email: frsalama@bechtel.com

This individual's specific duties, as they relate to the firm's subcontracting program, are as follows. General overall responsibility for reviewing and monitoring execution of the plan including but not limited to:

- Ensure that source lists of potential subcontracts for which goals are established herein are maintained.
- Ensure that procurement packages are structured to permit small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business concerns to participate to the maximum extent possible.
- Seek out other SB concerns through the use of mass media tools when the number of prospective sources is not adequate.
- Mentor SBs currently under subcontract, enhancing their ability to provide timely, cost-effective, and quality services.
- Attend SB training, monitor program changes to ensure compliance – review, revise, amend applicable procedures.

- Advise other personnel of the purposes of this program and ensure adequate support by all concerned.
- Maintain records showing BNI's performance compared with the goals established herein and submit information on the forms specified in the contract in a timely manner.
- Establish and maintain a relationship with the Small Business Administration and representatives to obtain assistance in finding competent small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business concerns.
- Coordinate with other Hanford Site Prime Contractors to secure data on small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small businesses and their capabilities.
- Report to the WTP Project Director on the progress made towards meeting the Small Business Subcontracting Plan goals and identification of action items to continuously improve on the plan.

8. Implementation

The following efforts will be made to assure that small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business concerns will have an equitable opportunity to compete for subcontracts.

- Identify known potential sources as large concerns, small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business concerns.
- Include small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business concerns in Request for Proposals where such concerns are known to exist and are qualified to supply the item(s) or service being procured.
- Assist all small business concerns in providing management counseling on request.
- Provide sufficient bid solicitation time for preparation of proposals, quantiles, specification, and delivery schedules to facilitate participation.
- Participate in small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business trade fairs and conferences. Provide promotional activities which increase community awareness of subcontracting opportunities.
- Prepare work scopes to develop opportunities which can be bid and executed by all small business concerns.
- Maintain good working relationships with Small Business Administration representatives to obtain assistance and coordination in finding capable SBs.

9. Subcontract Flow-Down

The clause entitled "Utilization of Small Business Concerns" will be included in all subcontracts that offer further subcontracting opportunities and all subcontractors (except small business concerns) who receive subcontracts in excess of \$550,000 (\$1,000,000 for construction of any public facility) will be required to adopt a similar plan.

10. Reports, Studies, and Surveys

The Offeror/Subcontractor will cooperate in any studies or surveys as may be required; submit periodic reports in order to allow the Government to determine the extent of compliance with the subcontracting plan; submit the "Individual Subcontracting Report" (ISR) and "Summary Subcontracting Report" (SSR) in accordance with the instructions on the eSRS website at www.esrs.gov; and ensure that its subcontractors agree to submit reports online utilizing eSRS.

ISR data must be submitted online at www.esrs.gov on a semi-annual basis on or before April 30 and October 31. SSR data must be submitted online at www.esrs.gov on or before October 31.

11. Records

The types of records that will be maintained to demonstrate the procedures adopted to ensure compliance with the requirements and goals of the Small Business Subcontracting Plan include:

- a. Source lists (e.g., SAM.gov and SBA's Dynamic Small Business Search database), guides, and other data that identify small business, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business concerns.
- b. Organizations contacted in an attempt to locate sources that are small, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business concerns.
- c. Records on each subcontract solicitation resulting in an award of more than \$150,000, indicating:
 - o Whether small business concerns were solicited and, if not, why not;
 - o Whether small disadvantaged business concerns were solicited and, if not, why not;
 - o Whether woman-owned small business concerns were solicited and, if not, why not;
 - o Whether HUBZone small business concerns were solicited and, if not, why not;
 - o Whether Native American owned business concerns were solicited and, if not, why not;
 - o Whether veteran-owned small business concerns were solicited and, if not, why not;
 - o Whether service-disabled veteran-owned small business concerns were solicited and, if not, why not;
 - o If applicable, the reason award was not made to a small business concern.
- d. Records of any outreach efforts to contact:
 - o Trade associations
 - o Business development organizations
 - o Conferences and trade fairs to locate small business, small disadvantaged, woman-owned, HUBZone, Native American owned, veteran-owned, and service-disabled veteran-owned small business sources.
- e. Records of internal guidance and encouragement provided to acquisition personnel through:
 - o Workshops, seminars, training, etc.
 - o Monitoring performance to evaluate compliance with the program's requirements.
- f. On a contract-by-contract basis, records to support award data submitted, including the name, address, and business size of each subcontractor.

Signed: Margaret J. McCullough Date: 11/14/16
Typed Name: M. G. McCullough
Company: Bechtel National, Inc., Waste Treatment Plant Project
Title: Project Director

Plan Accepted By: _____ Date: _____
Typed Name: Ronnie L. Dawson
Company: U.S. Department of Energy, Office of River Protection (ORP)
Title: ORP-WTP Contracting Officer

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT E – LIST OF APPLICABLE DIRECTIVES (LIST B-DEAR 970.5204.78)

- (a) Environmental, Safety, and Health (ES&H) requirements appropriate for work conducted under this Contract that have been determined by a U.S. Department of Energy (DOE) approved process to evaluate the work and the associated hazards and identify an appropriately tailored set of standards, practices, and controls:

| DOCUMENT NUMBER | DATE | TITLE |
|---|----------|--|
| | | DELETED (130) |
| | | DELETED (166) |
| RL/REG-97-04 | 08/02 | DELETED (206) |
| RL/REG-97-05 | 07/19/04 | DELETED (206) |
| RL/REG-97-13 | | DELETED (166) |
| RL/REG-98-05 | 07/01/99 | DELETED (206) |
| RL/REG-98-06 | 06/30/99 | DELETED (206) |
| RL/REG-98-14 | 06/29/98 | DELETED (206) |
| RL/REG-99-17 | 04/25/04 | DELETED (206) |
| RL/REG-2000-03 | 05/04/04 | DELETED (206) |
| DOE O 420.1B, contracts requirements document (CRD) | 12/22/05 | Facility Safety (Partial Implementation per CCN: 168377 [U.S. Department of Energy, Office of River Protection {ORP} 07-WTP-306] and CCN: 170076) (133) to include Office of Environmental Interim Policy, “Code of Record for Nuclear Facilities” dated September 3, 2009. (170, 175) |
| DOE O 420.1C, CRD | 12/04/12 | Facility Safety (Partial Implementation per ORP 13-TRS-0014, dated April 26, 2013, and CCN: 260182) to only implement new Maximum Possible Fire Loss threshold values. (310) |
| DOE O 470.2B, CRD | 10/31/02 | Independent Oversight and Performance Assurance Program. (175, 290) |

- (b) Additional Directives applicable to this Contract. The directive(s) or applicable section(s) of the directive(s) are applied as specified in other Sections of this Contract.

| DOCUMENT NUMBER | DATE | TITLE | CROSS REFERENCE |
|---------------------------|---------------|---|--|
| 06-AMD-050 (CCN 144548) | | DELETED (310) | |
| | | Deleted (376) | |
| DOE/EM-0093 | 12/96 | Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms (WAPS), Revision 2 (114) | Contract Clause C.8, Specification 1, 1.2.1.4 and 1.2.2.1.1(175) |
| DOE/RL-94-02, Rev 6 (336) | 06/2014 (336) | Hanford Emergency Management Plan (197, 310) (Revision 6, June 2014) (336) | Contract Clause C.6, Standard 4(j) and Standard(e)(1) Table S7-1 (175, 197, 336) |

| DOCUMENT NUMBER | DATE | TITLE | CROSS REFERENCE |
|--|-----------|---|---|
| DOE M 140.1-1B, CRD | 03/30/01 | Interface with Defense Nuclear Facilities Safety Board. | Contract Clause C.4 (d) (175) |
| DOE O 142.3A, CRD | 10/14/10 | Unclassified Foreign Visits and Assignments Program (047, 124, 204) | The order is effective regardless of comment above at (b) (175) |
| DOE O 205.1A, CRD | | DELETED (194) | |
| DOE M 205.1-2 | | DELETED (175) | |
| DOE M 205.1-5, CRD | | DELETED (194) | |
| DOE M 205.1-6, CRD | | DELETED (194) | |
| DOE M 205.1-7, CRD | | DELETED (194) | |
| DOE M 205.1-8, CRD | | DELETED (194) | |
| DOE O 206.1, CRD | 01/16/09 | DOE Privacy Program (235) | The order is effective regardless of comment above at (b). Contractor shall implement in accordance with CCN: 231161 (321) |
| DOE O 206.2, CRD | 02/19/13 | Identity, Credential, and Access Management (307) | The order is effective regardless of comment above at (b) (307) |
| DOE O 210.2A, CRD | 04/8/11 | DOE Corporate Operating Experience Program (077, 310) | Contract Clause H.49 (175) Refer to Note 10 (310) |
| DOE O 221.1A, CRD | 04/19/08 | Reporting Fraud, Waste, and Abuse to the Office of Inspector General (133) | Refer to Note 3 (175) |
| DOE O 221.2A, CRD | 02/25/08 | Cooperation with the Office of Inspector General (133) | Refer to Note 3 (175) |
| DOE O 226.1B, CRD | 04/25/11 | Implementation of Department of Energy Oversight Policy (069, 108, 310) | Contract Clause H.46 (175) Refer to Note 11 (310) |
| DOE O 231.1B, CRD (363) | 6/27/2011 | Environment, Safety, and Health Reporting (033, 310) | Contract Clause C.6, Standard 1(d)(6) (175, 310) |
| DOE M 231.1-1A, Change 2, CRD (332) | | DELETED (332) | |
| DOE M 231.1-2, CRD | | DELETED (256) | |
| SCRD M 231.1-2 | | DELETED (256) | |

| DOCUMENT NUMBER | DATE | TITLE | CROSS REFERENCE |
|-------------------------------------|----------|--|--|
| SCRD O 232.2 Admin. Change 1 (332) | 8/30/11 | Occurrence Reporting and Processing of Operations Information, Revision 1 (268) | Contract Clause C.6, Standard 1(d)(5) and (6). Contractor shall implement in accordance with CCN 269738 (332) |
| HFID-232-1B | | DELETED (256) | |
| DOE N 234.1, CRD | | DELETED (310) | |
| DOE O 241.1, CRD | | DELETED (310) | |
| DOE/RW-0333P | 10/01/08 | Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program (QARD) – Revision 20 (099, 134) | Contract Clause C.6, Standard 2(a)(2)(v), Standard 5(d), and Standard 7(e)(3)(ii)(A) and Contract Clause C.8, Specification 1, 1.2.1.7, 1.2.2.1.1, and 1.3 (175) |
| DOE O 350.1, Chg 3, CRD | 02/23/10 | Contractor Human Resource Management Program (171, 175) | Contract Clause H.37 (175) |
| DOE/RW-0351 | 5/31/07 | Waste Acceptance System Requirements Document– (WASRD) - Revision 5 (114) | Contract Clause C.6, Standard 2(a)(3)(vii)(E) and Standard 6(c)(2) and Contract Clause C.8, Specification 1, 1.2.1.3 and 1.2.2.1.1 (175) |
| DOE O 413.3A, CRD | | DELETED (271) | |
| DOE M 413.3-4 | | DELETED (271) | |
| DOE O 413.3B, CRD | 11/29/10 | Program and Project Management for the Acquisition of Capital Assets. Refer to Note 7 for implementation (271) | Contract Clause C.3, paragraph (b), sub-paragraph (1), item (ix), C.6, Standard 1, opening paragraph, (a), (b)(3) and (c)(1) and Standard 5(a)(6) and (k) |
| DOE O 414.1C, CRD | 06/17/05 | Quality Assurance (066) | Contract Clause C.6, Standard 7(e)(3)(i) & (iv) (175) |
| DOE 414.1D, CRD, Chg 1 | 05/08/13 | Quality Assurance (349) | The order is effective regardless of comment above at (b) and implemented in accordance with Note 14 (349) |
| DOE O 420.1C, CRD, Chg 1, Chapter V | 02/27/15 | Facility Safety (Partial Implementation Only Chapter V. Cognizant System Engineer Program) (369) | The order is effective regardless of comment above at (b) Implemented for LBL commissioning only in accordance with CCN 276975 |
| DOE O 422.1, CRD | 06/29/10 | Conduct of Operations (207) | The notice is effective regardless of comment above at (b). Contractor shall implement consistent with CCN: 229138. |

| DOCUMENT NUMBER | DATE | TITLE | CROSS REFERENCE |
|-------------------------------------|--|--|---|
| DOE-0223 | Effective the date of modification 384 | RL Emergency Plan Implementing Procedures (384) | Implemented in accordance with 16-CPM-0072 |
| DOE-0336 | 9/15/201 | Hanford Site Lockout/Tag out (384) | Implemented in accordance with 16-CPM-0072 |
| DOE-0343 | 3/26/2013 | Hanford Site Wide Stop Work Order Procedure (384) | Implemented in accordance with 16-CPM-0072 |
| DOE-0346 | | Hanford Site Fall Protection Program (HSFPP) (384) | Implemented in accordance with 16-CPM-0072 |
| DOE-0352 | 11/14/2012 | Hanford Site Respiratory Protection Program (HSRPP) (384) | Implemented in accordance with 16-CPM-0072 |
| DOE-0355 | | Hanford Standardized HAZWOPER Training Program Description (384) | Implemented in accordance with 16-CPM-0072 |
| DOE-0359 | 11/14/2012 | Hanford Site Electrical Safety Program (384) | Implemented in accordance with 16-CPM-0072 |
| DOE-0360 | | Hanford Site Confined Space Procedure (384) | Implemented in accordance with 16-CPM-0072 |
| DOE O 425.1D, Chg 1, CRD | 04/16/10 | Verification of Readiness to Start Up or Restart Nuclear Facilities (033, 190, 310) | Contract Clause C.6, Standard 5(a)(5), (c)(6), (e)(2), (f)(ii), and (g) (175, 310) Contractor shall implement in accordance with CCN: 281821 (363) |
| DOE O 433.1B, CRD (363) Admin Chg 1 | 04/21/10 | Maintenance Management Program for DOE Nuclear Facilities (342) | The order is effective regardless of comment above at (b) and implemented in accordance with Note 13 (342) |
| DOE O 435.1, Chg 1, CRD | 08/28/01 | Radioactive Waste Management | Implementation of this DOE CRD using the graded approach; approved by 05-WED-047; CCN: 136281 satisfies the comment above at (b) (130, 175, 278) |
| DOE M 435.1-1 | 07/09/99 | Radioactive Waste Management Manual | Contract Clause C.8, Specification 2, 2.2.1.13, 2.2.2.23, & 2.4 (175) |
| DOE M 441.1-1, CRD | 03/07/08 | Nuclear Material Packaging | The manual is effective regardless of comment above at (b) (130, 175) |
| DOE O 442.2, CRD | 07/29/11 | Differing Opinions for Technical Issues Involving Environment, Safety, and Health (271) | The order is effective regardless of comment above at (b) and implemented as described in CCN: 246747 |

| DOCUMENT NUMBER | DATE | TITLE | CROSS REFERENCE |
|--|----------|---|---|
| DOE O 442.1A & Supplemented Rev. 3 CRD | 06/06/01 | Department of Energy Employee Concerns Program (029, 293) | The order is effective regardless of comment above at (b) (175) and implemented as described in CCN: 249676 (293) Contractor shall implement in accordance with CCN: 266683 (332) |
| DOE M 442.1-1 CRD | | DELETED (271) | |
| DOE M 450.4-1, CRD | | DELETED (310) | |
| DOE O 458.1, Chg. 2 | | Radiation Protection of the Public and the Environment (384) | Implemented in accordance with 16-CPM-0072 |
| DOE M 470.4-1, CRD | 08/26/05 | Safeguards and Security Program Planning and Management (136, 171) | Refer to Note 1 (175) |
| DOE M 470.4-2A, CRD | | DELETED (310) | |
| DOE M 470.4-4A | 01/16/09 | Information Security Manual (145) | Refer to Note 2 (175) |
| DOE O 471.3, CRD | 4/9/03 | Identifying and Protecting Official Use Only Information (087) | Contract Clause H.50 (175) |
| DOE M 471.3-1, Chg 1, CRD | 4/9/03 | Manual for Identifying and Protecting Official Use Only Information (087, 310) | Contract Clause H.50 (175) Refer to Note 12 (310) |
| DOE O 475.1, CRD | 12/10/04 | Counterintelligence Program (071) | Contract Clause C.6, Standard 8(c) |
| DOE/RW-0511, Volume I, Rev. 4 | 03/07/08 | Integrated Interface Control Document (ICD), High-Level Radioactive Waste and U.S. Department of Energy and Naval Spent Nuclear Fuel to the Civilian Radioactive Waste Management System (114) | Contract Clause C.8, Specification 1,1.2.1.5 and 1.2.2.1.1 (321) |
| DOE O 551.1D, CRD | 04/02/12 | Official Foreign Travel. Refer to Note 4 (141, 175, 283) | Contract Clause I.109 (175) . Implemented in accordance with CCN: 243970, and 12-WTP-0272 (CCN: 251792) and Note 4 (283, 363) |
| DOE-HDBK-1092-2004, Appendix A | 12/2004 | DOE Electrical Safety Handbook. Refer to Note 6 (209) | The order is effective regardless of comment above at (b) |
| RL/REG-2000-04 | | DELETED (215) | |

| DOCUMENT NUMBER | DATE | TITLE | CROSS REFERENCE |
|--------------------------------------|----------|---|--|
| DOE/ORP-2000-06 | | Deleted through Contract Modification M082 (175) | |
| DOE STD 3009 | | DELETED (310) | |
| DOE O 5480.20A, Change 1, CRD | | DELETED (310) | |
| SCSP | 05/9/06 | Richland Regional Office Site Counterintelligence Support Plan Hanford Site - Bechtel National, Inc. (BNI) (071) | Contract Clause C.6, Standard 8(c) (175) |
| DOE-0364 | | DELETED (366) | |
| HNF-EP-0063 | 02/01/11 | Hanford Site Solid Waste Acceptance Criteria (310) | The order is effective regardless of comment above at (b) |
| DOE/RL-92-36 | 11/18/14 | Hanford Site Hoisting and Rigging Manual (342) | The order is effective regardless of comment above at (b) and implemented in accordance with Note 13 |
| DOE/RL-2001-36, Rev 1E, Appendix I.7 | 05/01/11 | Immobilized low-activity waste (ILAW) Special Packaging Authorization of the Hanford Sitewide Transportation Safety Document (310) | Implemented per C.8, Specification 2, 2.2.1.21 and 2.2.2.10 (293) |
| DOE/RL-2002-12 | | Hanford Radiological Health and Safety Document (384) | Implemented in accordance with 16-CPM-0072 |
| DOE O 151.1C, CRD | 11/02/05 | Comprehensive Emergency Management System (310) | Implemented in accordance with DOE/RL-94-02 |
| DOE O 473.3, CRD | 06/29/11 | Protection Program Operations (310) | The order is effective regardless of comment above at (b) |
| DOE O 426.2, CRD | 04/21/10 | Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities (310) | Contract Clause C.3(f)(6) (321) Refer to Note 8 (310) |
| DOE O 225.1B, CRD | 03/04/11 | Accident Investigations (310) | Refer to Note 9 (310) |
| DOE STD 3009 | 1994 | Preparation Guide for DOE Nonreactor Nuclear Facility Safety Analysis Reports (Change Notice 3, March 2006) (029, 152, 321) | Contract Clause C.6, Standard 9, paragraph 2 (321) |
| DOE-HDBK-1092-2013, Appendix D | 07/2013 | DOE Electrical Safety Handbook. Refer to Note 15 (353) | The order is effective regardless of comment above at (b) |

| DOCUMENT NUMBER | DATE | TITLE | CROSS REFERENCE |
|-----------------|---------|---|---|
| DOE STD 1195 | 09/2016 | Implement clause 11.4 (inclusive of sub-clauses 11.4.1 through 11.4.9) of International Electrotechnical Commission (IEC) standard 61511-1 (Edition 2.0) concurrent with DOE-STD-1195-2011 as a means of achieving Safety Integrity Level – 2 (SIL-2) for low demand simple SIFs without requiring redundancy, particularly with respect to final control devices such as valves. | Implemented with CLIN 1 Negotiations (384) |

Notes:

1. Implementation of DOE M 470.4-1, CRD includes the following Sections:
 - Section A, “Safeguards and Security Program Planning and Management”
 - Section F, “Performance Assurance Program”
 - Section G, “Survey, Review, and Self-Assessment Programs”
 - Section I, “Facility Clearances and Registration of Safeguards and Security Activities”
 - Section J, “Safeguards and Security Training Program”
 - Section K, “Safeguards and Security Awareness Program”
 - Section N, “Incidents of Security Concern”

Please refer to CCN: 182640 for detailed information on the implementation of each section.

2. Contractor scope of DOE M 470.4-4A is limited to the Operations Security (OPSEC) requirements listed in ORP letter 08-ESQ-318 (CCN: 192555), which states that the following actions are required:
 - Appoint an OPSEC representative;
 - Ensure the OPSEC representative attends Hanford OPSEC Working Group meetings on a quarterly basis;
 - Obtain OPSEC/Security Awareness Posters from Project Hanford Management Contracts Safeguards and Security Awareness Manager and ensure they are posted in BNI working areas; and
 - Annually conduct three OPSEC reviews/assessments of BNI work areas.
3. The Contractor shall implement DOE O 221.1, CRD and DOE O 221.2, CRD into all new subcontract awards beginning January 1, 2003, except for those acquisitions for

commercial items and for any new acquisition awards under \$100,000. DOE O 221.1A, DOE and DOE O 221.2A, CRD shall be implemented into all new subcontract awards beginning October 1, 2008, using the same criteria. Flow down of the requirements of these DOE order CRDs to subcontractors using these criteria meets the intent of ensuring compliance with the DOE order CRD requirements.

4. This order deemed to be the "subsequent version of the order in effect at the time of award" per DEAR 952.247-70. Implementation shall include compliance with DOE Office of Environmental Management Standing Operating Policy Procedure 66, Official Foreign Travel, Revision 0, with the exception of Standing Operating Policy Procedure Sections 7.D and 9.B.5.
5. DELETED **(336)**
6. The Contractor shall implement DOE-HDBK-1092-2004, Appendix A, as described in 10-WTP-327 (CCN: 229364) and CCN: 229141.
7. The Contractor shall implement DOE O 413.3B, as described in CCN: 242792 and 12-WTP-0159.
8. The Contractor shall implement DOE O 426.2, CRD, as described in CCN: 249671.
9. The Contractor shall implement DOE O 225.1B, CRD, as described in CCN: 249671 **(363)**.
10. The Contractor shall implement DOE O 210.2A, CRD, as described in CCN: 249671.
11. The Contractor shall implement DOE O 226.1B, CRD, as described in CCN: 249671.
12. The Contractor shall implement DOE M 471.3-1, Chg 1, CRD, as described in CCN: 249671.
13. The Contractor shall implement DOE O 433.1B, CRD Admin Chg 1 and DOE-RL-92-36, as described in CCN: 202791. **(363)**
14. The Contractor shall implement DOE O 414.1D, CRD, Chg 1, as described in CCN: 222763 and 15-QAD-0014.
15. The Contractor shall implement DOE-HDBK-1092-2013, Appendix D as described in 14-CPM-0231 (CCN: 274546) and CCN: 257008. Unlisted equipment that is "Low-Hazard," defined as "Class X.0 or X.1" in Appendix D of the DOE handbook for *Electrical Safety*, may be labeled or identified as such (e.g., "Unlisted Approval Not Required," "Low-Hazard," or "Class X.0, X.1") to indicate it is equipment that does not require field evaluation and approval. This exemption will only apply to Class X.0 and Class X.1 equipment that are connected to a power source of less than 50 volts and less than 1,000 volt-amps.

**SECTION J – LIST OF ATTACHMENTS
 ATTACHMENT F – KEY PERSONNEL**

| Key Position (M110) (M130) (M133) (M147) (M152) (M158) (A164) (M181) (206) (208) (242) (261) (276) (291) (303) (308) (332) (336) (353) (366) (369) (376) | Current Employee |
|---|-------------------------|
| Project Director | Margaret McCullough |
| Project Manager | Joseph St. Julian |
| Manager of Design, Operations & Integration | Alan Dobson |
| Manager of Environment, Safety & Health | Phillip Worley |
| Manager of Nuclear Safety Engineering | Robert (R.T.) Brock |
| Manager of Quality | James Tibble |
| Plant Operations Manager | Ken Wells |
| Project Technical Director & Design Authority | Ian Milgate |
| Manager of Production Engineering | Thomas Hughes |
| Manager of Construction | Danny Hydrick |
| Business Services Manager | Lori Baker |

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT G – PERFORMANCE GUARANTEE AGREEMENT

For value received, and in consideration of: and in order to induce the United States (the Government) to enter into Contract DE-AC27-01RV14136 for the design, construct, and commission of the Waste Treatment and Immobilization Plant (WTP) to treat and immobilize Hanford tank waste (Contract dated, December 11, 2000), by and between the Government and Bechtel National, Inc. (Contractor), the undersigned, Bechtel National, Inc. (Guarantor), a corporation incorporated in the State of Nevada with its principle place of business at 45 Fremont Street, San Francisco, CA 94105, hereby unconditionally guarantees to the Government (a) the full and prompt payment and performance of all obligations, accrued and executory, which Contractor presently or hereafter may have to the Government under the Contract, and (b) the full and prompt payment and performance by Contractor of all obligations and liabilities of Contractor to the Government, fixed or contingent, due or to become due, direct or indirect, now existing or hereafter and howsoever arising or incurred under the Contract, and Guarantor further agrees to indemnify the Government against any losses the Government may sustain and expenses it may incur as a result of the enforcement or attempted enforcement by the Government of any of its rights and remedies under the Contract, in the event of a default by Contractor hereunder, and/or as a result of the enforcement or attempted enforcement by the Government of any of its rights against Guarantor hereunder.

Guarantor has read and consents to the signing of the Contract. Guarantor further agrees that Contractor shall have the full right, without any notice to or consent from Guarantor, to make any and all modifications or amendments to the Contract without affecting, impairing, or discharging, in a whole or in part, the liability of Guarantor hereunder.

Guarantor hereby expressly waives all defenses which might constitute a legal or equitable discharge of a surety or guarantor, and agrees that this Performance Guarantee Agreement shall be valid and unconditionally binding upon Guarantor regardless of (i) the reorganization, merger, or consolidation of Contractor into or with another entity, corporate or otherwise, or the liquidation or dissolution of Contractor, or the sale or other disposition of all or substantially all of the capital stock, business or assets of Contractor to any other person or party, or (ii) the institution of any bankruptcy, reorganization, insolvency, debt agreement, or receivership proceedings by or against Contractor, or adjudication of Contractor as a bankrupt, or (iii) the assertion by the Government against the Contractor of any of the Governments rights and remedies provided for under the Contract, including any modifications or amendments thereto, or under any other document(s) or instrument(s) executed by Contractor, or existing in the Government's favor in law, equity, or bankruptcy.

Guarantor further agrees that its liability under this Performance Guarantee Agreement shall be continuing, absolute, primary, and direct, and that the Government shall not be required to pursue any right or remedy it may have against Contractor or other Guarantors under the Contract, or any modifications or amendments thereto, or any other document(s) or instrument(s) executed by Contractor, or otherwise. Guarantor affirms that the Government shall not be required to first commence any action or obtain any judgment against Contractor before enforcing this Performance Guarantee Agreement against Guarantor, and that Guarantor will, upon demand, pay the Government any amount, the payment of which is guaranteed hereunder and the payment of which by Contractor is in default under the Contractor or under any other document(s) or instrument(s) executed by Contractor as aforesaid, and that Guarantor will, upon demand, perform all other obligations of Contractor, the performance of which by Contractor is guaranteed hereunder.

Guarantor agrees to assure that it shall cause this Performance Guarantee Agreement to be unconditionally binding upon any successor(s) to its interests regardless of (i) the reorganization, merger, or consolidation of Guarantor into or with another entity, corporate or otherwise, or the liquidation or dissolution of Guarantor, or the sale or other disposition of all or substantially all of

the capital stock, business, or assets of Guarantor to any other person or party, or (ii) the institution of any bankruptcy, reorganization, insolvency, debt agreement, or receivership proceedings by or against Guarantor, or adjudication of Guarantor as a bankrupt.

Guarantor further warrants and represents to the Government that the execution and delivery of this Performance Guarantee Agreement is not in contravention of Guarantor's Articles of Organization, Charter, bylaws, and applicable law; that the execution and delivery of this Performance Guarantee Agreement, and the performance thereof, has been duly authorized by the Guarantor's Board of Directors, Trustees, or any other management board which is required to participate in such decisions; and that the execution, delivery, and performance of this Performance Guarantee Agreement will not result in a breach of, or constitute a default under, any loan agreement, indenture, or contract to which Guarantor is a party or by or under which it is bound.

No express or implied provision, warranty, representation or term of this Performance Guarantee Agreement is intended, or is to be construed, to confer upon any third person(s) any rights or remedies whatsoever, except as expressly provided in this Performance Guarantee Agreement.

In witness thereof, Guarantor has caused this Performance Guarantee Agreement to be executed by its duly authorized officer, and its corporate seal to be affixed hereto on.

BECHTEL NATIONAL, INC.

Original Signed By

T. F. Hash, President

GUARANTEE AGREEMENT ON
BEHALF OF GUARANTOR

I, D.W. Price, certify that I am the Assistant Secretary of the corporation named as Guarantor herein; that T.F. Hash who signed this certificate on behalf of the Guarantor, was then President of said corporation; that said certificate was duly signed for and in behalf of said corporation, and is within the scope of its corporate powers; that I have caused the corporate seal to be affixed hereto.

