

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE _____ PAGE **1** OF **3** PAGES

2. AMENDMENT/MODIFICATION NO. **409**

3. EFFECTIVE DATE (M/D/Y) **See Block 16C**

4. REQUISITION/PURCHASE REQ. NO. _____

5. PROJECT NO. (If applicable) _____

6. ISSUED BY CODE _____

**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) CODE _____

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code)

**Bechtel National, Inc.
2435 Stevens Center Place
Richland, WA 99354**

9A. AMENDMENT OF SOLICITATION NO. _____

9B. DATED (SEE ITEM 11) _____

10A. MODIFICATION OF CONTRACT/ ORDER NO. **DE-AC27-01RV14136**

10B. DATED (SEE ITEM 13) **December 11, 2000**

CODE **396A5** FACILITY CODE **153392068**

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.

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).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO THE AUTHORITY OF: Clause I.82, FAR 52.243-2 Changes - Cost Reimbursement (AUG 1987) - Alternate III (APR 1984)

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)
 Period of Performance: 12/11/2000 to 12/31/2022

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) **Katie A. Mair
Contracting Officer**

15B. CONTRACTOR/OFFEROR **Margaret G. McCullough**
(Signature of person authorized to sign)

15C. DATE SIGNED **12/13/17**

16B. UNITED STATES OF AMERICA BY **Katie Mair**
(Signature of Contracting Officer)

16C. DATE SIGNED **12/13/17**

Purpose of Modification:

The purpose of this modification is to make the following changes:

1. Section B, Supplies or Services and Prices/Costs is revised to update the wording from “Construction” to “Physical Plant” complete.
2. Section C, Statement of Work, is revised as follows:
 - a. Update the wording from “Construction” to “Physical Plant” complete.
 - b. C.5 Description of Contract Requirements and Deliverables, Table C.5-1.1 Deliverables, Item Numbers 2.5 (Operations Research Assessment) and 2.6 (WTP Tank Utilization Assessment) Contract Due Dates are revised.
 - c. C.6 Standards, Standard 2: Research, Technology, and Modeling, (b) Process and Facility Modeling Requirements is revised.
 - d. C.6 Standards, Standard 5 Commissioning, (g) Hot Commissioning, (6) Hot Commissioning Results and Documentation, (iii) is deleted.
 - e. C.6 Standards, Standard 9: Nuclear Safety, (e) is revised.
 - f. C.7 Facility Specification (b) Waste Treatment Capacity Requirements, Table C.7-1.1, Note 4 is revised.
3. Section J, List of Attachments, is revised as follows:
 - a. Update the wording from “Construction” to “Physical Plant” complete in Attachment P, Completion Definition Sheets for Incentive Fees (A-1 through A-5).
 - b. Attachment P – Completion Definition Sheets for Incentive Fees, Interim Milestone B-1 Commission LBL in the DFLAW Configuration Performance Based Incentive Fee is revised.
 - c. Update Milestone A-5 from “Complete LAW Construction” to “LBL Physical Plant Complete”.

These changes are performed under the authority provided by Contract Clause I.82, FAR 52.243-2 *Changes – Cost Reimbursement (AUG 1987) – Alternate III (APR 1984)* at no additional cost to the Government.

Description of Modification:

1. Section B, Supplies or Services and Prices/Costs is revised to update the wording from “Construction” to “Physical Plant” complete. Section B is revised in its entirety and included as Attachment 1.
2. Section C, Statement of Work, is revised and replaced in its entirety to include the following changes:
 - a. Update the wording from “Construction” to “Physical Plant” complete.
 - b. C.5 Description of Contract Requirements and Deliverables, Table C.5-1.1 Deliverables, Item Numbers 2.5 (Operations Research Assessment) and 2.6 (WTP Tank Utilization Assessment) Contract Due Dates are revised.
 - c. C.6 Standards, Standard 2: Research, Technology, and Modeling, (b) Process and Facility Modeling Requirements is revised.
 - d. C.6 Standards, Standard 5 Commissioning, (g) Hot Commissioning, (6) Hot Commissioning Results and Documentation, (iii) is deleted.
 - e. C.6 Standards, Standard 9: Nuclear Safety, (e) is revised.
 - f. C.7 Facility Specification (b) Waste Treatment Capacity Requirements, Table C.7-1.1, Note 4 is revised.

The revised Section C, Statement of Work, is included as Attachment 2.

3. Section J, List of Attachments, is revised and replaced in its entirety to include the following changes:
 - a. Update wording from “Construction” to “Physical Plant” complete in Attachment P, Completion Definition Sheets for Incentive Fees.
 - b. Attachment P – Completion Definition Sheets for Incentive Fees, Interim Milestone B-1 Commission LBL in the DFLAW Configuration Performance Based Incentive Fee is revised.
 - c. Update Milestone A-5 from “Complete LAW Construction” to “LBL Physical Plant Complete”.

The revised Section J, List of Attachments, is included as Attachment 3.

4. All other terms and conditions remain unchanged.

(End of Modification)

Attachment 1: Section B, Supplies or Services and Prices/Costs

Attachment 2: Section C, Statement of Work

Attachment 3: Section J, List of Attachments

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

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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 Clause I.66, "FAR 52.232-22 Limitation of Funds (Apr 1984)," 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	\$1,748,548,709.50
DFLAW	1250 and 1260	1111243	\$174,063,073.13
LAB	1250 and 1260	1111242	\$351,312,452.11
BOF	1250 and 1260	1111243	\$673,031,980.05
HLW	1250 and 1260	1111244	\$1,034,273,076.81
PT	1250 and 1260	1111245	\$1,540,921,007.86
Subtotal - Budgetary Controls Points for WTP Project thru Contract Modification No. 407			\$11,035,779,942.80
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 No. 407			\$11,038,269,942.80
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)		9	\$4,290,912.35
M0FTV00117 Funding (NETL)		4	\$410,000.00
Total - IEWO Funding 392			\$86,145,921.89

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 407		\$11,124,432,310.69

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.

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 (Clause I.110, "DEAR 952.250-70 Nuclear Hazards Indemnity Agreement (Jun 1996)") 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 in Table B.1 as follows:

Table B.1 – Total Estimated Contract Price

		Cost			
Total Estimated Contract Cost (TECC) through Mod No. 398					\$14,081,957,190
Total Estimated Contract Cost (398)		CLIN Estimated Cost	Increased by Mod No. 403	Total CLIN Estimated Cost	
B.1	CLIN 1.0: Design, Construct, and Commission LBL in the DFLAW Configuration	\$6,507,175,320	\$200,215	\$6,507,375,535	\$200,215
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	\$362,600,000 (Previous NTE Values)	\$0	\$362,600,000	\$0
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 No. 403					\$14,082,157,405
Fee					
		Available		Earned	Total
Earned before Mod No. 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	
Fixed Fee Payment (Attachment B-2-C)***		\$0		\$60,000,000	
Pending Activity Milestones (Attachment B-2-B)		\$0		\$6,667,000	
Maximum Available Award Fee (CY 2016–2022) (Attachment B-2-D)		\$47,235,620		\$7,242,000	
CLIN 1.0: Design, Construct, and Commission LBL in the DFLAW Configuration					
E1	LBL Construction Physical Plant Complete Performance Based Incentives (Attachment B-2-E)	\$55,575,000		\$12,825,000	
E2	Commission LBL in the DFLAW Configuration Performance Based Incentive (Attachment B-2-F)	\$159,600,000			
E3	Schedule Incentive Hot Commissioning (Attachment B-2-F)	+/- \$60,000,000 (Max)			
E4	Cost Share Incentive (Attachment B-2-G)	+/- \$50,000,000 (Max)			
CLIN 2.1: Performance-Based Incentive for DFLAW Design Completion (Attachment B-2-H)		\$8,000,000		\$1,000,000	
Total Maximum Available Fee****		\$270,410,620			
Total Fee Earned				\$321,929,878	
Total Estimated Contract Price (TECP) (Total Maximum Available Fee + Total Earned Fee + TECC) 408					\$14,674,497,903

** Estimated cost for interim work plans within the agreed funding profile for CLINs 3.0 and 4.0 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 No. 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~~Physical Plant 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, "FAR 52.243-2 Changes – Cost-Reimbursement (Aug 1987) – Alternate III (Apr 1984)," 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) calendar 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, "FAR 52.232-17, Interest (Jun 1996)."

- (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 U.S. 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, "DEAR 952.223-71 Integration of Environment, Safety, and Health into Work Planning and Execution (Jun 1997)." 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 1.82, "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 1.82) 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 1.82) 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 1.82) 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 1.82, "FAR 52.243-2 Changes -- Cost-Reimbursement (Aug 1987) – Alternate III (Apr 1984)") 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 Achievable 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 No. 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 No. 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 No. 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 (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 1.0 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 1.0 (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 ConstructionPhysical Plant 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."

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 (384)	Fixed	Determined by Contracting Officer		* \$131,573,553
	Pending Activity Milestones	Fixed	Determined by Contracting Officer	\$0	\$6,667,000
B-2-C	Fixed Fee Payment	Fixed		\$0	\$60,000,000
			TOTAL B-2-C	\$0	\$300,862,878
B-2-D	Award Fee (From Mod (384) 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	\$0	\$7,242,000
			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	\$47,235,620	\$7,242,000
B-2-E	LBL Construction Physical Plant Complete Performance Based Incentives		Interim Milestones		
		PBI	Install Caustic Scrubber Vessel Milestone	\$0	\$4,275,000
		PBI	Complete Final Assembly of Melter Lid #1 Milestone	\$0	\$4,275,000
		PBI	Complete Final Assembly of Melter Lid #2 Milestone	\$0	\$4,275,000
		PBI	Complete LAW Bulk Cable EL+ 48 Milestone	\$4,275,000	
		PBI	Final LBL Construction Physical Plant Complete Milestone	\$51,300,000	
			TOTAL B-2-E	\$55,575,000	\$12,825,000
B-2-F	Commission LBL in the DFLAW Configuration Performance 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	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	\$500,000
		PBI	Prepare and issue DFLAW EMF safety basis change package	\$0	\$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	\$8,000,000	\$1,000,000
			TOTAL FEE AVAILABLE	\$270,410,620	
			TOTAL FEE EARNED		\$321,929,878

*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, Incentive Fee Details

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 No. 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.

EARNED ACTIVITY MILESTONE COMPLETION INCENTIVE FEES

Facility	Milestone Designation	Function	Description	Date	CY	Fee Amount
LAB-01	1GT00E0918	Engineering	Title II Design Complete	01/30/09	2009	\$ 3,875,000
BOF-04	1GB16C1050	Construction	Complete Installation of Cathodic Protection System	02/20/09	2009	\$ 3,875,000
PTF-02	1GP12CFM02	Engineering	IFC Drawings for Concrete Walls EL 56 - 77 Ft	04/28/09	2009	\$ 3,875,000
LAB-02	1GT48P0921	Plant Equip	Receive Waste Transfer System Equipment	04/29/09	2009	\$ 3,875,000
LAW-06	1GL14C0915	Construction	Erect Switchgear Building	10/15/09	2009	\$ 3,875,000
LAW01	1GL47P0922	Plant Equip	Receive Offgas Mercury Adsorber, PA #09-A EL +48	10/19/09	2009	\$ 3,875,000
HLW-02	1GH48P0942	Plant Equip	Receive and Accept Melter Cave 1 Crane Maintenance Shield Door HSH-DOOR-05	11/11/09	2009	\$ 3,875,000
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 Distro 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, "List of Attachments" criteria contained in the contract before Modification No. 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 O 430.2B and DOE O 450.1A)	251	\$30,606
2011-004	LSIT Phase 1	299	\$183,750
		Total	\$268,996

B-2-B-1 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 No. 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 No. 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 (LSIT 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.

B-2-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	\$7,770,000	\$5,157,000	\$2,430,000	\$2,085,000	\$10,200,000	\$7,242,000	\$2,958,000
2017	2017	\$6,472,603		\$1,400,000		\$7,872,603		
2018						\$7,872,603		
2019						\$7,872,603		
2020						\$7,872,603		
2021						\$7,872,603		
2022						\$7,872,605		
Total			\$5,157,000		\$2,085,000	\$57,435,620	\$7,242,000	\$2,958,000

Attachment B-2-E, Incentive Fee E – LBL ~~Construction~~Physical Plant 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-1. LBL ~~Construction~~Physical Plant Complete Performance Based Incentive Fee.

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

- After 09/22/2017 and on or before 10/22/2017	\$1,275,000
- After 10/22/2017 and on or before 11/22/2017	\$
- After 11/22/2017 and on or before 12/22/2017	
- After 12/22/2017 Move unearned portion of fee to LAW <u>ConstructionPhysical Plant</u> Complete Milestone	
4) Complete LAW Bulk Cable EL +48	\$4,275,000
	\$3,275,000
- 02/13/2018 (Milestone Date)	\$2,275,000
- After 02/13/2018 and on or before 03/13/2018	\$1,275,000
- 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 <u>ConstructionPhysical Plant</u> Complete Milestone	
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 <u>ConstructionPhysical Plant</u> Complete PBI and will be earnable if LAW <u>ConstructionPhysical Plant</u> Complete is achieved by the contract date. If LAW is not <u>construction Physical Plant</u> complete by the contract date any unearned EPC Interim Performance Based Incentive fee is forfeited.	
B) Final LBL <u>ConstructionPhysical Plant</u> Complete Milestone Description	
<u>LAW ConstructionPhysical Plant Complete:</u>	
75% of the LBL <u>ConstructionPhysical Plant</u> Complete PBI pool will be earned upon LAW <u>ConstructionPhysical Plant</u> Complete per Section J, "List of Attachments," Attachment P, "Completion Definition Sheets for Incentive Fees," by June 28, 2018. The LAW <u>ConstructionPhysical Plant</u> Complete PBI is date dependent. Fee will be decreased \$3M per month for five months if date not met. For a LAW <u>ConstructionPhysical Plant</u> Complete date later than November 28, 2018, 70% (\$35.9M) of the PBI is forfeited. The minimum fee earned amount for LAW <u>ConstructionPhysical Plant</u> Complete is 30% or \$15.4M, which is subject to further reduction under the cost share incentive.	
	\$51,300,000 + (+ any unearned Interim EPC PBI)
	\$48,300,000
	\$45,300,000
- June 28, 2018 (Milestone Date)	\$42,300,000
- After June 28, 2018 and on or before July 28, 2018	\$39,300,000
- After July 28, 2018 and on or before August 28, 2018	\$36,300,000
- After August 28, 2018 and on or before September 28, 2018	\$15,400,000
- 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	
	\$15,400,000 Minimum
Minimum Fee under LAW, BOF and LAB EPC Incentive Fee (exclusive of any EPC Interim PBIs)	\$68,400,000
TOTAL LBL <u>ConstructionPhysical Plant</u> Complete Performance Based Incentive Fee	

Provisional payment of fee is authorized for the "LBL ConstructionPhysical Plant Complete Performance Based Incentive Fee." Provisional fee of 50% of the total Performance Based Incentives (PBI) 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 ConstructionPhysical Plant Complete will be paid provisionally based upon a projection of schedule completion. Final fee earned for LBL ConstructionPhysical Plant Complete will be based upon the criteria set forth in the Table B-2-E-1,

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~~Physical Plant 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 (Jun 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.

