

**AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT**

1. CONTRACT ID CODE \_\_\_\_\_ PAGE **1** OF **3** PAGES

2. AMENDMENT/MODIFICATION NO. **350** 3. EFFECTIVE DATE (M/D/Y) **See Block 16C** 4. REQUISITION/PURCHASE REQ. NO. \_\_\_\_\_ 5. PROJECT NO. (If applicable) \_\_\_\_\_

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

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)**

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

15A. NAME AND TITLE OF SIGNER (Type or print) **Margaret G. McCullough**  
**Project Director**

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) **Ronnie L. Dawson**  
**Contracting Officer**

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

15C. DATE SIGNED **6/4/2015**

16B. UNITED STATES OF AMERICA BY **Ronnie L. Dawson**  
 (Signature of Contracting Officer)

16C. DATE SIGNED **6/11/15**

**1. Purpose of Modification:**

The purpose of this modification is to make the following changes pursuant to FAR 52.243-2, Changes – Cost Reimbursement (AUG 1987) – Alternate III (APR 1984) as a result of the Agreement in Principle signed on April 28, 2015 in response to Contract Modification Proposal 2014-002, Direct Feed Low-Activity Waste (DFLAW) Design, 24590-WTP-CCP-MGT-14-002, Rev. 1. This modification is the definitization of the following change orders and the prospectively priced change for DFLAW design that form the Contract Modification Proposal: Change Order 329 for the design of the Balance of Facilities Modifications to support DFLAW; Change Order 330 for the design of the Balance of Facilities Effluent Management Facility to support DFLAW; Change Order 339 for the design of Balance of Facilities Underground and Site-Wide Modifications to support DFLAW and the prospectively priced change for the Balance of DFLAW Design.

**2. Description of Modification:** The following changes are hereby incorporated into the Contract:

- a. Contract Section B, SUPPLIES OR SERVICES AND PRICES/COSTS, is hereby replaced in its entirety by the attached Section B.
- b. Contract Section C, STATEMENT OF WORK, is hereby replaced in its entirety by the attached Section C.
- c. Contract Section H, SPECIAL CONTRACT REQUIREMENTS is hereby modified to add clause H.53 DFLAW DESIGN COMPLETION (SUB-CLIN 2.1).
- d. Contract Section J, LIST OF ATTACHMENTS, is hereby modified to add Attachment Q, DFLAW Design Completion and Interim Milestone Completion Definitions.

**3. Contractor's Statement of Release:** In consideration of the modifications agreed to herein as complete equitable adjustments for the Contractor's "Direct Feed LAW Design" contract modification proposal dated June 30, 2014, and the "Direct Feed LAW Design" contract modification proposal changes dated September 30, 2014, the Contractor hereby releases the Government from any and all liability under this contract for further equitable adjustments attributable to such facts or circumstances giving rise to the "proposal for adjustment" (except for N/A).

**4. All other terms and conditions remain unchanged.**

**Attachments:**

1. Contract Section B, SUPPLIES OR SERVICES AND PRICES/COSTS.
2. Contract Section C, STATEMENT OF WORK as modified

3. Contract Section H, Clause H.53 DFLAW DESIGN COMPLETION (SUB-CLIN 2.1).
4. Contract Section J, LIST OF ATTACHMENTS, Attachment Q, DFLAW Design Completion and Interim Milestone Completion Definitions

**(End of Modification)**

**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 – ITEMS BEING ACQUIRED**

This is a Cost-Plus Award-Fee Contract, with award and multiple fee incentives. The various incentive fee types are described in Clause B.4 *Incentive Fee Structure*. **(A143)**

**B.2 ITEM(S) BEING ACQUIRED (350)**

(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 Facility (PT), High-Level Waste Facility (HLW), Low-Activity Waste Facility (LAW), Analytical Laboratory (LAB) and Balance of Facilities (BOF).

(b) For purposes of cost collection, reporting, work authorization, and administration of the Contract fee structure for DFLAW, as of Modification **350** the parties have agreed to establish CLIN 2.1, Direct Feed Low-Activity Waste Facility (DFLAW) design.

(1) CLIN 2 – DFLAW facility modifications: **(350)**

(i) Sub-CLIN 2.1: DFLAW Design

**B.3 OBLIGATION AND AVAILABILITY OF FUNDS AND CONTRACT VALUE**

(a) Subject to the Section I Clause entitled, *Limitation of Funds*, the amount presently obligated under the 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 the contract. The following table establishes controls on the costs to be incurred and encumbrances to be made in the performance of the contract work. **(A058) (A153) (A168) (350)**

<b>BUDGETARY CONTROL POINTS FOR WTP PROJECT</b>			
<b>Description</b>	<b>Appropriation Symbol</b>	<b>B&amp;R No. (Control Point)</b>	<b>Budget Authority</b>
	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	\$1,094,828,797.50 <b>\$1,010,828,797.50 (350)</b>
<b>DFLAW (350)</b>	<b>1250 and 1260</b>	<b>1111241</b>	<b>\$84,000,000.00</b>
LAB	1250 and 1260	1111242	\$304,281,252.11
BOF	1250 and 1260	1111243	\$334,042,054.21
HLW	1250 and 1260	1111244	\$937,468,676.81
PT	1250 and 1260	1111245	\$1,347,346,842.27
Subtotal - Budgetary Controls Points for WTP Project thru Contract Modification 347			<b>\$9,531,597,266.24</b>
<b>BUDGETARY CONTROL POINTS FOR PROGRAM DIRECTION</b>			
<b>Description</b>	<b>Appropriation Symbol</b>	<b>B&amp;R No. (Control Point)</b>	<b>Budget Authority</b>
PD	1250	1110462	\$1,280,000.00
PD	1250	1110458	\$1,250,000.00
Subtotal - Budgetary Controls Points, including Project Direction, thru Contract Modification 347			<b>\$9,534,127,266.24</b>
<b>INTER-ENTITY WORK ORDER FUNDING</b>			
<b>IEWO Identification Numbers</b>		<b>IEWO Amendment No.</b>	<b>Funding</b>
M0SRLE60 Funding (SRNS/SRNL)		40	\$73,957,217.82
M0SRV00028 Funding (SRNS)		40	\$6,701,536.09
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)		4	\$2,367,760.00
M0FTV00117 Funding (NETL)		1	\$150,000.00
Total - IEWO Funding 347			<b>\$83,580,769.54</b>
<b>Total Budgetary Control Points for WTP Project 347</b>			<b>\$9,617,708,035.78</b>