Original Signed By

D. W. Price, Assistant Secretary

**SECTION J – LIST OF ATTACHMENTS
 ATTACHMENT H
 TANK FARM CONTRACTOR STAFF AND SUBCONTRACTORS EMPLOYED ON THE WTP
 PROJECT**

Staffing

The Tank Farm Contractor hired a total of 183 staff from BNFL Inc. and Bechtel National Inc. that were previously supporting the Waste Treatment and Immobilization Plant (WTP) activities; approximately 138 are currently identified as available for transition to the WTP Contractor. Discipline and experience are as follows:

**INTERIM DESIGN CONTRACTOR EMPLOYEES EXPERIENCE
 SUMMARY AS OF 8/30/00**

| DISCIPLINE | SENIOR LEVEL | JUNIOR LEVEL (1-5 Years) | YEARS EXPERIENCE | AVERAGE YEARS EXPERIENCE |
|-----------------------------|--------------|-----------------------------|------------------|--------------------------|
| <u>Engineers:</u> | | | | |
| Managers | 2 | 0 | 18-30 | 18 |
| Process Engineers | 9 | 2 | 1-33 | 16 |
| Civil/Structural | 7 | 1 | 1-35 | 23 |
| Mechanical | 17 | 5 | 1-33 | 18 |
| HVAC | 21 | 0 | 7-35 | 25 |
| Elect, I&C | 18 | 0 | 9-39 | 24 |
| Architectural | 2 | 1 | 1-21 | 13 |
| Construction Engineering | 1 | 0 | 9 | 9 |
| Quality Assurance | 2 | 0 | 25-30 | 28 |
| Layout/Design | 2 | 0 | 18-35 | 27 |
| Subtotal | 81 | 9 | | |
| <u>Designers:</u> | | | | |
| Civil/Structural | 3 | 1 | 4-36 | 21 |
| Mechanical | 19 | 2 | 3-34 | 21 |
| HVAC | 5 | 0 | 7-20 | 16 |
| Piping | 5 | 0 | 10-25 | 22 |
| Elect, I&C | 2 | 0 | 14-35 | 23 |
| Layout | 9 | 2 | 2-15 | 7 |
| Subtotal | 43 | 5 | | |
| Total | 124 | 14 | | |
| Total Interim Design | 138 | | | |

Subcontracts

The Tank Farm Contractor placed subcontracts with 27 firms; providing about 260 total staff supporting the design, science and technology, and ongoing operations roles. Most of the staff augmentation contracts will be available for transition to the WTP Contractor. Summary of contracts, scope, and numbers of staff identified includes:

| Subcontractor | Current Scope | Number of Staff |
|---|---|------------------------|
| Associated Western Universities | Summer Interns | 5 |
| EnergX | Staff Augmentation | 2 |
| ESG (ESG Technical Services) | Staff Augmentation | 3 |
| Enabling Technology | Staff Augmentation | 1 |
| Fircroft | Staff Augmentation | 51 |
| Global Environmental | Staff Augmentation | 1 |
| GTS-Duratek | Staff Augmentation | 19 |
| Individual Consultants (7 each) | Staff Augmentation | 7 |
| Doug Campbell | | |
| Gary Dukelow | | |
| Mike Fox | | |
| Bruce Hensley | | |
| William Roe | | |
| Gene Schroeder | | |
| John Deichman | | |
| Kelly Temporary Services | Staff Augmentation | 31 |
| LATA (Los Alamos Technical Associates) | Staff Augmentation | 8 |
| Manpower | Staff Augmentation | 3 |
| MCE (Mid-Columbia Engineering) | Staff Augmentation | 7 |
| MH Chew | Staff Augmentation | 2 |
| Noramtec | Staff Augmentation | 30 |
| Onsite Engineering | Staff Augmentation | 15 |
| Project Time & Cost | Staff Augmentation | 3 |
| SAIC (Science Applications International Corp.) | Staff Augmentation- safety, permitting, and design | 44 |
| Sciencetech | Staff Augmentation | 2 |
| SCM | Staff Augmentation | 8 |
| TRI (Technical Resources International) | Staff Augmentation | 13 |
| Vista Engineering | Staff Augmentation | 5 |

Science and Technology Support

The Tank Farm Contractor will have established work orders with Savannah River Technology Center, GTS-Duratek (including the Vitreous State Laboratory at Catholic University), Pacific Northwest National Laboratory, and IBC, Inc. for significant Science and Technology support to the WTP Project in the following areas:

| Science and Technology Provider | Scope |
|--|--|
| Savannah River Technology Center | Chemical and radiochemical separations, waste form qualification |
| Pacific Northwest National Laboratory (PNNL) | Chemical and radiochemical separations, waste form qualification |
| GTS-Duratek | Pilot melter testing, melter testing, and glass development |
| IBC, Inc. | Ion exchange media development and testing |

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT I – RESERVED

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT J
ADVANCE UNDERSTANDING ON COSTS

1. Allowable costs for WTP Project-specific travel and relocation shall be in accordance with the Bechtel Systems & Infrastructure, Inc. dated January 1, 2010 (Revision 15), effective January 1, 2010 **(164)**, submitted under BNI letter CCN: 210586 dated December 30, 2009 **(164)**. However, payments made under 2.7 d) [previously 3.7d) under Revision 3] and 3.17 c) therein for tax assistance “gross up” shall be an unallowable cost prior to July 29, 2002, and an allowable cost thereafter **(134)**.
2. Allowable costs for WTP Project-specific BNI employee permanent assignment compensation benefit shall be in accordance with the BNI Project Assignment Incentive (PAI), Revision 10 (dated February 2008), effective April 1, 2008.

Historical Notes:

- The tax assistance portion “gross up” of the PAI, in effect until February 26, 2007, shall be an unallowable cost. This “gross up” was eliminated with the issuance of PAI, Revision 9.
 - The minimum 150-mile limit for recruited college students from Washington State University (Pullman, Washington campus only) and Eastern Washington University (Cheney, Washington campus only) is waived and PAI payments for such eligible recruited employees shall be allowable, subject to other allowability tests required under the contract, until April 1, 2008, at which time the limit was eliminated with PAI, Revision 10. **(126)**
3. During 2001, BNI implemented an internal Six Sigma Program to provide a clear means of work process measurement and continuous process improvement that is expected to result in a net overall reduction in incurred costs under this Contract. Costs to implement the BNI Six Sigma Program are considered allowable costs under this Contract, subject to other required tests of allowability under this Contract, the *Federal Acquisition Regulation*, and the *Department of Energy Acquisition Regulation*.
 4. Costs to implement the BNI Sharing for Success Program to enhance craft productivity and reduce overall project costs are considered allowable costs under this Contract, subject to other required tests of allowability under this Contract, the *Federal Acquisition Regulation*, and the *Department of Energy Acquisition Regulation*.
 5. Effective from the date of Contract award, facilities capital cost of money shall be an allowable cost under this Contract, provided the criteria for allowability in FAR 31.205-10 are met.
 6. Costs to implement the BNI Employee Recognition Program to support individual and team accomplishments and encourage the achievement of project goals are considered allowable costs under this Contract, subject to other required tests of allowability under this Contract, the *Federal Acquisition Regulation*, and the *Department of Energy Acquisition Regulation*.
 7. Costs incurred in connection with hedging contracts entered into in connection with foreign currency purchases, including but not limited to the purchase cost, rollover costs to adjust a hedging contract to a new date in the event the payment date is delayed, and closure costs in the event a procurement is canceled, are considered allowable costs under this Contract, subject to other required tests of allowability under this Contract, the *Federal Acquisition Regulation*, and the *Department of Energy Acquisition Regulation*.
 8. Costs to implement the BNI Vanpool Program to encourage project craft and nonmanual

vanpooling are considered allowable costs under this Contract, subject to other required tests of allowability under this Contract, the *Federal Acquisition Regulation*, and the *Department of Energy Acquisition Regulation*.

9. Costs incurred in connection with the Washington State Retrospective Rating Program connected with Workers Compensation, including but not limited to surcharges, are considered allowable costs under this Contract, subject to other required tests of allowability under this Contract, the *Federal Acquisition Regulation*, and the *Department of Energy Acquisition Regulation*.
10. Multi-Employer Pension Plan (MEPP): **(152)**
 - a. The costs and expenses of the Contractor's participation in the MEPP are allowable Contract costs to the same extent as those costs are allowable under Contract No. DE-AC06-96RL13200 (Fluor) through August 23, 2009, and Contract No. DE-AC06-09RL14728 (Mission Support Alliance, LLC) thereafter. **(206)**
 - b. In the event that the Contractor withdraws from the MEPP, in accordance with the terms of the MEPP, the Contractor's withdrawal liability, if any, shall be an allowable cost of this Contract subject to availability of funds under this Contract.
 - c. In the event that the MEPP is overfunded at the time of the Contractor's withdrawal and the Contractor does not receive a cash disbursement of its share of such overfunding, ORP hereby waives the Contractor's obligations, if any, under FAR 52.215-15(b) to make payments to DOE, or otherwise adjust the Contractor's allowable costs, with respect to any amounts otherwise assessed in accordance with CAS 413-50(c)(12).
 - d. In the event that the Contractor becomes the last sponsoring employer of the MEPP, the Parties shall modify this agreement to address appropriate termination provisions and funding requirements.
 - e. This Advance Understanding shall be revised from time to time to incorporate any changes in those policies, practices, and procedures the related costs and expenses related to the MEPP.
11. The following pending items and trends are incorporated by reference in Modification **(029)**.

| Case No. | Title |
|----------|--|
| | Issued to ORP |
| 4 | PI-24590-01-00065 Additional Security Badging Requirements |
| 18 | PI-24590-01-00093 Model Recovery, Maintainability, and RAMI Development |
| 6 | PI-24590-01-00099 Construction Emergency Response Plan (Addendum for FH site emergency preparedness program) |
| 21 | PI-24590-01-00112 Addition of C2 Filtration (HEPA) to Pretreatment, Low-Activity-Waste (LAW), and HLW Facilities |
| | PI-24590-01-00117 Commissioning Maintenance Requirements |
| 17 | PI-24590-01-00118 Plant Operator Qualification & Training Facility |
| | PI-24590-01-00119 Commissioning Materials & Vendor Support |
| | PI-24590-01-00120 Commissioning Testing and Operations Requirements |
| | PI-24590-01-00121 Risk Assessment and Reporting |
| 19 | PI-24590-01-00122 Analytical Laboratory and Temporary Laboratory Facilities |
| | PI-24590-01-00131 Hazards/Accident Analysis Post PSAR Submittal |
| | PI-24590-01-00133 Commissioning Procedure Writers |
| | PI-24590-01-00135 QC Support to Commissioning |

| Case No. | Title |
|----------|---|
| | PI-24590-01-00136 Commissioning Training |
| | PI-24590-01-00138 Environmental Interface |
| | PI-24590-01-00140 Operation Authorization Request (OAR) Development and Authorization Basis Maintenance |
| | PI-24590-01-00142 Compliance with ISMS DEAR Clause, Safeguards and Security |
| | PI-24590-01-00143 Pilot Scale Facility |
| 10 | PI-24590-01-00147 Pulsed Jet Mixer Testing |
| 16 | PI-24590-01-00150 LAW Canister Level Control |
| | PI-24590-01-00153 A1-Incomplete WTP Conceptual Design - NOC & Sanitary Sewer |
| | PI-24590-01-00153 A2 - Incomplete WTP Conceptual Design - SAP & CAR |
| | PI-24590-01-00153 B - Incomplete R&T WTP Conceptual Design work (5 PIs) |
| 19 | PI-24590-01-00154 HLW Melter Cell Reconfiguration Due to Analytical Laboratory (LAB) Reconfiguration |
| 13 | PI-24590-01-00165 Vitrification, Rheology & Regulatory Analysis for the Rework of AZ-102 (Envelope B) |
| 2 | PI-24590-01-00170 LAW Annex Modifications |
| 23 | PI-24590-01-00181 Operations & Maintenance C3 Area Temperatures |
| 23 | PI-24590-01-00194 Study Associated with C3 Temperatures |
| | PI-24590-01-00197 Technical Integration Baseline Development Team |
| | PI-24590-01-00201 LAW Throughput Increase to 45 MTG |
| | PI-24590-01-00246 ES&H Fire Protection Support Program |
| 27 | PI-24590-01-00278 Change in LAW Concrete and Structural Steel Quality Class |
| | PI-24590-01-00309 Revised Scale-Up Ion Exchange Resin Quantities |
| | PI-24590-01-00311 Radiological Safety Support |
| 3 | PI-24590-02-00335 LAW Bubbler Failures Below the Melt Line |
| | |
| | 2001 Approved Trends |
| 1 | PI-24590-01-00173 Detailed Study & Process Plan for Resolving Mercury Issues in Waste Feed |
| 14 | PI-24590-01-00174 Maximum Achievable Control Technology |
| 14 | PI-24590-01-00316 Mercury mitigation for LAW Melter & Offgas |
| 14 | PI-24590-01-00327 Incorporate Activated Carbon Column in HLW Melter Offgas |
| | PI-24590-01-00143 Pretreatment (PT) Integrated Pilot Facility - Infrastructure & Testing IX Processes |
| | |
| | 2002 Approved Trends |
| 12 | PI-24590-02-00341 Radiological Monitoring Standards Change from ANSI-N13.1-1969 to 1999 |
| 7 | PI-24590-02-00356 Critical Decision 3 - Extended Independent Review |
| 22 | PI-24590-02-00358 Steam Reformer Technology Demonstration Acquisition |
| 20 | PI-24590-02-00382 Evaluate and Test CS & TC Exchange Resins |
| 15 | PI-24590-02-00395 DOE Order 420.1 Fire Safety Impact Assessment Study |
| | PI-24590-02-00396 Melt Pool Corrosion of LAW Bubblers (Part 2) |

| Case No. | Title |
|----------|---|
| | PI-24590-02-00398 Evaluation of Seismic Safety DOE 420.1 Impact |
| | PI-24590-02-00405 LAB - Cost Reductions |
| | PI-24590-02-00415 Initial Testing of Steam Reforming Waste Product |
| | PI-24590-02-00431 DWPA Phased Approach |
| | PI-24590-02-00447 Pour Tunnel Catch Tank |
| | PI-24590-02-00453 Increase Pour Cave Cooling |
| | PI-24590-02-00508 Sales and Use Tax |
| 25 | PI-24590-02-00516 Regulatory Compliance Matrix |
| | PI-24590-02-00539 LAB Rad Effluent Line |
| | PI-24590-02-00550 Develop Implementation Plan & Start Testing of Alt. Resins |
| | PI-24590-02-00581 Mixing Tests and Computational Fluid Dynamic Modeling by R&T for PT and HLW |
| | PI-24590-02-00586 Delete BOF Encapsulation Facility from WTP |
| | PI-24590-02-00587 Modify BOF Spent Melter Staging Facility |
| | PI-24590-02-00589 Eliminate BOF Melter Assembly Building |
| | PI-24590-02-00590 Delete BOF Central Waste Storage Facility |
| | PI-24590-02-00591 Eliminate BOF Administration Building from WTP Site |
| | PI-24590-02-00601 Modification to HLW Melter Cave Support Handling System Shielding/Containment and Decontamination |
| | PI-24590-02-00635 Mercury - Sulfur Impregnation Carbon Tests |
| | PI-24590-02-00637 Mercury R&T Studies |
| | PI-24590-02-00665 Replace Welded Sealing of LAW Containers with Mechanical Sealing |
| | PI-24590-02-00666 Eliminate Tc Ion Exchange System (pending approval) |
| | PI-24590-02-00688 Stage 1 Cs Alternative Resin Testing |
| | PI-24590-02-00700 Develop Estimate for Implementing DOE Order 435.1 |
| | PI-24590-02-00706 2 + 2 Melter Option |
| | PI-24590-02-00723 Commissioning and Training Cost Savings Initiatives |
| | PI-24590-02-00725 Schedule Impact of Cumulative Changes |
| | PI-24590-02-00728 Alternate Cesium Ion Exchange Resin Testing: Stages II & III |
| | PI-24590-02-00742 Develop Supplemental EIS Data Package |
| | PI-24590-02-00744 Include Battelle R&T Sample Residue Handling & Disposal |
| | PI-24590-02-00754 Foreign Travel Coordinator DEAR 952-247-70 |
| | PI-24590-02-00758 Replace Uniform Building Code with International Building Code for Fire Proofing Design |
| | PI-24590-02-00779 Trend Implementation Variance vs. Approved ROM |
| | PI-24590-02-00782 R&T Testing of Ion Exchange Pressure Drop Issue |

All items above may have subsequent update revisions, interpretations, or other clarifications that are agreed to by letter. Such updates shall be deemed to be incorporated by reference where stated.

- The Contractor's Employee Referral Bonus Program is an allowable cost for a period of two (2) years, from March 26, 2007, to March 25, 2009, with a not-to-exceed total cost of \$150,000,

and one (1) year from March 4, 2014, with a not-to-exceed total cost of \$100,000. The Contractor shall prorate the \$2,500 bonus over the new hire's first year of employment should the new hire leave the project prior to completing one (1) year of employment. The policies establishing the program, and the applicable time periods are:

- Program as contained in contractor letter, CCN: 146882, dated March 13, 2007, applies to the period March 26, 2007, through March 25, 2008.
- Program as contained in contractor letter CCN: 162480, dated April 1, 2008, applies to the period March 26, 2008, through March 25, 2009. **(086, 123)**
- Program as contained in contractor letter CCN: 259128, dated December 13, 2013, and DOE letter CCN: 266666, dated March 4, 2014, applies to the period March 4, 2014, through March 3, 2015.

12. The following requirements are incorporated into and made a part of this Contract. Not-to-exceed amounts for these items have been authorized. The items listed in Table 13-A were definitized by Modification No. A143. **(101, 130, 136, 143, 155)**

Table 13-A. Not-To-Exceeds Definitized by Modification No. A143 (155)

| Document ID | Title |
|---|--|
| TN 24590-03-01341 | Seismic Attenuation Study to Support ORP (101) |
| TN 24590-03-01071 | Maximum Achievable Control Technology/Destructive and Removal Efficiency Testing (101) |
| TN 24590-03-01318 | Supplemental LAW Treatment Study (101) |
| TN 24590-03-01317 | QA Testing of HEPA Filters at DOE Filter Test Facility (FTF) (101) |
| TN 24590-03-01482 | Earned Value Management System (EVMS) Criteria Crosswalk (101) |
| TN 24590-03-01315 | PTF Black Cell Access Trend (101) |
| TN 24590-03-01213 | Concentrate Receipt Vessels (CRV) Deletion (102) |
| TN 24590-05-01906 | PNNL Seismic Borehole Drilling Support (102) |
| TN 24590-06-01930 | Technical Feasibility Study of WTP Startup Sequencing (098, 130) |
| TN 24590-06-02430 | Perform Impact Assessment of Borehole Data (098, 130) |
| BCP-24590-06-03419 | Implementation of ASME NQA-1 2000 and QARD Revision 18 for performance by BNI subcontractor Duratek, Inc. (135) |
| ORP 08-AMD-213 (10/06/08) (CCN 187713) TN 24590-06-03628 | DOE ORP Direction to Cancel the Temporary LAW Melter Assembly Building Procurement (141) |

| 13-B. Not-To-Exceeds Not Included in Modification No. A143 Definitization (155) | | |
|---|--|--|
| DOCUMENT ID. | TITLE | DEFINITIZATION MODIFICATION NO. |
| BCP-24590-06-02279 | Expansion of DWP Requirements (permit Modifications) (122) (130) | A193 |
| ORP 08-NSD-011 (05/20/08) (CCN 179512) TN 24590-06-03487 | ORP Direction to Implement New Preliminary Safety Analysis Report (PSAR) Updates (136) | A164 |
| ORP 08-NSD-057 (10/09/08) (CCN 188218) TN 24590-06-03752 | Direction to Implement New Safety Classification Process for the Waste Treatment and Immobilization Plant (WTP) (141) | 276 |
| ORP 08-NSD-059 (10/15/08) (CCN 188217) TN 24590-06-03753 | Direction to Implement New Justification for Continued Design, Procurement, and Installation (JCDPI) (152) | 164 |
| Modification M090 & 09-AMD-205 (07/18/08) (CCN 202423) TN 24590-06-02145 & -02381 | Direction to Implement DOE 205.1A, Cyber Security Management Program (155) | 217 |
| Modification M154 TN 24590-06-04133 | Direction to Implement Pretreatment Engineering Platform (PEP) dry layup (155) | 167 |
| Modification M196 BCP 24590-06-04489 BCP 24590-06-04784 BCP 24590-06-05085 | Direction to Implement Multiple Operational Readiness Strategy (218) | 282 |
| Modification M196 BCP 24590-06-04853 ORP 10-AMD-139 (05/06/10; CCN 218244) | Direction to Implement CXP Equipment Option (218) | 317 |
| Modification 221 ORP 11-WTP-219 (06/17/11; CCN 236247); Modification 247 ORP 11-WTP-437 (12/01/11; CCN 242351); Modification 264 ORP 12-WTP-0109 (03/15/12; | Direction to Proceed with Large Scale Testing (221, 247, 264, 286) | 299 – Partial (384) |

| | | |
|---|--|--------------|
| CCN 245985); Modification 286 ORP 12-WTP-317 (09/24/12) | | |
| Modification 273 | Direction to participate in the Hanford Site Organizational Climate and Safety Conscious Work Environment (SCWE) Survey | 290 |
| Modification 245 ORP 11-WTP-429 | Direction to proceed with the implementation of DOE Order (O) 420.1B, <i>Facility Safety, Chapter V, Systems Engineer Program. (245)</i> | 276 |
| Modification 300 ORP 13-CPM-0099 (05/06/13); Mod 304 ORP 13-CPM-0133 (06/05/13); Modification 313 ORP 13-CPM-0299 (11/25/13) | Direction to Proceed with Full Scale Vessel Testing Program in lieu of the existing Computational Fluid Dynamics and Large Scale Vessel testing Program as a Design Verification Tool (300, 304, 313) | (384) |
| Modification 329 ORP 14-CPM-0172 | Direction to proceed with Section C, Statement of Work, Standard 3 Design, paragraph (i) Design of BOF Utility Modifications | 350 |
| Modification 330 ORP 14-CPM-0181 | Direction to proceed with Section C, Statement of Work, Standard 3 Design, paragraph (j) Design of BOF Effluent Management Facility | 350 |
| Modification 334 ORP 14-CPM-0228, ORP 15-CPM-0300 (358) 16- CPM-0088 (372) | Direction to proceed with Pretreatment Facility vessel mixing design verification. | (384) |
| Modification 339 ORP 15-CPM-0008 | Direction to proceed with Section C, Statement of Work, Standard 3 Design, paragraph (k) Design of Balance of Facilities Underground and Site-Wide Modifications necessary to support the Direct Feed of LAW (DFLAW) | 350 |
| Modification 342 ORP 15-CPM-0064, ORP 16-CPM 0012 (364) | Direction to proceed with the implementation of DOE Order (O) 433.1B, Maintenance Management Program for DOE Facilities and DOE/RL-92-36, Hoisting and Rigging Manual. (342) | |
| Modification 344 ORP 15-CPM-0092 | Direction to proceed with initiation of procurement of BOF modifications and LAW Valve Vault materials to support DFLAW; add Interface Control Documents 30 and 31 | |
| Modification 348 ORP 15-CPM-0128 | Direction to proceed with initiation of BOF isolation construction to support DFLAW | |
| Modification 349 ORP 15-CPM-0136 | Direction to proceed with the implementation of DOE Order (O) 414.1D, CRD, Chg. 1, Quality Assurance. (349) | |
| Modification 354 ORP 15-CPM-0195 | Direction to proceed with procurement of Effluent Management Facility (EMF) equipment and effluent transfer lines and limited EMF construction (354) | |

| | | |
|----------------------------------|---|--|
| Modification 371 ORP-CPM-0085 | Conduct supplementary analysis of vessels RLD-VSL-00007 and RLD-VSL-00008 beyond the WTP Code of Record and modify the RLD-VSL-00007 and RLD-VSL-00008 vessel design. | |
| Modification 375 ORP-CPM-011 | Update the Natural Phenomena Hazards (NPH) Assessment by generating a revised site-specific response analysis and design response spectra for WTP incorporating Hanford site-wide Probabilistic Seismic Hazard Analysis (PSHA) report from PNNL, dated November 21, 2014 (375) | |

14. Reserved

15. Reserved

16. The following advance agreements are incorporated and made a part of this Contract. **(130)**

| Title | References |
|---|---|
| Offsite Beryllium Medical Exam Costs (130) | CCN: 150302 (06-ESQ-166; 28DEC06) |
| Relocation Costs Associated with Establishing a Frederick, MD WTP Project Office (130) | Advance Agreement signed by J. J. Short/C. E. Rogers 20JUL06; CCN: 143197 |
| Steps to Bring BNI Billings and DOE Financial System into Agreement (130) | Advance Agreement signed by J. J. Short/C. E. Rogers 24JUL06; CCN: 143195 |
| Costs Related to Safety Award to WTP Construction Site Employees (130) | Advance Agreement signed by T. M. Williams/N. F. Grover 28NOV07; CCN: 169002 |
| Costs Related to WTP College Hire Conference (130) | Advance Agreement signed by T. M. Williams/N. F. Grover 08AUG07; CCN: 169228 |
| Costs Related to Per Diem Expenses for Certain Employees (130) | Advance Agreement signed by T. M. Williams/N. F. Grover 03JUL07; CCN: 169230 |
| Costs Related to Living Away From Home Option (LAFHO) (130) | Advance Agreement signed by T. M. Williams/N. F. Grover 12DEC07; CCN: 169233 |
| Costs Related to Voluntary Protection Program (VPP) (133) | Advance Agreement signed by T. M. Williams/N. F. Grover 20JUN08; CCN: 181338 |
| Costs Related to Per Diem Expenses for Specific Employees July 2008 (134) | Advance Agreement signed by T. M. Williams/N. F. Grover 18JULY08; CCN: 184046 |
| Construction Project Review Subsistence (197) | Advanced Agreement described in CCN: 224972 (27Oct10) and approved by R. L. Dawson on 04NOV10; 10-AMD-370 (CCN: 227552) |
| Costs Related to 2011 Safety Award to WTP Construction | Advanced Agreement described in BNI |

| Title | References |
|--|---|
| Site Employees (285) | letter CCN: 236919, dated July 26, 2011 and approved by R. L. Dawson in ORP letter 11WTP-264 dated July 29, 2011 (CCN: 238015) |
| Costs Related to Stipend for Mobile Communication Devices (285) | Advanced Agreement described in BNI letter CCN: 245311, dated September 18, 2012 and approved by R. L. Dawson in ORP letter 12-WTP-0312 dated October 2, 2012 (CCN: 252582) |

17. Dollar thresholds for obtaining Contracting Officer approval prior to BNI incurring costs for repair or replacement of Government Property resulting from damage, and/or the need for unscheduled nonroutine corrective maintenance/rehabilitation – are specified in CCN: 220281, "Contract Section J, Attachment J, Item 17 – Thresholds for Repair of Government Property," letter from N.F. Grover to R.L. Dawson, dated August 4, 2010, and are incorporated into this Contract. The Property Administrator is authorized to approve repairs costing less than \$25,000. **(136, 145, 186)**
18. Inclusions from Equitable Adjustment Settlement. The Trends and Baseline Change Proposals listed on Attachment J, Subattachment A are specifically included in the Statement of Release with Modification No. A143, and are released from any further equitable adjustment. **(143)**
19. Exclusions from Equitable Adjustment Settlement. The Modifications, Trends and Baseline Change Proposals listed on Attachment J, Sub-attachment B are specifically excluded from the Statement of Release with Modification No. A143, and may be eligible for equitable adjustment provided all Contract change requirements are met. **(143)**
20. All emergency-related repairs or emergency-related maintenance on BNI leased facilities less than or equal to \$25,000, no Contracting Officer approval is required. Alterations made to any BNI leased facility greater than or equal to \$100,000, Contracting Officer approval is required (09-AMD-164 dated May 28, 2009; CCN: 200168). **(155)**
21. Deviation to FAR 31.205-44 Training and education activity. Costs incurred in connection with Training on Overtime with DFLAW 24/7 Commissioning Personnel are allowable. This deviation is supported by BNI Business case included in CCN: 286030, and the DOE Senior Procurement Executive approval with three (3) conditions:
 - Time Period: The time period covered is 36 months, beginning 6 months prior to the "Loss of Power" test.
 - Designated Personnel: This approval applies only to those personnel, as described in the Contractor's revised business case (CCN 292307) dated 21 Septemebr 2016, who are directly assigned to DFLA, working 24/7 operations.
 - Costs: The maximum costs for overtime compensation relating to training and education that is allowed is \$17.5M

Overtime costs for training of the Commissioning 24/7 personnel are considered allowable costs under the contract subject to other required tests of allowability under the contract, the Federal Acquisition Regulation, and the Department of Energy Acquisition Regulation. **(384)**

**SECTION J – LIST OF ATTACHMENTS
 ATTACHMENT J
 ADVANCE UNDERSTANDING ON COSTS (143)**

Subattachment A

List of Inclusions from Equitable Adjustment Settlement Established in Modification 143