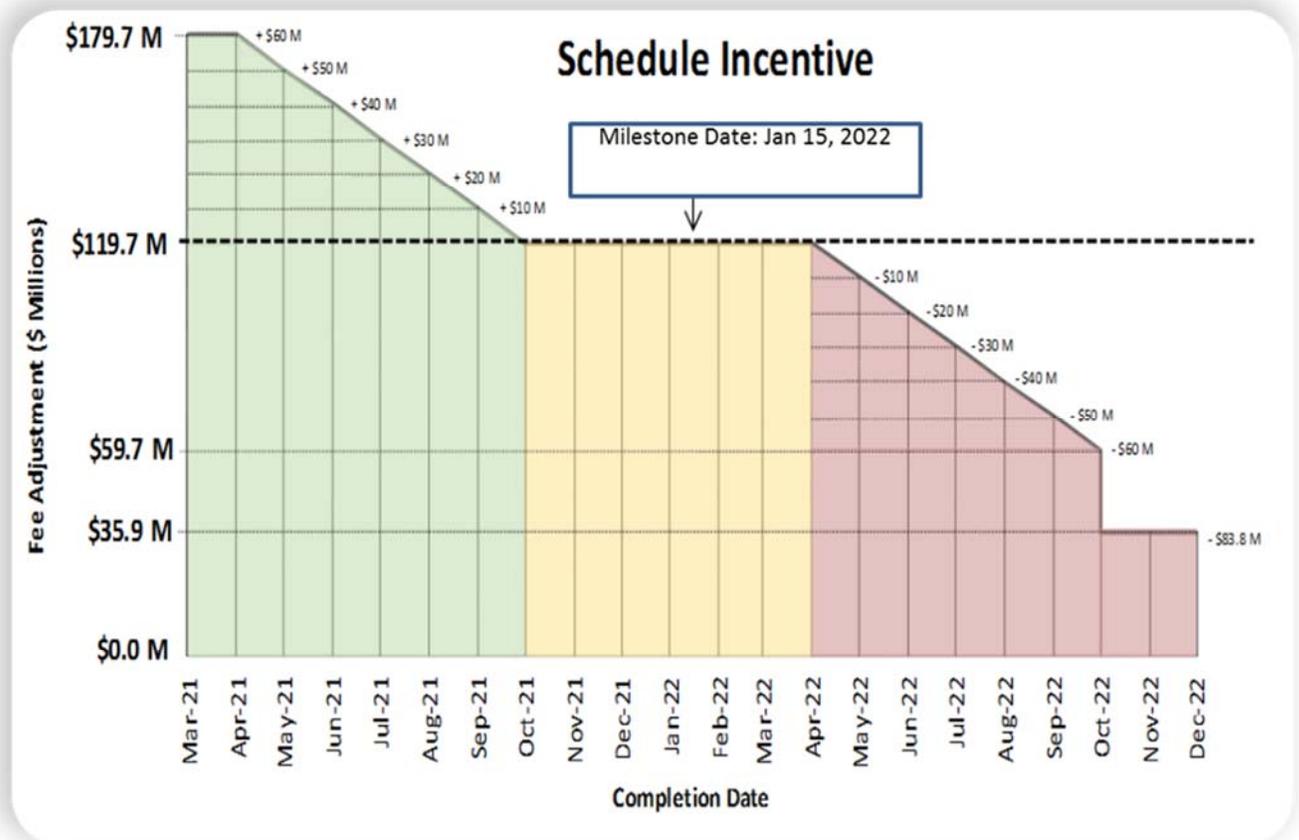
For purposes of determining fee payments, the activities, including all identified predecessor activities, listed in Section J, "List of Attachments," Attachment P, "Completion Definition Sheets for Incentive Fees" (the Identified Activities), describe the work to be completed to meet the associated 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-1. 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>	

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

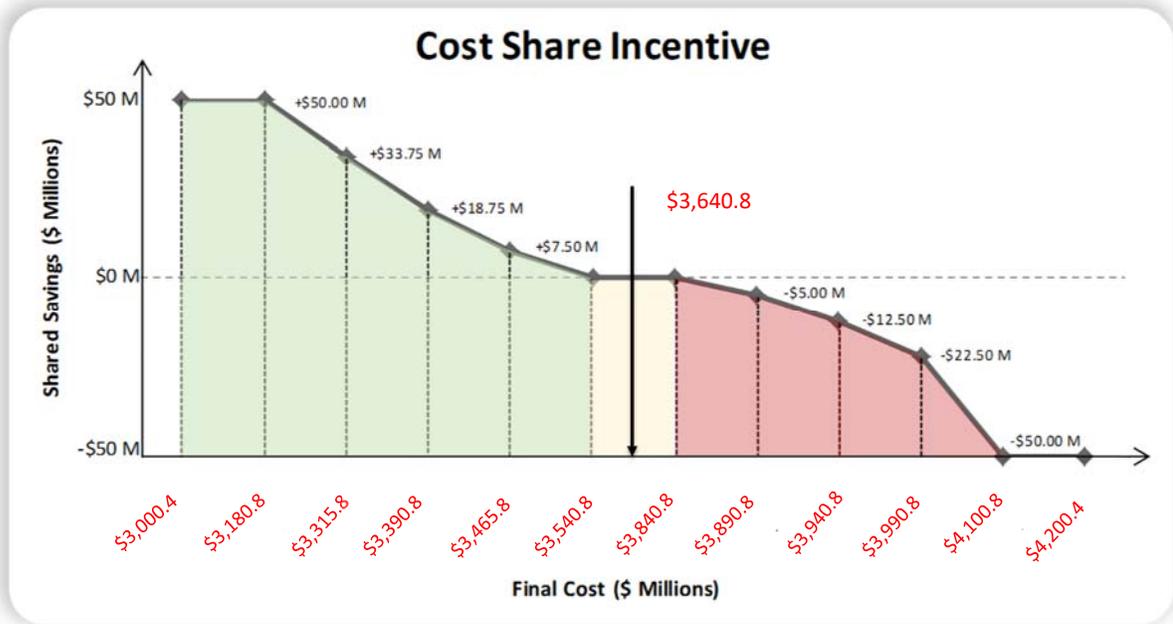


Attachment B-2-G, Incentive Fee G – CLIN 1.0 Cost Share Incentives

The Government and BNI will share cost increases/decreases above or below the target cost of \$3,640.8 million. 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.

Cost Share Incentives	Description	Maximum Incremental Fee Reduction	Maximum Cumulative Fee Reduction
	CLIN 1.0 Cost share incentive will include a +\$200M fee neutral cost band above the price of \$3,640.8M and a -\$100M fee neutral band below \$3,640.8M		
Decreases to earned fee will start after the total cost for CLIN 1.0 exceeds \$3,840.8M as follows:	Total cost for CLIN 1.0 between \$3,840.8M to \$3,890.8M, 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 \$3,890.8M to \$3,940.8M, 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 \$3,940.8M to \$3,990.8M, 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 \$3,990.8M to \$4,100.8M, 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 (\$4,100.8M)	-\$50,000,000.00	
Increases to earned fee will start when costs are below \$3,540.8M		Maximum Incremental Fee Increase	Maximum Cumulative Fee Increase
	Total cost for CLIN 1.0 equal to \$3,540.8M to \$3,465.8M, 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 \$3,465.8M to \$3,390.8M, 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 \$3,390.8M to \$3,315.8M, 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 \$3,315.8M to \$3,180.8M, 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 (Jun 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.	
Minimum Fee under DFLAW Design Completion <i>(exclusive of any Interim Milestone Completion Fee)</i>	\$750,000
Target Fee under DFLAW Design Completion <i>(exclusive of any Interim Milestone Completion Fee)</i>	\$4,500,000
Maximum Fee inclusive of Cost, Schedule, and Interim Milestone Completion Incentive Fee	\$9,000,000

SECTION C
STATEMENT OF WORK

SECTION C
STATEMENT OF WORK
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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 environment, safety, quality, and health (ESQ&H) 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)**

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

CLINs 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 (BCP). The Contractor shall develop and submit a modification proposal and an HLW Facility BCP for the then to-go work scope incorporating changes from resolution of design and technical issues, and process changes. This modification proposal and BCP 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 BCP. The Contractor shall develop and submit a modification proposal and a PT Facility BCP for the then to-go work scope incorporating changes from resolution of design and technical issues, and process changes. This modification proposal and BCP 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, "Special Contract Requirements," Clause H.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 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 (ORR) **(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 (CD) process (DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, Contractor 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, "Standards," 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, "Standards," 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 NEPA 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 Section C.6, "Standards"; Section C.7, "Facility Specification"; Section C.8, "Operational Specifications"; and Section C.9, "Interface Control Documents." Best commercial practices shall apply when a standard, specification, or 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, "List of Attachments," 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) ISMS, 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, "Special Contract Requirements," 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 Physical Plant Complete Inclusion/Exclusion List of Activities for Determination of Milestone	Standard 1(a)(2) (iii)	A	D, E	CO, COR(384)	Submit quarterly and final list 90 days prior to completion date of milestone LAW Construction Physical Plant 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	Standard 2 (a)(3)(i)(D)	A	D	COR(131)	as negotiated (384)
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 and , 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 and, AUGUST 2014 (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 with updates as required (369)

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 6 (c)(8), Standard 7 (e)(4)(vi)(G)	A	D	COR(131)	08/2003
7.11 (397)	Extent of Condition review of LBL & DFLAW Per 24590-WTP-PL-ENG-16-0003, Rev 0, "Extent of Condition Plan for Review of CGD Documentation for RCA-MGT-00338 CA, Section 7"	Standard 7(e) (3)(v)	C for interim/ A for final	D/E	COR/CO	Annually starting 12/31/2017 and ending 12/31/2021, as required

Table C.5-1.1. Deliverables.

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

Table C.5-1.1. Deliverables.

Item No.	Deliverable	Reference	Action Required	DOE Action Party	Point of Delivery	Contract Due Date
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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, “Waste Product Inspection and Acceptance.”
- R Regulatory Deliverable Approval — Will be performed in accordance with Standard 7, “Environment, Safety, Quality, and Health” or Standard 9, “Nuclear Safety” as appropriate.

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: Nuclear Safety **(384)**

1.0 References

The following listed references are not included in Section J, "List of Attachments," 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).

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:

- Baseline changes that result in a point adjustment.
- BCPs generated to support the cost and schedule impacts from a Request for Equitable Adjustment (REA). 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*; 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 BCP 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 Standard 3, "Design," paragraph (b)(1);
 - (iii) Approved Basis of Design pursuant to Standard 3, "Design," paragraph (b)(2);
 - (iv) Approved Authorization Basis pursuant to 10 CFR 830;
 - (v) Approved Operations Requirements Document (bolded text);
 - (vi) Approved ICDs;
 - (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, to evaluate progress toward meeting program objectives through tracking Contract milestones as outlined in Section B.12, 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 rolling wave concept that defines cycles of detailed planning and managed in accordance with the process documented in the EVMS Description (Table C.5-1.1, Deliverable 1.3) (383).
 - 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, "Supplies or Services and Prices/Cost," Attachment B-2-C, "Incentive Fee C – Fixed Fee Payment."
 - 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, network capable Commercially Off-The-Shelf 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-Physical Plant~~ 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 Physical Plant~~-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 and Total Allocated Budget including any negotiated or directed changes and approved BCPs, 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 BCPs.
 - (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) QA;
 - (iv) SAS;
 - (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 EVMS description meeting the requirements of DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD; and ANSI/EIA-748-A-1998, *Earned Value Management Systems* (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 EVMS description shall, at a minimum, include:

- (i) A 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 (OBS) 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 EVMS 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, 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 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 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 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 BCP 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; (j) Commodity Curves; (k) Special Purpose Charge Code Activity Log for all Not to Exceed Contracting Officer Authorizations; (l) Earned Purchase Order Value 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 232.2A, *Occurrence Reporting and Processing of Operations Information*, EM and ORP Supplemental Contractor Requirements Documents (SCRD), to DOE Order 232.2A with Hanford Site-specific requirements and methods for notification (Table C.5-1.1, Deliverable 1.8). **(406)**.
- (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 SCRD of DOE O 232.2A **(406)**.
- (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 R&T, 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 (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 Product," and for producing a Land Disposal Restrictions (LDR)-compliant ILAW form in accordance with Specification 2, "Immobilized Low-Activity Waste Product."

- 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, "Composition."
 - 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, "Immobilized Low-Activity Waste Product").
- (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, "Immobilized Low-Activity Waste Product"). 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 Specification 2.2.2.17.1 and Specification 2.2.2.17.3, "Vapor Hydration Test," nonradioactive glasses may be used provided that the results from Specification 2.2.2.17.2, "Product Consistency Test," 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, "Environment, Safety, Quality, and Health" 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, "Immobilized High-Level Waste Product").

(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, "Immobilized High-Level Waste Product"). 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, "Immobilized High-Level Waste Product."
- 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, "Environment, Safety, Quality, and Health" 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 Waste Feed Treatment Approach" and Specification 1, "Immobilized High-Level Waste Product," 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 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 Section C.7(b), "Waste Treatment Capacity~~

~~Requirements” 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), “Establishment of Master Equipment List”).

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, “Facility Specification” 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.

Operations Research Model assessments are not required to be provided to DOE as a contract deliverable for comment after facility design completion is achieved.

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 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.

Tank Utilization Assessments are not required to be provided to DOE as a contract deliverable for comment after facility design completion is achieved.

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, 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 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 (SRD) – 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) NOCs (when submitted/approved);

- (xv) Prevention of Significant Deterioration to the Environment (when submitted/approved);
 - (xvi) ICDs; 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), "Establish and Maintain Facility Design Requirements."

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, 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 (SSC) as non-safety to be reclassified as safety significant (SS). 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)
- (23) Utilize the engineering redraft process developed in Standard 3, subparagraph (c) (22) to reclassify the required portions of the LAW C5 ventilation system from non-safety to safety significant as described in 24590-LAW-PL-NS-16-0005 Rev. 0, Safety Strategy Summary Document (SSSD) – Oxides of Nitrogen/Melter Offgas Releases (Ref. letter from L.W. Baker, BNI, to W.F. Hamel, ORP, “Submittal of 24590-LAW-PL-NS-0005, for Review and Concurrence”, CCN 27631, December 13, 2016). The C5V confinement boundary from C5V exhaust fans to the C5V stack must be credited as safety significant for maintaining confinement of the melter offgas to an elevated release. (385)
- (24) Execute design and nuclear safety engineering work scope to implement new engineered safety controls as documented in 24590-LAW-PL-NS-16-0004 Rev. 0, Safety Strategy Summary Document – Process Streams and Sodium Hydroxide Reagent Hazards, (Ref. BNI letter from C.K. Binns, BNI, to R.L. Dawson, ORP, “Submittal of 24590-LAW-PL-NS-16-0004, Rev. 0, for Review and Concurrence, and Contract Clause I.84 FAR 52.243-7 Notification of Changes for Control Strategy Changes, CCN: 295189, dated March 17, 2017).