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-05-01906 | PNNL Seismic Borehole Drilling Support |
| TN-24590-05-02086 | Hexavalent Chromium Standards |
| TN-24590-05-02109 | Construction Late Adjustments Transfer |
| TN-24590-06-02119 | C&I LAB Safety Program Implementation |
| TN-24590-06-02121 | Ejector Addition to PWD-SUMP-00004 |
| TN-24590-06-02122 | BNI Analysis of NWC Vessels |
| TN-24590-06-02124 | Add Under Flange Swab for LAW Swabbing System |
| TN-24590-06-02125 | Revised Ground Motion Criteria for SC-III |
| TN-24590-06-02126 | Elimination of LAW PPJ Annunciator Panels |
| TN-24590-06-02127 | Unanticipated Growth in MET Support and Noise Assess |
| TN-24590-06-02130 | NAR/SHR Tank Separation Berm |
| TN-24590-06-02131 | C&I Datasheet EPPR Restructure |
| TN-24590-06-02132 | Laser Ablation Procurement Budget Reallocation |
| TN-24590-06-02133 | PJV Creep Additional Testing to Eliminate ALARA Concerns |
| TN-24590-06-02134 | Humphries & Assoc. Contract Modification |
| TN-24590-06-02135 | Funding for 12 Each PVP and PJV Valves |
| TN-24590-06-02136 | Add Stack Discharge Sample/Monitor Piping to 3D Models |
| TN-24590-06-02138 | Procedure Compliance Checklists and Isometric Second Checking |
| TN-24590-06-02139 | Impacts due to Unidynamics Bankruptcy |
| TN-24590-06-02140 | WTP Activated Carbon Temperature Modeling and Detection Limit Development |
| TN-24590-06-02141 | Improvement of PWD-SUMP-00040 Leak Detection Capability |
| TN-24590-06-02142 | Redistribution of LBL Production Hours |
| TN-24590-06-02143 | PTF Committed Phase Design for System CXP & HLW Dryer and Melter Flush Lines |
| TN-24590-06-02144 | Increased Effort for MH Packaged Equipment Integrated Testing & Drawing Review |
| TN-24590-06-02147 | LAW Off-Gas Ancillary SCIV Piping |
| TN-24590-06-02149 | Update Documents for HLW Joggles |
| TN-24590-06-02151 | Large Piping Loads to PTF at Elevation 67' - 4 |
| TN-24590-06-02152 | C&I Bulk Analysis |
| TN-24590-06-02153 | Establish Planning Packages in Current OTB |
| TN-24590-06-02154 | Termination Settlement for Trentec PO# 24590-QL-POA-ADDH-00005 |
| TN-24590-06-02155 | FNM Budget Hours Transfer from Plant Wide to Facilities |
| TN-24590-06-02156 | Plant Design Re-plan TN-24590-06-02157 Large Bore Pipe Support Jobhour Adjustment |
| TN-24590-06-02164 | HEPA Filter Equipment & Flow Meter Line Changes |
| TN-24590-06-02166 | Remote Operated Damper Alternate Supplier |
| TN-24590-06-02167 | C&I Hours for PJM Testing Not Implemented in TN-24590-05-01957 |
| TN-24590-06-02168 | BOF Glass Former Facility Additional Formwork & Concrete |
| TN-24590-06-02170 | SRNL-XRF |
| TN-24590-06-02174 | Increase Scope of EFRT M4, Commissioning Waste vs. Mission Needs |
| TN-24590-06-02176 | Systematic Approach to Training (SAT) |
| TN-24590-06-02177 | Plant Design Impacts Associated with Engineering of LBL Facility |
| TN-24590-06-02178 | Plant Design Impacts Associated with Engineering of BOF Facility |
| TN-24590-06-02179 | Plant Design Impacts Associated with Engineering of LAB Facility |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-02180 | Coupled Analysis of Two Typical Breakpots |
| TN-24590-06-02181 | Add Additional Hours to PT Process Calcs |
| TN-24590-06-02182 | Accelerated Data Reconciliation |
| TN-24590-06-02183 | Process Operations Actions to Close DOE Oversight Open Items |
| TN-24590-06-02184 | IT 14 Implementation |
| TN-24590-06-02186 | LAW Line List Development & CIS List Comparison Macro |
| TN-24590-06-02187 | Equipment Group Increased Deliverable Quantities |
| TN-24590-06-02189 | Modification of MV Switchgears and Load Centers |
| TN-24590-06-02190 | Environmental Performance Test Plan, Process Engineering Calculations |
| TN-24590-06-02191 | Change Offgas Pipe from CM to Q Classification |
| TN-24590-06-02192 | Review of Existing and Future Awarded Commercial Grade Dedication (CGD)-related Procurements |
| TN-24590-06-02193 | Reduction of LAW Cable Tray Baseline based on Qty Awareness |
| TN-24590-06-02194 | Mechanical Handling Diagrams (MHD's)/Mechanical Sequence Diagrams (MSD's) Hour Adjustment |
| TN-24590-06-02195 | CFD Analysis - LAW & HLW for HVAC, CSA, MH - Phase 2 |
| TN-24590-06-02197 | Multi-Discipline EN&S Support (for ISM Reviews) - 101F Accounts |
| TN-24590-06-02199 | DOE ORDER 413.3A - Estimate to Perform Impact Analysis |
| TN-24590-06-02201 | Overblow (OB) Equipment Modifications to Support Revised Design Requirements |
| TN-24590-06-02202 | Chiller Compressor Building Fire Protection |
| TN-24590-06-02204 | Conversion of PP to WP for Stairway Installation at PT |
| TN-24590-06-02205 | Late Adjustments Planning Package to Equipment Package Budget Reallocation 24590-QL-MEEM-00001 & 2 |
| TN-24590-06-02206 | Increase Cost of LAW C3V-ACU-00001, 00002, 00003 |
| TN-24590-06-02208 | Revise Criticality Safety Evaluation Report & Supporting Analysis |
| TN-24590-06-02211 | Late Adjustment Planning Package to Equipment Package Budget Re-allocation PO 24590-QL-POA-MJKG-00004 |
| TN-24590-06-02212 | Accelerate CHAMPS Software Purchase. Transfer Budget from Planning Pkg to Work Pkg |
| TN-24590-06-02213 | Conversion of REA Preparation Planning Package to Work Package |
| TN-24590-06-02215 | HPAV Support Contracts for Detonation Analysis and Configuration Management |
| TN-24590-06-02217 | BOF Construction Hours to Support Piping Design Changes |
| TN-24590-06-02218 | Late Adjustments Planning Package to Equipment Package Budget Reallocation for Flowserve Bulge Valves |
| TN-24590-06-02219 | LAPP to Equipment Package Budget Reallocation for Framatome Delay Claim |
| TN-24590-06-02220 | Conversion of DOE Order 226.1 Implementation of DOE Oversight Policy Planning Pkg to Work Pkg |
| TN-24590-06-02221 | Forward Pricing Rates (FPR) (Aug-2006) |
| TN-24590-06-02222 | Cost Increase to M-12 Original Scope, Undemonstrated Leaching Processes |
| TN-24590-06-02224 | 10 CFR 851 Implement Worker Health and Safety Rule PP to WP |
| TN-24590-06-02225 | Conversion of DOE Order 414.1C & NQA-1 Rev 2000 |
| TN-24590-06-02226 | Perform Qualification of Vendor Supplied Leak Detection Box - PT |
| TN-24590-06-02227 | Removal of Sealing Tapes from Pipe Ends and Flanges - PT |
| TN-24590-06-02228 | Removal of Sealing Tapes from Pipe Ends and Flanges - HLW |
| TN-24590-06-02229 | LAW Quantity Adjustment per the Latest Qty Takeoff |
| TN-24590-06-02230 | Removal of Sealing Tapes from Pipe Ends and Flanges - LAW |
| TN-24590-06-02231 | Direct Hire Craft Support for LAW Coatings Subcontract |
| TN-24590-06-02232 | LAB Hotcell Surface Preparation |
| TN-24590-06-02233 | Removal of Sealing Tapes from Pipe Ends and Flanges - LAB |
| TN-24590-06-02234 | Removal of Sealing Tapes from Pipe Ends and Flanges - BOF |
| TN-24590-06-02235 | Increased Attenuation for Six HLW Shield Windows |
| TN-24590-06-02239 | 414.1C QA Implementation Estimate Reduction |
| TN-24590-06-02241 | BOF Quantity Adjustment per the Latest Drawings IFC |
| TN-24590-06-02242 | LAB Quantity Adjustment per the Latest Drawings IFC |
| TN-24590-06-02243 | Plant Wide EPCC: FNM Work Package/Planning Package Allocation |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-02244 | Alignment of COBRA end-dates with P3 Schedule |
| TN-24590-06-02245 | Moving Budget Out of LAPP into WP for ASX System Re-evaluation |
| TN-24590-06-02247 | Support for DWP Public Comment Period |
| TN-24590-06-02248 | Re-allocation of Remaining FY 2006 PEM Late Adjustments Planning Package Budget |
| TN-24590-06-02249 | Bechtel Internal Cost due to Hirschfeld Request for Equitable Adjustment |
| TN-24590-06-02250 | Re-alignment of Plant Equipment Spend Profile - Critical 7 |
| TN-24590-06-02251 | LAW Summary Work Package/Planning Package Re-alignment |
| TN-24590-06-02252 | BOF Summary Work Package/Planning Package Re-alignment |
| TN-24590-06-02253 | LAB Summary Work Package/Planning Package Re-alignment |
| TN-24590-06-02256 | Move Late Adjustment Planning Packages (PP) and Transition PP to Work Packages |
| TN-24590-06-02257 | Mechanical Systems HPAV Calculations |
| TN-24590-06-02261 | Increase Size of Viewing Windows in Select Doors |
| TN-24590-06-02265 | Revision of Procedures and Guides for Nuclear Safety and Quality Initiative |
| TN-24590-06-02266 | Subcontractor EAC Adjustment due to Schedule Delay |
| TN-24590-06-02267 | AFA Antifoam Effect on Gas Retention/Release |
| TN-24590-06-02269 | PTF Hot Cell Fire Analysis |
| TN-24590-06-02270 | HLW C2/C5 Confinement |
| TN-24590-06-02271 | PTF Addition of Safety Class Differential Pressure Alarms |
| TN-24590-06-02272 | Complete SFA with Subcontractor Support |
| TN-24590-06-02276 | Freight BCWS Adjustment |
| TN-24590-06-02285 | Implementation of Sunflower Software System for Property Mgt |
| TN-24590-06-02288 | Additional Vendor Package Interconnection Diagrams |
| TN-24590-06-02289 | PT Modifications to Provide Access for Routine Maintenance of Shield Door |
| TN-24590-06-02291 | Vessel Design Changes - MOB, HPAV, Committed Design Evolution |
| TN-24590-06-02292 | Subcontractor EAC Adjustment to Comply with ASCE 97-8 Classification |
| TN-24590-06-02299 | Re-allocation of Fiscal Years 2008 and 2009 PEM Late Adjustments Planning Package Budget |
| TN-24590-06-02300 | Functional Verification of Crane Mounted Manipulator Dexterity |
| TN-24590-06-02303 | Re-alignment of Plant Equipment Spend Profile - Critical 4 |
| TN-24590-06-02306 | LBL Re-Sequencing TN-24590-06-02307 Capacity Modifications - 4 Month Earnable Hours |
| TN-24590-06-02308 | Support Steel for Fire Risers in HLW Stairwells |
| TN-24590-06-02310 | Modification of RWH-CRN-00013 to Eliminate Interferences with Monorail Airlocks |
| TN-24590-06-02311 | Plant Equipment to Management Reserve Budget Reallocation |
| TN-24590-06-02312 | LAW Export Bay-Individual Wall Form Installation/Removal |
| TN-24590-06-02313 | LAW Field Rebar Support Frame Fabrication |
| TN-24590-06-02314 | LAW Decontamination Unit and Glove Box - On Site Assembly |
| TN-24590-06-02315 | LAW AHU Installation Delay due to Late Implementation of Transition Frames Design |
| TN-24590-06-02317 | Post IFC Document Revision Activities |
| TN-24590-06-02318 | System HSH Decontamination Tanks |
| TN-24590-06-02319 | Labor to ODC Conversion (Process Operations) |
| TN-24590-06-02320 | Re-align E4 Labor Distribution and ODC Travel Allocation |
| TN-24590-06-02322 | Additional Engineering and E&NS Training |
| TN-24590-06-02324 | Estimate to Implement DOE Order 210.2 Corporate Operating Experience Program |
| TN-24590-06-02326 | LAB Steel Quantity Mix TN-24590-06-02328 Professional Services of SAIC |
| TN-24590-06-02334 | Hirschfeld Steel REA's-May 2006 HLW LAPP Budget to LAW Working Package |
| TN-24590-06-02335 | Vent Stack Restraints Field Modification |
| TN-24590-06-02338 | Process Engineering Support for the WTP Project |
| TN-24590-06-02339 | LAB Structural Steel Field Modification required from ORP Peer Review |
| TN-24590-06-02341 | CM-MRA-EK00-00001 - 480V Load Centers - Add Equipment Budget and Re-Align Schedules |
| TN-24590-06-02342 | Modification to LBL Resequencing BCP that will Correct End Dates for Project Controls |
| TN-24590-06-02343 | HLW Annex Roof SC-1 Equipment Hardening and Screening |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-02344 | Engineering Discipline Support for Component Identification System (CIS) |
| TN-24590-06-02346 | Elimination of SLATE Software Maintenance (PIP E160) |
| TN-24590-06-02348 | SQ Addition of Welding and Electrical Technical Specialists |
| TN-24590-06-02349 | Budget Shortfall for HLW ISA Vessels |
| TN-24590-06-02350 | LAB 480V MCC's Upsize Cable Lugs for (4) MCC's in Fabrication |
| TN-24590-06-02352 | Convert \$1.5M from QA PP to QA WP |
| TN-24590-06-02353 | LAW Additional Field Rebar Fabrication Quantity |
| TN-24590-06-02354 | Redistribute Radiological Safety ODC Support Budget |
| TN-24590-06-02356 | C/CP Bldg 82 Electrical Safety Upgrade from NEMA 1 to NEMA 12 Enclosures |
| TN-24590-06-02359 | Reallocation of Plant Material Budgets due to Implementation of To-Date Quantities Received Earning Basis |
| TN-24590-06-02361 | BOF Pump House Sidewalks Installation |
| TN-24590-06-02362 | LAB Monorail and Recovery System |
| TN-24590-06-02363 | LAW Planning Package Definitization |
| TN-24590-06-02365 | LAB in Slab, Below Slab & In-Cell Pipe Installation |
| TN-24590-06-02366 | Emergency Diesel Generator Re-design |
| TN-24590-06-02367 | Additional PJM Testing - Multiple Overblows and I&C Equipment Testing |
| TN-24590-06-02368 | Melter Feed Studies - Additional Tank |
| TN-24590-06-02369 | LAW Bogie Rail Trend due to New Grouting Requirement-Epoxy Grout |
| TN-24590-06-02370 | Remove Budget for ABB Technical Services Subcontract from Equipment Work Packages |
| TN-24590-06-02371 | BOF Planning Package Definitization |
| TN-24590-06-02372 | LAB Planning Package Definitization |
| TN-24590-06-02373 | Consulting Agreement for Fire Protection of HEPA Filters |
| TN-24590-06-02374 | Alignment of Cobra Dates with LBL Resequencing OTB Schedule |
| TN-24590-06-02376 | Align PO Value Due to Escalation, Schedule Extension, & New Scope |
| TN-24590-06-02379 | Phase 2 - Large Scale Gas Retention / Release (in the presence of anti-foam) |
| TN-24590-06-02380 | LAW Shield Door Additional Coating |
| TN-24590-06-02384 | Seismic Qualification of SC-I/II/III Equipment |
| TN-24590-06-02385 | Underground Cable Size Increases |
| TN-24590-06-02386 | RGM and Other Steel Changes Requiring New SASSI Run |
| TN-24590-06-02387 | LAW Coatings Budget |
| TN-24590-06-02388 | Technology Readiness Level Assessment/CRESP (Misc ORP Driven Reviews) |
| TN-24590-06-02391 | RF Resin Stage 2 and 3 Testing Budget Re-alignment |
| TN-24590-06-02392 | Safeguards and Security Budget |
| TN-24590-06-02393 | HPAV Design Confirmation Studies |
| TN-24590-06-02394 | LAW Monorail Alignment and Pour Cave Radiation Shielding Installation |
| TN-24590-06-02395 | New C2 Duct added to BSA in LAW |
| TN-24590-06-02396 | Continue Procurement of Concrete Related Items due to Schedule Extension |
| TN-24590-06-02397 | Storage of Shield Windows (PT, LAW, HLW, and LAB) |
| TN-24590-06-02398 | Jib Crane Design Evolution |
| TN-24590-06-02399 | MH014 - Change of Design Scope for HSH Slewing JIB Coverage |
| TN-24590-06-02400 | Addition of Eight 10.5 inch Shielding Plugs for Black Cell Access Penetrations |
| TN-24590-06-02401 | STR Support of Fireproofing of Structural Steel |
| TN-24590-06-02402 | PTF Internal Replanning |
| TN-24590-06-02404 | LAB Roofing and Siding Subcontractor Delay and Acceleration |
| TN-24590-06-02405 | LAW Schedule Delay of Roofing and Siding Subcontractor |
| TN-24590-06-02406 | Conversion of Sprinkler System to Dry Pipe/Nitrogen in LAB Hot Cell |
| TN-24590-06-02407 | Government Property Organization Staffing Trend |
| TN-24590-06-02410 | LAB Subcontractor Support Job Hour |
| TN-24590-06-02411 | Fireproofing Structural Steel Design Changes |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-02417 | HLW HVAC Subcontract Replanning |
| TN-24590-06-02421 | Support to DNFSB |
| TN-24590-06-02422 | Operational Readiness - Late Adjustment Detailed Estimate |
| TN-24590-06-02424 | LBL Resequence Estimating Corrections - Transfer to MR |
| TN-24590-06-02426 | 2007 Execution Revision |
| TN-24590-06-02428 | LAB Design Quantity Changes from Budget for Elevated Slab |
| TN-24590-06-02429 | QL-POA-ADDH-00007 Change Requirements to Awarded Contract |
| TN-24590-06-02430 | WTP Assessment of Latest Seismic Boring Data |
| TN-24590-06-02432 | MH Equipment Supplier RGM Scope Reduction |
| TN-24590-06-02433 | PTF Floor Penetration Modules |
| TN-24590-06-02434 | PT Room P-0332B Shield Wall Changes |
| TN-24590-06-02435 | HLW Crane Configuration Changes |
| TN-24590-06-02436 | Partition Wall Structural Calculations for HVAC Transfer Ducts |
| TN-24590-06-02438 | Plant Design Support to RGM Worksopce |
| TN-24590-06-02439 | Addition of Pretreatment Hot Cell Crane |
| TN-24590-06-02440 | HEH Cask Lidding Configuration |
| TN-24590-06-02441 | Rebar Detailing Continuation of Services |
| TN-24590-06-02442 | Align PO Value for Vessel Vent Caustic Scrubber - New Scope |
| TN-24590-06-02443 | Convert CS&A Hours ODC for TSC |
| TN-24590-06-02445 | Construction Subcontract Data Trace Resolution |
| TN-24590-06-02447 | Concrete Bulks Estimate Adjustment for Central Pre-Mix (CPM) Schedule Extension |
| TN-24590-06-02448 | LAW Fireproofing Repairs |
| TN-24590-06-02450 | Moving Approved Sunflower Hours From B0 to B1 |
| TN-24590-06-02452 | Add'l Coating Requirements for LVP & HOP Carbon Bed Adsorbers |
| TN-24590-06-02456 | Instrument Tubing Clamps |
| TN-24590-06-02460 | Establish Process Engineering & Technology Organization |
| TN-24590-06-02463 | Early LBL - Hot Commissioning |
| TN-24590-06-02464 | HPAV Design Authority Revision |
| TN-24590-06-02465 | PJM Mixing and Multiple Overblow Control |
| TN-24590-06-02466 | Distribution of Auto-Sampler System (ASX) LAPP, including Change to Bi-Directional Carrier System |
| TN-24590-06-02467 | Capacity Mods [1] [BCP-2307-Must Take Out 13,162] |
| TN-24590-06-02468 | PTF Capacity Mods Undemonstrated Leaching [2 - 8] |
| TN-24590-06-02469 | PTF Capacity Mod Utilities |
| TN-24590-06-02470 | HLW Mod 1 Modifications to Support 7.5 MTG/Day Increased Capacity Throughput |
| TN-24590-06-02471 | EFRT (M1 & M6) Implementation of Design Changes to Prevent Line Plugging |
| TN-24590-06-02472 | EFRT (M3) Inadequate Vessel Mixing |
| TN-24590-06-02473 | Materials Management Organization Startup |
| TN-24590-06-02475 | Allocate ODC Budget for Testing of Grouted Rebars & Anchors |
| TN-24590-06-02476 | LAW Architectural Post-IFC Budget |
| TN-24590-06-02477 | EFRT M14 IX Resin and Related IX EFRT Activities |
| TN-24590-06-02478 | M-12, Mod 3: Front End Leach Capacity, with Option 1 |
| TN-24590-06-02479 | LAW Partition Wall Changes |
| TN-24590-06-02480 | Design Change to LMP System for LAW Facility |
| TN-24590-06-02482 | Review of Intools LBL Process Data |
| TN-24590-06-02483 | Extra storage cost NW Copper vessels thru Sept 07 |
| TN-24590-06-02488 | FY07 Budget Alignment for Duratek Tasks 1 through 7 |
| TN-24590-06-02490 | Increased Work Scope for the LOP System in LAW |
| TN-24590-06-02491 | BOF Coating Subcontractor Support Job Hour |
| TN-24590-06-02493 | PT and HLW Coating Subcontractor Support Job Hour |
| TN-24590-06-02494 | Chiller Compressor Building Pipe Rack Coatings Budget |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-02495 | Consolidation of N102A Remaining Hrs |
| TN-24590-06-02496 | Crane Rail Splice Welding |
| TN-24590-06-02498 | EFRT Issue M3 Program to Determine Adequacy of WTP Pulse Jet Mixer Design |
| TN-24590-06-02499 | Line Plugging (M1) |
| TN-24590-06-02501 | Closeout of QL-POA-ADDH-00002 Due to Unidynamics Bankruptcy |
| TN-24590-06-02502 | Commissioning Simulants - Revision to Schedule |
| TN-24590-06-02503 | Mixing Vessel Erosion (M2) |
| TN-24590-06-02504 | Revise Environmental Risk Assessment per EPA Guidance & Obtain 1 Yr Air Model Data |
| TN-24590-06-02505 | Fire Protection T-52 Warehouse Redesign |
| TN-24590-06-02506 | Develop Dynamic Analysis Program for PTF HVAC Design |
| TN-24590-06-02509 | Project Controls Increased Support Requirements |
| TN-24590-06-02510 | EVMS Certification / CAR Resolution Impacts to Project Controls |
| TN-24590-06-02512 | Additional HLW ITS Cooling for Fan Rooms |
| TN-24590-06-02513 | HVAC Piping and Valve P&ID |
| TN-24590-06-02515 | Plant Design Miscellaneous Conceptual Design Studies |
| TN-24590-06-02517 | BOF Miscellaneous Piping Field Modifications |
| TN-24590-06-02521 | Thermal Catalytic Oxidizer and Silver Mordenite Preheater Work Scope Change |
| TN-24590-06-02525 | Refrigerant Lines for Remote Condensers |
| TN-24590-06-02526 | LAW Carbon Dioxide Storage Vessel Quality Change |
| TN-24590-06-02530 | Mitigate Water Droplet Formation at LAW LVP Stack |
| TN-24590-06-02531 | BOF Safety Shower Water Temperature |
| TN-24590-06-02532 | Safety Control Instrumentation / SSRS Additional Work and Unit Rates |
| TN-24590-06-02534 | Early Energization of Cathodic Protection Systems |
| TN-24590-06-02535 | Environmental Qualification Manhours for all Facilities |
| TN-24590-06-02540 | DOW Booster Pump Removal in PTF and LAW |
| TN-24590-06-02543 | PTF Evaporators - AREVA |
| TN-24590-06-02547 | Reconciliation of PNNL Stack Qualification Budget |
| TN-24590-06-02550 | CM-MRA-EL00-00009, LAW Lighting Fixtures |
| TN-24590-06-02551 | HLW Melter Pour Spout Design |
| TN-24590-06-02555 | Additional Engineering Hours for HVAC Environmental Qualification |
| TN-24590-06-02556 | Re-bid of Ammonia MR #24590-QL-MS00-00008 |
| TN-24590-06-02557 | Changes to PTF Bulges / Cabinets and Bulk Valve Order |
| TN-24590-06-02558 | Addition of Steam Traps and Strainers to BOF SCW P&IDs |
| TN-24590-06-02559 | Generate Equipment Loads for Near-Term PTF/HLW Concrete Design |
| TN-24590-06-02560 | New MR for Blanket Order of Distribution Panelboards and Transformers |
| TN-24590-06-02565 | Startup LAW RWH-CRN-00008 for Beneficial Use by Construction |
| TN-24590-06-02567 | SS Resequencing Corrections and Additional Staffing Needs |
| TN-24590-06-02575 | HLW Floor Preparation for Special Coatings |
| TN-24590-06-02579 | LAW Process and Effluent Cell Vessel Shims/Plates/Bars |
| TN-24590-06-02582 | LAW First Conceptual Design Report, Revised Basis of Design, & Negotiate ICD Agreement |
| TN-24590-06-02584 | CM-MRA-AELE-00009 / QL-MRA-AELE-00009 Material Requisition Schedule Activities PREF Codes Correction |
| TN-24590-06-02586 | Additional Coatings for WTP Equipment |
| TN-24590-06-02588 | Six Sigma PIP - Reviewing FCR/FCNs and NCR/CDRs |
| TN-24590-06-02589 | Calculations Resulting from CAR-06-250 Action # CAR-25-5 |
| TN-24590-06-02590 | Increase in Design Review Notice and Design Verification Activities |
| TN-24590-06-02591 | Budget Realignment for Duratek Melter Feed Studies |
| TN-24590-06-02593 | LAW Miscellaneous Structural Steel Modification |
| TN-24590-06-02595 | Additional Staffing for Acquisition Services B1 |
| TN-24590-06-02597 | Consolidation of MS Equipment EPPR Accounts |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-02599 | B7 Subcontracts - Increased Staff |
| TN-24590-06-02600 | HLW EI. 14' Steel Changes |
| TN-24590-06-02603 | BOF Shrink Sleeve Replacement |
| TN-24590-06-02606 | Additional C3V HEPA Housing |
| TN-24590-06-02607 | Permanent Cranes - Radio Frequency Allocation |
| TN-24590-06-02609 | Budget for New & Existing Material Requisitions for C&I |
| TN-24590-06-02610 | Transfer of HLW and LAW Spare Melter Budget from Commissioning to Engineering |
| TN-24590-06-02612 | Battelle/PNNL Contract Conversion |
| TN-24590-06-02614 | BCP HLW Film Cooler (M17) |
| TN-24590-06-02618 | Steam Sys. & High Energy Line Study-CRPT-QA-06-218 Actions |
| TN-24590-06-02619 | EVMS Compliant Control Account Structure |
| TN-24590-06-02621 | Definitization of DOE Order 226.1, Implementation of DOE Oversight Policy |
| TN-24590-06-02624 | Process Limits Definition (M6) R&T Activities |
| TN-24590-06-02625 | Radar Polypropylene Window Additions |
| TN-24590-06-02630 | Sanitary Sewer O&M Manual Revision |
| TN-24590-06-02631 | Modify Leak Detection System for LMP-LDB-00001 & 00002 |
| TN-24590-06-02633 | CAR 2 Corrective Action Phase I - Reverse Implemented PEM Claims Budget WPs to MR |
| TN-24590-06-02634 | CAR 2 Corrective Action Phase II - Reallocate PEM Remaining Claims Budget LAPP to MR |
| TN-24590-06-02636 | Bus Duct Related Rework and Inefficiencies |
| TN-24590-06-02637 | SQ Shift-Transfer of ODC 89 into Direct Hire 1313 |
| TN-24590-06-02639 | Humphreys & Assoc. Increase |
| TN-24590-06-02641 | Automated Flush to Bubbler Racks for LAW and HLW Facilities |
| TN-24590-06-02643 | Transfer of Remaining Budget in 1.08 EQ to Other Accounts |
| TN-24590-06-02644 | LAW Miscellaneous Piping Changes |
| TN-24590-06-02646 | Review of DOE Order 420.1B for Impacts to WTP |
| TN-24590-06-02648 | LAW Removal of Fireproofing and Rework due to NLD Dwg Changes |
| TN-24590-06-02649 | BCP Transfer Budget from PP to WP |
| TN-24590-06-02650 | Transfer of Process Engineering & Flowsheet Modeling Scope from Engineering Mgt Account |
| TN-24590-06-02652 | BCP EFRT Budget Re-distribution |
| TN-24590-06-02654 | Develop Standard CM Cable Tray/Conduit Support Detail Dwgs and Model Raceway Supports in PTF 3D Model |
| TN-24590-06-02655 | 4-Month DOE ORR to 2-Month DOE ORR |
| TN-24590-06-02658 | LAW/LAB Fabrication Isometrics |
| TN-24590-06-02660 | Fabricated Panel Order - New Material Requisition |
| TN-24590-06-02662 | Align Work Packages with the Correct Control Accounts |
| TN-24590-06-02664 | Transfer E&NS Budget from Planning Packages to Work Packages |
| TN-24590-06-02665 | Create 1.08.HH-PW LOE Control Acct & Req'd OBS Change E&NS |
| TN-24590-06-02666 | BCP-Create 1.08 DL PW LOE Control Acct for Eng |
| TN-24590-06-02670 | HVAC PP to WP Conversion |
| TN-24590-06-02671 | BCP CAR 05 (BCP not taken the same manner as BCWS) Closure |
| TN-24590-06-02672 | Coupled Analysis of PTF and HLW Filter Caves |
| TN-24590-06-02673 | Modifications to LAW as a Result of Environmental Qualification |
| TN-24590-06-02675 | Change to PSA System & Addtl Piping for LAW Steam Systems |
| TN-24590-06-02677 | Time Related Costs for Execution Strategy Revision |
| TN-24590-06-02680 | Resolution of Process Engineering Confirmed Calculation Budget |
| TN-24590-06-02682 | Revise Panel to Implement 3 Pole Breakers Multi-Wire Branch Circuits |
| TN-24590-06-02683 | Upgrade of Plant Fiber Optic Cable for Distance and Bandwidth |
| TN-24590-06-02684 | Implementation of Pipe Support ABAR into Criteria, Guides, and Standard Calculations |
| TN-24590-06-02685 | Stelite Cone and Ring Beam NDE N690 Redesign |
| TN-24590-06-02686 | Review of Vendor and Other Discipline Documents |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-02687 | Overflow Calculations Resulting From CRPT-05-140 |
| TN-24590-06-02688 | AEA Manipulator Tool Power/Removal Changes |
| TN-24590-06-02689 | 490 Curtailment Cost/Schedule Delays for Power Manipulators Remobilization |
| TN-24590-06-02690 | PVP Header Pressure |
| TN-24590-06-02691 | LVP-SCB-00001 Design Scope Change |
| TN-24590-06-02693 | HLW Decon Pit Shield Limits |
| TN-24590-06-02696 | 24590-QL-POA-MEEM-00001 Schedule Change Melter 1 - LAW |
| TN-24590-06-02697 | BCP Budget Trans Matl PP 4MT-081960-PP to GE-Ionics |
| TN-24590-06-02698 | HLW Mod 2 - Plant Components for Potential Future HLW Concentration Annex |
| TN-24590-06-02699 | PTF AB Design Review Support |
| TN-24590-06-02700 | Engineering Support to Melter Fabrication |
| TN-24590-06-02701 | P&ID Enhancement Program |
| TN-24590-06-02702 | DOE Order 413.3 LAPP Savings and Configuration Mgt of Vendor P&I's |
| TN-24590-06-02703 | BCP - LAW Hydrogen LAPP to PP |
| TN-24590-06-02707 | LAW Container Overpack/Elevator Cooling Modifications |
| TN-24590-06-02709 | CSA Support to WTB Pipe & Cable Tray Supports |
| TN-24590-06-02710 | Ultrafilter Drain Cleanout Demonstration Testing |
| TN-24590-06-02711 | LAW Piping Commodities Forecast Revision |
| TN-24590-06-02713 | Incorporation of Revised Standard 1 - Cost Estimate |
| TN-24590-06-02715 | Equipment PP Transfer from MAR 07 to MAY 07 |
| TN-24590-06-02717 | Commissioning PP Transfer from MAR 07 to APR 07 |
| TN-24590-06-02718 | LAB Structural Steel Pricing Revisions |
| TN-24590-06-02719 | LAW Pour Cave Cooling Panel Installation |
| TN-24590-06-02721 | Support Services Additional Lease Space |
| TN-24590-06-02723 | Increased CDF Backfill Quantities / Melter Assembly Pad Electrical Changes |
| TN-24590-06-02724 | Additional HVAC Subcontract Support Craft Hours |
| TN-24590-06-02725 | Replace Installed Unscheduled Cable/Welding Receptacle Insta |
| TN-24590-06-02726 | SS Resequencing Correction- Support Services Labor |
| TN-24590-06-02727 | Create Additional Control Accounts for PT & HLW |
| TN-24590-06-02729 | LAB Steel Quantity Mix (New changes from OCT 2006 QDP) |
| TN-24590-06-02730 | Air Inbleed for LAW LOP Film Coolers |
| TN-24590-06-02731 | Rad Transfer Lines Shrink Wrap Analysis |
| TN-24590-06-02732 | Increased Receiving Inspection Work Load (B6) |
| TN-24590-06-02735 | Melter Feed Studies Task 8 - Schedule Re-baselining and Additional EFRT Scope |
| TN-24590-06-02736 | Lease Rate and Co-Location impacts to Support Services |
| TN-24590-06-02737 | Fire Modeling of Selected Areas of WTP Facilities |
| TN-24590-06-02738 | Miscellaneous Steel Detailing Services |
| TN-24590-06-02739 | Transfer Of Scope From Plant Equipment Group |
| TN-24590-06-02740 | HLW Electrical Joggle Purchase Strategy Change |
| TN-24590-06-02741 | BCP Changes to C&I ID for Work Packages |
| TN-24590-06-02742 | PTF Jumper Material Re-estimate |
| TN-24590-06-02743 | BOF Excavation Unit Rate Adjustment |
| TN-24590-06-02748 | LAW - Additional Transition Frames for AHUs and FCUs |
| TN-24590-06-02749 | Reversal of Plant Equipment Budget from Management Reserve |
| TN-24590-06-02753 | WTP Rebar Density Savings |
| TN-24590-06-02754 | CFD Design Evolution and Delay |
| TN-24590-06-02755 | HDH Decon Vessel Heating System |
| TN-24590-06-02757 | Negotiated Savings - Six Sigma PIP 012 |
| TN-24590-06-02758 | LAW Piping Unit Rate Forecast |
| TN-24590-06-02759 | BCP Alignment of Equip Mang System to Baseline Schedule |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-02762 | BCP Reallocation of Plant Equipment Scope |
| TN-24590-06-02763 | Physical Configuration Audit for HLW Shield Doors Melter Cave |
| TN-24590-06-02764 | 490 Curtailment Suspension Cost Wall Mounted Light/Socket Assemblies |
| TN-24590-06-02767 | Implement ABB Process Control Device Library for ICN Software |
| TN-24590-06-02768 | ISARD Revision 4 Delayed Start |
| TN-24590-06-02769 | Additional Engineering Training |
| TN-24590-06-02770 | Criticality Safety HAZOP |
| TN-24590-06-02771 | Convert PP to WP |
| TN-24590-06-02773 | Convert HVAC PP to WP |
| TN-24590-06-02775 | Reversal of Plant Material Budget from Management Reserve |
| TN-24590-06-02777 | Process Engineering and Flowsheet Modeling COBRA Reload |
| TN-24590-06-02779 | HFP Vessels Hydrogen Generation Mitigation Study |
| TN-24590-06-02781 | Distribution of Auto-Sampler (ASX) Phase II |
| TN-24590-06-02784 | LAW PP to WP Conversion |
| TN-24590-06-02786 | Forward Pricing Rates (FPR) (May-2007) |
| TN-24590-06-02787 | Excess Government Property Disposal |
| TN-24590-06-02790 | Removing Freight Budget (B4) |
| TN-24590-06-02791 | Savings LAW Equipment award less than budget |
| TN-24590-06-02793 | Savings Reduction in planned revisions |
| TN-24590-06-02794 | Savings LAW & BOF Elec Bulk Commodity Quantity Reduction |
| TN-24590-06-02795 | Savings Potential reduction in RGM EAC |
| TN-24590-06-02796 | Convert Planning Pkg Work Pkg for DOE Order 414.1C |
| TN-24590-06-02798 | BOF Long Term Storage and Setting Chillers |
| TN-24590-06-02799 | BOF Glass Former Slab - Silos and other Equipment |
| TN-24590-06-02800 | Commercial Grade Dedication Activities |
| TN-24590-06-02801 | BCWS Point Adjustment Control Point Repair |
| TN-24590-06-02802 | PATS 618,974,2545,2696,2839 Budget Redist-Follow BCP-02749 |
| TN-24590-06-02803 | BSA Compressors - Increase in Chill Water Pressure Rating |
| TN-24590-06-02804 | CM Receipt Inspection Work Scope Shift from Materials Manage |
| TN-24590-06-02807 | EFRT M-17 Film Cooler Redesign and Testing |
| TN-24590-06-02809 | 490 Curtailment Suspension Cost for Through Wall Manipulators |
| TN-24590-06-02810 | 490 Curtailment Suspension Cost for 13.8 KV Switchgear |
| TN-24590-06-02811 | Change in Contracting Strategy for Penetration Seals |
| TN-24590-06-02812 | Reversal of Budget for DOE M 205.1-2 (IS&T) |
| TN-24590-06-02813 | Referral Bonus Program |
| TN-24590-06-02815 | LAB Additional Activity to Support Deck Slab |
| TN-24590-06-02816 | Extension of Process Engineering Support |
| TN-24590-06-02817 | BOF - S/C Insulation and Heat Trace Reschedule |
| TN-24590-06-02818 | Transfer DOE Order 226.1 from PP to Management Reserve |
| TN-24590-06-02819 | HLW EI 14 ft to 37 ft Gatepost Milestone Reschedule |
| TN-24590-06-02820 | Procurement of Bulk Plate Material |
| TN-24590-06-02822 | BOF setting of Dryers |
| TN-24590-06-02823 | Design Changes to Conduit Requires an Increase to Direct Hire Job Hours |
| TN-24590-06-02825 | LAW - Pour Cave Cooling Panel Support |
| TN-24590-06-02830 | Compliance with DOE/WTP Security Requirements at WTP Satellite Offices |
| TN-24590-06-02831 | LAW Remove Intumescent FP on 14X90 Columns & Reapply with Cementitious |
| TN-24590-06-02833 | Transfer of LAB Equipment Level 4 Schedule Responsibilities |
| TN-24590-06-02836 | LAW Melter Slab |
| TN-24590-06-02838 | LAW Special Coatings PP to WP Conversion |
| TN-24590-06-02839 | Implementation of 10 CFR 851-Worker Safety and Health Program |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-02843 | Implementation of Official Use Only (DOE Order 471.3 and DOE M 471.3-1) |
| TN-24590-06-02844 | LAW Melter Lid Calculation Subcontract |
| TN-24590-06-02848 | Degraded Anti-Foam and Impacts on Gas Retention/Release |
| TN-24590-06-02850 | In-House Rack Design Schedule Alignment |
| TN-24590-06-02851 | Alignment of PP within the EMS to overall completion dates for the facilities |
| TN-24590-06-02852 | LAW Planning Pkg to Work Pkg Conversion |
| TN-24590-06-02853 | Schedule Changes LBL HVAC Design Support Activities |
| TN-24590-06-02854 | Construction Distribs Budget Increase (June 06 - Mar 07) due to Direct Craft Labor BCPs |
| TN-24590-06-02855 | LAB PP to WP |
| TN-24590-06-02857 | PT Favorable Cost Variance Scope Completion |
| TN-24590-06-02859 | Add Column Splice at El. 81' |
| TN-24590-06-02860 | Align BCWS to post ESR Baseline Schedule |
| TN-24590-06-02863 | Transfer of Operational Risk Assessment Budget |
| TN-24590-06-02866 | Deferral of CY 2007 Early LAW Conceptual Design Report and Early LAW Commissioning Activities |
| TN-24590-06-02867 | E&NS Support to DNFSB Meetings |
| TN-24590-06-02868 | LAB Communication Data Drop Additions |
| TN-24590-06-02870 | New Material Handling Facility and Relocation of Marshaling Yard |
| TN-24590-06-02871 | HLW Transfer Part of Curtailment Construction Scope to Marshaling Yard |
| TN-24590-06-02872 | ASCE-4 Modal Combination Piping Reanalysis |
| TN-24590-06-02876 | Phase II Pre Eng Type A Bldgs (affected facilities BOF, LAW) |
| TN-24590-06-02878 | LAW Planning Package to Work Package |
| TN-24590-06-02879 | LAB Convert Sub-Contract Planning Packages to Work Packages |
| TN-24590-06-02882 | ICD 19 Reconciliation Trend Study |
| TN-24590-06-02883 | PP Replan for R&T for PW and PT |
| TN-24590-06-02887 | Sub-Contracts Planning Package to Work Package Conversion |
| TN-24590-06-02888 | BOF Motor Starter Planning Package to Work Package Conversion |
| TN-24590-06-02889 | PT Facility Planning Package to Work Package Conversion |
| TN-24590-06-02891 | Descoping of Remote Clamp Connector MR |
| TN-24590-06-02892 | PT Sub-Contract Planning Package to Work Package Conversion |
| TN-24590-06-02894 | Staff Reduction for LA-ICP-AES |
| TN-24590-06-02897 | LAW FY07 Gatepost Milestones |
| TN-24590-06-02898 | RF Testing Cost Under Run |
| TN-24590-06-02901 | Relay Setpoints and Setting Reports |
| TN-24590-06-02902 | Movement of LAW Non-Camera Equipment from one L4 Schedule Activity to another |
| TN-24590-06-02903 | BOF Planning Package to Work Package Conversion |
| TN-24590-06-02906 | BOF RAD Lines, Insulation of DOE and RAD Lines |
| TN-24590-06-02907 | Hirschfeld Steel Company Request for Equitable Adjustment - Negotiated Settlement |
| TN-24590-06-02908 | BOF EFRT Scope Allowance Removal |
| TN-24590-06-02909 | LAB Hot Cell Trolley System |
| TN-24590-06-02911 | LAB Concrete Favorable Performance |
| TN-24590-06-02912 | EMS Level 5 Alignment to Level 4 Baseline Schedule |
| TN-24590-06-02914 | Postponement of Diesel Generator Tank Coating Activities |
| TN-24590-06-02915 | Transfer of Hours to ODCs to Fund BOA Contract |
| TN-24590-06-02916 | CSA HLW Schedule Revision |
| TN-24590-06-02917 | NDE Reduction for Welds on Pipework in Hard to Reach Areas |
| TN-24590-06-02918 | PP Replan for R&T for HLW & LAW |
| TN-24590-06-02919 | LAW Embed Quantity Reduction |
| TN-24590-06-02921 | C&I Control Strategy Design Review |
| TN-24590-06-02922 | Three Part Schedule Logic Correction |
| TN-24590-06-02924 | Impact of Revised CGD Requirements for the HOP and LVP Carbon Bed Absorbers |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-02929 | M3/M2-Inadequate Vessel Mixing/Erosion |
| TN-24590-06-02930 | HLW MOD-1 Support for 7.5MTG/day Next Generation Melter Throughput |
| TN-24590-06-02932 | PTF Capacity Mods Utilities |
| TN-24590-06-02936 | LAB Installation of Floor Mounted Jib Crane |
| TN-24590-06-02937 | HLW HVAC Restart |
| TN-24590-06-02938 | Claim for 222S LA ICP-AES Instrument |
| TN-24590-06-02940 | Budget to Provide Large Scale for Effects of AFA on Gas Retention/Release |
| TN-24590-06-02941 | Technology Maturation Plan IRPs & VE Study Prep |
| TN-24590-06-02943 | M5 and M9 Late Adjustment PP to PP transfer within Commissioning Budgets |
| TN-24590-06-02946 | Conversion of PP to WP Canister Racks QL-POA-SY00-00003 |
| TN-24590-06-02949 | Seismic Calc for SC-1 & SC-2 Gypsum Board Walls in PT & HLW |
| TN-24590-06-02950 | Generate Equip Loads for PTF/HLW Concrete Design to Support L4 Schedule |
| TN-24590-06-02953 | Partial Commissioning Distribution of the 1.08 WBS |
| TN-24590-06-02954 | Backflow Preventers |
| TN-24590-06-02955 | LAW Swab Manipulator Container Height Adjustment |
| TN-24590-06-02956 | Replan Subcontract Support for Safety Document Maintenance |
| TN-24590-06-02957 | BOF & LAB Equipment Favorable Savings |
| TN-24590-06-02959 | Plant Equipment Non-Negotiated Claim Return to Management Reserve |
| TN-24590-06-02961 | Study for Steam Heating UFP Vessels - EFRT PT M12 changes |
| TN-24590-06-02962 | Cesium Nitric Acid Neutralization |
| TN-24590-06-02963 | ODC's to support E&NS HPAV activities |
| TN-24590-06-02965 | Savings on Silver Mordenite Columns |
| TN-24590-06-02967 | Alignment of LAW Melter Budgeted Cost for Work Scheduled (BCWS) with the existing Purchase Order |
| TN-24590-06-02968 | Implementation of M095 - Add DOE M 442.1-1 (DPO) |
| TN-24590-06-02972 | LAW: Recovery from Unidynamics Bankruptcy and Arch - Roofing and Siding |
| TN-24590-06-02973 | LAW 1) Bulk Installation Package 2) Annex Roof Decking 3) Vent Stack Piping |
| TN-24590-06-02974 | LAW CGD Requirements for the LVP Carbon Bed Absorber |
| TN-24590-06-02976 | Fluidic Devices Jet Pulse Mixers ECAR for QL-POA-MPE0-00002 |
| TN-24590-06-02981 | Descoping of Undefined Plant Equipment Planning Packages |
| TN-24590-06-02982 | Startup Impacts Due to Fire Service Water PP to WP conversion |
| TN-24590-06-02983 | Commissioning Impacts Due to Fire Service Water PP to WP Turnover |
| TN-24590-06-02984 | LAW Transition Frames |
| TN-24590-06-02985 | LAW Planning Pkg to Work Pkg Conversion |
| TN-24590-06-02986 | LBL Subcontracts PP to WP Conversions |
| TN-24590-06-02990 | Alignment of HLW Melter BCWS with existing PO QL-POA-MEEM-00002 |
| TN-24590-06-02993 | PP Start Date Correction - ER-BCP-03-PP |
| TN-24590-06-02994 | PP Start Date Correction - ER-BCP-05-PP |
| TN-24590-06-02996 | LAW Melter Feed Simulant Replacement |
| TN-24590-06-02998 | HLW Convert PP to WP |
| TN-24590-06-03001 | Commercial Grade Dedication Schedule |
| TN-24590-06-03002 | Subcontract Planning Package to Work Package Conversion |
| TN-24590-06-03003 | CO2 Pelletizers System Design Changes |
| TN-24590-06-03004 | Acquisition Services into Three Control Accounts |
| TN-24590-06-03008 | North Lay Down Yard Relocation |
| TN-24590-06-03010 | IHLW Rescreening of WAI Items and Canister Calculations |
| TN-24590-06-03012 | Engineering Automation Staffing & Training Increase |
| TN-24590-06-03015 | Added 8 Start-Up Flanges for FSW |
| TN-24590-06-03016 | LAW Annex Roofing and Siding Budget |
| TN-24590-06-03017 | Marshalling Yard Consolidation - Labor Savings |
| TN-24590-06-03019 | Commissioning Task Replan |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03020 | LBL Replan |
| TN-24590-06-03025 | Startup Instrument Calibration budget transfer to C&T Maintenance |
| TN-24590-06-03027 | Change logics for Hammock activities for transition to P5 |
| TN-24590-06-03029 | M-12 Pretreatment Engineering Platform Utility Increase for Vertical Filters |
| TN-24590-06-03030 | M-2 Additional Testing |
| TN-24590-06-03032 | Savings on West Metals |
| TN-24590-06-03033 | Collection of PJM test Results |
| TN-24590-06-03035 | WTP Project Selective use of WSGM |
| TN-24590-06-03038 | Permit/Risk Assessment Schedule for EFRT/Capacity Modifications |
| TN-24590-06-03039 | 490 Curtailment Costs & Schedule delays for Weir Hazleton Feed Vessel Pump |
| TN-24590-06-03040 | Additional REAs to HLW Melter Fabrication |
| TN-24590-06-03043 | Addition of Facility DOW Expansion Tanks |
| TN-24590-06-03046 | PP to WP Conversion - Plant Equip Exec Rev Impacts |
| TN-24590-06-03047 | Transfer of Budget and Schedule for ASD Procurement |
| TN-24590-06-03048 | Unsolicited Vendor REA - LAW Melter Spool Connections |
| TN-24590-06-03050 | 1.08-HH Staffing Variance |
| TN-24590-06-03051 | EFRT Major Issues M15 - Availability, Operability and Maintainability |
| TN-24590-06-03052 | Subcontract PP to WP Conversion |
| TN-24590-06-03053 | Moving PW Warehousing & 2nd waste tracking from PT equipment |
| TN-24590-06-03056 | Savings on Condensate Collection Vessels |
| TN-24590-06-03057 | Startup Impacts Due to Early Energization of Cathodic Protection System - PP to WP Conversion |
| TN-24590-06-03067 | Addition of Process Regulator Scope for LAW & HLW Erroneously Omitted in Bulk Transfer |
| TN-24590-06-03068 | Reallocation of Budget for Elec Work PP in Equip Mang Sys |
| TN-24590-06-03069 | LAW 5-Part Rework |
| TN-24590-06-03070 | HLW Baseline Schedule Logic Corrections |
| TN-24590-06-03075 | PT & HLW Mixing Design Evaluations |
| TN-24590-06-03076 | Material Management Staffing Increase - Non Manual |
| TN-24590-06-03078 | BOF PP to WP and Replan |
| TN-24590-06-03079 | Allocating budget into correct WP |
| TN-24590-06-03080 | LAW Convert PP to WP |
| TN-24590-06-03081 | Increased Field Non Manual Requirements for CY08 |
| TN-24590-06-03082 | Transfer of CSA Hours to ODCs for ESQ Subcontract |
| TN-24590-06-03084 | BOF - Coating of Pipe Rack Connections |
| TN-24590-06-03085 | LAW Caulking |
| TN-24590-06-03086 | Additional Scope for EFRT Issue M-2 Vessel Erosion |
| TN-24590-06-03087 | LAW Freight Elevator Schedule Delay |
| TN-24590-06-03091 | LAB Change logics for Hammock activities for transition to P5 |
| TN-24590-06-03092 | Additional Manhours for Construction Equipment Inspection/Spotters |
| TN-24590-06-03096 | LAB Stack Internal replan |
| TN-24590-06-03097 | Plant Design HPAV Schedule Update |
| TN-24590-06-03098 | Concrete Pump Truck Increased Efficiency PT & HLW Commodity Installs |
| TN-24590-06-03105 | Intools Input Effort - Schedule Correction |
| TN-24590-06-03111 | HFP Overflow Flapper Valves |
| TN-24590-06-03112 | PTF Bulge CRPT-06-219 Issue Resolution |
| TN-24590-06-03113 | OSHA 2 Inch Running Clearance for HLW Maintenance Cranes |
| TN-24590-06-03114 | REA Settlement for Still-Water QL-POA-PF00-00002 |
| TN-24590-06-03116 | Adding schedule activities for QL-MRA-MJW0-00003 |
| TN-24590-06-03119 | Property Management Scope and Budget Transfer from Acquisition Services to Material Management |
| TN-24590-06-03120 | UFP and PWD Vessel Ring Beams Refabrication |
| TN-24590-06-03121 | 80% Bulk Material and Equipment Reforecast |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03122 | Assess Impact of Implementing DOE M 470.4-1 and DOE M 470.4-2 |
| TN-24590-06-03128 | HLW Schedule Logic Corrections to Construction Schedule |
| TN-24590-06-03129 | Cylinder Bottle Pressurized PP to WP Conversion |
| TN-24590-06-03133 | Create Material Milestones in Primavera |
| TN-24590-06-03134 | PP Replan for HLW and LAW |
| TN-24590-06-03137 | LAB Communications Change to Cable Tray |
| TN-24590-06-03138 | Lifting Beam Specification Revision and Capacity Increase |
| TN-24590-06-03139 | Crane Combustible Inventory Reduction |
| TN-24590-06-03140 | Capacity Mod Impacts to HLW Canister Racks |
| TN-24590-06-03141 | Change HLW HEME Internal Components to Q |
| TN-24590-06-03142 | Potential Reduction in HLW ODC's |
| TN-24590-06-03144 | BOF Maintenance and Janitorial Services for the Simulator Building |
| TN-24590-06-03145 | Replan of To-Go Hours for Developing Testing Admin Procedures |
| TN-24590-06-03149 | Realign MS Schedule for Field Change Documents |
| TN-24590-06-03150 | BOF Glass Former Storage Resequencing |
| TN-24590-06-03152 | BOF Site wide Cathodic Protection |
| TN-24590-06-03153 | LAB - PP to WP |
| TN-24590-06-03154 | Positive Cost Variance in H3 Accounts |
| TN-24590-06-03155 | Additional Construction Safety Program Costs CY08/09 |
| TN-24590-06-03156 | Transfer Budget from Construction Bulks to Subcontractor Fireproofing |
| TN-24590-06-03157 | BOF Subcontractor Cable Identification |
| TN-24590-06-03158 | Flooding Trend (Study Only) |
| TN-24590-06-03160 | Redesign of Cooling System for LAW Melter Lid |
| TN-24590-06-03161 | Pre Eng Type A Bldgs Phase II Cost Increase |
| TN-24590-06-03162 | Transfer Testing of Grayloc's from Equipment to ENG ODC |
| TN-24590-06-03164 | LAW - Revised Bolt Tightening Requirements |
| TN-24590-06-03166 | PT Vessel Subcontract to Direct Hour Conversion |
| TN-24590-06-03167 | New Warehouse Lease Cost |
| TN-24590-06-03171 | HLW Planning Package to Work Package Conversion |
| TN-24590-06-03173 | Purge Air for Hydrogen Mitigation in LAW Vessels |
| TN-24590-06-03174 | Additional Funding for RIO MR# 24590-CM-MRA-JC00-00006 |
| TN-24590-06-03175 | Cost Increase & Schedule Delays for HLW CCTV Due to 490 Funding Limitations/Design Evolution |
| TN-24590-06-03177 | Schedule Logic Correction for C&I LAW Confirmed Calculation |
| TN-24590-06-03178 | Down-Trend for HLW Spooled Pipe |
| TN-24590-06-03179 | Implementation of Equipment Qualification Program |
| TN-24590-06-03180 | Broad-Based Review |
| TN-24590-06-03181 | QL-POA-MEEM-00001 Approved ECAR's |
| TN-24590-06-03183 | LAW - Pour Cave Cooling Panels - Monorail Modification |
| TN-24590-06-03184 | LAW Scaffolding Support for Partition Walls |
| TN-24590-06-03186 | QL-POA-MEEM-00002 Approved ECAR's |
| TN-24590-06-03188 | Jumper Data Sheet Schedule Alignment |
| TN-24590-06-03189 | Piping Joggle Transfer of Budget from Concrete Embedments to Plant Material and Pricing Reconciliation |
| TN-24590-06-03193 | Deferral of CY 2008 Early LAW Activities to CY 2009 |
| TN-24590-06-03195 | REA Settlements for PaR Systems, Inc. |
| TN-24590-06-03196 | Sub-Contracts Planning Package to Work Package Conversion |
| TN-24590-06-03198 | Engineering Management Staffing Alignment |
| TN-24590-06-03201 | HLW Mods HVAC Design Mitigating Loss of Cooling/Heating Accidents |
| TN-24590-06-03202 | Heavy Lift Crane Mats |
| TN-24590-06-03206 | PTF PP to WP and Clarification of Work Scope |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03207 | Correct omission / error from BCP 06-3004 3 Control Accounts |
| TN-24590-06-03208 | Increase Cost for Severe Weather Doors |
| TN-24590-06-03209 | Impacts to LAW and LAB Coiling Door Subcontract |
| TN-24590-06-03210 | HLW Engineering Impacts from In-Structure Response Spectra (ISRS) Changes |
| TN-24590-06-03212 | LAB Steel Quantities |
| TN-24590-06-03214 | PT Hot Cell Crane Rail Beam Addtl NDE/Weld Rqmts Vendor Supplied Crane Rails |
| TN-24590-06-03216 | Transfer of Production and Added Scope for Software Life Cycle Documents |
| TN-24590-06-03217 | Correction of BCWS in two of PT Equipment Pos |
| TN-24590-06-03218 | Extension of the Material Requisition BEA Cycle |
| TN-24590-06-03219 | Additional Budget Required to Support Evaluation of DOE-STD-1066 Impact on WTP HEPA Systems |
| TN-24590-06-03220 | Glovebox and Posting Machine Schedule Revision due to 490 Funding Limitations |
| TN-24590-06-03228 | Forward Pricing Rates (FPR) (Dec-2007) |
| TN-24590-06-03229 | BOF Site Wide Vacuum Truck |
| TN-24590-06-03230 | PTF Internal Replan Concrete |
| TN-24590-06-03231 | BOF Pipe/Water Treatment Bldg. Concrete Trend |
| TN-24590-06-03233 | LAW Fire Protection Obstruction Corrections |
| TN-24590-06-03234 | BOF PP to WP conversion |
| TN-24590-06-03236 | PT - Enclosure of stairwells & North Side for Weatherization |
| TN-24590-06-03237 | Removal of Parasitic Loads from the Fire Service Water System |
| TN-24590-06-03239 | Actuated Jumper Valves - Specification and Procurement by C&I |
| TN-24590-06-03241 | Revisions to HLW Cranes and Cable Reels |
| TN-24590-06-03243 | Non-Logic Driven Activities Re-Plan for Plant Design |
| TN-24590-06-03244 | Addition of Fire Barrier Drawings to CSA Scope |
| TN-24590-06-03245 | Safeguards and Security Budget Transfer |
| TN-24590-06-03247 | Addition of Humidification to HLW C2 AHUs |
| TN-24590-06-03251 | LBL Near Term Title III Engineering Hours |
| TN-24590-06-03253 | PT Internal Replan of HVAC PMB |
| TN-24590-06-03254 | Engineering Procedures and Processes Staff Increase |
| TN-24590-06-03260 | Align Equipment, Budget & Schedule for MH MRs |
| TN-24590-06-03262 | Additional Criticality Support |
| TN-24590-06-03264 | Construction Subcontracts Planning Packages to Work Packages. |
| TN-24590-06-03265 | LA-ICP-AES Installation Site Testing |
| TN-24590-06-03266 | Remove Construction Escalation Activities |
| TN-24590-06-03268 | LAW, Convert Eight Planning Package to Work Packages |
| TN-24590-06-03269 | Correction of Time Phasing for PT Equipment BCWS previously incorrectly stasured as Complete |
| TN-24590-06-03270 | Reconciliation of Execution Revision Equipment Budget |
| TN-24590-06-03271 | PTF Committed System To Go Unit Rate Alignment |
| TN-24590-06-03272 | Revision of the PTF Preliminary ISM Schedule to Reflect Revised Design Schedule |
| TN-24590-06-03273 | Early LAW 2014 Commissioning Conceptual Design Study and Report |
| TN-24590-06-03275 | Storage Costs for Suspended Pressure Vessels |
| TN-24590-06-03278 | Emergency Diesel Generator Alternatives Study |
| TN-24590-06-03279 | Revision To Startup Generic Logic In The Baseline Schedule |
| TN-24590-06-03280 | Ultrafilter Tube Failure Investigation |
| TN-24590-06-03283 | UFP Vessel Modifications Due to Capacity Mods |
| TN-24590-06-03284 | OBS HB Plant Wide Favorable Variance |
| TN-24590-06-03285 | Mentoring EPCON -Supplier Quality & Quality Assurance |
| TN-24590-06-03287 | Transfer of Six Sigma from Proj Bus Mgmt to Quality and Performance Assurance |
| TN-24590-06-03289 | Planning Package to Work Package Conversion for C&I Plant Equip |
| TN-24590-06-03292 | Implement Pipe Spt ABAR in Criteria, Guides, & Std Calcs - Phase II |
| TN-24590-06-03294 | LAW Elevator Guide Rail |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-03295 | LAW - Elevation +48 Adsorber 1A and 1B |
| TN-24590-06-03296 | Modification to Sodium Hydroxide Reagent Piping & Controls |
| TN-24590-06-03297 | Shield Door Recovery Device Receiver Add to Crane Maint Shield Door Scope |
| TN-24590-06-03299 | M&PE Engineering EQ Implementation |
| TN-24590-06-03301 | LAW Pour Cave Cooling Panel Emissivity Requirements |
| TN-24590-06-03304 | Favorable Trend for PTF Crane Maintenance Shield Door |
| TN-24590-06-03306 | BOF Internal Replan |
| TN-24590-06-03307 | HLW Delete BCP Budget Place Holder Activities |
| TN-24590-06-03308 | Realignment of HLW Steel Budget and Quantities per Hirschfeld Steel Contract |
| TN-24590-06-03309 | LAW Combined Trend |
| TN-24590-06-03310 | Place PT PVV Fans on Emergency Diesel Generator Power |
| TN-24590-06-03312 | HLW Electrical Joggle Purchase Strategy Change |
| TN-24590-06-03313 | LAW Pour Cave Panel and Hanger Installation; LFH Shard Samplers; Vessels 2 & 4; & Pipe Interference w/Lug |
| TN-24590-06-03314 | LAW - Finish Line Hoists Monorail Lidding/ Dual Rail Hoists/ JIB Cranes |
| TN-24590-06-03315 | Transportation and Refurbishment of ACECO cranes |
| TN-24590-06-03316 | LAW Piping Planning Package to Work Package |
| TN-24590-06-03318 | Impact of Preparation Guide for US DOE Nonreactor Nuclear Facility Safety Analyses |
| TN-24590-06-03319 | Assess Impact to Preparation for Cost & Schedule Estimate for Installing Third Melter |
| TN-24590-06-03320 | C&T Laboratory Labor Underrun |
| TN-24590-06-03321 | Emergency Diesel Generator Evaluation - Schedule Logic Changes |
| TN-24590-06-03322 | REA for Oregon Iron Works (24590-QL-POA-ADDH-00007) |
| TN-24590-06-03323 | PP Replan for M-6 Process Limits Definition |
| TN-24590-06-03324 | PP Replan for Alt Resin Stage III Testing |
| TN-24590-06-03325 | Construction Distribs Budget Increase (April '07 - Sept '07) due to Direct Craft Labor BCPs |
| TN-24590-06-03326 | LAW Melter Lid Modifications |
| TN-24590-06-03327 | LAB Planning Package to Work Package |
| TN-24590-06-03328 | LAW Planning Package to Work Package Conversion |
| TN-24590-06-03330 | Delete R&T Testing of Antifoam Impact on Filter Flux |
| TN-24590-06-03332 | Analysis of Concrete Temperature Around Hot Pipe Penetrations |
| TN-24590-06-03333 | HLW Melter Seismic Calculation |
| TN-24590-06-03335 | LAB Construction Mechanical Equip Schedule Correction |
| TN-24590-06-03336 | HLW Carbon Bed Adsorbers (CBA) Fabrication & Delivery Delay |
| TN-24590-06-03341 | BOF/LAB Rod Room Attendant |
| TN-24590-06-03344 | LAW - Install steel supports for LSH-CRN-00011 and LSH-CRN-00012 bus bars |
| TN-24590-06-03347 | HLW Construction PP to WP |
| TN-24590-06-03350 | HLW Radar Level Test Foaming Issues when Agitation is Stopped |
| TN-24590-06-03351 | Subcontracts Converting PP to WP |
| TN-24590-06-03354 | Jumper - Frame Vendor Proof of Performance Program |
| TN-24590-06-03356 | ITS Valves for LAW Water Shutoff |
| TN-24590-06-03357 | TLP Reboiler Modification |
| TN-24590-06-03358 | Updated Quantities and Unit Rates for HLW MS Post-Committed Work |
| TN-24590-06-03359 | Correction of Overstated PT Jumper Budget |
| TN-24590-06-03360 | Transfer Safety Assurance Scope and Budget from PBM to Quality Assurance |
| TN-24590-06-03362 | Flowdown of Non-Destructive Examination Requirements to Piping |
| TN-24590-06-03363 | PE&T Functional Manager |
| TN-24590-06-03364 | Electrical Bulk Material Quantity & Pricing Update for LAW |
| TN-24590-06-03366 | LAW 2014 Cost & Schedule Evaluation |
| TN-24590-06-03367 | BOF - Pipe Rack 5C/5B, PT/HLW Interference |
| TN-24590-06-03368 | Schedule Logic Correction for EPPR activity 01-J1123-002 PJM Design Activities |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03370 | Property Management Budget Transfer from Acquisition Services (WP 1.08-B0) to Material Mgmt |
| TN-24590-06-03371 | BOF Steam Plant PP to WP |
| TN-24590-06-03374 | Engineering Training Forecast FY08/09 |
| TN-24590-06-03375 | Adjust BCWS for Pipe Spools due to Engineering Holds on Pipe Spool Releases |
| TN-24590-06-03377 | PTF Plant Design Utility Rack EPPR Code Ties |
| TN-24590-06-03378 | PTF Plant Design RGM EPPR Code Ties & Schedule Realignment |
| TN-24590-06-03379 | Budget for a Full Time Electrical Authority Having Jurisdiction (AHJ) Position |
| TN-24590-06-03381 | Allyl Alcohol Method Regulatory Requirements |
| TN-24590-06-03383 | Forward Pricing Rates (FPR) (Mar-2008) |
| TN-24590-06-03385 | Planning Element Clean-up |
| TN-24590-06-03386 | Correction of overstated bud, for PO 24590-QL-POA-MJKG-00004 |
| TN-24590-06-03387 | Propane Line Failure Testing/ DFO Coating Repairs |
| TN-24590-06-03390 | BOF NLD/DFO Electrical Underwriters Laboratories Inspections/Modifications. |
| TN-24590-06-03392 | Positive Cost Variance in Plant Wide Design ODC's |
| TN-24590-06-03395 | Correction of Overstated Budget CM-MRA-MEEM-00001 |
| TN-24590-06-03396 | Correction of Overstated Budget QL-POB-MVA0-00010 |
| TN-24590-06-03397 | Implementation of Topography Reviews |
| TN-24590-06-03398 | LAW PP to WP |
| TN-24590-06-03399 | LAB Construction Electrical Equipment Schedule Activity Definitization |
| TN-24590-06-03400 | PJM Overblow Testing (Favorable) |
| TN-24590-06-03401 | Review of the CGD Program |
| TN-24590-06-03407 | EFRT M3 - IRP Revision and Additional Test Planning Scope |
| TN-24590-06-03408 | Positive Cost Variance in E&NS Regulatory Safety Management Account |
| TN-24590-06-03410 | Assess the Impact of Adding DOE/RW-0333P, QARD Rev 20 |
| TN-24590-06-03411 | Vendor REA for Revised Melter Material Quantities |
| TN-24590-06-03412 | ASX Sampler Tests Replan |
| TN-24590-06-03413 | Distribs Scaffolding PP to WP |
| TN-24590-06-03414 | PT & HLW Upgrade Temp. Power to Construction Power |
| TN-24590-06-03415 | Temporary Construction Utilities - Propane System |
| TN-24590-06-03416 | Additional Architectural Sections and Details for HLW and PTF |
| TN-24590-06-03417 | LAW - LFH Shard Samplers |
| TN-24590-06-03418 | LAW Tools and Equipment for Removal of Silica Containing Coatings |
| TN-24590-06-03419 | Implementation of ASME NQA-1 2000 and QARD 18 for Duratek, Inc. |
| TN-24590-06-03422 | BOF 90 Day Window PP to WP |
| TN-24590-06-03425 | C&T CY08 PP Replan |
| TN-24590-06-03426 | BOF/LAB - Piping/Hanger Rework |
| TN-24590-06-03427 | LAW - Melter Rail Grout |
| TN-24590-06-03428 | PTF, PP to WP, Clarification of Electrical work. |
| TN-24590-06-03429 | LAW Stair Nosing |
| TN-24590-06-03431 | Pretreatment PP to WP Conversion |
| TN-24590-06-03432 | Pretreatment Selected Wall & Slab Consolidation & PP to WP |
| TN-24590-06-03433 | BOF ITS Switchgear Craft Labor Giveback |
| TN-24590-06-03435 | ASX Design Completion, Trouble Shooting, and Fabrication |
| TN-24590-06-03437 | Knowledge Relay LLC Support for Migration of P3-to-P6 |
| TN-24590-06-03439 | Additional LAW Melter bubblers |
| TN-24590-06-03443 | Material Services & Procurement Engineering Startup |
| TN-24590-06-03444 | BOF WTB Pipe/Electrical/Civil Design Evolution/Rework |
| TN-24590-06-03446 | BOF CCP Electrical Conduit Installation Supports Redesign/Rework |
| TN-24590-06-03447 | PSI ENG Spec Change for Panel Indicator Lighting Colors and Supplier Document Submittal Requirements |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03450 | Re-Bid of API-610 Seal-less pumps due to requirements changes |
| TN-24590-06-03451 | Correction of Time Phasing for HLW Equipment BCWS incorrectly statused as Complete |
| TN-24590-06-03453 | PTF - Definitization of Drain Piping Work Packages |
| TN-24590-06-03455 | LAW North Annex Inc Fireproof Quantity & Change Fireproof Material Type/Finish |
| TN-24590-06-03456 | PW Vactor (VAC) Hydro Excavator Trucks |
| TN-24590-06-03457 | PW - Installation of Repeater Antennas |
| TN-24590-06-03459 | PW - T-52 Building - Add air intake dampers and seal louver/duct interfaces |
| TN-24590-06-03461 | Elimination of the WBS 1.08 Plant Wide |
| TN-24590-06-03462 | Conversion of PP to WP and Addition of 5 Enclosures for LAB |
| TN-24590-06-03463 | Material Services & Procurement Engineering Team Implementation |
| TN-24590-06-03464 | Subcontracts, Chicago Bridge & Iron Overhead Adjustment from 1.08 Account. |
| TN-24590-06-03465 | Mentoring EPCON Supplier Quality |
| TN-24590-06-03467 | Utility Service Schedule Updates |
| TN-24590-06-03468 | BOF - T-52 Construction Warehouse Fire Detection System Upgrade |
| TN-24590-06-03470 | Response to CRPTs: Pressure Safety Valves (PSVs) |
| TN-24590-06-03471 | Ultrafilter Drain Testing (Favorable) |
| TN-24590-06-03472 | CGD Impacts on Procurement of PTF Remote Clamp Connectors |
| TN-24590-06-03473 | Additional E&NS Resources for Fire Safety Support |
| TN-24590-06-03475 | PW Preventative Maintenance Material for Permanent Plant Equipment FY08/FY09 |
| TN-24590-06-03476 | PTF Leak Detection Boxes |
| TN-24590-06-03480 | LAB, Planning Package to Work Package |
| TN-24590-06-03482 | MH Engineering Tasks To Support Other Disciplines And Management |
| TN-24590-06-03483 | Modifications to PTF HVAC Design for Mitigation of Loss of Cooling & Loss of Heating Accidents |
| TN-24590-06-03484 | Vessel Code Evaluation Subcontract |
| TN-24590-06-03485 | M&PE Equipment Group Engineering Budget |
| TN-24590-06-03486 | Transfer PP CSA Hrs for Design of Jumper Steel Grouted Pads/Embeds to WPs in PTF Hot Cell |
| TN-24590-06-03489 | HVAC Alternate Fire Barrier Analysis |
| TN-24590-06-03490 | Transfer of Vessel Analysis Scope to WTP Engineering |
| TN-24590-06-03492 | M12 PDL-W Modification Overrun |
| TN-24590-06-03494 | ENS Training Forecast FY08 through FY16 |
| TN-24590-06-03495 | HLW - Unit Rate revision for pipe and electrical sleeves |
| TN-24590-06-03496 | PT - Removal & Reinstallation of Embedded Conduit, +56' el |
| TN-24590-06-03497 | NOx Gas, Rearrangement of instruments due to potential exposure to NOx gas |
| TN-24590-06-03499 | PT PP to WP Conversion and Internal Replanning thru FY09 |
| TN-24590-06-03500 | C&I and Electrical Equipment List for Facilities |
| TN-24590-06-03501 | Engineer, Procure & Install Guardrails on Pre-Engineered Metal Buildings (ENG 1069) |
| TN-24590-06-03502 | EFRT Issue M3 Completion |
| TN-24590-06-03505 | LAW, Planning Package to Work Package, Replan |
| TN-24590-06-03506 | LAW, Planning Package to Work Package, Replan |
| TN-24590-06-03508 | HLW Drum Transfer Rails |
| TN-24590-06-03509 | BOF FSW Battery Rack Modifications |
| TN-24590-06-03512 | Compensation For QL-POA-MEEM-00001 REA Vendor Cost |
| TN-24590-06-03514 | LAW - Melter Winch, Pulley Systems |
| TN-24590-06-03516 | HLW - Completed Scope Summary (Favorable) |
| TN-24590-06-03517 | HLW, PP to WP, FY08 & FY10 |
| TN-24590-06-03518 | PTF Building 12 Re-Design |
| TN-24590-06-03520 | HLW - P3 to COBRA Alignment |
| TN-24590-06-03521 | LAW - COBRA to P3 Alignment (Favorable) |
| TN-24590-06-03524 | Convert Planning Package to Work Package for 24590-CM-MRE-MVA0-00003 |
| TN-24590-06-03528 | ISM Changes for HOP Preheaters |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03529 | Material Corrosion Evaluation |
| TN-24590-06-03531 | Downtrend for Late Adjustments related to EFRT & Misc Ops in 1.08MT Plant Material |
| TN-24590-06-03535 | Steam Conditioning Skid Scope Reduction |
| TN-24590-06-03539 | Support for Revisions to Unique, One-of-a-Kind MH Equip |
| TN-24590-06-03540 | Seismic Monitoring System |
| TN-24590-06-03544 | SRNL Project Management Extension |
| TN-24590-06-03545 | LAW PP to WP Conversion, Bulges and Pumps |
| TN-24590-06-03548 | Implement ILAW/IHLW Glass Formulation Algorithms in Plant Control and Waste Form Compliance Software |
| TN-24590-06-03553 | BOF-FSW, Pump House Foundation to Increase scope for DH craft |
| TN-24590-06-03556 | False Claims Act Suit (Rille Litigation) |
| TN-24590-06-03557 | Construction Support for Black Cell Piping Pilot Program |
| TN-24590-06-03558 | Implementation and Execution of Revised Architectural AHJ Process |
| TN-24590-06-03560 | Upgrade Lenel Security Software |
| TN-24590-06-03561 | ACECO Crane Refurbishment |
| TN-24590-06-03565 | Remote Fastener Qualification for FEP & TLP Systems |
| TN-24590-06-03568 | LAB Jib Crane support; Hot Cell Maint. Room |
| TN-24590-06-03569 | Engineering Support for Construction Subcontracts and Schedule Alignment |
| TN-24590-06-03570 | LAW - Add HVAC Fire Dampers on Fire Rated Walls |
| TN-24590-06-03573 | Omitted Equip. Mounting Interfaces - Transition Frames/Equip. Pads |
| TN-24590-06-03577 | PTF Additional activates to complete 4th Lift Walls |
| TN-24590-06-03578 | Pipe Deemed Deleted Reusable Material (DRM) for All Facilities |
| TN-24590-06-03579 | Piping Joggles/Process Improvements |
| TN-24590-06-03580 | BOF Additional Fire Alarm Panels FSW |
| TN-24590-06-03583 | M12 - Pretreatment Engineering Platform Transportation Costs |
| TN-24590-06-03584 | Vendor Rebid for RLD-VSL-00002 Fabrication |
| TN-24590-06-03585 | Favorable Trend for P5 (IX Process Development) |
| TN-24590-06-03586 | Fire Protection Resident Engineer |
| TN-24590-06-03587 | PTF & HLW Bogie Shield Doors Seismic Analysis Qualification |
| TN-24590-06-03588 | Material Handling Facility Furniture/Fiber Installation |
| TN-24590-06-03591 | HLW Formwork Shoring 0' through 37' |
| TN-24590-06-03593 | LAW - Compound Tolerances Civil/Structural/Mechanical |
| TN-24590-06-03594 | BOF - Vac Truck Trend |
| TN-24590-06-03595 | LAW - Penthouse Siding Support Steel |
| TN-24590-06-03596 | LAB PP to WP and Internal Replan |
| TN-24590-06-03598 | Plant Design Unit Rates for Modeling and Isometric Unit Rates |
| TN-24590-06-03600 | DOE O 430.2B Transportation/Fleet Maintenance (Assessment) |
| TN-24590-06-03601 | Thermal Catalytic Oxidizer Procurement Strategy Update |
| TN-24590-06-03603 | HLW Task Order Restart |
| TN-24590-06-03604 | Additional scope for resolution of 24590-WTP-CRPT-QA-07-170 |
| TN-24590-06-03606 | HLW N690 Weld Inspections |
| TN-24590-06-03607 | PW Electrical Q Stainless Steel Fasteners to Replace CM Stainless Steel Fasteners |
| TN-24590-06-03614 | Changes to PT and HLW Steam Systems Quality and Seismic Categories |
| TN-24590-06-03615 | LAB - Stack Steel Restraint Lugs |
| TN-24590-06-03617 | PW Implementation Of 10CFR851 Budget into Correct Control Accounts |
| TN-24590-06-03619 | Deletion of PJV Bulge and Vessel |
| TN-24590-06-03620 | HLW Establishing a Unit Rate for HLW Joggle Installation |
| TN-24590-06-03621 | Transfer Remaining Budget for Load Path from PWM to CS&A |
| TN-24590-06-03622 | Engr Recovery Plan 2008 Office Moves |
| TN-24590-06-03624 | LAW - Concrete planning package to work package replan |

| Trend No. | Trend Description |
|-------------------|---|
| TN-24590-06-03627 | LAW - LMH-RAIL-00001,2,3,4 |
| TN-24590-06-03628 | Development of Alternatives for Permanent Melter Assembly Building |
| TN-24590-06-03629 | Correction of Coding Errors on PO CM-POA-MAH0-00001 and QL-POA-MACS-00002 |
| TN-24590-06-03631 | PTF Installation of Cell Top Steel & Platforms PP to WP Conversion |
| TN-24590-06-03632 | PTF Rod Room Attendant |
| TN-24590-06-03634 | Startup/Commissioning Milestone & Logic Cleanup |
| TN-24590-06-03636 | LAW Melter End Trucks Petersen REA |
| TN-24590-06-03637 | LAW Inert Fill Pipe and Support Structure |
| TN-24590-06-03638 | Establishment of Management Budget for New Plant Equipment Group |
| TN-24590-06-03639 | Deletion of Two (2) Redundant P3 LAW Piping Activities |
| TN-24590-06-03641 | ACGIH Physical Agent TLV Implementation |
| TN-24590-06-03642 | HLW Field Modification of Fabricated Steel to Accommodate Installation of Multi Discipline Rack Steel |
| TN-24590-06-03643 | Installation of Pipe for Vessel 904 |
| TN-24590-06-03644 | LAW - SHIM PLATES FOR BULGES ON +28 ELEVATION |
| TN-24590-06-03646 | Independent Verification of Melter Calculations (CRPT-QA-07-325) |
| TN-24590-06-03647 | EFRT M-1 Test Acceptance PNNL Descope |
| TN-24590-06-03649 | LAW - Combined Electrical Trend |
| TN-24590-06-03650 | Knowledge Relay P3-P6 Stage 4 |
| TN-24590-06-03654 | Transfer Constr FNM Project S/C Mgmt Scope/Budget from Const to Acq Svcs |
| TN-24590-06-03655 | CHW Circuit Balancing Valves for LAW and PT |
| TN-24590-06-03657 | Baseline T560 Migration to P6 |
| TN-24590-06-03658 | HLW SBS and HEME Modifications |
| TN-24590-06-03659 | Cathodic Electrical Equipment Estimate Error |
| TN-24590-06-03661 | Construction Distributable Shuttle Van for Site to Town Transportation |
| TN-24590-06-03662 | Transfer of Craft Training Hours from PT/HLW Remobilization to Construction Distributables |
| TN-24590-06-03663 | BOF Preventative Maintenance |
| TN-24590-06-03664 | PW Additional M&TE Budget for Construction Distributables |
| TN-24590-06-03670 | Increase in BOF Grounding Cable Quantities |
| TN-24590-06-03672 | Emergency Diesel Generator Design |
| TN-24590-06-03673 | PT & LAW - Steel Price Increase for American Fabricator Pressure Vessels |
| TN-24590-06-03676 | PTF/HLW - Add HVAC Fire Dampers on Fire Rated Walls |
| TN-24590-06-03678 | Re-align Planning Package BCWS With The Baseline Schedule |
| TN-24590-06-03681 | LAW Carbon Bed Adsorber EQ & ISM Driven Changes |
| TN-24590-06-03682 | PW Replacement of Flooring in Site Restrooms |
| TN-24590-06-03683 | PTF - Design Changes to Completed Work for Walls 4-30 & 4-31 |
| TN-24590-06-03684 | LAB Stack Grating Rework |
| TN-24590-06-03686 | System LFH Decontamination Robotic Arm Modifications |
| TN-24590-06-03689 | LAW-R&T PP to WP Commissioning Simulant |
| TN-24590-06-03690 | R&T Duratek (ES) Closeout |
| TN-24590-06-03691 | LAW - Painting & Wall Covering Scope Transfer Between Control Accounts |
| TN-24590-06-03692 | HLW - Correcting Omission in MAY 06 EAC of 4 sets of -21' Rails |
| TN-24590-06-03693 | PTF: PIH-CRN-00004 Crane Rail Install/Align |
| TN-24590-06-03695 | PW - PTF Temporary Work Platforms - Labor |
| TN-24590-06-03696 | BOF PSA in DOE Line Rework Excavation/Backfill |
| TN-24590-06-03697 | PTF 10-MHAN-00004 Decontamination Booth Assembly |
| TN-24590-06-03700 | PNNL LAW Statistical Support PP to WP Conversion |
| TN-24590-06-03703 | Corrosion Testing for UFP Vessels |
| TN-24590-06-03704 | Craft Support for First Drop of Material at Construction Site |
| TN-24590-06-03709 | Add Paint Booth and Abrasive Blast Booth in Building T-47 |
| TN-24590-06-03710 | Additional Maintenance Platforms for Crane LEH-CRN-00003 |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03714 | BOF Electrical/Instrumentation Redesign |
| TN-24590-06-03715 | Change of Procurement Strategy of LAW TCO Components |
| TN-24590-06-03716 | Impact of assessment: DOE M 470.4-4, Information Security, Change 1 |
| TN-24590-06-03717 | PTF Concrete Chipping to Support Installation of Secondary Containments |
| TN-24590-06-03718 | PTF Installation of RWH-DOOR-000007 and DOOR-00023 |
| TN-24590-06-03722 | BOF CCP/NLD 2 |
| TN-24590-06-03725 | LAW - Additional Hours for Installation of Large Vessel Pumps |
| TN-24590-06-03726 | Combo Shop Modifications to Support Black Cell Pipe Repairs |
| TN-24590-06-03727 | BOF DOE Pipe Work Pause/Cold Weather Work |
| TN-24590-06-03728 | LAW Hoist Upgrades Concurrent to Refurbishment |
| TN-24590-06-03729 | Acquisition Services Negotiated Savings - PIP No. P012 |
| TN-24590-06-03732 | CM HVAC S/C Schedule Impacts of Project Re-Sequence Plan & Execution Strategy |
| TN-24590-06-03733 | LAB Stack Stair Handrail Modification |
| TN-24590-06-03735 | M3 Phase I Cohesive Simulant Descope |
| TN-24590-06-03738 | Tepid Water Heaters for BOF, LAW, LAB, and HLW |
| TN-24590-06-03739 | HFH Crane Modifications, Spares, and Recovery System |
| TN-24590-06-03742 | Convert LAW Engineering Subcontract PP to WP |
| TN-24590-06-03743 | LAW - Shard Table Support; Embed Interference; Painting of Black Iron |
| TN-24590-06-03750 | HLW Melter Seismic Analysis Scope Increase |
| TN-24590-06-03751 | FEA Calculation for 6 LAW and 2 PTF Bulges |
| TN-24590-06-03755 | Equipment Anti-Sweat and Personnel Protection Insulation |
| TN-24590-06-03757 | LAB - Cable Tray Supports |
| TN-24590-06-03762 | Construction Distribs Budget Increase in Support of Approved BCP's from Oct 07 – Aug 08 |
| TN-24590-06-03765 | Additional Budge for HOP Manual Valves |
| TN-24590-06-03766 | T43 & 47, Area 41 & Parking Lot Fencing |
| TN-24590-06-03768 | Engineering Support of DOE Audit Team |
| TN-24590-06-03769 | BOF - Disassembly / Reassembly of the CCP Motor Starter Cabinets |
| TN-24590-06-03771 | LAW - Primavera BCWS and BCWP Electrical Commodity Alignment to TEAMWorks, Setroute, and QURR |
| TN-24590-06-03774 | LAW Additional Hrs for Installation of LFM-PMP 00007, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 |
| TN-24590-06-03775 | Melter Feed Studies - Agitator Design Change |
| TN-24590-06-03776 | BOF - Switchgear Drip Shield Install (Bldg. 87 & 91) |
| TN-24590-06-03780 | Schedule Change to Planning Package for Jumper Materials |
| TN-24590-06-03782 | Anhydrous Ammonia Storage Facility |
| TN-24590-06-03783 | LAW Electrical Unit Rate Forecast |
| TN-24590-06-03785 | LAW - MECHANICAL REWORK FORECAST |
| TN-24590-06-03786 | PT - IX / Alt Resin III PP Partial Return to MR |
| TN-24590-06-03788 | Reallocate HVAC Procurement from Existing Purchase Order (PO) to new PO |
| TN-24590-06-03793 | PE&FM System Leads Tasks |
| TN-24590-06-03794 | LAB Pipe Unit Rates |
| TN-24590-06-03800 | PTF Girt Clip Modifications |
| TN-24590-06-03801 | PTF Chipping Concrete Top of Existing Wall |
| TN-24590-06-03804 | Recovery Plan Optimization - Electrical (Concession) |
| TN-24590-06-03805 | Recovery Plan Optimization - Mechanical Systems (Concession) |
| TN-24590-06-03806 | Recovery Plan Optimization - C&I Estimate Reductions (Concession) |
| TN-24590-06-03807 | Recovery Plan Optimization - Plant Design (Concession) |
| TN-24590-06-03808 | Recovery Plan Optimization - Civil/Structural/Architectural (Concession) |
| TN-24590-06-03809 | Recovery Plan Optimization - Mechanical Handling (Concession) |
| TN-24590-06-03810 | Recovery Plan Optimization - Engineering Management (Concession) |
| TN-24590-06-03811 | Recovery Plan Optimization - PEQ (Concession) |