Authorized work scope includes 1) using the engineering redraft process developed in Standard 3, subparagraph (c) (22) to reclassify the required portions of the outer piping of concentrate receipt process (LCP) and melter feed process (LFP) coaxial piping in areas outside of C5V ventilated rooms and secondary confinement from non-safety to safety significant, and 2) upgrading the seismic classification of designated sodium hydroxide reagent system (SHR) piping from seismic category IV (SC-IV) to SC-III. (389)

- (25) 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: (389)
- (i) 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.
 - (ii) 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.
 - (iii) Physical requirements and the process for crediting the C5V SS confinement boundary will be documented in the SSSD by BNI and approved by DOE. (389)

(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 R&T 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 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 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. **(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 PEP described in Standard 1, “Management Products and Controls” and the Environment, Safety, Quality, and Health program described in Standard 7, “Environment, Safety, Quality, and Health.”
- (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 I.85, “52-244-2 Subcontracts (Aug 1998) – Alternate II (August 1998)” (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 ORR (**196**) in accordance with DOE O 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 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 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 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), 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 Product" and Specification 2, "Immobilized Low-Activity Waste Product") 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, "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, "Research, Technology, and Modeling," 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 (4) 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), "Cold Commissioning" (Table C.5-1.1, Deliverable 5.9) or as outlined in Standard 5(h), "Cold and Hot Commissioning Capacity Testing Deficiency Remedial Actions."

(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 ORR process shall be conducted in accordance with DOE O 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*, CRD (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, "Interface Control Documents," 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, "Low-Activity Waste Envelopes Definitions," 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, "Immobilized Low-Activity Waste Product," Section 2.2.2.2, "Waste Loading."

- (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, "Procedure to Determine the Waste Feed Treatment Approach," 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 (4) ultrafiltration cycles (two [2] 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 facilities 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, "Immobilized High-Level Waste Product."
 - (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, "Immobilized Low-Activity Waste Product."
 - (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, "Waste Product Inspection and Acceptance," 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, "Waste Product Inspection and Acceptance," 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, "Immobilized High-Level Waste Product" and Specification 2, "Immobilized Low-Activity Waste Product," respectively.
 - (iii) ~~Updated process model assessments (Standard 2, "Research, Technology, and Modeling" (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. DELETED (409)~~
 - (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), "Hot Commissioning Tests (Table C.5-1.1, Deliverable 5.21)." The Contractor shall certify to DOE that the Hot Commissioning is complete and that the Contractor met the requirements contained in Standard 5(g), "Hot Commissioning" (Table C.5-1.1, Deliverable 5.15 or as outlined in Standard 5(h), "Cold and Hot Commissioning Capacity Testing Deficiency Remedial Actions").

- (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, "Attachments," Attachment B-2-F, "Incentive Fee F – Commission LBL in the DFLAW Configuration Performance Based Incentive."
- (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 to ensure safe accomplishment of work **(190)**.
 - (ii) Facility safety documentation (normally DSAs and 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. 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-CD-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, "Contract Clauses," Clause I.82, "FAR 52.243-2 Changes -- Cost-Reimbursement (Aug 1987) -- Alternate III (Apr 1984)."

- (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, "Environment, Safety, Quality, and Health."
- (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, "Environment, Safety, Quality, and Health" 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, "Environment, Safety, Quality, and Health" 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, "Environment, Safety, Quality, and Health" (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, "Environment, Safety, Quality, and Health."
- (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; QA; 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 SRD. The SRD is the set of ESQ&H tailored requirements as referenced in Section I, "Contract Clauses," Clause I.117, "DEAR 970.5204-78 Laws, Regulations, and DOE Directives (Jun 1997)."
- (e) The specific deliverables and program requirements are divided into four (4) 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 I.82, "FAR 52.243-2 Changes – Cost Reimbursement (Aug 1977) – Alternate III (Apr 1984)".
 - (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, "List of Attachments," 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 Standard 2, "Research, Technology, and Modeling" and Standard 6, "Product Qualification, Characterization, and Certification." 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 Standard 2, "Research, Technology, and Modeling" and Standard 6, "Product Qualification, Characterization, and Certification." 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- 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 R&T activities (other than IHLW – see a. above) shall be conducted in accordance with NQA-1. **(066)**
 - c. The estimated cost and schedule in Contract Modification No. 384 is based on the current DOE approved QA 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, NEPA, 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, Double-Shell Tank 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, which will not be present in DFLAW 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 NOC(s) 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 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 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 Material Control & Accountability (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 PDSA (previously known as Authorization Basis Amendment Requests), 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:

- (6) An annual letter summarizing the changes made to each PDSA in the previous 12 months,
 - (7) Quarterly listings of screenings, evaluations and PDSA changes, and
 - (8) Criticality Safety Evaluations thirty (30) days prior to their approval by the Contractor.
- (c) The Contractor shall submit the 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 SSC 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, unless a delay is approved by ORP.

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 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.

[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 Waste 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, "Low-Activity Waste Envelopes Definition," 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, "Low-Activity Waste Envelopes Definition," 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), "Validation of Sludge-Washington Process," 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 SAS 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 Na will be converted to 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 DOE personnel in Building T-1. The office space will include 18 single occupancy hard walled offices (with a configuration of floor to ceiling walls w/door, with a min 10ft X 10ft dimension) and 12 cubicles for temporary staff (configured with a single work station) with the addition of two category 5 cable drops for the Hanford local area network for each work location. This will include the following office space locations:
 - Areas and with Offices 201 through 214 as currently configured (with the additions above)
 - Areas and Offices 215 through 226 as currently configured (with the additions above)
 - Conference Room 227 as currently configured (with the additions above)
 - Areas and Offices 230 through 234 as currently configured
- (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 R&T, 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 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 HNF-SD-WM-SP-012, *Tank Farm Contractor Operation and Utilization Plan* (TFCOUP), 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), “Waste Treatment and Immobilization Plant Tank Utilization Assessments.” 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, "Immobilized High-Level Waste Product," 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), "Operations Research Assessment of the Waste Treatment and Immobilization Plant." 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 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, "Waste Loading."

- (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 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 PJM 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 Al species and reduce the volume of permeate that must pass through the ultrafilters.
 - (vii) Increase the capacity of the 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 Cs and 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 (4) 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 Na permanganate for de-complexation and adsorption of the TRU elements.
- (iii) 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 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, "Procedure to Determine the Waste Feed Treatment Approach," with other operational parameters. For example, if the approved flowsheet or process steps (Standard 2(a)(3)(iii), "Validation of Sludge-Washington Process") 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), "Validation of Sludge-Washington Process," 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, "Procedure to Determine Waste Feed Treatment Approach," 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, 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 sliver mordenite column, a thermal catalytic oxidizer, and a selective catalytic reducer.

- (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 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. **(047)**"

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, "High-Level Waste Envelope Definition" 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 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)(11), 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). 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 Cs-137 and 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, "Package Handling") 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, "Waste Product Inspection and Acceptance," 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 (4) **(350)** 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, "Facility Specification," 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)** 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)
Envelopes A, B, C (350) E (384)	4 – 10
AZ-101 Supernatant	2 – 5
HLW Slurry and other HLW Liquids (Defined in Specification 8, "High-Level Waste Envelope Definition")	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 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, Double-Shell Tank 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

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
Hg	1.4E-05	1.4E-05	1.4E-05
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 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, "Facility Specification," 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 Envelopes Definition." For liquid fractions with a Na molarity of less than three (3), the liquid shall be treated as if 3 molar Na were present for feed certification purposes. Specification 7.2.2.2, "Radioactive Material Concentration" 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 Na up to 144 grams/liter at 7 molar 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 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, Double-Shell Tank 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 DFLAW 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 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), "Validation of Sludge-Washing Process." 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, "Commissioning."

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 Product." 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, "Immobilized Low-Activity Waste Product" 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, "Commissioning." 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, "Immobilized Low-Activity Waste Product," 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 non-conforming 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, "Waste Loading." 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, "Immobilized Low-Activity Waste Product" 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 Product." 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, "Immobilized High-Level Waste Product" 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, "Commissioning" (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, "Immobilized High-Level Waste 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, "Immobilized High-Level Waste Product" 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:

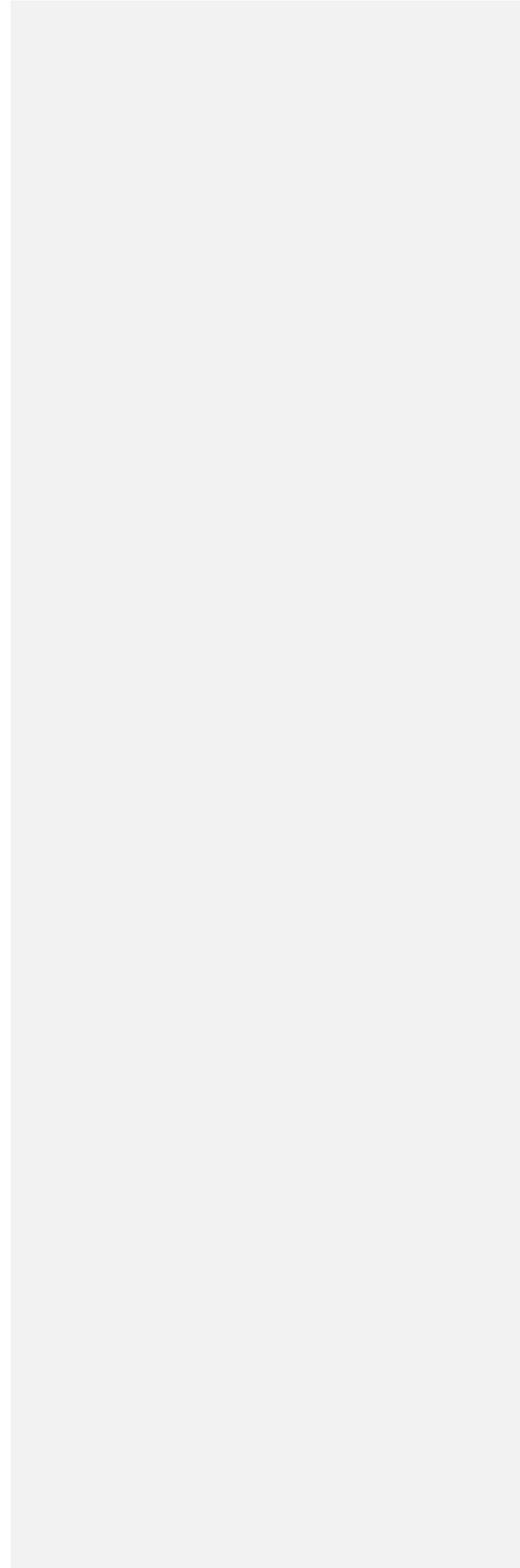
ICD 28:	Pit 30 Aggregate Supply for Construction
ICD-29:	Waste Na
ICD 30:	Direct LAW Feed
ICD 31:	DFLAW Effluent Returns to Double-Shell Tanks (350)

- (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."

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Section J
Modification No. 409

SECTION J
LIST OF ATTACHMENTS



SECTION J
LIST OF ATTACHMENTS
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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	<i>Code of Federal Regulations</i>
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	<i>Department of Energy Acquisition Regulation</i>
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	<i>Federal Acquisition Regulation</i>
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

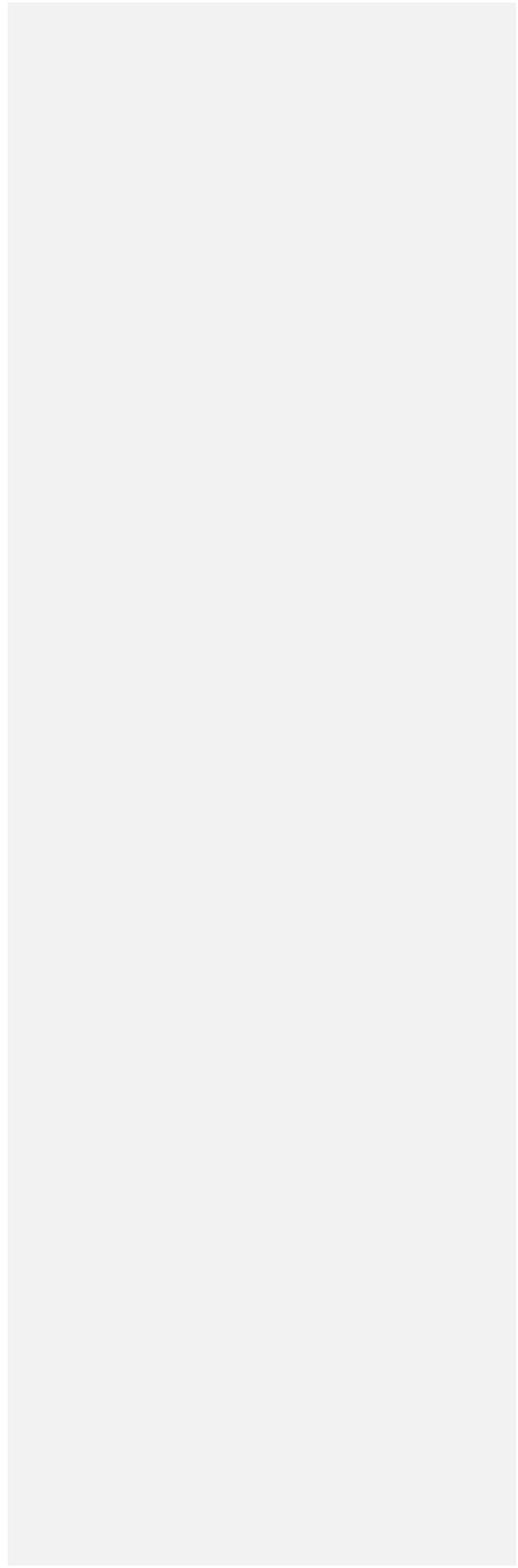
NOAV	Notice of Alleged Violation
NRC	Nuclear Regulatory Commission
NTE	Not to Exceed
OCI	Organizational Conflict of Interest
OPSEC	Operations Security
ORP	U.S. Department of Energy, Office of River Protection
OSHA	Occupational, Safety and Health Administration
PBS	Project Breakdown Structure
PSD	Prevention 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
SIL-2	Safety Integrity Level – 2
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

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**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."