| Trend No. | Trend Description |
|-------------------|--|
| TN-24590-06-03851 | Changes to PT and HLW Steam Systems Quality and Seismic Categories |
| TN-24590-06-03756 | Change to PT Rack Procurement Strategy and Risk Realization |
| TN-24590-06-03798 | PW Replacement of Spiral Wound and Flat Sheet Graphite Gaskets |
| TN-24590-06-03815 | HLW - Safety Wire Mesh for Elevated Slabs |
| TN-24590-06-03816 | HLW Extra Concrete Floor Finishing for Liner Plates |
| TN-24590-06-03817 | HLW Establishing an Embeds & Steel Field Fabrication Account |
| TN-24590-06-03818 | HLW - Piping/Hanger Rework |

**SECTION J – LIST OF ATTACHMENTS
 ATTACHMENT J
 ADVANCE UNDERSTANDING ON COSTS (143)**

Subattachment B

List of Exclusions from Equitable Adjustment Settlement Established in Modification 143

| Trend No. | Trend Description | Definitized |
|-------------------|--|----------------------|
| TN-24590-06-02279 | Expansion of DWP Requirements (Permit Modifications) | 193 |
| TN-24590-06-02381 | DOE Order 205-1A Cyber Security Management Program | 217 |
| TN-24590-06-02728 | M-12 Engineering Scale Pretreatment System (Design, Procure, Install) | 214 |
| TN-24590-06-02778 | Reduction of Core Bores for HPAV Active Controls | |
| | Deleted (158) | |
| TN-24590-06-03109 | Plant Material Bulk Steel EAC Increase | |
| TN-24590-06-03123 | EPD Funding to Support EFRT M12 PT Engineering Platform Completion | 214 |
| TN-24590-06-03146 | EPD Funding to Support EFRT M12 PT Engineering Platform | 214 |
| TN-24590-06-03204 | EPD Funding to Support EFRT M12 PTF Engineering Platform Completion, Part 3 | 214 |
| TN-24590-06-03242 | PEP Install, Plan Site Integrated and Shakedown Testing, & Oversight | 214 |
| TN-24590-06-03282 | Additional HPAV Active Controls | |
| TN-24590-06-03317 | BNI and DOE HPAV Test Program | |
| | Deleted (158) | |
| TN-24590-06-03394 | ABAR to Implement DOE S 1066 Chpt 14 for Nuclear Filter Plenum Fire Protection | |
| TN-24590-06-03405 | PEP Site Integrated Testing and Shakedown | 214 |
| | Deleted (164) | |
| TN-24590-06-03503 | PEP Phase 1 Testing, Trend 1 | 214 |
| TN-24590-06-03527 | Engineering Study and Support Scope for Standard 1066 | |
| TN-24590-06-03533 | Quantity and Material Escalation for Pipe Supports Impacting Control Account 1.08 MT | |
| TN-24590-06-03537 | Increase Fuel Surcharge | |
| | Deleted (158) | |
| TN-24590-06-03708 | Implementation of Features Equivalent to DOE-STD-1066 | |
| TN-24590-06-03752 | Safety Classification Process for the Waste Treatment and Immobilization Plant | |
| | Deleted (164) | |
| TN-24590-06-03754 | Increased Cost for HPAV Test Program | |
| TN-24590-06-03781 | Evaluation and Interim Report on Updated Radioactive Source Term | |
| TN-24590-06-03820 | Re-Evaluation Of HPAV Design Strain Criteria | |
| TN-24590-06-03823 | Pretreatment Engineering Platform Shakedown Testing Extension | 214 |
| TN-24590-06-03827 | Additional Support for Material at Risk Design Basis | |
| TN-24590-06-03859 | Additional Impacts Associated with 10 CFR 851 | 233 & 238 |
| | Additional Impacts Associated with 10 CFR 851 – Silica Sand Impact, REA 2010-012 (Note: This is a portion of TN-24590-06-03859) | 233 |
| | Additional Impacts Associated with 10 CFR 851 – Subcontract Implementation Costs, REA 2010-003 (Note: This is a portion of TN-24590-06-03859) | 238 |
| TN-24590-06-03860 | Additional Escalation Impacts Beyond May 2006 EAC Rates Through Jan 2009 | |
| | Escalation of Craft Labor (FY2006-FY2009); TN-24590-06-04947; REA 2010-004 (NOTE: This is a portion of TN-24590-06-03860) | 187 |
| TN-24590-06-03861 | Received Vendor & Subcontractor Claims Due to DOE Impacts | |

| Trend No. | Trend Description | Definitized |
|------------------|---|--------------------|
| | Vendor & Subcontractor Claims Due to DOE Impacts – Oregon Iron Works, TN-24590-06-04020 (Note: This is a portion of TN-24590-06-03861.) | 167 |
| | Vendor & Subcontract Claims Due to DOE Impacts – FD Thomas, Inc. REA will not submitted. (Note this is a portion of TN-24590-06-03861) | 230 |
| | Vendor & Subcontract Claims Due to DOE Impacts – Cobra Roofing Services, Inc. REA will not submitted. (Note this is a portion of TN-24590-06-03861) | 230 |
| | Vendor & Subcontract Claims Due to DOE Impacts -Diversified Metal Products (Note this is a portion of TN-24590-06-03861) | 290 |
| | Vendor & Subcontract Claims Due to DOE Impacts – Quality Inspection Services International, Inc. (QISI) REA will not submitted. (Note this is a portion of TN-24590-06-03861) | 230 |
| | Vendor & Subcontract Claims Due to DOE Impacts – Central Pre-Mix Concrete Company, Inc. REA 2010-020 will not submitted. (Note this is a portion of TN-24590-06-03861) | 230 |
| | Vendor & Subcontract Claims Due to DOE Impacts – Apollo Sheet Metal, Inc. REA 2010-019 will not submitted. (Note this is a portion of TN-24590-06-03861) | 230 |
| | Vendor & Subcontract Claims Due to DOE Impacts – Ellis & Watts, Inc. REA 2010-018 will not submitted. (Note this is a portion of TN-24590-06-03861) | 230 |

| Modification No. | Modification Description | Definitized |
|-------------------------|---|--------------------|
| M090 | Implement DOE O 205.1A, Department of Energy Cyber Security Management | 217 |
| M101 | Maximum Available Control Technology and Destructive & Removal Efficiency Testing | |
| M122 | Process Changes for Revised Dangerous Waste Permit | 193 |
| M136 Item 3c | Deleted (164) | |
| M141 Item c | Implement New Safety Classification Process | |

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT J
ADVANCE UNDERSTANDING ON COSTS (384)
Sub-Attachment C

List of Exclusions from Release and Waiver of Claims (Mod 384)

1. The revised cost, scope, schedule, and all terms and conditions as set forth in this modification are intended to reflect a complete and final resolution of all events, issues, actions and/or inactions of either party that gave rise to the increase in cost and extension of the schedule for the work herein identified as CLINs 1 and 2. For purposes of the waiver and release of claims for Contract Modification 384, the waiver of issues which “were known or should have been known” does not include pending issues for which an authorized representative of the government has not provided a final determination or formal direction or interpretation of the contract. The intent of this exclusion is to avoid foreclosure of the contractor’s right to assert a basis for relief or otherwise dispute actions of the Government as pertains to matters presently being contemplated, but not formally acted upon, by the Government. It is not the intent of this exclusion to provide entitlement to relief, or otherwise entitle the contractor to bring any action that results in a change to the cost, scope, schedule, or any other term or condition of the contract for events occurring prior to the date of this modification.
2. Commercial Grade Dedication (CGD). The settlement for Modification (384) includes implementation of changes in the form of CGD documentation as described in BNI Corrective Action Plan (CAP) Actions 4-9 and actions to implement the new documentation expectations on all LBL and DFLAW equipment, instruments and bulk materials that have not yet been received and installed, including any vendor impacts due to delays and changes in requirements.

The included BNI CAP Actions 4-9 are set forth in Sub-Attachment C, Table 1 (Included CAP Actions 4-9) (6 pages)

Cost and schedule impacts associated with CGD requirements or expectations extending beyond CAP Actions 4-9 are excluded. Specifically excluded are cost and schedule impacts arising from:

- the 19 “parking lot items”; are set forth in Sub-Attachment C, Table 2 (19 CGD Parking Lot Items) (3 pages)
 - any revision to the final root cause analysis (24590-WTP-RCA-MGT-15-003, Rev. 2);
 - benchmark plans; (Definition- Benchmark CGD plans” to be developed jointly by BNI and ORP (as an outcome of the CGD Working Group chartered in October 2015) as general examples for future CGD plans, to demonstrate implementation of current CGD requirements in addition to ORP directed changes relative to the 19 parking lot items.)
 - the CGD extent of condition review and any related impacts to received or installed equipment, instruments and materials.
3. DOE-STD-3009. Implementation of DOE-STD-3009-2014 is excluded from the settlement of Modification 384.
 4. LAW Confinement Ventilation System (“C5V”). Primary confinement for a melter off-gas release event is provided by the safety significant (SS) melter off-gas system. Secondary confinement of the off-gas is provided by the C5V system, which has been designed, designated and constructed as defense in depth. The settlement for Modification (384) specifically excludes potential cost and schedule impacts for C5V design changes, hardware changes, testing, analysis or other scope or schedule impacts resulting from changing the designation of the LAW C5V secondary confinement system from defense in depth to safety significant pursuant to the approach described in Section C, Standard 9, paragraph (k).

5. DOE Order 414.1D: The settlement for Modification (384) includes development of a plan for implementation of DOE Order 414.1D. Specifically excluded is implementation of DOE Order 414.1D.
6. Standard 1195: The settlement for Modification (384) includes tailored implementation of International Electrotechnical Commission (IEC) standard 61511-1 concurrent with DOE-STD-1195-2011 as a means of achieving Safety Integrity Level – 2 (SIL-2) for low demand simple Safety Instrumented Functions (SIFs) as described in Section J (DOE order list). Specifically excluded are potential cost and schedule impacts associated with achieving SIL-2 through redundancy.
7. Installed Underground Pipe: The settlement for Modification (384) includes costs for repair of existing damaged or defective installed LBL or DFLAW underground piping identified during the contract performance period, and development of an Underground Pipe Integrity Program, which includes an evaluation of existing underground inspection technologies, an inspection plan and risk ranking of inspection locations. Specifically excluded is implementation of the Underground Pipe Integrity Program, including any condition assessment or verification of existing piping, or any maintenance, repairs or replacement of installed underground piping, except to the extent that the piping is defective or damaged by BNI.
8. Design & Operability Impacts: Cost and schedule impacts associated with LAW design basis issues in Category 4 (issues requiring contract change) and category 5 (issues requiring further review for validity) cited in the *Low-Activity Waste Facility Design and Operability Review Report* dated September 4, 2015 (and detailed in CCN 276214) are excluded from the settlement of Modification (384).
9. DOE Letter of Technical Direction: Excluded from the settlement of Modification (384) are potential cost and delay impacts associated with design changes, hardware changes, testing, analysis or other scope or schedule impacts resulting as a result of the nuclear safety direction in the DOE-ORP letter of technical direction CCN 281177, including but not limited to changes related to systems including ammonia, CO2 decon, and fire barriers, or accident scenarios including caustic spray leaks or NOx; but not including the C5V system.

Section J, Attachment J
 Sub-Attachment C, Table 1

Corrective actions to correct the condition and cause to prevent further findings.

Table 1 (Included CAP Actions 4-9) (384)

| <p align="center">BNI Action</p> <p align="center">24590-WTP-GCA-MGT-15-00338-A</p> | <p align="center">Evidence of Completion</p> |
|--|---|
| <p align="center">Immediate/Compensatory Actions</p> | |
| <p>4. Establish a “Q Equipment Review Board” to Review Complex CGD Equipment Procurements:</p> <p>Establish a “Q Equipment Review Board” to Review Complex CGD Equipment Procurements</p> <p>Establish a WTP “Q Equipment Review Board (QERB)” responsible for providing a review of process interfaces/handoffs for complex CGD equipment procurements. Reviews will be conducted to determine if requisite nuclear safety, design, equipment qualification (EQ), commercial grade dedication (CGD), and quality requirements have been correctly implemented through the various process interfaces, are being flowed down and effectively implemented in the procurement process, resulting in reasonable assurance the safety function will be met.</p> <p>Develop briefing/presentation material to discuss the conditions observed in the DOE Audit Report and the RCA with the QERB board members. Include lessons learned progressively as QERB’s reviews are completed. Include this in a pre-job brief (effective implementation of this portion 6/15/2016).</p> <p>Document in QERB charter the required skill mix for the QERB board membership.</p> <p>Document actions (e.g., meeting minutes, action tracking matrix) resulting from QERB meetings and identify any resulting issues in Supplier Corrective Action Reports (SCARs), NCRs, and / or CRs, Action Tracking System items (ATs) as appropriate.</p> <p>Implementation of QERB action to be effective as of 10/05/2015.</p> <p>This immediate/compensatory action remains in effect through implementation of CAs 11 – 16 of this CR Retention as a CAPR will be evaluated when CAs 10-15 have been implemented.</p> | <p>The following objective evidence can be attached (electronically) to CA-4 in CAMP and / or identified by document number(s) identifiable and retrievable in InfoWorks:</p> <ul style="list-style-type: none"> • Approved WTP “Q Equipment Review Board (QERB)” charter. • Documented actions resulting from QERB meetings (e.g., meeting minutes, action tracking matrix). • Initiated, in-process, or completed SCARs, NCRs, and / or CRs/ATs resulting from QERB reviews. |
| <p>5. Develop and Issue a VCGD Submittal Review Guide</p> | <p>The following objective evidence can be attached (electronically) to CA-5 in CAMP and / or identified by document</p> |

| <p align="center">BNI Action</p> <p align="center">24590-WTP-GCA-MGT-15-00338-A</p> | <p align="center">Evidence of Completion</p> |
|---|---|
| <p>Develop and issue a WTP Guide that includes a review checklist for WTP Procurement Engineering (PROE) review of CGD related G321-E document category 33.0-33.7 required submittal documents.</p> <p>Develop presentation materials for the new guide and conduct a briefing with WTP Procurement Engineering personnel. Identify members of the target audience required to receive the briefing and document attendance on signed attendance sheets.</p> <p>Implementation of this action to be effective as of 10/05/2015.</p> <p>Note: This immediate / compensatory / corrective action to prevent recurrence (CAPR) was created to address, in part, the following root causes resulting from 24590-WTP-RCA-MGT-15-0338:</p> <ul style="list-style-type: none"> • RC-1 - Procurement Engineering did not effectively manage some aspects of process execution <ul style="list-style-type: none"> ○ This action will address personnel turnover and experience by providing guidance and checklists to drive consistency • RC-3 - Complex process flow coupled with lack of seamless integration of knowledge between functions and unclear R2A2s | <p>number(s) identifiable and retrievable in InfoWorks:</p> <ul style="list-style-type: none"> • Approved VCGD Submittal Review Guide. • Update PROE Learning Management System (LMS) profiles with a “Read and Review” (RR) for guide 24590-WTP-GPG-PROE-0006. • Presentation materials developed to conduct briefing(s) on the new guide. • Signed attendance sheets for target audience required to receive the briefing, including any make-up sessions. |
| <p>6. Implement Checking of Bechtel-Generated CGD Plans:</p> <p>Revise 24590-WTP-3DP-G06T-00904, <i>Evaluation of Commercial Grade Items and Services</i>, to establish a formal process for checking CGD plans prior to approval and issuance. Develop a CGD Plan “checking” checklist based on the implementing procedure and associated CGD Plan Form. The “checking” checklist should facilitate a consistent approach for checking that will result in comprehensive CGD Plans that can be understood and implemented by equally qualified personnel without recourse to the originator. “Checking” checklist elements should include, but not be limited to, review of:</p> <ul style="list-style-type: none"> • Design criteria applicable to the Q function(s) • Critical characteristics associated with Q function(s) and basis for selection of each • Acceptance methods • Acceptance criteria with reference to applicable codes, standards, and design documents • Sampling plans and basis for selection of each <p>Develop presentation materials for the revised procedure (and new checklist) and conduct a briefing with WTP Procurement Engineering</p> | <p>The following objective evidence can be attached (electronically) to CA-6 in CAMP and / or identified by document number(s) identifiable and retrievable in InfoWorks:</p> <ul style="list-style-type: none"> • Approved revision to 24590-WTP-3DP-G06T-00904, <i>Evaluation of Commercial Grade Items and Services</i>, that includes a new checklist for checking of CGD Plans prior to approval and issuance. • Presentation materials developed to conduct briefing(s) on the revised procedure and new checklist. • Signed attendance sheets for target audience required to receive the briefing, including any make-up sessions. |

| <p align="center">BNI Action</p> <p align="center">24590-WTP-GCA-MGT-15-00338-A</p> | <p align="center">Evidence of Completion</p> |
|---|--|
| <p>personnel. Identify members of the target audience required to receive the briefing and document attendance on signed attendance sheets.</p> <p>Implementation of this action to be effective as of 10/05/2015.</p> <p>Note: This immediate/compensatory/corrective action to prevent recurrence (CAPR) was created to address, in part, the following root causes resulting from 24590-WTP-RCA-MGT-15-0338:</p> <ul style="list-style-type: none"> • RC-1 - Procurement Engineering did not effectively manage some aspects of process execution • RC-2 - CGD process is handled differently than engineering processes | <ul style="list-style-type: none"> • Documentation of completed Read and Review (RR) of 24590-WTP-3DP-G06T-00904, Evaluation of Commercial Grade Items and Services for PROE. |
| <p>7. Establish Mentoring:</p> <p>Conduct mentoring sessions with Procurement Engineering personnel consistent with ISMS Core Function #5 – “<i>Feedback & Continuous Improvement</i>”. CGD related topics may include, but are not limited to:</p> <ul style="list-style-type: none"> • Implementation of immediate/compensatory measures resulting from 24590-WTP-GCA-MGT-15-00338-A, <i>Commercial Grade Dedication</i> • Feedback/opportunities for improvement resulting from document reviews of: <ul style="list-style-type: none"> ○ CGD plans ○ CGD release forms ○ Supplier submittals • Appropriate use of various CGD document review checklists • CGD Sampling Plans • Feedback on results of Quality Engineering (QE) reviews • Feedback on results of Q Equipment Review Board (QERB) meetings • Feedback on results of client reviews (e.g. ORP CGD audit U-14-QAD-RPPWTP-003) • Feedback on results of other internal / external reviews (e.g. RCA Report 24590-WTP-RCA-MGT-15-0338) <p>Mentoring sessions may be conducted by CGD SMEs, Managers, Supervisors, or other personnel knowledgeable of the topic being discussed.</p> <p>Implementation of this action to be effective as of 10/05/2015.</p> | <p>The following objective evidence can be attached (electronically) to CA-7 in CAMP and / or identified by document number(s) identifiable and retrievable in InfoWorks:</p> <ul style="list-style-type: none"> • Presentation materials developed to conduct mentoring. • Signed attendance sheets for target audience required to receive the mentoring, including any make-up sessions. • DACGDS01 LMS Qualification for SME’s inclusive of those assigned to it. |

| <p align="center">BNI Action</p> <p align="center">24590-WTP-GCA-MGT-15-00338-A</p> | <p align="center">Evidence of Completion</p> |
|--|---|
| <p>Develop presentation materials and conduct mentoring of WTP Procurement Engineering personnel. Identify members of the target audience required to receive the mentoring and document attendance on signed attendance sheets.</p> <p>This immediate action must remain in effect through implementation of CAs 11 – 16 of this CR.</p> <p>Note: This immediate action was created to address, in part, the following root cause and contributing causes resulting from 24590-WTP-RCA-MGT-15-0338, <i>Commercial Grade Dedication</i>:</p> <ul style="list-style-type: none"> • RC-1 - Procurement Engineering did not effectively manage some aspects of process execution • CC-1 – Corrective actions from past CGD PIERs were partially effective | |
| <p>8. Incorporate Quality Engineering (QE) review of BCGD plans and VCGD submittals into 24590-WTP-GPG-ENG-0176, Quality Engineering Work Process:</p> <p>Revise 24590-WTP-GPG-ENG-0176, <i>Quality Engineering Work Process</i>, to incorporate review of Bechtel CGD (BCGD) Plans. Revision to include a new QE Review Checklist (form) to facilitate review of BCGD Plans prior to approval and issuance.</p> <p>Perform an initial QE review of 100% of BCGD Plans using the revised guide/checklist (Form 24590-ENG-F00182) and 100% review of VCGD documents submitted under G321-E, Category 33, <i>Commercial Grade Dedication Documentation</i>, using the existing <i>QE Review Checklist for Vendor Submittals</i> (Form 24590-ENG-F00162). The initial percentages of 100% may be adjusted at a later date in accordance with the guide, based on results of reviews performed.</p> <p>Develop presentation materials for the revised guide (and new checklist) and conduct a briefing with WTP Procurement Engineering personnel and Quality Engineering personnel. Identify members of the target audience required to receive the briefing and document attendance on signed attendance sheets.</p> <p>Implementation of QE review to be effective as of 10/05/2015.</p> <p>The “later date” referenced above will be upon completion of CAs 11 – 16 of this CR.</p> | <p>The following objective evidence can be attached (electronically) to CA-8 in CAMP and / or identified by document number(s) identifiable and retrievable in InfoWorks:</p> <ul style="list-style-type: none"> • Approved revision to 24590-WTP-GPG-ENG-0176, <i>Quality Engineering Work Process</i>, that includes a new QE Review Checklist (Form 24590-ENG-F00182) to facilitate review of BCGD Plans prior to approval and issuance. • Presentation materials developed to conduct briefing(s) on the revised guide and new checklist. • Signed attendance sheets for target audience required to receive the briefing, including any make-up sessions. • LMS training completion record for QE and Responsible Engineer (RE) for the revised 24590-WTP- |

| <p align="center">BNI Action</p> <p align="center">24590-WTP-GCA-MGT-15-00338-A</p> | <p align="center">Evidence of Completion</p> |
|--|---|
| <p>Note: This immediate/compensatory/corrective action was created to address, in part, the following root causes resulting from 24590-WTP-RCA-MGT-15-0338:</p> <ul style="list-style-type: none"> • RC-1 - Procurement Engineering did not effectively manage some aspects of process execution • RC-2 - CGD process is handled differently than engineering processes | <p>GPG-ENG-0176, <i>Quality Engineering Work Process</i> guide and the 24590-WTP-3DP-G06T-00904, <i>Evaluation of Commercial Grade Items</i> PROE procedure, respectively.</p> |
| <p>9. Develop and Issue a “Completed CGD Package” Process for both BCGD and VCGD:</p> <ul style="list-style-type: none"> • Issue new form(s) with instructions for Procurement Engineering to perform a review of BCGD/VCGD related documents required by G321-E & G321-V forms as well as Bechtel generated CGD documentation (e.g. CGD survey report, source verification reports, and Receiving Inspection & Test (RI&T) generated inspection results). • Revise affected procedures and instructions to establish a process for preparation and issuance of a completed CGD package. Include a release form(s) that facilitate identification of each activity required by the approved CGD plan (reference specific plan sections), and identification of objective evidence required to document and demonstrate successful completion of each required CGD activity. Procedure, form, and associated form instructions need to discuss identification of objective evidence required to support completion of required dedication activities. Objective evidence must be traceable and retrievable. • Define required documentation criteria for items where the CGD release form will not be required. (e.g. concrete and grout). • Develop presentation materials for the revised procedure and conduct a briefing with WTP Procurement Engineering personnel. Identify members of the target audience required to receive the briefing and document attendance on signed attendance sheets. <p>Implementation of this action to be effective as of 10/05/2015.</p> <p>This immediate/compensatory action remains in effect through implementation of CAs 11 – 16 of this CR Retention as a CAPR will be evaluated when CAs 11-16 have been implemented.</p> <p>Note: This immediate/compensatory was created to address, in part, the following root causes and observations resulting from 24590-</p> | <p>The following objective evidence can be attached (electronically) to CA-9 in CAMP and / or identified by document number(s) identifiable and retrievable in InfoWorks:</p> <ul style="list-style-type: none"> • New form(s) with instructions for Procurement Engineering to perform a preliminary review of CGD related submittals required by G321-E and G321-V forms and BCGD plans. • Approved revision to procedure 24590-WTP-3DP-G06T-00904, <i>Evaluation of Commercial Grade Items and Services</i>, that addresses documentation requirement where the CGD release form is not employed. • Presentation materials developed to conduct briefing(s) on the revised procedure. • Signed attendance sheets for target audience required to receive the briefing, including any make-up sessions. |

| BNI Action 24590-WTP-GCA-MGT-15-00338-A | Evidence of Completion |
|---|-------------------------------|
| WTP-RCA-MGT-15-0338 until long-term corrective actions are implemented: <ul style="list-style-type: none">• RC-1 - Procurement Engineering did not effectively manage some aspects of process execution• RC-2 - CGD process is handled differently than engineering processes• Obs-1: Document retrieval is difficult | |

**Section J, Attachment J
 Sub-Attachment C, Table 2**

Table 2 (19 CGD Parking Lot Items)(384)

| PL Item No | Description | Scope |
|------------|---|--|
| 1 | What is the dedication package? How validated/accepted? | This alignment expectation requires that a CGD release form be populated demonstrating that all required CGD plan activities have been completed for BCGD and VCGD. This requires that the reviewer/ CGD release/report generator review CofC's, source verification reports, inspection and test reports, material test reports, factory acceptance test reports and any other document used to document objective evidence of critical characteristic verification. Each CGD plan required attribute and/or activity must be matched to the associated record or objective evidence to demonstrate completion. |
| 2 | EQ & Seismic Considerations from Design addressed in CCFA & how documented | This alignment expectation requires that the basis for selection of the CC include how the CC may be related to EQ. |
| 3 | Structure of Specification of CCFA's | This alignment expectation requires that the acceptance criteria be defined in a manner that is not interpretable whether that acceptance criteria is directly listed or referenced out to a code or standard. Additionally, engineering judgement required to substantiate that acceptance criteria must be documented in the CGD plan technical evaluation. |
| 4 | Define Complex Items / Design Process – differentiate between item complexity and procurement complexity (dedication at lower tier suppliers) | This alignment expectation requires additional guidance to be created for complex nuclear procurements, both BCGD and VCGD. Additional deliverables include a procurement strategy document and a supply chain map. |
| 5 | What is a source Verification Plan - vs Material Acceptance Plan (MAP) (level of detail Survey Plan model) | This alignment expectation requires the creation of a source verification checklist when performing source verification for CGD. |
| 6 | Item Part Number as a CCFA? | This alignment expectation requires that an item part number be verified. It will not be verified as part of CGD, rather the standard receipt inspection process. |

| | | |
|----|--|--|
| 7 | How do we use Design Information in Technical Evaluations to support critical characteristics for acceptance (CCFA) selection? | This alignment expectation requires a technical evaluation with credible failure modes identified when the design is not available. When the design is available, a technical evaluation with credible failure modes is not required. |
| 8 | Material Chemistry specifications – full chemistry vs. partial | This alignment expectation requires technical justification when selecting a sub-set of material chemical properties for acceptance. MET will be producing a report that identifies the acceptable chemical values for typical materials procured at WTP. |
| 9 | Use of PMI vs. wet chemistry. | This alignment expectation requires that the use of equipment used to verify material chemistry (OES, XRF) to be defined in WTP design documents. (MET report) |
| 10 | Refine definition of “Reasonable Assurance” | Documentation of the dedication activities must be complete enough for an independent, qualified reviewer to arrive at the same conclusion. Generated CGD packages shall provide reasonable assurance. |
| 11 | How do we implement industry guidance into the CGD Process? | This alignment expectation requires that a requirements basis report be produced to embody the outcome of the CGD Working Group. |
| 12 | Application of CGD Methods | This alignment expectation further defines the application of CGD acceptance methods, roles and responsibilities. This alignment expectation will evaluate the performance of Method 3 Source Verification by SQR. This alignment expectation will allow for the implementation of EPRI 5652 Rev. 1, Appendix F as an alternative means for nuclear procurement. |
| 13 | Use of procurement specification to qualify commercial as NQA-1 vendor | This alignment expectation reiterates the ability to exercise the procurement option allowed by the graded approach to quality document. This allows BNI to qualify a CM vendor using and NQA-1 audit by writing a tailored engineering and quality specification and placing the vendor on the ESL as an NQA-1 qualified vendor. BNI would, however, be required to dedicate all of the vendor’s incoming material. |
| 14 | Resolve criteria for review of Supplier Submittals - Specs, Supplier Procedures? | This alignment expectation reiterates the requirement to review vendor documents to contract flow down requirements. In this item, the commitment made was that vendor CGD plans would comply to the contract flow down requirements (T0019) as well as the vendor’s procedure. |
| 15 | Effective use of Supplier Submittal during procurement reviews. | This alignment expectation reiterates the requirement to review vendor documents to contract flow down requirements. In this item, the commitment made was that vendor CGD plans would comply to the contract flow down requirements (T0019) as well as the vendor’s procedure. |

| | | |
|----|--|---|
| 16 | Work on Sampling Strategy method/ guidance. | This alignment expectation requires that when sampling is applied in a CGD plan, that the basis be EPRI TR-017218, Rev. 1. Additional guidance on generating and reviewing sampling plans will be provided to those executing the work. |
| 17 | When does a Credible Failure Modes (CFM) analysis/Failure Mode and Effects Analysis (FMEA) add value? How should they be used? | This alignment expectation requires a failure analysis be performed when the design information is not available. |
| 18 | How to strengthen Commercial Procurements? | N/A |
| 19 | How do we monitor Vendors/Suppliers? How far down the supply chain should BNI monitor dedication activities, and how can a procurement map aid in this effort? | This alignment expectation requires dedication activities to be submitted from all sub-suppliers performing dedication to receive appropriate code status. |

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT K
LISTING OF WTP CONCEPTUAL DESIGN AND SUPPORTING INFORMATION

The following information associated with the WTP Conceptual Design and Supporting Information is provided at <http://www.hanford.gov/orp/procure/solicitations/index.html>.

The information includes:

- (a) Process and Facility Design Documentation and Analyses
 - Facility Mass and Energy Balances
 - Process Description
 - Process and Facility Drawings
 - Systems Descriptions
 - Facility Descriptions
 - Facility Capability Studies
 - Facility Expansion Capability Study
 - Interface Control Documents
- (b) Construction Planning
 - Engineering Execution Plan
 - Construction Strategy
 - Construction Mobilization Plan
 - Facility Acceptance Strategy
- (c) Technology Planning and Testing Information
 - Technology Development Plan
 - Tank Waste Sample Analyses
 - Technology Test Reports
- (d) Waste Form Qualification Strategies
 - Products and Secondary Wastes Plan
 - IHLW Waste Compliance Plan
- (e) Environmental Permitting Documentation
 - Dangerous Waste Permit Application
 - Environmental Plan
 - Risk Assessment Work Plan
 - Approach for Immobilized High Level Waste (HLW) Delisting
 - Approach for Immobilized LAW Land Disposal Restrictions (LDR) Compliance
 - Environmental Report Revision
- (f) Integrated Safety Management Program, Hazards and Safety Analysis Information
 - Documentation prepared for, and correspondence between the DE-AC06-96RL13308 Contractor Organization and the U.S. Department of Energy (DOE) Regulatory Unit can be found at <http://www.hanford.gov/osr/osr.asp>.
- (g) Cost and Schedule Documentation
 - Integrated Master Plan
 - Government Fair Cost Estimate
- (h) Quality Assurance
 - Quality Assurance Program Description.

**SECTION J – LIST OF ATTACHMENTS
ATTACHMENT L**

RESERVED

**SECTION J – LIST OF ATTACHMENTS
ATTACHMENT M
DAVIS-BACON WAGE DETERMINATION**

General Decision Number WA20080009 dated February 6, 2009 **(147)**, is hereby incorporated by reference. **(147)**

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT N
ALTERNATIVE DISPUTE RESOLUTION (147)

Purpose: Contract Clause H.34, “Alternative Dispute Resolution” (ADR) provisions were established to facilitate the early resolution of disputes. This procedure defines the agreed continued ADR process for selection and utilization of a “Standing Neutral” (SN) in the instance an agreement cannot be reached through informal negotiations.

Scope: In recognition of mutual interests, the U.S. Department of Energy (DOE) and Bechtel National, Inc. (BNI), “the Parties,” shall use their best efforts to informally resolve any dispute, claim, question, or disagreement (“the issue”), by consulting and negotiating with each other in good faith and attempting to reach a just and equitable solution satisfactory to both Parties. If an agreement cannot be reached through informal negotiations, then such disagreement shall be referred to the SN, pursuant to the following selection and proceeding process.

Process: When informal negotiations reach an impasse, either Party may initiate the continued ADR process, utilizing a SN, by issuing a written ADR proceeding notification to the other Party. The Party issuing notice shall propose two (2) SN candidates for consideration by the other Party. The proposed candidates shall have proven expertise in the area of disagreement. If a SN cannot be agreed upon within ten (10) business days, the DOE Office of Dispute Resolution shall assist the Parties in this selection. At any point during the ADR proceedings either Party may acquiesce to the other Party’s position, and the dispute shall be considered resolved.

It shall be incumbent on both Parties to fully discuss and demonstrate how the issue has or will adversely affect that Party’s ability to perform its contractual requirements in a timely and cost efficient manner. Accordingly, within ten (10) business days of the ADR proceeding notification, both Parties shall submit, in writing, a “Resolution Memorandum” (RM) to the other Party and SN defining the issue and describing its recommendation for resolution. The RM shall address all relevant facts, which would include, as appropriate, discussion regarding an alleged impact event, work scope affected, and the contractual and equitable basis for proposed settlement. If any cost and schedule adjustments are recommended, the basis for such adjustments shall be quantified.

Following RM review, the SN shall establish a meeting time and place for convening the ADR meeting. The SN, not later than fifteen (15) business days following ADR proceeding notification, shall issue an agenda for the meeting. The agenda shall allow each Party the opportunity to fully explain its position regarding the issue and allow for an exchange of dialogue. The SN shall ensure a meeting attendance sheet is completed and formal meeting minutes are issued to both Parties within three (3) business days of the meeting date.