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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, quantities, 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
Typed Name: M. G. McCullough
Company: Bechtel National, Inc., Waste Treatment Plant Project
Title: Project Director

Date: 11/14/16

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

Date: 12/15/16

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	04/25/01	DELETED (206)
RL/REG-2000-03	05/04/01	DELETED (206)
DOE O 420.1B, contractor 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 205.1B, Change 1, CRD	12/07/12	Cyber Security Program (387)	Effective with Modification No. 384 and implemented in accordance with CCN: 266220 (14-WTP-0011), Attachment 1, "CRD 205.1B, Chg 2 (Supplemented Rev. 0)" and CCN: 267962 (14-WTP-0051). (387) .
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		DELETED (332)	
DOE M 231.1-2, CRD		DELETED (256)	

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
SCRD-M-234.1-2		DELETED (256)	
DOE Order 232.2A, CRD (406)	9/29/2017	Occurrence Reporting and Processing of Operations Information(406)	Contract Clause C.6, Standard 1(d)(5) and (6). (406)
CRD O 232.2A (Supplemented Rev.0)(406)	9/29/2017	Environmental Mangement Contractor Requirements Document (Supplemented DOE O 232.2A), Occurrence Reporting and Process of Operations Information (406)	Contract Clause C.6, Standard 1(d)(5) and (6).(406)
SCRD DOE Order 232.2A (406)	9/29/2017	ORP Supplemental Contractor Requirements Document (SCRD), for DOE Order 232.2A, Occurrence Reporting and Processing of Operations Information (406)	Contract Clause C.6, Standard 1(d)(5) and (6). (406)
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-413.3-1		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), subparagraph (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)

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
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, Change 1, CRD	06/25/13	Conduct of Operations (207)(387)	Effective with Modification No. 384 and implemented in accordance with CCN: 276479. (387)
DOE-0223	Effective the date of Modification No. 384	RL Emergency Plan Implementing Procedures (384)	Implemented in accordance with 16-CPM-0072
DOE-0336	9/15/2011	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 Admin Chg 1	04/21/10	Maintenance Management Program for DOE Nuclear Facilities (342)	This order is effective regardless of comment above at (b). (342, 387)
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)

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
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
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 442.1-4 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) (175)
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)

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
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)	
DOE/ORP-2000-06		Deleted through Contract Modification No. 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)

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
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)
DOE-STD-1195	09/2016	Design of Safety Significant Safety Instrumented Systems Used at DOE Non-Reactor Nuclear Facilities (384)	Implement clause 11.4 (inclusive of subclauses 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 Safety Instrumented Functions without requiring redundancy, particularly with respect to final control devices such as valves. (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. Deleted. **(387)**
 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)(387)(391)	Current Employee
Project Director	Margaret McCullough
Project Manager	Kimberly Irwin
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	Chris Binns

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 Contract 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. (BNI) 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:

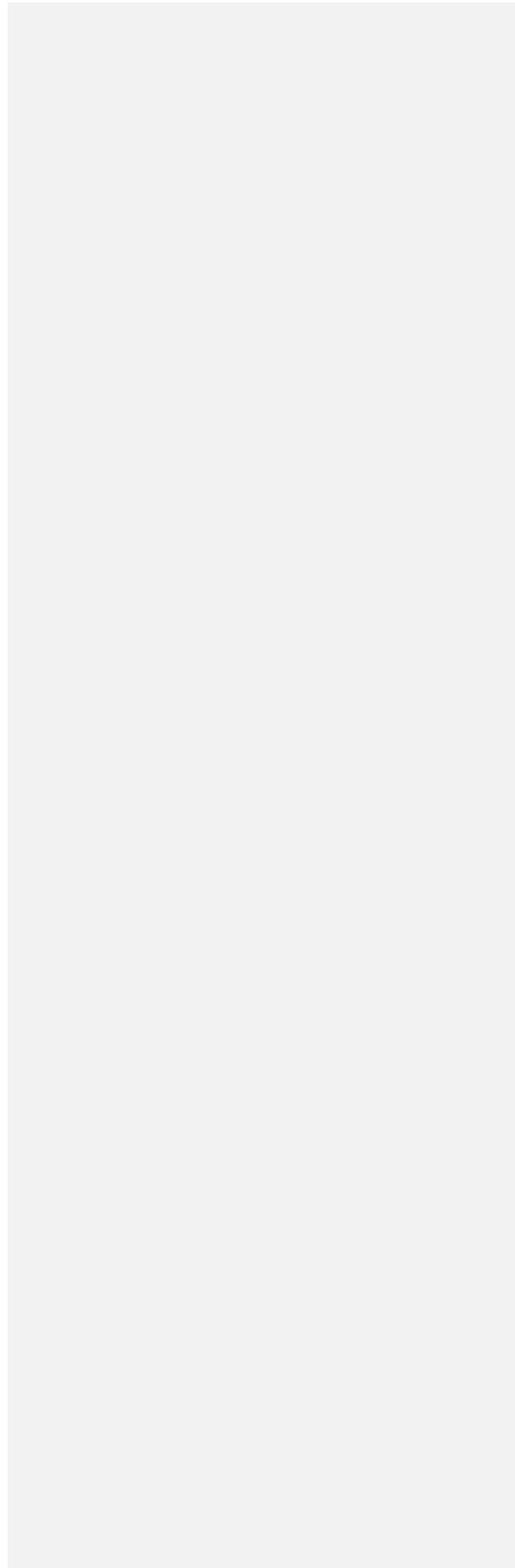
Science and Technology Provider	Scope
Savannah River Technology Center	Chemical and radiochemical separations, waste form qualification
Pacific Northwest National Laboratory (PNNL)	Chemical and radiochemical separations, waste form qualification
GTS-Duratek	Pilot melter testing, melter testing, and glass development
IBC, Inc.	Ion exchange media development and testing

WTP Contract
Contract No. DE-AC27-01RV14136

Section J
Modification No. 409

**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 3.7 d) 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 No. **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

Case No.	Title
	PI-24590-01-00135 QC Support to Commissioning
	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

Case No.	Title
	PI-24590-02-00396 Melt Pool Corrosion of LAW Bubblers (Part 2)
	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.

12. 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.
13. 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 (M155)		
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) (M152)	164
Modification No. 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 No. M154 TN 24590-06-04133	Direction to Implement Pretreatment Engineering Platform (PEP) dry layup (155)	167
Modification No. M196 BCP 24590-06-04489 BCP 24590-06-04784 BCP 24590-06-05085	Direction to Implement Multiple Operational Readiness Strategy (218)	282
Modification No. M196 BCP 24590-06-04853 ORP 10-AMD-139 (05/06/10; CCN: 218244)	Direction to Implement CXP Equipment Option (218)	317
Modification No. 221 ORP 11-WTP-219 (06/17/11; CCN: 236247); Modification No. 247 ORP 11-WTP-437 (12/01/11; CCN: 242351);	Direction to Proceed with Large Scale Testing (221, 247, 264, 286)	299 - 384

Modification No. 264 ORP 12-WTP-0109 (03/15/12; CCN: 245985); Modification No. 286 ORP 12-WTP-317 (09/24/12)		
Modification No. 273	Direction to participate in the Hanford Site Organizational Climate and Safety Conscious Work Environment (SCWE) Survey	290
Modification No. 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.</i> (245)	276
Modification No. 300 ORP 13-CPM-0099 (05/06/13); Modification No. 304 ORP 13-CPM-0133 (06/05/13); Modification No. 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 No. 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 No. 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 No. 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 No. 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 No. 342 ORP 15-CPM-0064, ORP 16-CPM 0012 (364)	Direction to proceed with the implementation of DOE Order 433.1B, Maintenance Management Program for DOE Facilities and DOE/RL-92-36, Hoisting and Rigging Manual. (342)	384
Modification No. 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	384
Modification No. 348 ORP 15-CPM-0128	Direction to proceed with initiation of BOF isolation construction to support DFLAW	384

Modification No. 349 ORP 15-CPM-0136	Direction to proceed with the implementation of DOE Order 414.1D, CRD, Chg. 1, Quality Assurance. (349)	
Modification No. 354 ORP 15-CPM-0195, ORP 16-CPM-0154 (380)	Direction to proceed with procurement of Effluent Management Facility (EMF) equipment and effluent transfer lines and limited EMF construction (354)	384
Modification No. 371 ORP-16-CPM-0085, ORP-16-CPM-0091	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 No. 375 ORP-16-CPM-0111, 17-CPM-0038, (388)	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)	
Modification No. 381 ORP-16-CPM-0155 (381)	Authorization to proceed with the development of an engineering redraft process for Standard 3: Design (c) (22).	403
Modification No. 385 ORP-16-CPM-0174 (385)	Authorization to proceed with the engineering redraft process developed in Standard 3, subparagraph (c) (22) to reclassify the required portions of the LAW C5 ventilation system from non-safety to safety significant as described in 24590-LAW-PL-NS-16-0005 Rev. 0, <i>Safety Strategy Summary Document (SSSD) – Oxides of Nitrogen/Melter Offgas Releases</i> .	
Modification 389 17-CPM-0044 (389)	Authorization to proceed with engineering and nuclear safety activities necessary to implement the changes to engineered safety controls documented in the Caustic Safety Strategy Summary Document (SSSD) under Standard 3, subparagraph (c) (24)	
Modification No. 397, ORP-17-CPM-0094	DOE included a deliverable to implement the CGD extent of condition review and impacts in Section C, <i>Statement of Work, Table C.5-1.1. Deliverables, 7.11</i> (397)	
Modification No. 406, ORP-17-CPM-0151 (406)	DOE Updated DOE Order 232.2A as referenced in Section C, Standard 1, (d)(5)(6) and updated Section J deliverables.(406)	

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)

Title	References
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 Site Employees (285)	Advanced Agreement described in BNI 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, "List of Attachments," 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, "List of Attachments," Subattachment 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 direct-feed low-activity waste (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 September 2016, who are directly assigned to DFLAW, 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 No. 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
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

Trend No.	Trend Description
TN-24590-06-02194	Mechanical Handling Diagrams (MHD)/Mechanical Sequence Diagrams (MSD) 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	Overflow (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
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

Trend No.	Trend Description
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
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-III/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

Trend No.	Trend Description
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
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 Workslope
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 Resequence 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
TN-24590-06-02599	B7 Subcontracts - Increased Staff
TN-24590-06-02600	HLW El. 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

Trend No.	Trend Description
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	Stellite Cone and Ring Beam NDE N690 Redesign
TN-24590-06-02686	Review of Vendor and Other Discipline Documents
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

Trend No.	Trend Description
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
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

Trend No.	Trend Description
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
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 EI. 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
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

Trend No.	Trend Description
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
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

Trend No.	Trend Description
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
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

Trend No.	Trend Description
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
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 stated 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

Trend No.	Trend Description
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
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 Distributions 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
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

Trend No.	Trend Description
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-MJG-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
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 stated 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 (PSV)
TN-24590-06-03471	Ultrafilter Drain Testing (Favorable)
TN-24590-06-03472	CGD Impacts on Procurement of PTF Remote Clamp Connectors

Trend No.	Trend Description
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
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

Trend No.	Trend Description
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
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

Trend No.	Trend Description
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
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 Descopes
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)
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

WTP Contract
Contract No. DE-AC27-01RV14136

Section J
Modification No. 409

Trend No.	Trend Description
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 No. 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 (Modification No. 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-15-0338, 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.

(Record Note: DOE included a deliverable to implement the CGD extent of condition review and impacts in Section C, *Statement of Work, Table C.5-1.1. Deliverables, 7.11*) (397)

3. DOE-STD-3009. Implementation of DOE-STD-3009-2014 is excluded from the settlement of Modification No. 384.
4. LAW Confinement Ventilation System ("C5V"). Primary confinement for a melter off-gas release event is provided by the safety-significant 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 3, paragraph (c), item (25).

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 – LIST OF ATTACHMENTS
 ATTACHMENT J
 ADVANCE UNDERSTANDING ON COSTS (384)**

Subattachment C, Table 1

Corrective actions to correct the condition and cause to prevent further findings.

Table 1 (Included CAP Actions 4-9) (384)

BNI Action 24590-WTP-GCA-MGT-15-00338-A	Evidence of Completion
Immediate/Compensatory Actions	
<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 (SCAR), 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 corrective action to prevent recurrence (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/ATSS resulting from QERB reviews.
<p>5. Develop and Issue a VCGD Submittal Review Guide</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</p>	<p>The following objective evidence can be attached (electronically) to CA-5 in CAMP and / or identified by document number(s) identifiable and retrievable in InfoWorks:</p> <ul style="list-style-type: none"> • Approved VCGD Submittal Review Guide.

Table 1 (Included CAP Actions 4-9) (384)

<p align="center">BNI Action 24590-WTP-GCA-MGT-15-00338-A</p>	<p align="center">Evidence of Completion</p>
<p>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. 	<ul style="list-style-type: none"> • 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 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 	<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. • Documentation of completed Read and Review (RR) of 24590-WTP-3DP-G06T-00904, <i>Evaluation of Commercial Grade Items and Services</i> for PROE.

Table 1 (Included CAP Actions 4-9) (384)

BNI Action 24590-WTP-GCA-MGT-15-00338-A	Evidence of Completion
<ul style="list-style-type: none"> RC-2 - CGD process is handled differently than engineering processes. 	
<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>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 	<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.

Table 1 (Included CAP Actions 4-9) (384)

BNI Action 24590-WTP-GCA-MGT-15-00338-A	Evidence of Completion
<ul style="list-style-type: none"> 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>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>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-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.

Table 1 (Included CAP Actions 4-9) (384)

<p style="text-align: center;">BNI Action 24590-WTP-GCA-MGT-15-00338-A</p>	<p style="text-align: center;">Evidence of Completion</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-WTP-RCA-MGT-15-0338 until long-term corrective actions are implemented:</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 • Obs-1: Document retrieval is difficult 	<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.

**SECTION J – LIST OF ATTACHMENTS
 ATTACHMENT J
 ADVANCE UNDERSTANDING ON COSTS (384)**

Subattachment 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 CCFAs	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.

PL Item No	Description	Scope
8	Material Chemistry specifications – full chemistry vs. partial	This alignment expectation requires technical justification when selecting a subset 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.

PL Item No	Description	Scope
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:

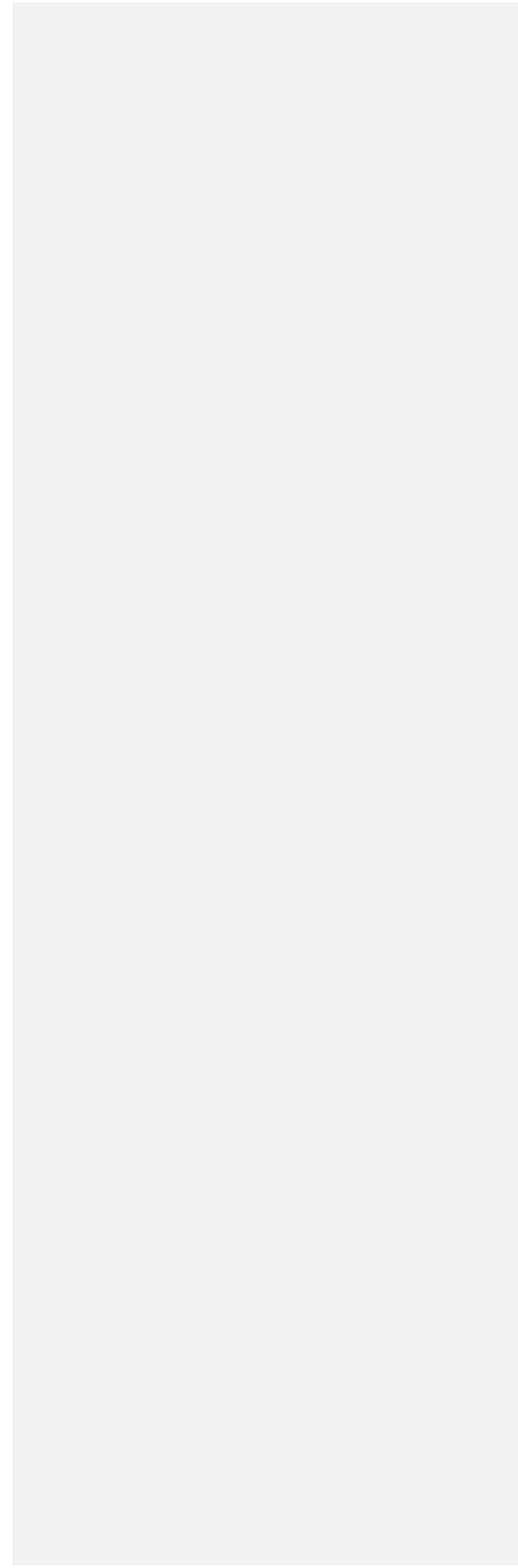
- (a) Process and Facility Design Documentation and Analyses
 - Facility Mass and Energy Balances
 - Process Description
 - Process and Facility Drawings
 - Systems Descriptions
 - Facility Descriptions
 - Facility Capability Studies
 - Facility Expansion Capability Study
 - Interface Control Documents
- (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.