The Parties shall jointly meet with the SN to discuss the issue. Each Party shall be allowed up to three (3) representatives for meeting attendance, inclusive of a spokesman, to address the technical, financial, and contractual merits of the issue. Each Party shall be free to select its own representatives as it sees fit. The representative selections shall be identified in writing, by name and title, to the SN and other Party within ten (10) business days following ADR proceeding notification. The Parties and SN shall initially meet, at a mutually agreeable time and place, no later than thirty (30) calendar days from the date of ADR proceeding notification. The need for subsequent meetings shall jointly be agreed.

The SN shall evaluate all facts and provide a written settlement recommendation to both Parties no later than ten (10) business days following the last meeting. The subject recommendation shall discuss, as appropriate, the alleged impact event, perceived work scope affected, and cite its contractual and equitable basis for settlement or rejection. In the instance certain cost and schedule adjustments are recommended, the basis for such adjustments shall be quantified.

Although the SN settlement recommendation shall be considered nonbinding, in the interest of early dispute resolution, both Parties shall seriously consider such advisement. The DOE Contracting Officer shall issue the final DOE written dispute determination to BNI within five (5) business days after receipt of

the SN's settlement recommendation. BNI shall advise the Contracting Officer, in writing, of the acceptability of the DOE dispute determination within five (5) business days after its receipt. The SN shall be copied on all such correspondence.

At this point the ADR process, utilizing a SN, shall be considered closed. If the dispute has not been resolved through the SN process, either Party may request resolution under the Disputes Clause of this Contract.

**SECTION J – LIST OF ATTACHMENTS
 ATTACHMENT O
 LIST OF EXCLUSIONS UNDER FAR 52.225-11 (b) (3) BUY AMERICAN ACT – CONSTRUCTION
 MATERIALS UNDER TRADE AGREEMENTS**

| Material Description | Modification No. |
|--|------------------|
| Purchases under \$100,000 for construction material – replacement parts that must be acquired from the original foreign manufacturer or supplier, either directly or indirectly, because such parts are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality, or use of domestic parts would invalidate manufacturer/supplier warranties, or adversely affects the system safety or performance function. The Contractor must use good faith efforts to acquire construction material that complies with the <i>Buy American Act</i> , and document justification and determination of inapplicability for use of foreign materials in accordance with FAR 25.205(a); and paragraph (c)(1) of this clause. DEAR 925.202 states that if the cost of the materials is expected to exceed \$100,000, the Head of the Contracting Activity shall approve the determination. The Contractor shall not split acquisitions to avoid exceeding the acquisition threshold stated herein. Acquisition of foreign construction material that exceeds the \$100,000 threshold, must be submitted to the Contracting Officer to obtain Head of the Contracting Activity approval. BNI must submit an annual report to the Contracting Officer for all foreign construction materials purchased under this paragraph. The report shall state the materials, acquisition price, vendor, and country of origin. The Contracting Officer reserves the right to re-negotiate consideration in accordance with FAR 25.205(c) if determined in the Government's best interest. | 184 |
| Purchase of screwed ductile iron fittings and screwed cast iron fittings for the WTP fire protection system under Subcontract No. 24590-CM-HC1-PY21-00002. | 189 |
| Purchase of non-safety Pressure Differential Gauges, with Dial Indication, 4.5 inch, type 1133, under Subcontract No. 24590-CM-POA-JP01-00001. | 303 |
| Purchase of Tie Rods for Modification to Onsite Safeflex Expansion Joints under Purchase Order 24590-CM-POA-MERK-00001. | 303 |
| Purchase of 41 Colton Vacuum Breakers, Model CVB-200SS under Purchase Order 24590-CM-POA-PY01-00011. | 353 |

**SECTION J – LIST OF ATTACHMENTS
 ATTACHMENT P
 COMPLETION DEFINITION SHEETS FOR INCENTIVE FEES (384)**

| Line # | PBI | Milestone |
|--------|---------|---|
| A-1 | EPC | Install Caustic Scrubber Vessel |
| A-2 | EPC | Complete Final Assembly of Melter #1 |
| A-3 | EPC | Complete Final Assembly of Melter #2 |
| A-4 | EPC | Complete LAW Bulk Cable EI +48 |
| A-5 | EPC | Complete LAW Construction |
| | | |
| B-1 | S/U & C | ORP (safety evaluation report [SER]) approval of LAW Documented Safety Analysis (DSA) |
| B-2 | S/U & C | LAB Startup Testing Complete |
| B-3 | S/U & C | LAW Startup Testing Complete |
| B-4 | S/U & C | EMF Startup Testing Complete |
| B-5 | S/U & C | LAB Readiness to Operate |
| B-6 | S/U & C | LAW DOE Headquarters Operational Readiness Review (ORR) complete |
| B-7 | S/U & C | Successful Demonstration of Hot Commissioning |
| DF-01 | | DFLAW CLIN 2.1 |
| DF-02 | | DFLAW CLIN 2.1 |
| DF-03 | | DFLAW CLIN 2.1 |

CONTRACT FEE MILESTONES

The following conditions apply to all fee-bearing milestones:

- Key predecessor activities listed on the milestone sheets will be complete.
- DOE-WTP will confirm completion within thirty (30) days of receiving the documentation.
- BNI will provide a listing of any milestone exceptions and open quality documents (including punch lists, construction deficiency reports, nonconformance reports, field changes, and vendor documentation) that do not functionally impact or impede successor activities, along with justification for each one.
- DOE-WTP has the final authority for the acceptance of milestone completions subject to the dispute provisions of this Contract.
- Any changes that occur after the achievement of the milestone will not invalidate completion.
- All documents (including memoranda providing copies of interim documents), drawings, calculations, and specifications will be available for review in Project Document Control and will be readily accessible to DOE-WTP.

Milestone

Interim Milestone A-1, LBL Construction Complete Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|---------------------------------|
| LAW | 4LL4608B10 | Install Caustic Scrubber Vessel |

Milestone Definition

Install the caustic scrubber in its final location in order to facilitate the completion of the 48-foot elevation of the LAW Facility. This piece of equipment is located in the central region of the 48-foot elevation of the LAW building and is the keystone to facilitating the completion activities for the offgas systems in the upper elevation of the LAW building (+48-foot elevation).

- a) Complete the Material Receiving Report associated with the receipt of the caustic scrubber.
- b) Close all nonconformance reports associated with the caustic scrubber.
- c) Set the caustic scrubber in its final location on anchor bolts.
- d) Install internal components in the caustic scrubber vessel.

Inclusions

N/A

Exclusions

N/A

Objective Evidence of Milestone Completion and Key Predecessors

This milestone shall be considered complete upon installation of the caustic scrubber in its final location on anchor bolts with the internal components installed. This will be demonstrated by:

- Completion of the milestone will include issuance to Project Document Control of the G321V. In addition, completion of this milestone will include a screen shot from the Bechtel Procurement System demonstrating that the material receiving report number has been issued for the specific shipment and the material receiving report has been completed and issued by Project Document Control.
- Completion of the schedule activity codes listed in the table below for the installation of the caustic scrubber vessel.

DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-E.

| Activity ID | Description |
|-------------|--|
| 9FL4610210 | LAW - QN - Ship - LVP-SCB-01 - Caustic Scrubber - QL-MRA-MKAS-00003 |
| 9FL4610230 | LAW - QN - DMY - LVP-SCB-01 - Caustic Scrubber - QL-MRA-MKAS-00003 |
| 9ZL4610250 | LAW - QN - QC/MRR - LVP-SCB-01 - Caustic Scrubber -QL-MRA-MKAS-00003 |
| 4LL4608B10 | Install Melter Offgas Caustic Scrubber (LVP-SCB-00001) PA08B EL+48 |

Milestone

Interim Milestone A-2 LBL Construction Complete Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|--------------------------------------|
| LAW | 4LL4602B90 | Complete Final Assembly of Melter #1 |

Milestone Definition

Complete final structural assembly of Melter #1 as described by Hold Point 22 of the specification entitled *Site Assembly of LAW Melter*, document number 24590-LAW-3PS-LMP-T00002, which states:

Contractor to verify Shielded Lid welds completed IAW WTP-M-11960 and Shield Lid position, relative the Gas Barrier Lid, has not changed as verified with the previously installed measuring instruments.

Inclusions

Shielded Lid Installation includes:

- Connecting the gas barrier lid cooling water pipe flanges to the cooling water supply header flex hoses, reinstalling the Shielded Lid Northeast Side Cooling Water Access Flange Cover and the North Side West Cooling Water Access Flange Cover.
- Welding the shielded lid to the shielded wall.
- Inspection and/or nondestructive examination of welding and assembly as applicable.
- Measuring any shifting of the shielded lid ports in respect to the gas barrier lid ports during the shielded lid to shielded wall welding.
- Nonconformance issues pertinent to lid installation have been closed.

Exclusions

- Utility hook-ups.
- Piping connections.

Objective Evidence of Milestone Completion and Key Predecessor

This milestone shall be considered complete upon the installation of Melter #1 Lid Refractories and completion of the welding of the shield lid to the melter. Evidence of completion includes:

- Copy of inspection reports with signoffs – this includes visual weld examination records, nondestructive examination records, and pipe/flange assembly inspection records
- Copy of inspection report with signoffs confirming acceptable condition – or replacement if required-- of Shielded Lid North Side East and North Side West Cooling Water Access Flange Cover gaskets
- Copy of inspection report with signoffs confirming the Shielded Lid position relative to the Gas Barrier Lid did not change during welding
- Nonconformance issues pertinent to lid installation have been closed

DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-E.

| Activity ID | Description |
|--------------------|---|
| 4LL4601B89 | LAW – Melter #1 Complete Melter Lid Castable Placements |
| 4LL4602B90 | LAW – Melter #1 Install and Weld Shield Lid |

Milestone

Interim Milestone A-3, LBL Construction Complete Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|--------------------------------------|
| LAW | 4LL4602B89 | Complete Final Assembly of Melter #2 |

Milestone Definition

Complete final structural assembly of Melter #2 as described by Hold Point 22 of the specification entitled, *Site Assembly of LAW Melters*, document number 24590-KAW-3PS-LMP-T00002, Rev. 2 (effective March 24, 2016), which states:

Contractor to verify Shielded Lid welds completed IAW WTP-M-11960 and Shield Lid position, relative to the Gas Barrier Lid, has not changed, as verified with the previously installed measuring instruments.

Inclusions

Shielded Lid Installation included:

- Connecting the Gas Barrier Lid cooling water pipe flanges to the cooling water supply header flex hoses. Reinstalling the shielded Lid Northeast Sided Cooling Water Access Flange cover and the North side West Cooling Water Access Flange cover.
- Welding the Shielded Lid to the Shielded Wall.
- Inspection and/or nondestructive examination of welding and assembly as applicable.
- Measuring any shifting of the Shielded Lid ports in respect to the Gas Barrier Lid port during the Shielded Lid to Shielded Wall welding.
- Nonconformance issues pertinent to lid installation have been closed.

Exclusions

- Utility hook-ups.
- Piping connections.

Objective Evidence of Milestone Completion and Key Predecessor

The milestone shall be considered complete upon the installation of Melter #2 Lid Refractories and completion of the welding of the Shield Lid to the melter. Evidence of completion includes:

- Copy of inspection reports with signoffs – this includes visual weld examination records, nondestructive examination records, and pipe/flange assembly inspection records
- Copy of inspection report with signoffs confirming acceptable condition – or replacement if required – of Shielded Lid North Side East and North Side West Cooling Water Access Flange Cover gaskets
- Copy of inspection report with signoffs confirming the Shielded Lid position relative to the Gas Barrier Lid did not change during welding
- Nonconformance issues pertinent to lid installation have been closed.

DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the

schedule decrement outlined in Section B, Table B-2-E

| Activity ID | Description |
|--------------------|---|
| 4LL4601B90 | LAW – Melter #2 Complete Melter Lid Castable Placements |
| 4LL4602B89 | LAW – Melter #2 Install and Weld Shield Lid |

Milestone

Milestone A-4 LBL Construction Complete Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|--------------------------------|
| LAW | 4LL1610512 | Complete LAW Bulk Cable EI +48 |

Milestone Definition

Complete the bulk wire pulls associated with the last LAW elevation (+48 feet). Complete all SetRoute cards related to "LAW-Installation of Scheduled Bulk Cable EL+48."

Inclusions

This includes all scheduled power, control, instrumentation, and fiber optic cables including completion of all raceway systems (cable tray and raceways), and completed inspections records ensuring contractual requirements (design, codes, and standards). Electrical wiring is complete.

Exclusions

N/A

Objective Evidence of Milestone Completion and Key Predecessors

- This milestone shall be considered complete upon the completion of LAW Bulk Cable campaign at elevation +48 feet. The raceway and cable lists will be generated from Setroute four (4) months prior to the milestone completion date. Set Route inspection records
 - Raceway installation cards complete
 - Cable installation cards complete
- Turnover Exception Report.

All A Punch List items complete as defined in procedure 24590-WTP-GPP-CON-1603.

DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-E.

| Activity ID | Description |
|-------------|---|
| 4LL1610512 | LAW-Installation of Scheduled Bulk Cable EL+48 |
| 4LL16132N7 | LAW-Completion of Cable Tray EL+48 (Part 2) |
| 4LL16COND12 | LAW-Completion of Scheduled Conduit EL+48 (Phase B) |

Milestone

Milestone A-5 Final LBL Construction Complete Performance Based Incentive Fee - LAW Construction Complete

| Facility | Activity ID | Description |
|----------|-------------|---------------------------|
| LAW | 4LL0000999 | Complete LAW Construction |

Milestone Definition

This milestone is achieved when the LAW Facility is constructed and major mechanical and electrical systems have been installed. This includes completion of the building structure; the installation, testing, and inspection of equipment and piping; installation of electrical raceway and cables, instrumentation, tubing, permanent lighting, grounding, and lighting protection. LAB and BOF facilities, which support DFLAW operations must also be constructed, as defined in the “Objective Evidence of Milestone Complete” section.

Inclusions

Completed scope includes scheduled activities tied to “construction complete” identified in Table C.5-1.1, Deliverable 1.13. The following building components/items will be finished at LAW construction complete stage:

- Building structure is complete, including architectural finishes walls, doors, and penetrations
- LAW mechanical systems are complete:
 - Equipment is installed, tested, and inspected
 - Piping is installed, tested, and inspected
 - Vessels installed, tested, and inspected
 - Ventilation systems installed, tested, and inspected
- Electrical raceway, cables, and terminations installed:
 - Instrumentation racks, instrumentation, and associated tubing are installed
 - Permanent lighting, grounding, and lightning protection for the facility are complete
 - Control and communication systems are installed
 - Motor control centers are installed.

Exclusions

Elements of work, which remain unfinished or are yet to be performed, which do not prevent the testing of systems, in part or in whole, for its intended purpose as identified in Table C.5-1.1, Deliverable 1.13.

- Type B Punch List-like items as identified in procedure 25490-WTP-GPP-CON-1603
 - Intentionally excluded items necessary to facilitate startup activities
 - Items subject to obsolescence and maintenance
 - Installation of components deferred to protect government property
- All new safety-significant components as defined in the completed PrHA tables and the preliminary documented safety analysis (PDSA) - DSA evolution.

Objective Evidence of Milestone Completion and Key Predecessors

This milestone shall be considered complete upon the completion of all the associated LAW “construction complete” activity IDs as delineated in Table C.5-1.1, Deliverable 1.13.

Th activities can be compared to the completed construction installation inspection media (depending upon function/discipline) to ensure all of those scoped for completion are complete. For instance, for electrical construction installations, Setroute cards associated with those electrical scheduled items can be verified as complete.

All 90 percent design reviews are completed and all actions except for B Punch List items are complete.

At completion of this milestone, the LAB will be construction-complete for servicing DFLAW operations, with temporary isolations in place for ventilation system components necessary to support HLW and PT. These modifications will allow the LAB systems to be tested for DFLAW operations. Remaining LAB scope necessary for HLW and PT will be deferred until needed to support HLW operations.

The BOF will be constructed and in startup testing for DFLAW operations. This includes reconfiguration of the systems for DFLAW demand and isolations of systems to allow for operations of DFLAW with concurrent construction in HLW and PT. CLIN 2.0 work added to BOF necessary to bypass PT will be under construction. This includes the EMF, waste transfer lines, and added utilities needed to operate the EMF.

A quarterly update will be provided to DOE clearly showing those schedule items that are actualized as being complete. This will enable an incremental review/walkdown to be executed to verify completion.

DOE shall provide concurrence regarding completion of the construction complete milestone or provide notice of material deficiencies within thirty (30) working days of receipt of declaration of completion. In the event DOE provides notice of material deficiencies after thirty (30) working days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-E.

| Activity ID | Description |
|-------------|-----------------------------|
| 4LL0000999 | LAW – Construction complete |

Milestone

Interim Milestone B-1 Commission LBL in the DFLAW Configuration Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|--|
| LAW | 7KLG2A1626 | ORP (SER) approval of LAW DSA (DSA Approved) |

Milestone Definition

Prepare and issue the LAW DSA and associated technical safety requirements (TSR). Submit the documents to DOE and receive a SER from DOE approving the DSA and TSRs, with conditions of approval as warranted, and directing implementation of the documents.

Predecessors to completion of the LAW DSA, which must be complete include the following:

- The General Volume DSA
- The LAW PDSA change package (CP) with updates to the control selection consistent with DOE-STD-3009-1994, CN3 and compliant with 15-NSD-0017, "Contract No. DE-AC27-01RV14136 – Updated Safety Analysis Direction"
- The LAW PDSA CP incorporating conditions of approval for the EMF as established in the SER for DFLAW, 24590-LAW-PDACP-NS-15-0002, *Update for LAW and Addition of the Effluent Management Facility (EMF) and Transfer Lines*
- A DOE approved Unreviewed Safety Question procedure.

A schedule depicting sequence, preparation times, and review phases for the DSA and each of the predecessor deliverables is summarized in the table below.

Inclusions

N/A

Exclusions

N/A

Objective Evidence of Milestone Completion and Key Predecessors

This milestone shall be considered complete upon completion of the predecessor activities listed in the table below and the transmission by DOE of a SER, which approves the LAW DSA and associated TSRs, including conditions of approval as warranted. The SER shall provide direction for implementation of the DSA and associated TSRs.

DOE Contracting Officer shall provide notification of rejection due to document deficiencies of the DSA submission within thirty (30) calendar days of receipt of the DSA. If the submittal is rejected DOE will provide the cause for rejection including any material deficiencies in the submittal. If the documents are acceptable, DOE shall complete the review and pursue approval of the DSA and associated TSRs with a SER within four (4) months of final submission of the documents by BNI. In the event DOE provides notification of rejection, after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Table B-2-F-1 until DOE Contracting Officer provides such notification.

Key Predecessors

See attached scheduled activities and documents.

| Activity ID | Description | Date |
|--------------|---|-----------|
| | General Volume DSA | |
| 7KBGENDSA15 | BOF - NSE - Submit General DSA to ORP - General DSA | 3-May-17 |
| 7KBGENDSA17 | BOF - NSE - Incorporate / Resolve Comments from ORP Review - General DSA | 3-Oct-17 |
| 7KBGENDSA19 | BOF - NSE - Compile Final DSA for Submittal ORP Submittal - General DSA | 14-Nov-17 |
| 7KBGENDSA22 | BOF - SVT - SER Approval - General DSA - ORP | 14-Mar-18 |
| 7KBGENDSA20 | BOF - SVT - General DSA Approval - ORP (03/15/18) | 15-Mar-18 |
| | LAW PDSA | |
| 7KLDS4000135 | LAW - NSE - LAW PDSA Submittal to ORP - PDSA Change Package | 1-Nov-16 |
| 7KLDS100341 | LAW - SVT - Review by ORP - PDSA Change Package | 19-Jan-17 |
| 7KLDS4000171 | LAW - NSE - Incorporate / Resolve Comments from ORP Review - PDSA Change Package | 19-Jan-17 |
| 7KLDS4000136 | LAW - NSE - Compile Final PDSA for Formal Submittal to ORP - PDSA Change Package | 30-Jan-17 |
| 7KLDS100344 | LAW - SVT - Approve PDSA and Issue SER - ORP | 28-Feb-17 |
| 7KLDS4000134 | LAW - SVT - Approval PDSA and Issue SER - ORP (02/28/17) | 28-Feb-17 |
| | | |
| 7KDEMFPDSA51 | DFL - SVT - Submit EMF PDSA for ORP Review - ORP - EMF PDSA | 14-Feb-17 |
| 7KDEMFPDSA24 | DFL - SVT - Review EMF PDSA - ORP (05/17/17) | 17-May-17 |
| 7KDEMFPDSA28 | DFL - NSE - Incorporate / Resolve Comments from ORP Review- EMF PDSA | 17-May-17 |
| 7KDEMFPDSA29 | DFL - NSE - Compile Final PDSA for Formal Submittal to ORP – EMF PDSA (06/14/17) | 14-Jun-17 |
| 7KDEMFPDSA30 | DFL - SVT - Approval of EMF PDSA and Issue SER - ORP | 13-Jul-17 |
| 7KDEMFPDSA40 | DFL - SVT - Complete EMF PDSA (07/14/17) | 14-Jul-17 |
| | LAW/DFLAW DSA | |
| 7KLDS100454 | LAW - NSE - Provide Draft DSA Chapter 4 to ORP | 2-Oct-17 |
| 7KLDS100358 | LAW - NSE - Provide Draft DSA Chapter 5 and TSR to ORP | 1-Nov-17 |
| 7KLDS100456 | LAW - SVT - Review Draft DSA Chapter 4 - ORP | 1-Dec-17 |
| 7KLDS100359 | LAW - SVT - Review Draft DSA Chapter 5 and TSR - ORP | 1-Dec-17 |
| 7KLK2A1614 | LAW - NSE - Provide 2nd Draft DSA to ORP | 1-Feb-18 |
| 7KLK2A1615 | LAW - SVT - Review 2nd Draft DSA- ORP | 23-Feb-18 |
| 7KLK2A1616 | LAW - NSE - Incorporate / Resolve Comments from ORP 2nd Review - Formal DSA Submittal | 12-Mar-18 |
| 7KLK2A1617 | LAW - NSE - Conduct Final DSA Page Turn Workshop for Working Group and Mngt Review - Formal DSA Submittal | 2-Apr-18 |
| 7KLK2A1620 | LAW - NSE - Provide LAW DSA to ORP for Formal Review - Formal DSA Submittal | 16-Apr-18 |
| 7KLK2A1621 | LAW - SVT - ORP Formal Review and Approval - Formal DSA Submittal | 14-Aug-18 |
| 7KLK2A1626 | LAW - NSE - LAW DSA Approved (08/15/18) | 15-Aug-18 |

Milestone

Interim Milestone B-2, Commission LBL in the DFLAW Configuration Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|------------------------------|
| LAB | 5HTC107610 | LAB Startup Testing Complete |

Milestone Definition

Component and system testing within the scoped system boundaries of the LAB facility, as needed to support DFLAW, is complete and the LAB systems have been accepted by plant operations.

Systems that will be tested to achieve LAB startup testing complete include only those LAB systems to operate in the DFLAW configuration. Any LAB systems not needed to support DFLAW operations shall be excluded. Systems within the LAB requiring testing are as follows:

| | |
|-------------|--|
| FPW-A-01 NM | Fire Protection Water System |
| FDE-A-01 NM | Fire Detection and Alarm System |
| MVE-A-01 NM | Medium Voltage Electrical System |
| DOW-A-01 NM | Domestic (potable) Water System |
| LVE-A-01 NM | Low Voltage Electrical System |
| SND-A-01 NM | Sanitary Disposal System |
| LTE-A-01 NM | Lighting Electrical System |
| PCJ2 NM | Process Control system |
| UPE-A-01 NM | Uninterruptible Power Electrical System |
| SCW-A-01 NM | Steam Condensate Water System |
| MXG-A-01 NM | Miscellaneous Gases System |
| CHW-A-01 NM | Chilled Water System |
| PSA-A-01 NM | Plant Service Air System |
| RLD-A-01 NM | Radioactive Liquid Waste Disposal System |
| ASX-A-01 NM | Autosampling System |
| LPS-A-01 NM | Low Pressure Steam System |
| DIW-A-01 NM | Demineralized Water System |
| ASJ-A-01 NM | Autosampling Control System |
| PVA-A-01 NM | Plant Vacuum Air System |
| BAG-A-01 NM | Bottled Argon Gas System |
| BHG-A-01 NM | Bottled Helium Gas System |
| C1V-A-01 NM | C1 Ventilation System |
| BNG-A-01 NM | Bottled Nitrogen Gas System |
| C3V-A-01 NM | C3 Ventilation System |
| C2V-A-01 NM | C2 Ventilation System |
| CME | Communications Electrical System |

If BNI determines that one or more of the listed systems are not required, notification and justification will be provided to DOE for review and concurrence.

Inclusions

All systems necessary to operate the LAB in support of DFLAW operations.

Exclusions

- All systems and components not required for DFLAW operations
- B Punch List items accepted by plant operations acceptance of the systems.

Objective Evidence of Milestone Completion and Key Predecessors

This milestone shall be considered complete upon completion of individual system and component testing and turnover, and acceptance of all systems necessary for DFLAW operation to commissioning and operations in accordance with procedure 24590-WTP-GPP-MGT-042 (as amended). Compliance with procedure 24590-WTP-GPP-MGT-042 will be demonstrated through delivery of Contractor certification and reference to complete turnover records. DOE oversight will validate the Contractor's assessment.

DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-F.

Startup component and system testing includes all work defined through completion of the following activities:

| Activity ID | Activity Name |
|-------------|---|
| 5HTC107700 | LAB - SU Component & System Testing - FPW-A-01 NM |
| 5HTC107680 | LAB - SU Component & System Testing - FDE-A-01 NM |
| 5HTC107970 | LAB - SU Component & System Testing - MVE-A-01 NM |
| 5HTC107660 | LAB - SU Component & System Testing - DOW-A-01 NM |
| 5HTC107760 | LAB - SU Component & System Testing - LVE-A-01 NM |
| 5HTC108010 | LAB - SU Component & System Testing - SND-A-01 NM |
| 5HTC107740 | LAB - SU Component & System Testing - LTE-A-01 NM |
| 5HTC107800 | LAB - SU Component & System Testing - PCJ2 NM |
| 5HTC107920 | LAB - SU Component & System Testing - UPE-A-01 NM |
| 5HTC107880 | LAB - SU Component & System Testing - SCW-A-01 NM |
| 5HTC107780 | LAB - SU Component & System Testing - MXG-A-01 NM |
| 5HTC107600 | LAB - SU Component & System Testing - CHW-A-01 NM |
| 5HTC107820 | LAB - SU Component & System Testing - PSA-A-01 NM |
| 5HTC107860 | LAB - SU Component & System Testing - RLD-A-01 NM |
| 5HTC107420 | LAB - SU Component & System Testing - ASX-A-01 NM |
| 5HTC107720 | LAB - SU Component & System Testing - LPS-A-01 NM |
| 5HTC107640 | LAB - SU Component & System Testing - DIW-A-01 NM |
| 5HTC108190 | LAB - SU Component & System Testing - ASJ-A-01 NM |
| 5HTC107840 | LAB - SU Component & System Testing - PVA-A-01 NM |
| 5HTC107440 | LAB - SU Component & System Testing - BAG-A-01 NM |
| 5HTC107460 | LAB - SU Component & System Testing - BHG-A-01 NM |
| 5HTC107520 | LAB - SU Component & System Testing - C1V-A-01 NM |
| 5HTC107480 | LAB - SU Component & System Testing - BNG-A-01 NM |
| 5HTC107560 | LAB - SU Component & System Testing - C3V-A-01 NM |
| 5HTC107540 | LAB - SU Component & System Testing - C2V-A-01 NM |

| | |
|------------|---|
| 4TT56230 | LAB - Construction Turnover to Startup - Communications Electrical System CME |
| 5HTC107610 | LAB - SU Component & System Testing Complete |

Milestone

Interim Milestone B-3, Commission LBL in the DFLAW Configuration Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|------------------------------|
| LAW | 5HLC107600 | LAW Startup Testing Complete |

Milestone Definition

Component and system testing within the scoped system boundaries of the LAW Facility systems are complete and LAW systems have been accepted by plant operations.

Systems within LAW requiring testing are as follows:

| | |
|------|---|
| GRE | Grounding & Lightning Protection Electric System |
| SND | Sanitary Disposal System |
| DCE | DC Electrical System |
| FPW | Fire Protection Water System |
| MVE | Medium Voltage Electrical System |
| NLD | Non-radioactive Liquid Waste Disposal System |
| ASJ | Autosampling Control System |
| FNJ | Facility Network Infrastructure System |
| MHJ | Mechanical Handling Control System |
| PCJ | Process Control system |
| THE | Heat Trace Electrical System |
| C1V | C1 Ventilation System |
| LVE | Low Voltage Electrical System |
| PPJ | Programmable Protection system |
| LTE | Lighting Electrical System |
| PSA | Plant Service Air System |
| ISA | Instrument Air System |
| PSW | Process Service Water System |
| DOW | Domestic (potable) Water System |
| HPS | High Pressure Steam System |
| FDE | Fire Detection and Alarm System |
| UPE | Uninterruptible Power Electrical System |
| LPS | Low Pressure Steam System |
| DIW | Demineralized Water System |
| SCW | Steam Condensate Water System |
| CHW | Chilled Water System |
| ARV | Atmospheric Reference Ventilation System |
| CDG | Carbon Dioxide Gas System |
| AMR | Ammonia Reagent System |
| C5V | C5 Ventilation System |
| ASX | Autosampling System |
| LFH1 | LAW Container Finishing Handline System Melter #1 |

| | |
|------|---|
| C3V | C3 Ventilation System |
| LMH | LAW Melter Handling System |
| MXG | Miscellaneous Gases System |
| LFH2 | LAW Container Finishing Handline System Melter #2 |
| SHR | Sodium Hydroxide Reagent System |
| LSH | LAW Melter Equipment Support Handling System |
| RLD | Radioactive Liquid Waste Disposal System |
| LRH | LAW Container Receipt Handling System |
| PTJ | Process & Mechanical Handling CCTV System |
| CME | Communications Electrical System |
| C2V | C2 Ventilation System |
| LCP1 | Concentrate Receipt Process System 1 |
| RWH | Radioactive Solid Waste Handling System |
| LCP2 | Concentrate Receipt Process System 2 |
| LVP | LAW Secondary Offgas/Vessel Vent Process System |
| LEH | LAW Container Export Handling System |
| PCW | Plant Cooling Water System |
| SDJ | Stack Discharge Monitoring system |
| LFP1 | Melter Feed Process System 1 |
| LMP1 | Melter Process System 1 |
| LOP1 | Primary Offgas Process System 1 |
| LPH | LAW Container Pour Handling Process |
| RPJ | Radiological Personnel Monitoring System |
| CPE | Cathodic Protection Electrical System |
| EMJ | Environmental Monitoring System |
| LFP2 | Melter Feed Process System 2 |
| LOP2 | Primary Offgas Process System 2 |
| LMP2 | Melter Process System 2 |
| GFR | Glass Formers Reagent System |
| BSA | Breathing Service Air System |
| SCE | Security Electrical System |

If BNI determines that one or more of the listed systems are not required, notification and justification will be provided to DOE for review and concurrence.