WTP Contract
Contract No. DE-AC27-01RV14136

Section J
Modification No. 409

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

Reserved



WTP Contract
Contract No. DE-AC27-01RV14136

Section J
Modification No. 409

**SECTION J – LIST OF ATTACHMENTS
ATTACHMENT M
DAVIS-BACON WAGE DETERMINATION**

General Decision Number WA20150002 dated July 1, 2016, is hereby incorporated as follows: (383)

General Decision Number: WA160002 07/01/2016 WA2

Superseded General Decision Number: WA20150002

State: Washington

Construction Types: Building, Heavy and Highway

Counties: Benton and Franklin Counties in Washington.
 (D.O.E. HANFORD SITE ONLY)

BENTON AND FRANKLIN COUNTIES (D.O.E. HANFORD SITE ONLY)
 BUILDING (does not include residential construction consisting of single family homes and apartments up to and including 4 stories), HEAVY and HIGHWAY CONSTRUCTION

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016
1	04/29/2016
2	07/01/2016

* SUWA2001-001 09/03/2001

(D.O.E. HANFORD SITE ONLY)

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR.....	\$ 32.92	19.37
BOILERMAKER.....	\$ 36.44	28.41
BRICKLAYER.....	\$ 29.73	14.89
CARPENTER		
Carpenters.....	\$ 31.94	14.00
Divers.....	\$ 36.72	14.00
Millwright & Machine erector.....	\$ 41.86	14.49
Piledriver.....	\$ 32.97	14.00
Tenders.....	\$ 35.02	14.00
CEMENT MASON/CONCRETE FINISHER		
GROUP 1.....	\$ 27.01	12.59
GROUP 2.....	\$ 27.63	12.59

GROUP 3.....	\$ 28.14	12.59
DRYWALL FINISHER/TAPER.....	\$ 23.80	12.20
ELECTRICIAN		
Cable Splicers.....	\$ 40.74	3%+17.43
Electricians.....	\$ 38.80	3%+17.43
IRONWORKER.....	\$ 32.76	23.19
LABORER		
GROUP 1.....	\$ 24.78	11.23
GROUP 2.....	\$ 25.05	11.23
GROUP 3.....	\$ 25.32	11.23
GROUP 4.....	\$ 25.60	11.23
GROUP 5 (RATES PER SHIFT)		
Sandhogs-[(1-14 LBS), (6		
HRS)].....	\$ 212.16	11.23
Sandhogs-[(14-18 LBS), (6		
HRS)].....	\$ 217.09	11.23
Sandhogs-[(18-22 LBS), (6		
HRS)].....	\$ 239.23	11.23
Sandhogs-[(18-25 LBS), (4		
HRS)].....	\$ 217.37	11.23
Sandhogs-[(22-26 LBS), (4		
HRS)].....	\$ 221.69	11.23
Sandhogs-[(26-32 LBS), (4		
HRS)].....	\$ 224.31	11.23
Sandhogs-[(32-38 LBS), (3		
HRS)].....	\$ 227.27	11.23
Sandhogs-[(38-44 LBS), (2		
HRS)].....	\$ 227.68	11.23
GROUP 5		
Outside Lock and Gauge		
Tender.....	\$ 204.80	11.23
GROUP 6.....	\$ 25.50	11.23
GROUP 7.....	\$ 26.07	11.13
GROUP 8.....	\$ 26.54	11.23
GROUP 9.....	\$ 27.31	11.23
PAINTER (Soft Floor Covers, Glaziers, Spray Painters, Steel Painters, Steam Clean and Acid Etching, Sign Writers).....		
	\$ 24.15	10.73
PLUMBER/PIPEFITTER.....	\$ 41.24	28.79
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 26.16	13.55
GROUP 2.....	\$ 26.48	13.55
GROUP 3.....	\$ 27.09	13.55
GROUP 4.....	\$ 27.41	13.55
GROUP 5.....	\$ 27.69	13.55
GROUP 6.....	\$ 27.96	13.55
GROUP 7.....	\$ 29.06	13.55
GROUP 8.....	\$ 30.40	13.55
ROOFER (Including Waterproofing and Kettleman).....		
	\$ 25.65	10.52

SHEET METAL WORKER.....	\$ 33.53	18.90
SPRINKLER FITTER.....	\$ 30.70	20.65
TRUCK DRIVER		
GROUP 1.....	\$ 22.31	17.31
GROUP 2.....	\$ 24.95	17.31
GROUP 3.....	\$ 25.06	17.31
GROUP 4.....	\$ 25.39	17.31
GROUP 5.....	\$ 25.50	17.31
GROUP 6.....	\$ 25.50	17.31
GROUP 7.....	\$ 26.04	17.31
GROUP 8.....	\$ 26.36	17.31

CEMENT MASON CLASSIFICATIONS

GROUP 1: Rodding, tamping, floating, troweling, patching, stoning, rubbing, sack rubbing; All exposed aggregate finishing and sealing. All architectural finishing, staining, stamping and coloring, washing and power washing of concrete, polymer, latex and composite materials; Setting of screeds, screeds forms, curb and gutter and sidewalk forms; Preparation of all concrete for caulking of the joints and the caulking of expansion joints; Preparation of concrete for the application of hardners, sealers and curing compounds and their application; Grouting and dry packing of machine base; Removal of snap ties and she bolts prior to patching of concrete

GROUP 2: Power troweling machine operator; Troweling of magnesite, torganal or material with epoxy bases of oxichloride base; All power grinders, bushing hammer, chipping gun; Gunite Nozzleman. All sandblasting for architectural finishes, patch preparation and exposing of aggregate for finish; Concrete sawing and cutting for concrete and expansion joints and scoring for decorative patterns; Operating of Clary-type floats, Longitudinal Floats, Rodding Machines and Belting Machines; Scarifiers; Working on scaffolds

GROUP 3: Grinding, bushing or chipping of toxic materials or high density concrete; Operating of power tools on a scaffold

LABORER CLASSIFICATIONS

GROUP 1: Flagman, Landscape Laborer, Scaleman, Traffic Control Supervisor, Asbestos Abatement Worker, Brick Pavers (to include the installation of brick or grass pavers for sidewalks, driveways, streets and parking lots), Brush Hog Feeder; Carpenter Tender; Cement Handler; Concrete Signalman; Concrete Crewman (to include Stripping of forms, hand operating jacks on slip form construction, application of concrete curing compounds, pumpcrete machine, signaling, handling the nozzle of squeezecrete or similar machine- 6 inches and smaller); Confined Space Attendant, Crusher Feeder; Demolition (to include clean-up, burning, loading, wrecking and salvage of all material); Dry Stack Walls (including all dry stack walls, including keystone walls and others using blocks and interlocking pegs.), Dumpman; Traffic Control Laborer (To include but is not limited to,

erection and maintenance of barricades, signs and relief of flag person.), Window Washer/Cleaner, Pilot Car, Hazardous Waste Worker, Erosion Control Laborer, Fence Erector, Guard Rail (to include Guard Rail, guide and reference posts, sign posts, and right-of-way markers); Firewatch. Form cleaning machine feeder; Stacker; General Laborer; Group Machine Header Tender; Miner, Class "A" (to include bull gang, concrete crewman, dumpman and pumpcrete crewman, including distributing pipe, assembly and dismantle, and nipper); Lead Abatement Worker, Mold Abatement Worker, Nipper; Riprap Man; Sandblast Tailhoseman, Scaffold Erector (wood or steel); Stake Jumper; Structural Mover (to include separating foundation, preparation, cribbing, shoring, jacking and unloading of structures); Tailhoseman (water nozzle); Timber Bucker and Faller (by hand); Track Laborer (RR); Truck Loader; Wellpoint Man; (HDPE or similar liner installer).

GROUP 2: Asphalt Roller, walking; Cement Finisher Tender; Concrete Saw, walking; Demolition Torch; Dope Pot Fireman, non-mechanical; Driller Tender (when required to move and position machine); Form Setter, paving; Jackhammer Operator; Miner, Class "B" (to include brakeman, finisher, vibrator, and form setter); Nozzleman (to include squeeze and flow-crete nozzle); Nozzleman, water, (to include fire hose), air or steam; Pavement Breaker (under 90 lbs); Pipelayer, corrugated metal and multi-plate; Pot Tender; Power Buggy Operator; Power Tool Operator, gas, electrical, pneumatic; Rodder and Spreader; Trencher, Shawnee; Tugger Operator; Wagon Drills; Wheelbarrow, power driven; Water Pipe Liner, Rigger/Signalperson, Remote Equipment Operator (i.e., compaction and demolition) Compaction Equipment (to include all hand operated power compaction equipment); Railroad Power Spiker or Puller, dual mobile; Railroad Equipment, power driven, except dual mobile power spiker or puller.

GROUP 3: Air and Hydraulic Track Drill, Asphalt Raker, Brush Machine (to include Horizontal construction joint clean-up brush machine, power propelled); Caisson Worker, free air; Chain Saw Operator and Faller; Concrete Stack (to include Laborers when working on free standing concrete stacks for smoke or fume control above 40 ft high); Gunnite (to include operation of machine and nozzle); High Scaler; Miner, Class "C" (to include miner, nozzleman for concrete, laser beam operator, and Rigger on tunnels); Monitor Operator (air track or similar mounting); Mortar Mixer; Nozzleman (to include jet blasting nozzleman, over 1200 lbs., jet blast machine, power propelled, sandblast nozzle, Squeeze and Flo-crete nozzle); Pavement Breaker, 90 lbs. & over; Pipelayer (to include working topman, caulker, collarman, jointer, mortarman, rigger, jacker, shorer, valve or meter installer, temper, (Including pressurized and non-pressurized ductile pipe, gravity pipe and HDPE (fused and non-fused); Pipewrapper; Plasterer Tender, Trenchless Technology, Vibrators (all); Laser Beam Operator (Elevation Control); Technician)

GROUP 4: Drills with dual masts, Miner, Class "D" (to include Raise and Shaft Miner, Laser Beam Operator on raises and

shafts.) Welder, electric, manual or automatic, Remote Equipment Operator (to include HDPE or similar pipe and liner)

GROUP 5: Sandhogs under compressed air (rates increases are computed by multiplying the increase x 8 hr shift and add total to the previous rate)

GROUP 6: Construction Specialist

GROUP 7: Hod Carrier

GROUP 8: Powderman

GROUP 9: Grade Checker

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Bit Grinders; Bolt Threading Machine; Compressors (under 2000 CFM, gas, diesel or electric power); Crusher Feeder (mechanical); Deck Hand; Drillers Tender; Fireman and Heater Tender; Grade Checker; Tender Mechanic, Welder H.D.; Hydro-seeder, Mulcher, Nozzleman; Oiler; Oiler and Cable Tender, Mucking Machine; Pumpman; Rollers, all types on subgrade (farm type, Case, John Deere and similar, or Compacting Vibrator), except when pulled by Dozer with operable blade; Steam Cleaner; Welding Machine

GROUP 2: A-Frame Truck (single drum); Assistant Refrigeration Plant (under 1000 ton); Assistant Plant Operator, Fireman or Pugmiser (asphalt); Bagley or Stationary Scraper; Belt Finishing Machine; Blower Operator (cement); Cement Hog; Compressor (2000 CFM or over, 2 or more, gas, diesel or electric power); Concrete Saw (multiple cut); Distributor Leverman; Ditch Witch or similar; Elevator, hoisting materials; Dope Pots (power agitated); Fork Lift or Lumber Stacker, Hydra-lift and similar; Gin Trucks (pipeline); Hoist, single drum; Loaders (bucket, elevators and conveyors); Longitudinal Float; Mixer (portable - concrete); Pavement Breaker, Hydra-hammer and similar; Power Broom; Spray Curing Machine (concrete); Spreader Box (self-propelled); Straddle Buggy (Ross and similar on construction job only); Tractor (Farm type R/T with attachments, except Backhoe); Tugger Operator

GROUP 3: A-Frame Truck (2 or more drums); Assistant Refrigeration Plant and Chiller Operator (over 1000 ton); Backfillers (Cleveland and similar); Batch Plant and Wet Mix Operator single unit (concrete); Belt-crete Conveyors with power pack or similar; Belt Loader (Kocal or similar); Bend Machine; Bob Cat; Boring Machine (earth); Boring Machine (rock under 8 inch bit) (Quarry Master, Joy or similar); Bump Cutter (Wayne, Saginaw or similar); Canal Lining Machine (concrete) Chipper (without crane), Cleaning and Doping Machine (pipeline); Curb Extruder (Asphalt and Concrete); Deck Engineer; Elevating Belt-type Loader (Euclid, Barber Green and similar); Elevating Grader-type Loader (Dumor, Adams or similar); Generator Plant Engineers (diesel, electric); Gunite Combination Mixer and Compressor; Locomotive Engineer; Mixermobile; Posthole

Auger or Punch; Pump (grout or jet); Soil Stabilizer (P & H or similar); Spreader Machine; Surface Heater and Planer Machine; Tractor (to D-6 or equivalent) and Traxacavator; Traverse Finish Machine; Turnhead Operator

GROUP 4: Blade Operator (motor patrol and attachments); Concrete Pumps (squeeze-crete, flow-crete, pump-crete, Whitman and similar); Drilling Equipment (8 inch bit and over) (Robbins, reverse circulation and similar); Drills (Churn, Core, Calyx, or Diamond); Equipment Serviceman, Greaser and Oiler; Hoe Ram; Hoist (2 or more drums or Tower Hoist); Loaders (overhead and front-end, under 4 yards R/T); Paving (Dual Drum) Rubber Tire; Refrigeration Plant Engineers (under 1000 ton); Signalman (Whileys, Highline, Hammerheads or similar); Skidders (R/T with or without attachments); Screed Operator; Trenching Machines (under 7 ft depth capacity); Vacuum Drill (reverse circulation drill under 8 inch bit)

GROUP 5: Automatic Subgrader (Ditches and Trimmers) (Autograde, ABC, R.A. Hansen and similar on grade wire); Backhoe (under 1 yd); Batch Plant (over 4 units); Batch and Wet Mix Operator (multiple units, 2 and including 4); Boat Operator; Cableway Controller (dispatcher); Concrete Pump Boom Truck; Conveyor Aggregate Placement Equipment; Cranes (25 tons and under); Derricks and Stifflegs (under 65 tons); Drill Doctor; Multiple Dozer Units with single blade; Paving Machine (asphalt and concrete); Piledriving Engineers; Roller (finishing pavement); Trenching Machines (7 ft depth and over)

GROUP 6: Asphalt Plant Operator (Backhoes (1 yd to 3 yds); Blade (finish and bluetop) Automatic, CMI, ABC and similar when used as automatic; Boom Cats (side); Cableway Operators; Clamshell Operators (under 3 yds); Concrete Slip Form Paver; Cranes (over 25 tons, including 45 tons); Crusher, Grizzle and Screening Plant Operator; Draglines (under 3 yds); Elevating Belt (holland type); Gradall (1 yd to 3 yds); Loader Operator (front-end and overhead, 4 yards, including 8 yds); Mucking Machine; Quadtrack or similar equipment; Rubber-tired Scrapers; Shovels (under 3 yds); Tractors (D-6 and equivalent and over); Vactor Guzzler, Super Sucker; Concrete Cleaning/Decontamination Machine; Ultra High Pressure Waterjet Cutting Tool System (30,000 psi)

GROUP 7: Backhoes (3 yds and over); Cranes (All Cranes over 45 tons, including 100 tons) Climbing, Rail and Tower Cranes up to including 45 tons; Clamshell Operator (3 yds. and over); Derricks and Stifflegs (65 tons and over); Draglines (3 yds and over); Lead Water Well Driller; Loader (360 degrees revolving Kochring Scooper or similar); Loaders (overhead and front-end, over 8 yds); Shovels (3 yds and over); Whirleys and Hammerheads, all; Vacuum Blasting Machine Operator; HD Mechanic/welder

GROUP 8: Cranes (all cranes over 100 tons); Climbing, Rail and Tower Cranes over 45 tons

ALL CRANE BOOMS, INCLUDING TOWER CRANES:

Measure from center of rotation to center of shaft (radius):
130 ft TO 200 ft .50 hr. additional to classification
Over 200 ft .80 hr. additional to classification

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Escort Driver or Pilot Car tender and swamper,
Pickup Hauling Employees or Materials

GROUP 2: Flat Bed Truck, single rear axle; Fork Lift, 3000
lbs and under; Leverperson Loading Trucks at Bunkers;
Seeder and Mulcher; Stationary Fuel Operator; Team Driver;
Tractor (small rubber tired, pulling trailer or similar
equipment); Trailer Mounted hydro Seeder and Mulcher; Water
Tank Truck, up to 1800 gallons

GROUP 3: Bus Driver or Employee Haul Driver; Flat Bed Truck,
dual rear axle; Power Boat hauling employees or material

GROUP 4: Buggy Mobile and similar; Bulk Cement Tanks and
Spreader; Power Operated Sweeper; Straddle Carrier (Ross,
Hyster and similar); Water Tank Truck, 1801-4000 gallons

GROUP 5: Auto Crane, 2000 lbs capacity; Dumptor (6 yds and
under); Flat Bed Truck (with hydraulic system); Fork Lift
(3001-16,000 lbs); Fuel Truck Driver, steam cleaner and
washer; Rubber-tired Tunnel Jumbo; Scissors Truck; Slurry
Truck Driver; Transit Mixers & mixers hauling concrete 3
yd to and including 6 yd.; Wrecker and Tow Trucks

GROUP 6: A-Frame; Service Greaser; Tireperson; Truck, side,
end, and bottom & articulated end dump (up to and including
12 yds); Water Tank Truck, 4001 to 8000 gallons,
Warehouseperson, to include shipping and receiving

GROUP 7: Dumps, semi-end; Flagerty Spreader Box Driver;
Flowboys; Fork lift, 16,000 lbs and over; Lowboy, 50 tons
and under; Mechanic, Field; Oil Distributors Driver (road,
bootperson, leverperson); and Oil Tank Driver; Self-Loading
Roll Off and Dumpster over 6 yds; Stringer Truck (cable
operated trailer); Tractor with Steer Trailer; Transfer
Truck & Trailer; Transit Mixers & Truck Hauling Concrete:
over 6 yards to and including 20 yards; Truck & Pup;
Trucks, side, end, bottom, & articulated end dump: over 12
yards to and including 100 yards; Truck Mounted Crane (with
load-bearing surface, either mounted or pulled) up to 14
tons; Turnarocker, DWs & similar, with 2 or or more 4
wheel-power tractor with trailer, gallonage or yardage
scale, whichever is greater; Vacuum truck (super sucker,
guzzler, etc.); Water Tank Truck, 8,001 to 14,000;
Scmi-truck and Trailer, 50 tons and under Lowboy

GROUP 8: Lowboy, over 50 tons; Prime movers & stinger truck;
Transit Mixers and truck hauling concrete, over 20 yards;
Trucks, side, end bottom and articulated end dump, over 100
yards.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

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

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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-LBL Physical Plant Complete
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-Physical Plant 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, "Supplies or Services and Prices/Costs," Attachment B-2-E, "Incentive Fee E - LBL Construction-Physical Plant Complete Performance Based Incentive Fee."

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-Physical Plant 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, "Supplies or Services and Prices/Costs," Attachment B-2-E, "Incentive Fee E – LBL Construction-Physical Plant Complete Performance Based Incentive Fee."

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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-Physical Plant 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

This 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

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schedule decrement outlined in Section B, "Supplies or Services and Prices/Costs," Attachment B-2-E, "Incentive Fee E - LBL ~~Construction-Physical Plant~~ Complete Performance Based Incentive Fee."

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-Physical Plant~~ 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, "Supplies or Services and Prices/Costs," Attachment B-2-E, "Incentive Fee E - LBL ~~Construction-Physical Plant~~ Complete Performance Based Incentive Fee."

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-Physical Plant~~ Complete Performance Based Incentive Fee ~~-LAW Construction-Complete~~

Facility	Activity ID	Description
LAW	4LL0000999	Complete LAW Construction-LBL Physical Plant Complete

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-Physical Plant~~ complete" identified in Table C.5-1.1, Deliverable 1.13. The following building components/items will be finished at LAW ~~construction-Physical Plant~~ 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-Physical Plant~~ complete" activity IDs as delineated in Table C.5-1.1, Deliverable 1.13.

The 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 ninety (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-Physical Plant~~ 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, "Supplies or Services and Prices/Costs," Attachment B-2-E, "Incentive Fee E - LBL ~~Physical Plant~~Construction Complete Performance Based Incentive Fee."

Activity ID	Description
4LL0000999	LAW—Construction complete LBL Physical Plant Complete

Milestone

Interim Milestone B-1 Commission LBL in the DFLAW Configuration Performance Based Incentive Fee

Facility	Activity ID	Description
LAW	7KLLK2A1626 7KLLK2A1626	ORP (SER) approval <u>Approval</u> 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.~~

This milestone shall be considered complete upon transmission by DOE of a SER which approves the LAW DSA and associated TSRs, including conditions of approval as warranted. The LAW DSA shall be a complete standalone DSA to support DFLAW operations. The LAW DSA shall consist of a 17 chapter DSA which complies with DOE-STD-3009-94 CN3.

~~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 Attachment B-2-F, "Incentive Fee F – Commission LBL in the DFLAW Configuration Performance Based Incentive," until DOE Contracting Officer provides such notification.~~

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Key Predecessors

See attached scheduled activities and documents. Described above.

Activity ID	Description	Date
	General Volume DSA	
<u>7KLK2A1626</u>	<u>ORP (SER) Approval of LAW DSA</u>	<u>15-Aug-18</u>

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

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Activity ID	Activity Name
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

Activity ID	Activity Name
5HLC106300	LAW - SU Component & System Testing - C3V
5HLC106800	LAW - SU Component & System Testing - LMH
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

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Activity ID	Description
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 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 contained in Section 1 progresses the major design elements to a committed status that supports a bid for procurement and construction of the DFLAW project, and 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
- 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
- Fire Analysis

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 Scope elements defined in Sections 1 and 2 to a confirmed status. 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,
- Initial issuance of the 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		
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 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	3ED4800114	EMF - EN - Issue Evaporator Equipment Datasheets - Rev. 0

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Activity ID	Description	Activity ID	Description
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, civil/structural/architectural [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 > ninety (90) percent
- Waste streams identified
- Input Basis of Design > ninety (90) percent
- 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 – thirty (30) percent 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 (ICD)
- 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 thirty (30) percent 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		DFLAW 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		

**SECTION J – LIST OF ATTACHMENTS
ATTACHMENT R
PERFORMANCE EVALUATION AND MEASUREMENT PLAN**

**PERFORMANCE EVALUATION AND
MEASUREMENT PLAN**

Incentive B – Award Fee

**DESIGN, CONSTRUCTION, AND COMMISSIONING OF THE
HANFORD TANK WASTE TREATMENT AND
IMMOBILIZATION PLANT**

CONTRACT NO. DE-AC27-01RV14136

Evaluation Period 2017
January 1, 2017, to December 31, 2017

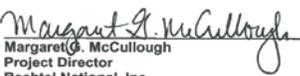
Bechtel National, Inc.
Richland, WA
Rev. 2 – Effective June 30, 2017



Issued By:



Kevin W. Smith
Manager, DOE Office of River Protection
Fee-Determining Official



Margaret G. McCullough
Project Director
Bechtel National, Inc.

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Appendix A Award Fee Rating Guide

1.0 AWARD FEE OBJECTIVES

This Performance Evaluation Measurement Plan (PEMP) contains the following seven award fee objectives:

1. Project performance (cost, schedule, and efficiencies)
2. One System, startup and commissioning, and engineering performance
3. Environmental, safety, health, and safety conscious work environment
4. Quality Assurance (QA) Program and quality of performance
5. Nuclear safety
6. Pretreatment (PT) Facility
7. High-Level Waste (HLW) Facility.

1.1 EVALUATION PROCESS

The U.S. Department of Energy (DOE), Office of River Protection (ORP) will evaluate and measure performance in each of the seven award fee objectives using the criteria in each objective. The evaluation will assign an adjectival rating and corresponding award fee earned to each award fee objective (see Table 1, "Award Fee – Incentive Ratings and Definitions"). The Fee-Determining Official (FDO) may consider any other pertinent factors in making a final fee determination.

1.2 INCENTIVE RATINGS AND DEFINITIONS

ORP will utilize Table 1 to rate performance. ORP will utilize a separate color-coded table (see Appendix A, "Award Fee Rating Guide") for informal periodic evaluations. The final evaluation will reflect the adjectival rating scale in Table 2, "Award Fee – Fee Earnings Calculations."

Table 1. Award Fee – Incentive Ratings and Definition. (2 pages)

Adjectival Rating	Definition	Percentage of Award Fee Earned
Excellent	Contractor has exceeded almost all of the significant award-fee criteria and has met overall cost, schedule, and technical performance requirements of the contract in the aggregate as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.	91% to 100%
Very Good	Contractor has exceeded many of the significant award-fee criteria and has met overall cost, schedule, and technical performance requirements of the contract in the aggregate as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.	76% to 90%
Good	Contractor has exceeded some of the significant award-fee criteria and has met overall cost, schedule, and technical performance requirements of the contract in the aggregate as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.	51% to 75%

Performance Evaluation and Measurement Plan (Rev. 2)
 Evaluation Period 2017 – 01/01/17 to 12/31/17
 WTP Contract No. DE-AC27-01RV14136

Table 1. Award Fee – Incentive Ratings and Definition. (2 pages)

Adjectival Rating	Definition	Percentage of Award Fee Earned
Satisfactory	Contractor has met overall cost, schedule, and technical performance requirements of the contract in the aggregate as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.	≤ 50%
Unsatisfactory	Contractor has failed to meet overall cost, schedule, and technical performance requirements of the contract in the aggregate as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.	0%

Table 2. Award Fee – Fee Earnings Calculation.

Award Fee Objective	Award Fee Available	Adjectival Rating	% of Award Fee Earned	Award Fee Dollars Earned
1 Project Performance (Cost, Schedule, and Efficiencies)	\$1,400,000			
2 One System, Startup and Commissioning, and Engineering Performance	\$1,400,000			
3 Environmental, Safety, Health, and Safety Conscious Work Environment	\$1,100,000			
4 Quality Assurance Program and Quality of Performance	\$1,200,000			
5 Nuclear Safety	\$1,300,000			
6 Pre-Treatment Facility	\$900,000			
7 High-Level Waste Facility	\$572,103			
Total Award Fee (Period 2017)	\$7,872,103			

1.3 AWARD FEE OBJECTIVE 1: PROJECT PERFORMANCE (COST, SCHEDULE, AND EFFICIENCIES)

Award Fee Criteria:

- Project Performance
- Cost Performance and Efficiencies.

1.3.1 Project Cost and Schedule Performance

ORP will evaluate the contractor’s cost and schedule performance based upon actual incurred costs compared to the total estimated costs of that work and actual schedule performance as compared to the planned schedule. The analysis of cost control performance will give consideration to changed programmatic requirements, changed statutory requirements, and/or changes beyond the contractor’s control, which impact costs. ORP will rely on other objective and/or subjective cost and schedule performance elements, such as critical path and float

analysis, to evaluate the contractor's performance, which includes, but is not limited to the following:

- Contractor Assurance System – Project metrics represent accurate project performance and are used to monitor performance trends. Actions are taken based on performance trends to adjust project performance.
- Cost Control – The contractor maintains cost control (i.e., actual costs incurred for work performed are equal to or less than the estimated costs for that work) and actively pursues cost containment and reduction through innovative approaches and management of resources. Cost control will be monitored against the Performance Measurement Baseline (PMB) for the Low-Activity Waste (LAW) Facility, Balance of Facilities, and Analytical Laboratory (collectively referred to as LBL)/direct-feed low-activity waste (DFLAW), and against the internal forecast for the IILW/PT Facility and Project Services.
- Schedule Control – The contractor maintains an internal forecast schedule reflective of actual schedule performance, problem identification, and corrective action plans. These action plans are tracked for actual schedule performance. Contractor performance will also be evaluated using internal contractor planning documents and performance (e.g., meeting scheduled documented safety analysis development activities, quantity unit rate report, and engineering production rate report).
- Cost and Schedule Reporting – The contractor is proactive in assisting ORP with problem identification. Potential problems are identified, and corrective action is implemented to minimize cost/schedule impacts (e.g., meeting QA requirements while meeting schedule activity completions). The Government is notified immediately of significant problems, and the contractor interacts with the Government to develop viable resolutions and overcome delays.
- Communication – The contractor is expected to communicate clearly and effectively and in a timely manner for the reporting of data and metrics for project performance.
- Variiances – The contractor is expected to promptly take corrective action on negative cost and schedule variances. Negative variances are not expected to build but instead be mitigated effectively and with sound business practices.
- Risk Management – The contractor shall identify new threats, opportunities, and risk closures to demonstrate an effective risk program. Risks should be identified early to maximize risk mitigation and risks shall be managed, monitored, and risk mitigation effectiveness reported on for closed threats, open threats, and opportunities realized.
- Available Funding Utilization – The contractor is expected to optimize utilization of funds while planning for an appropriate amount of carryover to cover outstanding year-end commitments and to provide for the first few weeks of continuing operations into the next fiscal year.
- Earned Value Management System (EVMS) Indices, Including Cost Performance Index and Schedule Performance Index – The contractor is expected to effectively use EVMS in managing and reporting their project performance to ensure that actual progress is

reported compared to the PMB for LBL/DFLAW, and against the internal forecast for HLW/PT, and that sound management actions are taken when negative cost and schedule variances and/or cost overruns are projected.

- **Baseline and Contract Alignment** – The contractor shall work closely with ORP to maintain alignment between the baseline and the contract. The contractor shall submit quality and timely documents as required to support the alignment between the baseline and the contract and to support independent reviews.

1.4 AWARD FEE OBJECTIVE 2: ONE SYSTEM, STARTUP AND COMMISSIONING, AND ENGINEERING PERFORMANCE

Award Fee Criteria:

- One System
- Startup and Commissioning
- Engineering Performance.