Inclusions

- All systems necessary to operate LAW in support of DFLAW operations.

Exclusions

- All systems and components not required for DFLAW operations
- B Punch List items accepted by Plant Ops acceptance of the systems.

Objective Evidence of Milestone Completion and Key Predecessors

This milestone shall be considered complete upon completion of individual system and component testing

and turnover, and acceptance of all systems necessary for DFLAW operation to Commissioning and Operations in accordance with procedure 24590-WTP-GPP-MGT-042 (as amended). Compliance with procedure GPP-MGT-042 will be demonstrated through delivery of Contractor certification and reference to complete turnover records. DOE oversight will validate the contractor's assessment.

DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-F.

Startup component and system testing includes all work defined through completion of the following activities:

| Activity ID | Activity Name |
|--------------------|--|
| 5HLC106580 | LAW - SU Component & System Testing - GRE |
| 5HLC107380 | LAW - SU Component & System Testing - SND |
| 5HLC106420 | LAW - SU Component & System Testing - DCE |
| 5HLC106540 | LAW - SU Component & System Testing - FPW |
| 5HLC107060 | LAW - SU Component & System Testing - MVE |
| 5HLC107100 | LAW - SU Component & System Testing - NLD |
| 5HLC106200 | LAW - SU Component & System Testing - ASJ |
| 5HLC106520 | LAW - SU Component & System Testing - FNJ |
| 5HLC107040 | LAW - SU Component & System Testing - MHJ |
| 5HLC107120 | LAW - SU Component & System Testing - PCJ |
| 5HLC106620 | LAW - SU Component & System Testing - HTE |
| 5HLC106260 | LAW - SU Component & System Testing - C1V |
| 5HLC107000 | LAW - SU Component & System Testing - LVE |
| 5HLC107160 | LAW - SU Component & System Testing - PPJ |
| 5HLC106980 | LAW - SU Component & System Testing - LTE |
| 5HLC107180 | LAW - SU Component & System Testing - PSA |
| 5HLC106640 | LAW - SU Component & System Testing - ISA |
| 5HLC107200 | LAW - SU Component & System Testing - PSW |
| 5HLC106460 | LAW - SU Component & System Testing - DOW |
| 5HLC106600 | LAW - SU Component & System Testing - HPS |
| 5HLC106500 | LAW - SU Component & System Testing - FDE |
| 5HLC107400 | LAW - SU Component & System Testing - UPE |
| 5HLC106920 | LAW - SU Component & System Testing - LPS |
| 5HLC106440 | LAW - SU Component & System Testing - DIW |
| 5HLC107320 | LAW - SU Component & System Testing - SCW |
| 5HLC106360 | LAW - SU Component & System Testing - CHW |
| 5HLC106180 | LAW - SU Component & System Testing - ARV |
| 5HLC106340 | LAW - SU Component & System Testing - CDG |
| 5HLC106160 | LAW - SU Component & System Testing - AMR |
| 5HLC106320 | LAW - SU Component & System Testing - C5V |
| 5HLC106220 | LAW - SU Component & System Testing - ASX |
| 5HLC106720 | LAW - SU Component & System Testing - LFH1 |
| 5HLC106300 | LAW - SU Component & System Testing - C3V |
| 5HLC106800 | LAW - SU Component & System Testing - LMH |

| Activity ID | Activity Name |
|--------------------|--|
| 5HLC107080 | LAW - SU Component & System Testing - MXG |
| 5HLC106740 | LAW - SU Component & System Testing - LFH2 |
| 5HLC107360 | LAW - SU Component & System Testing - SHR |
| 5HLC106960 | LAW - SU Component & System Testing - LSH |
| 5HLC107240 | LAW - SU Component & System Testing - RLD |
| 5HLC106940 | LAW - SU Component & System Testing - LRH |
| 5HLC107220 | LAW - SU Component & System Testing - PTJ |
| 5HLC106380 | LAW - SU Component & System Testing - CME |
| 5HLC106280 | LAW - SU Component & System Testing - C2V |
| 5HLC106660 | LAW - SU Component & System Testing - LCP1 |
| 5HLC107280 | LAW - SU Component & System Testing - RWH |
| 5HLC106680 | LAW - SU Component & System Testing - LCP2 |
| 5HLC107020 | LAW - SU Component & System Testing - LVP |
| 5HLC106700 | LAW - SU Component & System Testing - LEH |
| 5HLC107140 | LAW - SU Component & System Testing - PCW |
| 5HLC107340 | LAW - SU Component & System Testing - SDJ |
| 5HLC106760 | LAW - SU Component & System Testing - LFP1 |
| 5HLC106820 | LAW - SU Component & System Testing - LMP1 |
| 5HLC106860 | LAW - SU Component & System Testing - LOP1 |
| 5HLC106900 | LAW - SU Component & System Testing - LPH |
| 5HLC107260 | LAW - SU Component & System Testing - RPJ |
| 5HLC106400 | LAW - SU Component & System Testing - CPE |
| 5HLC106480 | LAW - SU Component & System Testing - EMJ |
| 5HLC106780 | LAW - SU Component & System Testing - LFP2 |
| 5HLC106880 | LAW - SU Component & System Testing - LOP2 |
| 5HLC106840 | LAW - SU Component & System Testing - LMP2 |
| 5HLC106560 | LAW - SU Component & System Testing - GFR |
| 5HLC106240 | LAW - SU Component & System Testing - BSA |
| 5HLC107300 | LAW - SU Component & System Testing - SCE |
| 5HLC107600 | LAW - SU Component & System Testing Complete |

Milestone

Interim Milestone B-4, Commission LBL in the DFLAW Configuration Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|-------------|------------------------------|
| EMF | 5HBDFL8530 | EMF Startup Testing Complete |

Milestone Definition

Component and system testing within the scoped system boundaries of the Effluent Management Facility (EMF) is complete and the EMF systems have been accepted by plant operations.

Systems that will be tested to demonstrate EMF startup testing complete include the following:

| | |
|-----|--|
| GRE | Grounding & Lightning Protection Electric System |
| FPW | Fire Protection Water System |
| CME | Communications Electrical System |
| HTE | Heat Trace Electrical System |
| LTE | Lighting Electrical System |
| FDE | Fire Detection and Alarm System |
| ISA | Instrument Air System |
| DOW | Domestic (potable) Water System |
| HPS | High Pressure Steam System |
| LPS | Low Pressure Steam System |
| DIW | Demineralized Water System |
| AFR | Anti-foam Reagent System |
| DEP | DFLAW EMF Process System |

If BNI determines that one or more of the listed systems are not required, notification and justification will be provided to DOE for review and concurrence.

Inclusions

N/A

Exclusions

- B Punch List items accepted by plant operations acceptance of the system.

Objective Evidence of Milestone Completion and Key Predecessors

This milestone shall be considered complete upon completion of individual system and component testing and turnover, and acceptance of all systems necessary for DFLAW operation to Commissioning and Operations in accordance with procedure 24590-WTP-GPP-MGT-042 (as amended). Compliance with procedure 24590-WTP-GPP-MGT-042 will be demonstrated through delivery of Contractor certification and reference to complete turnover records. DOE oversight will validate the contractor's assessment.

DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-F.

Startup component and system testing includes all work defined through completion of the following activities:

| Activity ID | Activity Name |
|--------------------|---|
| 5HBDFL7950 | BOF - SU - EMF - Component & System Testing (FNM) - GRE |
| 5HBDFL8190 | BOF - SU - EMF - Component & System Testing (FNM) - FPW |
| 5HBDFL7910 | BOF - SU - EMF - Component & System Testing (FNM) - CME |
| 5HBDFL7970 | BOF - SU - EMF - Component & System Testing (FNM) - HTE |
| 5HBDFL7990 | BOF - SU - EMF - Component & System Testing (FNM) - LTE |
| 5HBDFL8090 | BOF - SU - EMF - Component & System Testing (FNM) - FDE |
| 5HBDFL7630 | BOF - SU - EMF - Component & System Testing (FNM) - ISA |
| 5HBDFL7690 | BOF - SU - EMF - Component & System Testing (FNM) - DOW |
| 5HBDFL7530 | BOF - SU - EMF - Component & System Testing (FNM) - HPS |
| 5HBDFL7550 | BOF - SU - EMF - Component & System Testing (FNM) - LPS |
| 5HBDFL7670 | BOF - SU - EMF - Component & System Testing (FNM) - DIW |
| 5HBDFL7710 | BOF - SU - EMF - Component & System Testing (FNM) - AFR |
| 5HBDFL7730 | BOF - SU - EMF - Component & System Testing (FNM) - DEP |
| 5HBDFL8530 | BOF - SU - EMF - Component & System Testing (FNM) |

Milestone

Interim Milestone B-5, Commission LBL in the DFLAW Configuration Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|--------------|--------------------------|
| LAB | 5HTC3JA00410 | LAB Readiness to Operate |

Milestone Definition

Complete activities necessary to demonstrate readiness to operate of the Analytical Laboratory (LAB) by completing the closure of all pre-start findings from the Contractor Ready to Operate Assessment of the LAB facility. Additional activities to be completed include the following as needed to support the Contractor Ready to Operate Assessment of the LAB facility as needed for DFLAW:

- Complete LAB-Ops-Conduct Chemical Management Assessment
- Complete LAB-Ops-Conduct Onsite Methods Validation Sealed Sources

Inclusions

N/A

Exclusions

- Post-start findings.

Objective Evidence of Milestone Completion and Key Predecessors

Documentation of closure of all pre-start findings from the Contractor Ready to Operate Assessment through the Contractor's Corrective Action Management Program system. DOE oversight will validate the contractor's assessment.

DOE shall provide concurrence regarding the acceptability of the submission of the Contractor's Declaration of Readiness to operate the LAB or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-F.

| Activity ID | Activity name |
|-------------|--|
| 5HTC3JA0039 | LAB-Ops-Conduct Chemical Management Assessment |
| 5HTC3JA0040 | LAB-Ops-Conduct Onsite Methods Validation Sealed Sources |

Milestone

Interim Milestone B-6 Commission LBL in the DFLAW Configuration Performance Based Incentive Fee

| Facility | Activity ID | Description |
|----------|--------------|-----------------------------------|
| LAW | 5HLC3JA00371 | LAW DOE Headquarters ORR complete |

Milestone Definition

Completion of the DOE Operational Readiness Review (ORR) and issuance of the DOE ORR Action Closure report, including closure of all pre-start findings, Activity ID 5HLC3JA00371 and receipt of approval from the startup authorization authority.

Key supporting activities that will be completed prior to the commencement of the DOE ORR, include:

- Pre-cold commissioning management assessment.
- The LAW Vitrification Facility shall be operated continuously for two (2) five (5)-day cold commissioning tests. If subsequent five (5)-day test(s) are required, the timing of the test(s) shall be agreed upon by both the DOE and the Contractor.
- LAW environmental performance test.
- Contractor ORR and closure of pre-start findings.

Inclusions

- Scope, breadth, and depth of ORR will be defined in the approved Startup Notification Report and the ORR plan of action
- Reference B.11 (d)(1) Fee Risk Allocation, Regulatory Actions.

Exclusions

N/A

Objective Evidence of Milestone Completion and Key Predecessors

Receipt of permission to commence hot commissioning from the DOE Authorization Authority.

Milestone

Milestone B-7 Milestone Successful Demonstration of Hot Commissioning Performance Based Incentive

| Facility | Activity ID | Description |
|----------|--------------|---|
| DFLAW | 5HLC3JA00401 | Successful Demonstration of Hot Commissioning |

Milestone Definition

Successful demonstration of LAW Vitrification Facility hot commissioning milestone shall be considered accomplished when Contract Deliverable 5.15, "Certification of Demonstration of Hot Commissioning," is approved by DOE.

Additional support activities that will be completed prior to the submittal of the certification of hot commissioning include:

- Completion of cold commissioning testing;
- Completion of transfer line tie-in between WTP and Tank Farm Operator;
- Tank Farm Operator completes first batch;
- Completion of waste acceptance for first batch of tank waste;
- Submission of an engineering evaluation establishing the number of ILAW containers required to displace nonradioactive simulants with LAW pretreatment system feed in ILAW product glass; and
- Produce compliant ILAW product as follows:
 - Exceeds minimum waste loading as defined in the Contract for the DFLAW waste stream in accordance with Section C(8), Specification 2
 - Demonstrates conformance with ICD 15.

Inclusions

N/A

Exclusions

N/A

Objective Evidence of Milestone Completion and Key Predecessors

Deliverable – A Certification of successful demonstration of Hot Commissioning has been approved by DOE.

DOE shall provide approval of the submission or provide notice of material deficiencies within thirty (30) calendar days of receipt. In the event DOE provides notice of material deficiencies after thirty (30) calendar days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Section B, Table B-2-F.

Objective Evidence of Milestone Completion and Key Predecessors

| Activity ID | Description |
|--------------|-------------------------------------|
| 5HLC3JA00340 | Cold Commissioning Testing Complete |
| 5HLC3JA00380 | Transfer line Tie-in |
| 5HLC3JA00382 | TOC First Batch |
| 5HLC3JA00390 | LAW Hot Commissioning |

| | |
|--------------|--|
| 5HLC3JA00400 | Prepare and Submit Certification of Hot Commissioning Completion |
|--------------|--|

SECTION J – LIST OF ATTACHMENTS
ATTACHMENT Q
DFLAW DESIGN COMPLETION CRITERIA INCENTIVE DEFINITIONS

The DFLAW design effort in CLIN 2.1 consists of several fee incentives as outlined in Section B.5. This attachment contains the completion criteria for these fee incentives.

DFLAW DESIGN Design Completion Cost Incentive Fee

The DFLAW Design Completion Incentive Fee consists of two components. A Schedule Incentive Fee, which can adjust the final Cost Incentive Fee calculation positively for early completion or negatively for late completion and a Cost Incentive Fee, which is determined at the completion of the effort as defined herein.

The schedule completion incentive/disincentive fee of this milestone is calculated by the completion of the Section 1 Major Scope Elements established in the Milestone Definition Sheet (DF-01). The target schedule completion is April 30, 2018. Calculation of any Cost Incentive Fee adjustments associated with the schedule performance shall be based on this target date. See Section B, Attachment B-2-H, Table B-2-H-1 CLIN 2.1 DFLAW Design Completion Fee for the Schedule Incentive Fee details.

Cost performance for DFLAW Design Completion will be measured by the cumulative costs associated with the performance of the Major Scope Elements and the Residual Scope Elements established in the Milestone Definition sheet for DFLAW Design Completion. The Cost Incentive Fee shall be determined once the combined scope elements have been completed and a “Declaration of Completion” package has been prepared by the Contractor and approved by DOE as outlined in Section B, Attachment B-2-H. Evidence of completion of the activities defined in the Milestone Definition Sheet (DF-01) shall be provided for verification.

DFLAW Interim Milestone Completion

The DFLAW Interim Milestone Completion Incentive Fee consists of two distinct components. These components are “EMF Hazard Analysis and 30% Design Review” (DF-02) and “DFLAW Safety Basis Change Package” (DF-03) and are defined in the Interim Milestone definition sheets contained herein. The Contractor shall prepare and submit a Declaration of Completion to DOE for determination of the final fee paid for these Interim Milestones as outlined in Section B, Attachment B-2-H. The fee for these Interim Milestones will be earned and payable when the Contracting Officer determines the milestone has been completed as described in the milestone definition sheets DF-02, and DF-03 contained in this Attachment Q.

Milestone

DF-01, Cost Incentive Milestone Definition Sheet

WTP Contract No. DE-AC27-01RV14136

| Facility | Activity ID | Description |
|----------|-------------|----------------------------------|
| DFLAW | | CLIN 2.1 DFLAW Design Completion |

Milestone Definition

Completion of major design activities associated contained in Section 1 constitutes completion of the schedule incentive/disincentive portion of the DFLAW Design Completion fee. Completion of the Residual Scope Elements in Section 2, and Section 3 defines objective evidence for completion of CLIN 2.1 design for the purposes of calculating the Cost Incentive Fee as set forth in Section B-2-H.

Section 1: Major Design Elements

- System Design Description/Facility Design Description
- Final Process Flow Diagrams
- Heat and Material Balance
- Major Equipment Lists
- Instrumentation Specifications
- Major System Calculations
- Major System Specifications and Data sheets
- Major System Calculations
- Piping and instrumentation diagrams (P&ID)/Line and valve lists
- Ventilation and instrumentation diagrams and lists
- Plant layout design detailed planning (3D model)
- Detailed Piping Design
- Stress and Support design
- Architectural Design Renderings, Layouts, details and schedules
- Structural/Foundation Design Concrete
- Structural/Foundation Design Steel
- Civil Design drainage, grading, paving underground
- Radiation Safety Design Criteria
- Hazards Analysis
- Fire Analysis
- Preliminary Documented Safety Analysis (PDSA).

Section 2: Residual Scope Elements

- Arc Flash Calculations
- Final Termination Schedules
- Software Requirements
- Final Instrument Index
- Functional Acceptance Testing (Operations and Engineering Testing)
- Develop ICN Simulator Software for LAW/EMF
- Final Public Reviews/Permitting – operating and final installation permit for DWP equipment in EMF (evaporator and tanks)
- Management of Acquired Software. IT-14 is the old procedure for software quality and putting software on the baseline, this procedure will be replaced with a new engineering procedure.

Section 3: Objective Evidence of Milestone Completion and DFLAW Activity ID Key Predecessors

Completion of this milestone shall be measured by submittal of a “Declaration of Completion” (DOC) package by BNI. Separate DOC packages shall be submitted for the Schedule and Cost components of this milestone supported by evidence of completion. The Schedule DOC package shall include evidence of completion of the Major Design Elements defined in Section 1. The DOC package for the cost component of this milestone shall include evidence of completion of Residual Scope elements defined in Sections 1 and 2. The Cost DOC shall include evidence of completion of those activities which would support a bid for procurement and construction of the DFLAW project. The Cost DOC submittal shall include the following elements of work:

- Engineering report for DFLAW scope with confirmed calculations and drawings.
- Confirmed specifications and datasheets, suitable for soliciting bids from contractors and suppliers
- Initial issuance of the preliminary safety analysis and preliminary fire hazard analysis.

The following list of Key Predecessors will be completed:

| Activity ID | Description | Activity ID | Description |
|-------------|---|-------------|--|
| 3ED90BODCN | EMF - E1 - BODCN Completion | 3ED900011 | EMF - E1 - Perform 30% Review |
| 3ED900025 | EMF - E1 - DFLAW - ICD 30 | 3ED90HAZD | EMF - E1 - Hazardous Analysis Completion |
| 3ED900026 | EMF - E1 - DFLAW - ICD 31 | 3ED4800008 | EMF - EN - Issue Water DIW / DOW / PCW/PSW P&IDs & Lists - Rev 0 |
| 3ED900027 | EMF - E1 - DFLAW - ICD 6 | 3ED4800009 | EMF - EN - Issue Air BSA/ISA/PSA P&IDs & Lists - Rev 0 |
| 3ED4800004 | EMF - EN - Issue Drains / Vents / Interfaces P&IDs & Lists - Rev 0 | 3ED4800006 | EMF - EN - Issue Steam LPS / HPS / SCW P&IDs & Lists - Rev 0 |
| 3ED4800014 | EMF - EN - Issue Evaporator P&IDs & Lists - Rev 0 | 3ED2700017 | EMF - EH - Issue Fire Protection P&ID (1) - Rev 0 |
| 3ED4800017 | EMF - EN - Issue Major Water DIW / DOW / PCW / PSW Equipment Datasheets - Rev 0 | 3ED4800118 | EMF - EN - Issue Major Air BSA/ISA/PSA Equipment Datasheets - Rev. 0 |
| 3ED4800114 | EMF - EN - Issue Evaporator Equipment Datasheets - Rev. 0 | 3ED4800115 | EMF - EN - Issue Major Drains/Vents/Interfaces Equipment Datasheets Rev. 0 |
| 3ED4800116 | EMF-EN-Issue Major Equipment Datasheets to Support Permitting –Rev. 0 | 3ED1700108 | EMF - EJ - Develop and Issue HVAC and Fire Protection Instruments Data Sheets Rev. 0 |
| 3ED1700069 | EMF - EJ - Develop and Issue Steam LPS/HPS/SCW Instruments Data Sheets Rev. 0 | 3ED1700042 | EMF - EJ - Develop and Issue Water DIW/DOW/PCW/PSW Instruments Data Sheets Rev. 0 |
| 3ED1700086 | EMF - EJ - Develop and Issue Air BSA/ISA/PSA Instruments Data Sheets Rev. 0 | 3ED1700081 | EMF - EJ - Develop and Issue Evaporator Instruments Data Sheets Rev. 0 |
| 3ED1700098 | EMF - EJ - Develop and Issue Drains Instruments Data Sheets Rev. 0 | 3ED1700042 | EMF - EJ - Develop and Issue Water DIW/DOW/PCW/PSW Instruments Data Sheets Rev. 0 |
| 3ED4800118 | EMF - EN - Issue Major Air BSA/ISA/PSA Equipment | 3ED4800115 | EMF - EN - Issue Major Drains/Vents/Interfaces |

| Activity ID | Description | Activity ID | Description |
|--------------------|---|--------------------|---|
| | Datasheets - Rev. 0 | | Equipment Datasheets Rev. 0 |
| 3ED4800116 | EMF - EN - Issue Major Equipment Datasheets to Support Permitting - Rev. 0 | 3ED4800114 | EMF - EN - Issue Evaporator Equipment Datasheets - Rev. 0 |
| 3ED1700069 | EMF - EJ - Develop and Issue Steam LPS/HPS/SCW Instruments Data Sheets Rev. 0 | 3ED1700086 | EMF - EJ - Develop and Issue Air BSA/ISA/PSA Instruments Data Sheets Rev. 0 |

Milestone

DF-02, Interim Milestone Definition Sheet

WTP Contract No. DE-AC27-01RV14136

| Facility | Activity ID | Description |
|----------|-------------|---|
| EMF | 3ED900011 | EMF Hazard Analysis and 30% Design Review |

Milestone Definition

Thirty percent (30%) Design Review will use the process as defined in procedure 24590-WTP-GPG-ENG-050 (3D Model Review/Freeze). A design review plan will be prepared, submitted, and approved at least five (5) working days prior to conducting the review. This plan will include objectives, scope of review, documents to be reviewed, method(s) for conducting the review, and methods to resolve any identified issues. The expectation of the process is to finalize and approve (freeze) the design and 3D model, and ensure inter-discipline/functional coordination.

Model review participants are across all functions and disciplines and include the following:

- Engineering Design Agency (as a minimum this includes, Construction Safety Alliance [CSA, electrical, control and instrumentation [C&I], mechanical, HVAC, fire protection, plant design)
- Engineering Design Authority (as a minimum this includes, Nuclear Safety, System Engineering, and Process Engineering)
- Nuclear Safety
- Environmental
- Industrial Hygiene
- Operations
- Plant Engineering
- Procurement
- Construction
- DOE.

Model review participants are expected to provide constructive input on the design of the commodities being reviewed relative to the following:

- Safety
- Quality
- Operability
- Maintainability
- Constructability
- Human factors
- Permitting requirements
- As Low As Reasonably Achievable (ALARA) principles.

The following related activities will be fundamentally complete before a thirty percent (30%) Design Reviews is commenced:

- BOD requirements are defined
- Hazards to system operation have been preliminarily identified and mitigation strategies defined
- Major equipment and systems are identified.

Requirements

- Preliminary System Design Description, Part 1 (not issued)
- Preliminary Facility Design Description (not issued).

Basis of Design

- System Requirements Document
- Design Criteria
- Code of Record
- Scope of Facilities
- Operations and Maintenance Requirements.

Nuclear Safety

Preliminary hazard analysis, accident analysis, and control selection

Technical Issues – Identified

- Preliminary Functional Requirements
- Preliminary TSRs
- Preliminary Radiation Zone Maps
- Preliminary Shielding Criteria.

Process Engineering

Establish BOD and identify applicable codes and standards

- Process Analysis Model >90%
- Waste streams identified
- Input Basis of Design >90%
- Revision A Process Flow Diagrams
- Revision A Mass Balance.

Mechanical Systems, including Mechanical Handling and Fire Protection

Establish basis for design and identify applicable codes and standards

- Preliminary Calculations
- Preliminary P&IDs
- Preliminary System Flow Diagrams
- Preliminary Mechanical Line, Valve & Equipment Lists
- Preliminary Mechanical Handling Drawings
- Preliminary Mechanical Sequence Drawings
- Preliminary MR/Spec/Datasheets for Long Lead Procurements.

HVAC

Establish basis for design and identify applicable codes and standards

- Preliminary Calculations
- Preliminary Ventilation Flow Diagrams
- Preliminary ventilation and instrumentation diagrams
- Preliminary Heating/Cooling Loads
- Preliminary Equipment List
- Preliminary Duct Routing (major runs)

- Preliminary Material Requisition/Specification/Datasheets for Long Lead Procurements
- Preliminary Electrical Power (Equipment Loads & Duty)
- Preliminary Heat Generated by Equipment
- Preliminary Air Flow/Cooling Needs for Equip
- Preliminary Compressed Air/Gases.

CSA

Establish basis for design and identify applicable codes and standards

- Preliminary Structural Model Complete
- Preliminary Structure Framing Plans/Sections
- Preliminary Concrete drawings
- Preliminary Calculations
- Preliminary Plot Plan
- Preliminary Drainage Plan
- Preliminary Plans, Sections, Elevations
- Preliminary Architectural Details
- Preliminary Architectural Schedules.

Plant Design

- Major Commodities – 30% of Budget Quantities In the Model
- Major Process and HVAC Equipment Modelled
- Space Allocation Plan Implemented
- Preliminary General Arrangement Drawings
- Preliminary Building Plumbing and Drains
- Preliminary HVAC Orthographic Drawings
- Preliminary Piping Specifications
- Preliminary Piping Class Sheets.

Electrical

Establish basis for design and identify codes and standards

- Preliminary Calculations
- Preliminary One-Line Diagram
- Preliminary Electrical Load Summary
- Preliminary Power Distribution System Layout (Load Centers, Switchgear, MCCs, Panel Boards)
- Preliminary MR/Spec/Datasheets for Long Lead Procurements.

Controls and Instrumentation

Establish basis for design and identify applicable codes and standards

- Preliminary Calculations
- Preliminary Control Strategy
- Preliminary Control Requirements (manual, semi, automatic)
- Preliminary Communication protocol
- Preliminary Security, data storage, retrieval and security
- Reliability, Availability, Maintainability (RAM) parameters identified for key systems
- Preliminary MR/Spec/Datasheets for Long Lead Procurements.

Other

- Issued for use Interface Control Documents (ICDs)
- Preliminary Material Assignment Schedule (MAS).

Inclusions

N/A

Exclusions

N/A

Objective Evidence of Milestone Completion and DFLAW Activity ID Key Predecessors:

Objective Evidence

The 30% Design review will be documented by issuing an engineering report containing the associated EMF hazard analysis. The report will describe the status of the design; address each design, safety basis, and operating and maintenance requirement including design and safety margins and capability to comply with WTP Contract technical and quality requirements. The report shall resolve issues identified by DOE and the Contractor staff during the review. The report will identify open issues and unverified assumptions requiring closure as design matures. These actions and items that are not incorporated will be tracked in an action tracking system. This interim milestone will be considered complete upon submission by the Contractor to DOE, subject to concurrence by DOE within ten (10) days of receipt.

Key Predecessors

| Activity ID | Description | Activity ID | Description |
|-------------|--|-------------|--|
| 3ED900025 | EMF - E1 - DFLAW - ICD 30 | 3ED4700003 | EMF – EB – Develop Process Flow Diagrams - Committed |
| 3ED900026 | EMF - E1 - DFLAW - ICD 31 | 3ED1000005 | EMF – E2 – Prepare BODCN |
| 3ED900027 | EMF - E1 - DFLAW - ICD 6 | 3ED4700001 | EMF – EB – Develop Process Committed Calculations – Equipment Design |
| 3ED4800004 | EMF - EN - Issue Drains / Vents / Interfaces P&IDs & Lists - Rev 0 | 7KLDFL327 | DFLAW Hazard Analysis |

Milestone

DF-03 Interim Milestone Definition Sheet

WTP Contract No. DE-AC27-01RV14136

| Facility | Activity ID | Description |
|----------|-------------|--|
| EMF | | DLFAW Safety Basis Change Package (PDSA) |

Milestone Definition

Prepare and issue the DFLAW EMF Safety Basis Change Package (SBCP)/PDSA update as an addendum to the LAW PDSA. Submit the SBCP/PDSA to DOE.

Inclusions

N/A

Exclusions

N/A

Objective Evidence of Milestone Completion and Key Predecessors

This milestone shall be considered complete upon the submission of the SBCP/PDSA to DOE. DOE shall provide concurrence regarding the acceptability of the submission or provide notice of material deficiencies within ten (10) working days of receipt. In the event DOE provides notice of material deficiencies after ten (10) working days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Table B-2-H-1.

DOE shall provide approval of the SBCP/PDSA within ninety (90) days of accepted submission.

Key Predecessors

| Activity ID | Description | Activity ID | Description |
|-------------|-----------------------|-------------|-------------|
| 7KLDFL327 | DFLAW Hazard Analysis | | |
| 7KLDFL3430 | DFLAW PDSA | | |