1.4.1 One System

Performance will be evaluated on progress in meeting the following strategic objectives:

- Establish a prioritized set of activities and timing to fully integrate tank farms, LAWPS, and WTP necessary to meet the contractual dates for startup and commissioning of WTP. Be responsible for coordinating, tracking, measuring, and reporting on these activities.
- Accurately track schedule performance and any schedule slippage for DFLAW Program.
- Recommend to ORP, Washington River Protection Solutions LLC, and BNI actions needed to more effectively or efficiently conduct the transition to startup, commissioning, and operations.
- Support the establishment of a long-term tank waste disposition integrated flowsheet stewardship and technical management process that involves the national laboratories. Performance will be evaluated against milestones planned for the award fee period that are established by One System.
- Support the integration of tank farms and WTP system planning and modeling, with a focus on the WTP feed vector and waste feed qualification requirements. This includes support for preparation for DOE review of the gaps, risks, opportunities management plan, and technology roadmap.
- Manage the WTP interface control documents.
- Drive down risk by finding opportunities such as partial system tests, and activations.
- Closely track the activities necessary for startup and commissioning DFLAW and advise the One System Governance Board of any significant risks for the Governance Board milestones defined for BNI.
- Coordinate the alignment of DOE orders between BNI and Washington River Protection Solutions LLC for those DOE orders, DOE directives and contract changes having a

direct effect on completion of commissioning phase activities of the WTP. Establish an optimum or necessary time to have each item aligned.

- Ensure integration of plant installed and plant administration software systems between WTP and the Tank Operations Contractor in support of DFLAW startup and commissioning.

1.4.2 Startup and Commissioning

Turnover and startup:

- Definition and implementation of system and area turnover processes that are efficient and ensure systems are successfully turned over.
- Turnover from construction to startup completed with effective management of impacts from equipment aging or other adverse conditions that impact startup work performance. This excludes any issues that require energization and testing in order to discover.
- Successful turnover planning, preparation, acceptance, and testing of scoped systems – Water Treatment Building process service water system, domestic water system, and demineralized water system.
 - 5HBC10835B63, PSW-B-01, Component Testing (energized) complete (October 5, 2017).
 - 5HBC10834B67, DOW-B-01, Component Testing (energized) complete (July 31, 2017).
 - 5HBC10834B78, DIW-B-01, Component Testing (energized) complete (November 10, 2017).

System testing:

- Successful performance of component and initial system testing, to include review and approval of component test result packages for scoped systems consistent with the Startup Waterfall schedule data dated December 19, 2016.
- Preparation and approval of appropriate component and/or system test procedures to support upcoming testing in accordance with 24590-WTP-GPP-MGT-042 *WTP System Turnover*, and the baseline schedule. Completion of test matrices and test indices and associated test requirements and criteria prior to system turnover to Startup from Construction. This will include consideration of procedure quality and review timeliness.
- Initiate potable water service to the cooling tower (ICD-2) Activity ID No. 5HBC108200 (September 17, 2017).
- Initiate Liquid Effluent Services (ICD05C) Activity ID No. 5HBC108230 (May 7, 2017).
- NLD System Testing/Closeout and Turnover to Operations ID No. 5HBC108449 (May 27, 2017).

Commissioning and operations:

- Perform contractor integrated safety management system Phase 1 verification review in order to support the safe and successful turnover of the Water Treatment Building.
- Develop and issue the Balance of Facilities Readiness Plan (July 31, 2017).

1.4.3 Engineering performance:

Completion of design and construction:

- Completion of comprehensive LBL design reviews as scheduled. Performance of comprehensive LAW 90 percent design reviews – assess LAW design against contractual and safety requirements, identify and address any shortcomings, and document system acceptability in a retrievable manner; resulting in a valuable system and facility operational reference resource.
- Address LAW Facility design and operability (D&O) comments as evidenced by closure of remaining 11 open D&O issues and BNI support in DOE validation of remaining 253 D&O items.
- Procurement Package Development – Address past procurement issues and results in procurements that clearly specify requirements and ensures adequate oversight of important procurement submittals and activities. Acceptable quality to be demonstrated through use of existing Quality Engineering metrics for In-Process Document Review.
- Configuration Management – Maintain the newly developed technical requirements management system, including system design descriptions, and develops and maintains an adequate SmartPlant system to support LAW system turnover.
- Design Output – Issues adequate calculations and other design products that reflect acceptable quality; manage margin; control unverified assumptions; and adequately flows down requirements to calculations, drawings, specifications, data sheets, and procurement documents. Acceptable quality to be demonstrated through use of existing Quality Engineering metrics for In-Process Document Reviews.

1.5 AWARD FEE OBJECTIVE 3: ENVIRONMENTAL, SAFETY, HEALTH, AND SAFETY CONSCIOUS WORK ENVIRONMENT

Award Fee Criteria:

- Nuclear Safety and Quality Culture
- Integrated Safety Management
- Environmental Permitting and Compliance.

Performance will be evaluated on continuous improvement in these areas, which includes, but is not limited to:

- Have an effective safety conscious work environment and culture through implementation of programs and dissemination of expectations in order to establish a

work environment in which employees feel free to raise safety concerns to management and/or a regulator without fear of retaliation.

- Conduct business in a manner fully transparent to ORP. Activities are demonstrated by open, clear, and well communicated management actions and technical and project documentation. Identified issues and trends are proactively shared with ORP.
- Foster a culture that rewards proactive self-identification and reporting of issues and proactively identify and takes action on systemic weaknesses leading to sustained continuous self-improvement.
- Implementation of work hazard analysis and controls resulting in (1) improving work injury/illness performance and (2) no unplanned employee exposures to work place hazards.
- Implementation of event investigation (e.g., review, cause analysis, and action implementation) resulting in effective organizational learning with the goal of eliminating recurring events and implementing quality corrective actions in a timely manner.
- Documented periodic management analysis of work site conditions and implementing strategies resulting in improving WTP Project safety.
- Implement a robust and effective integrated safety management program.

1.5.1 Environmental Permitting and Compliance

Performance will be evaluated on the contractor's programs for environmental stewardship and compliance. ORP will rely on subjective and objective evaluations of the contractor's performance in areas that include but are not limited to documentation and implementation of the contractor's environmental protection and compliance program including initiatives for continuous improvement, establishment of performance metrics and use in improving the environmental protection and compliance program, timeliness and quality (e.g., accuracy, completeness) of permit documents and compliance to permits and licenses, proactive assessment/evaluation program, and the number and seriousness of any findings or concerns related to noncompliances or violations including the timeliness and quality of related reporting and responses.

- Submit permitting products with a high degree of quality on the initial submittal, requiring minimal rework and enable schedule efficiencies. Specific deliverables which will be evaluated are:
- Provide final EMF transfer line permit modification package to ORP for transmittal to the Washington State Department of Ecology.
- Provide final LAB operating permit modification package to ORP for transmittal to Ecology.
- Provide "first" final EMF process equipment permit modification package to ORP for transmittal to the Washington State Department of Ecology to support agency initiated modifications.
- Provide Environmental Performance Demonstration Test Plan to ORP.

- Provide final LDR Treatability Variance to ORP for transmittal to Ecology and EPA.

1.6 AWARD FEE OBJECTIVE 4: QUALITY ASSURANCE PROGRAM AND QUALITY OF PERFORMANCE

The QA Program and Quality of Performance Objective has been divided into two subparts. Objective 4a will evaluate the effectiveness of the Contractor Assurance System and Objective 4b will evaluate the contractor's actions to address four significant quality issues. Performance will be judged based on the quality and timeliness of products and services produced during the reporting period and the overall effectiveness of the contractor's assurance system to completely identify, track, correct, and communicate issues. The analysis of quality performance will also give consideration to the contractor's ability to self-identify issues (e.g., nonconforming conditions, legacy issues, emerging negative performance trends) and correct negative performance trends before significant issues occur. In addition, the QA documentation supports the requirements needed for documented safety analysis approval. ORP will rely on objective and subjective evaluations of the contractor's performance.

Award Fee Criteria:

- Contractor Assurance System
- Actions to Address Significant QA Issues.

1.6.1 Objective 4a: Contractor Assurance System

- Assessment Program – Rigorous, risk-informed, highly self-critical, credible self-assessments are conducted to identify issues and improvement opportunities by the line management. These self-assessments should demonstrate the line management's self-critical commitment to quality. The assessment program should also include rigorous independent QA reviews that verify the line management's achievement of quality. The target for measurement of effectiveness of both the self-critical assessments and the QA independent assessments is that issues are identified and documented in the Corrective Action Management Program.
- Trend Analysis Program – Performance metrics are effectively used to provide an accurate picture of current quality performance against goals. Outcomes of the trend analysis program are leveraged to inform management (contractor and ORP) of emerging issues in a timely manner.
- Cause Analysis and Corrective Action – Performance gaps are identified and analyzed commensurate with their significance. Corrective actions are timely, prioritized by importance, and appropriately targeted to correct negative performance/compliance trends and prevent the development of significant issues. In the case of significant conditions adverse to quality, effective compensatory measures are implemented, the causes of the condition are determined in a timely manner and corrective action taken to preclude recurrence.
- Corrective Action Management System – BNI improvements are implemented to promote a proactive and effective corrective action program ensuring quality issues

(including project peer reviews, other reviews, assessments and audits) are correctly identified, appropriately classified, rigorously investigated and resolved to mitigate recurrence.

- **Feedback and Improvement** – Continuous feedback and improvement, including worker feedback mechanisms are incorporated into the overall work process to measure the effectiveness of continuous improvement. Lessons learned and operational experiences are shared with others.

1.6.2 Objective 4b: Actions to Address Significant Quality Assurance Issues

Corrective actions to address the following areas will be evaluated during each review period to determine if BNI's actions have been completed as planned and whether completed corrective actions have been effective. Ongoing status shall be communicated to the ORP QA Division during the weekly interface meetings.

- **Commercial Grade Dedication** – BNI shall implement, document, and demonstrate an effective commercial grade dedication program in accordance with the contract and associated corrective action plan.
- **Software QA Program** – BNI shall implement the Corrective Action Plan for CR 16-00939-B. Actions in the CR develop the procedure for Software Requirements Traceability and validate existing ICN software. Metric is actions completed in accordance with the CAP schedule.
- **QA Program Implementation** – BNI shall complete actions necessary to close Priority Level 1 QA findings (U-13-QAT-RPPWTP-001-F01) (U-13-QAT-RPPWTP-001) and demonstrate that an adequate QA program has been effectively implemented.
- **Procurement Program Improvements** – BNI shall demonstrate effective procurement and property management policies and procedures. This includes subcontractor/vendor related nonconformance report/construction deficiency report identification and disposition processes, and back-charge processes to ensure the contractor is effectively identifying and resolving nonconformances to support project priorities, schedule, and contract requirements.

1.7 AWARD FEE OBJECTIVE 5: NUCLEAR SAFETY

Award Fee Criteria:

Contract No. DE-AC27-01RV14136, *Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant*, Section C, "Statement of Work," Standard 9 describes contractor requirements to ensure radiological, nuclear, and process safety. This work scope includes implementation of a standards-based safety management program in compliance with the rules provided in 10 CFR 830, "Nuclear Safety Management," on nuclear safety to ensure that WTP safety requirements are defined, implemented, and maintained.

Evaluation criteria to measure performance will include ORP's evaluation of the contractor's progress toward and compliance with contract requirements for nuclear safety performance. Progress will be evaluated against interim project schedules for nuclear safety submittals and

supporting documentation (e.g., hazards analyses) with consideration of any emerging issues. Compliance will be evaluated against guidance found in DOE-STD-3009, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*, CN 3 as well as all other contract requirements and clarifying direction from ORP.

ORP-WTP will consider any available information that bears on nuclear safety performance in making this evaluation. Documents to be considered include:

- Draft nuclear safety deliverables submitted for informal review possess a high degree of quality, and meet the requirements defined in the Implementation Plan for Contract No. DE-AC27-01RV14136, *Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant*, Section C, Standard 9. Acceptable quality to be determined through use of existing Quality Engineering metrics for In-Process Documents.
- Progress toward interim project schedules and milestones while producing a high quality and compliant preliminary documented safety analysis (PDSA) for the LAW Facility
- Formally submit a high quality and compliant HLW Facility PDSA revision resolving gaps identified in the HLW safety design strategy/PDSA gap analysis
- Progress toward interim project schedules and milestones and completion of a compliant Analytical Laboratory PDSA to incorporate ORP technical direction and current hazard analysis processes
- Nuclear safety calculations and engineering studies developed to support resolution of technical issues will possess a high degree of quality and will meet the requirements defined in the Implementation Plan for Contract No. DE-AC27-01RV14136, *Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant*, Section C, Standard 9 for submittal of draft documents for informal review. Effectiveness of the corrective actions resulting from the quality issues identified in 16-NSD-0026, "Contract No. DE-AC27-01RV14136 – Low-Activity Waste Process Hazards Analysis Report Quality Issues"
- Incorporation of lessons learned from the submittal and approval of the initial EMF PDSA reflecting 30 percent design completion
- Effectiveness in self-identifying nuclear safety concerns early and responding to concerns raised both internally and by external stakeholders and review teams
- Formally submit the LAW Effluent Management Facility PDSA addendum to include comment disposition received from ORP on the draft submittal
- Successfully close all remaining Conditions of Acceptance as stated in the Safety Evaluation Report for the LAW PDSA Addendum for 30% design of the Effluent Management Facility
- Develop and issue the LAW criticality safety evaluation report (CSER)

- Revise and issue 24590-WTP-G04B-00022, Licensing Document; 24590-WTP-3DG-W10T-00001, WTP Nuclear Safety Analysis Design Guide; and applicable desktop instructions to address corrective actions resulting from quality issues identified in 16-NSD-0026, Contract No. DE-AC27-01RV14136 – Low-Activity Waste Process Hazards Analysis Report Quality Issues, and to provide clear guidance on the mutually agreed upon level of detail required for hazard analysis to support an approvable PDSA/DSA.

1.8 AWARD FEE OBJECTIVE 6: PRETREATMENT FACILITY

This award fee objective applies to the PT Facility program development and technical issues resolution activities as directed by ORP to support a return to production engineering.

Award Fee Criteria:

- Identified technical and testing deliverables are accomplished on schedule and within budget for the full scale pulse jet mixing (PJM) controls and mixing for the standard high-solids vessel (SHSV) test
- Provide recommendation for PT design concept with SHSV for Planning Areas 2, 3, and 4 in support of DOE decision for PT optimization
- Demonstrate effective project performance reporting consistent with ORP priorities and available funding
- Effectively utilize funding provided to complete the directed work scope
- Demonstrate an effective and integrated WTP program team approach for accountability, leadership, decision making, and ownership
- Maintain an effective, transparent, and integrated line of communication with ORP
- Proactively support ORP in completing and documenting the resolution of technical issues identified by the Defense Nuclear Facilities Safety Board.

Work activities and deliverables are completed on schedule:

- The contractor will ensure each deliverable is submitted on schedule as defined in the current Internal Forecast (IF).
 - Complete PJM control systems testing in SHSV design test phase 3 and complete all SHSV mixing tests by September 2017.
 - Execute the Joint Test Group approved run sheets for PJM controls testing in SHSV design. Tests are complete and data successfully acquired to achieve the test objectives described in the test plan (24590-WTP-ES-ENG-16-011 *Test Plan for Phase 3 PJM Controls Testing in the Standard High Solids Vessel Design (SHSVD-T Vessel)*) by September 2017.
 - Complete and approve the SHSV PJM control test reports by September 2017.
 - Complete PJM Qualification (Mixing) testing.
 - Submit a formal notification with results of successful qualification testing.

- Transmit completed alternate trade study with recommendation and rough order of magnitude cost aligned with the functional requirements and constraints for the PT design concept for Planning Areas 2, 3, and 4.
- Deliverables provided to ORP comply with the BNI/ORP predetermined quality criteria (e.g., completeness, clarity of presentation).
- Support resolution of Defense Nuclear Facilities Safety Board-identified issues on the WTP by completing required analyses, supporting interactions with the Defense Nuclear Facilities Safety Board, and preparing documentation to support the basis for issues resolution.

Manage project performance functions and tools consistent with DOE priorities and available funding:

- The contractor will consistently maintain project management function tools (e.g., cost and schedule reporting, change control, variance reporting, configuration management, risk management function, and procurements as relative to a baseline IF).
- Implement a robust and effective EVMS in managing project performance reporting to ensure that actual progress is reported compared to a baseline IF.
- Proactively identify new threats, opportunities, and risk closures resulting in an effective risk program.

Quality of deliverables meet the BNI/ORP predetermined quality criteria:

- The contractor will collaborate with ORP to fully define quality criteria for each product deliverable required by the contract and to meet requirements as identified by the WTP federal project director.
- Report progress during project area review briefings, weekly and monthly reports.
- Contractor will also submit quality and timely documents as required as defined in the baseline IF.

Effectively maintain an integrated approach to accountability, leadership, decision making, and ownership:

- The contractor will maintain an effective integrated approach and accept responsibility; accountability; leadership and decision making; and ownership for each defined pretreatment role, responsibility, and line of authority per the BNI organizational construct.

Maintain an effective integrated line of communication; sustain transparency:

- The contractor will be expected to communicate clearly and effectively to ORP WTP Project staff, current project deliverables on a weekly and monthly schedule.
- Conduct business in a manner fully transparent and documented.

1.9 AWARD FEE OBJECTIVE 7: HIGH-LEVEL WASTE FACILITY

This award fee objective applies to the HLW Facility activities performed in support of the full procurement and construction authorization planned to be accomplished by the end of calendar year 2017.

Award Fee Criteria:

- Management of D&O issue resolution and adequate condition report disposition and closure
- Effective implementation of the updated BNI processes and procedures ensuring sustained improved products
- Deliverables are responsive, timely, and meet the quality requirements
- Achieve full authorization of procurement and construction (Decision 2A)
- All of the requirements are met to resume full HLW engineering, procurement, and construction in 2017 in accordance with the HLW Facility Completion Plan.

Management of issue resolution and condition report closures:

- Submit a D&O summary report meeting ORP expectations for disposition of design comments

Effective implementation of the updated BNI processes:

- Demonstrate effective implementation of BNI processes by successfully shipping critical equipment with completed documentation packages
- Update and manage changes to design deliverables using updated design and nuclear safety processes (e.g., backward and forward passes)
- Ensure that design products align with system design descriptions and are documented in the requirements verification matrices
- Demonstrate effective implementation of the quality engineering program.

Deliverables are responsive, timely, and of high quality:

- Collaborate with DOE-ORP to fully define quality criteria for key deliverables
- Technical and management products are clear, comprehensive, and of adequate technical content withstanding the scrutiny of internal and external stakeholders
- Deliverables meet HLW Facility objectives on schedule.

Achieve full authorization of procurement and construction:

- BNI provides notification of completion of criteria for full authorization in accordance with the criteria described in the HLW Facility Completion Plan

- Receive DOE approval of the full authorization of procurement and construction (Decision 2A).

**2.0 PERFORMANCE EVALUATION AND MEASUREMENT PLAN
GENERAL INFORMATION**

A. CONTRACT INCENTIVE FEE STRUCTURE

Contract No. DE-AC27-01RV14136 utilizes multiple, performance-based incentive fee components to drive contractor performance excellence in completing the design, construction, and commissioning of the WTP Contract.

The contract has the following incentive fee elements:

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

This PEMP covers Incentive D, which is updated annually. The fee administration terms and conditions of incentive fee elements A, B, C, E, F, G, and H are self-contained within Contract Section B, and thus, are not addressed in this PEMP.

The award fee provides a performance incentive for the contractor and gives the Government a tool to identify and reward superior performance. The amount of award fee the contractor earns is based on both an objective and subjective evaluation by the Government of the contractor's performance as measured against the criteria contained in this PEMP.

B. ROLES AND RESPONSIBILITIES

The award fee process utilizes a three-level system to ensure full and fair performance evaluation:

- Level 1.0 – FDO
 - Level 1.1 – WTP Contracting Officer (CO)
- Level 2.0 – Performance Evaluation Board (PEB)
- Level 3.0 – Performance Evaluation Monitors (PEM).

2.1.1 Level 1.0 – Fee-Determining Official: Office of River Protection Manager

The FDO will:

- Review the recommendation of the PEB, consider all pertinent data, and determine the amount of award fee earned during each evaluation period
- Notify the contractor via the CO of performance strengths, areas for improvement, and future expectations
- Approve this PEMP and any significant changes thereto
- Authorize the CO to make the award fee payment.

Level 1.0 ensures independent, executive level review of the work of the PEB and PEMs.

2.1.2 Level 1.1 – Waste Treatment and Immobilization Contracting Officer

The WTP CO will:

- Serve as a voting member of the PEB
- Issue the PEMP on an annual basis in accordance with Section B.8, "Award Fee Administration," of the contract
- Ensure that the award fee and contract incentives process is managed consistent with applicable acquisition regulations
- Ensure that the award fee process meets the overall WTP business objectives
- Issue the award fee amount earned determination as authorized by the FDO in accordance with Section B.8.

2.1.3 Level 2.0 – Performance Evaluation Board

- WTP federal project director, Chair
- WTP deputy federal project director, field operations
- WTP CO
- Assistant Manager, Technical and Regulatory Support.

The PEB reviews the PEM evaluations of contractor performance, considers the contractor's self-assessment if submitted, considers all information from pertinent sources, prepares draft and final performance reports, and arrives at an earned award fee recommendation to be presented to the FDO. The PEB may also recommend changes to this PEMP.

2.1.4 Performance Evaluation Board Chair

The PEB Chair will be the assistant manager/federal project director for WTP. The Chair will:

- Review the performance monitors' evaluations and consider the contractor's self-assessment

- Analyze the contractor's performance against the criteria set forth in this PEMP
- Consider any additional relevant contractor performance
- Provide periodic interim performance feedback to the contractor via the CO
- Provide a recommendation to the FDO on the award fee scoring and the amount earned by the contractor
- Recommend any changes to this PEMP.

2.1.5 Level 3.0 – Performance Evaluation Monitors:

PEMs will consist primarily of WTP sub-federal project directors and ORP division directors. The PEMs will:

- Monitor, evaluate, and assess contractor performance in their assigned areas
- Periodically prepare a contractor performance monitor report for the PEB and recommend verbal performance input as well
- Recommend any needed changes to this PEMP for consideration by the PEB and FDO
- Maintain a performance dialogue with their respective BNI counterparts throughout the evaluation period.

C. PROCESS

The total available award fee for the 2017 evaluation period is \$7,872,603.

In accordance with FAR 16.401(e)(3)(v), the contractor is prohibited from earning any award fee when the contractor's overall cost, schedule, and technical performance is below satisfactory.

D. PROVISIONAL FEE

Provisional fee requirements in Contract Section B, Clause B.8 (g), "Provisional Payment of Fee," apply to this PEMP. The clause paragraphs are restated below for emphasis:

(g)(3)(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.

(g)(3)(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.

(g)(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.

(g)(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 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 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; amounts it would otherwise authorize the Contractor to draw down under a Letter of Credit; or any other amount it owes the Contractor for payment, financing, or other obligation.

(g)(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 it the difference between the earned fee and the provisional fee.

Provisional fee procedures:

The Government and the Contractor will meet monthly to review the Contractor's performance against the PEMP criteria. Subsequent to each monthly meeting and pending satisfactory performance, the Contractor is authorized to invoice for provisional fee once per month, at a rate of \$328,025 per month (calculated as one-twelfth of 50 percent of the \$7,872,603 maximum annual available PEMP fee). However, the Contracting Officer may reduce the amount in accordance with Section B, Clause B.8 (g) Provisional Payment of Fee.

In the event that fee overpayment results from the provisional fee payments provided for in this section exceeding the earned fee, as determined by the FDO, the contractor shall reimburse the unearned fee overpayment within 30 days of notification to the CO.

E. CONTRACTOR SELF-ASSESSMENT

Contract Section B, Clause B.8 states:

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.

F. METHOD FOR CHANGING THE PERFORMANCE EVALUATION AND MEASUREMENT PLAN DURING THE EVALUATION PERIOD

Proposed changes to the current period PEMP may be initiated by either ORP or the contractor. Proposed changes shall be in writing. Both ORP and the contractor must agree to any changes. Once agreement is reached, the FDO and contractor representative will sign the revised PEMP. The revision number (e.g., Rev. 1) will be noted on the PEMP. Subsequently, the revised PEMP will be incorporated into the contract by reference via contract modification.

ABBREVIATIONS AND ACRONYMS

BNI	Bechtel National, Inc.
CLIN	Contract Line Item Number
CO	contracting officer
DFLAW	direct-feed low-activity waste
DOE	U.S. Department of Energy
D&O	design and operability
EMF	Effluent Management Facility
EVMS	Earned Value Management System
FDO	Fee-Determining Official
HLW	high-level waste
IF	Internal Forecast
LAW	low-activity waste
LBL	low-activity waste, balance of facilities, analytical laboratory
ORP	U.S. Department of Energy, Office of River Protection
PDSA	preliminary documented safety analysis
PEB	Performance Evaluation Board
PEM	performance evaluation monitor
PEMP	Performance Evaluation Measurement Plan
PJM	pulse jet mixing
PMB	Performance Measurement Baseline
PT	pretreatment
QA	quality assurance
SHSV	standard high-solids vessel
WTP	Waste Treatment and Immobilization Plant

REFERENCES

- 10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.
- 16-NSD-0026, 2016, "Contract No. DE-AC27-01RV14136 – Low-Activity Waste Process Hazards Analysis Report Quality Issues" (external letter to M. McCullough, Bechtel National, Inc.), from W.F. Hamel, U.S. Department of Energy, Office of River Protection, Richland, Washington, June 23.
- 24590-WTP-ES-ENG-16-011, 2016, , *Test Plan for Phase 3 PJM Controls Testing in the Standard High Solids Vessel Design (SHSYD-T) Vessel*, Bechtel National, Inc., Richland, Washington, September 29.
- 24590-WTP-GPP-MGT-042, 2014, *WTP System Turnover*, Bechtel National, Inc., Richland, Washington, October 30.
- Contract No. DE-AC27-01RV14136, *Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant*, U.S. Department of Energy, Washington, D.C., as amended.
- DOE-STD-3009, 2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*, DOE Standard, U.S. Department of Energy, Washington, D.C., November.
- FAR 16.401, "Incentive Contracts," "General," *Federal Acquisitions Regulations*, as amended.
- U-13-QAT-RPPWTP-001, 2013, *BNI Quality Assurance Program Requirements 3, 4, 7, 8, 15, and 16*, U.S. Department of Energy, Office of River Protection, Richland, Washington, October 28.

WTP Contract
Contract No. DE-AC27-01RV14136

Section J
Modification No. 408

**APPENDIX A
AWARD FEE RATING GUIDE**

Appendix A. Award Fee Rating Guide. (2 pages)

	OBJECTIVE ITEMS	SUBJECTIVE ITEMS
Dark Blue "Excellent" Performance	<ul style="list-style-type: none"> Objective measures are achieved on or ahead of time Very high probability of achieving the outcome Meeting all cost, scope, and schedule objectives Very high degree of transparency 	<ul style="list-style-type: none"> 100% of key areas meeting requirements 100% of key deliverables will be met on time 90% of sub or supporting areas are performing very well No safety, security, or quality issues of note Very high degree of self-identification and reporting deficiencies Very high degree of transparency Strong ISMS practices, timely reporting, critiqued/EOC whenever needed
Light Blue "Very Good" Performance	<ul style="list-style-type: none"> Objective measures expected to be achieved on time Very good probability of achieving the outcome Expect to meet cost, scope, and schedule objectives High degree of transparency 	<ul style="list-style-type: none"> 100% of key areas meeting or close to meeting requirements 100% of key deliverables are meeting or expected to meet requirements Majority of sub or supporting areas are performing very well At most minor safety, security, or quality issues of note High degree of self-identification and reporting deficiencies High degree of transparency Strong ISMS practices, timely reporting, critiqued/EOC whenever needed
Green "Good" Performance	<ul style="list-style-type: none"> Objective measures reasonably expected to be achieved on time Reasonable probability of achieving the outcome Expect to meet or be very close to cost, scope, and schedule Good degree of transparency 	<ul style="list-style-type: none"> Almost all key areas meeting or close to meeting requirements Majority of key deliverables are satisfactory or better Majority of sub or supporting areas are performing satisfactorily Mostly minor safety, security, or quality issues of note Good degree of self-identification and reporting deficiencies Good degree of transparency Infrequent deviation in ISMS practices, timely reporting, critiqued/EOC reviews

Appendix A. Award Fee Rating Guide. (2 pages)

	OBJECTIVE ITEMS	SUBJECTIVE ITEMS
Yellow "Underperforming" "Needs improvement" "Elevated risk"	<ul style="list-style-type: none"> Elevated risk of objectives not being achieved on time Reasonable probability of not achieving the outcome Expect to not meet cost, scope, or schedule Partial degree of transparency 	<ul style="list-style-type: none"> Majority key areas meeting or close to meeting requirements Notable percentage of key deliverables are satisfactory or better Notable percentage of sub or supporting areas are performing satisfactorily Occasional mid-level safety, security, or quality issues of note ~75% of issues are self-identified with most reporting in a timely manner Partial degree of transparency Clear deviations of ISMS practices, reporting, critiques, EOC reviews, safety basis/CONOPS/engineering deviations that are generally infrequent or have minor consequences Nominal NOV, PAAA, fine, injury, security infraction(s)
Red "Does not meet reqmts" "Failing or will fail"	<ul style="list-style-type: none"> Clear (or high) risk of objectives not being achieved on time High probability of not achieving the outcome Expect to not meet or significantly miss cost, scope, or schedule Inadequate degree of transparency 	<ul style="list-style-type: none"> Overall most key areas meeting or close to meeting requirements Inadequate percentage of key deliverables are satisfactory or better Inadequate percentage of sub or supporting areas are performing satisfactorily Too high a frequency of mid-level safety, security, or quality issues of note Major safety, security, or quality issue Less than ~75% of issues are self-identified and reported in a timely manner Inadequate degree of transparency Significant deviations of ISMS practices, reporting, critiques, EOC reviews, multiple safety basis/CONOPS/engineering deviations or a significant deviation with nuclear safety or operational implications Significant NOV, PAAA, fine, injury, security deviation(s)
Grey "Insufficient data" "Not able to assess"	<ul style="list-style-type: none"> Insufficient data to assess at this time 	<ul style="list-style-type: none"> Insufficient data to assess at this time Parties misaligned on the objective

CONOPS = conduct of operations. ISMS = Integrated Safety Management System. PAAA = Price-Anderson Amendment Act.
 EOC = extent of condition. NOV = notice of violation.