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.

The Government owns the IEWO process; therefore, all funding under these IEWOs is approved by the Office of River Protection 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.

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

<b>Cost:</b>				
A	Total Estimated Contract Cost (TECC) through Mod 349			\$10,805,496,289
B	Total Estimated Contract Cost <b>(350)</b>			
	B.1	CLIN 2: DFLAW Facility Modifications <b>(350)</b>	TBD	
		SUB-CLIN 2.1: DFLAW Design (Target Cost)	\$75,000,000	\$42,568,556 *
			<b>Total Estimated Contract Cost (TECC) (349)(350)</b>	
		<b>Revised Total Estimated Contract Cost through Mod 350</b>		<b>\$10,848,064,845</b>
<b>Fee:</b>				
A	Final Fee Determination – Pre-Mod No. A143			\$102,622,325
B	Maximum Available Award Fee (See Table B-2-B-1)			\$109,966,215
	B.1	Project Management Incentive	\$66,545,997	
	B.2	Cost Incentive	\$38,022,560	
	B.3	REA Settlement	\$5,397,658	
C	Schedule Incentive Fee			\$227,000,000
	C.1	Activity Milestone Completion	\$173,000,000	
	C.2	Facility Milestone Completion	\$54,000,000	
D	Operational Incentive Fee			\$91,000,000
	D.1	Cold Commissioning	\$45,000,000	
	D.2	Hot Commissioning	\$46,000,000	
E	Enhancement Incentive Fee			\$60,000,000
	E.1	Enhanced Plant Capacity	\$15,000,000	
	E.2	Sodium Reduction	\$15,000,000	
	E.3	Enhanced Plant Turnover	\$15,000,000	
	E.4	Sustained Production Achievement	\$15,000,000	
F	Performance-Based Incentive for DFLAW Design Completion <b>(350)</b>			\$9,000,000
	<b>Total Maximum Available Fee (346) (350)</b>			<b>\$599,588,540</b>

			<b>Total Estimated Contract Price (TECP) (349) (350)</b>		
					<b>\$11,447,653,385</b>

\* Sub-CLIN 2.1 DFLAW (Target Cost) amount decreased by total amount of Change Orders 329, 330 & 339 (\$32,431,444) definitized in Modification 350. \$75,000,000 - \$32,431,444 = \$42,568,556.

**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 the 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 the Contract requirements.

The Contract has ~~five~~ **six (350)** incentive fee elements:

- Incentive Fee A – Final Fee Determination for Work Prior to Modification No. A143
- Incentive Fee B – Maximum Available Award Fee
- Incentive Fee C – Schedule Incentive Fee
- Incentive Fee D – Operational Incentive Fee
- Incentive Fee E – Enhancement Incentive Fee
- **Incentive Fee F – DFLAW Design (350)**

**WTP Incentive Fee Structure**

No.	Title	Fee Type	Performance Measure(s)	Fee Administration Terms and Conditions Reference
<b>A</b>	<b>Final Fee Determination for Work Prior to Mod. No. A143</b>	Fixed	Determined by Contracting Officer	Section B.6, Attachment B-2-A
<b>B</b>	<b>Award Fee:</b>			
B.1	Award Fee - Project Mgmt Incentive	Award	Performance Measures in PEMP	Section B.7, Atch B-2-B & PEMP
B.2	Award Fee - Cost Incentive	Award	Performance Measures in PEMP	Section B.7, Atch B-2-B & PEMP
B.3	Award Fee - REA Settlement	Award	Completion of Specified Milestones	Section B.6, Atch B-2-C & PEMP
<b>C</b>	<b>Schedule Incentive Fee:</b>			
C.1	Activity Milestone Completion	PBI	Completion of Specified Milestones	Section B.6, Atch B-2-C & PEMP
C.2	Facility Milestone Completion	PBI	Completion of Specified Milestones	Section B.6, Atch B-2-C & PEMP
<b>D</b>	<b>Operational Incentive Fee:</b>			
D.1	Cold Commissioning	PBI	Capacity	Section B.6; Atch B-2-D; Section C, Standard 5, Table C.6-5.1
D.2	Hot Commissioning	PBI	Capacity	Section B.6, Atch B-2-D; Section C, Standard 5, Table C.6-5.2
<b>E</b>	<b>Enhancement Incentive Fee:</b>			
E.1	Enhanced Plant Capacity	PBI	Plant Capacity Exceeding Treatment Capacity	Section B.6, Atch B-2-E
E.2	Sodium Reduction	PBI	Metric Tons Sodium Reduced	Section B.6, Atch B-2-E
E.3	Enhanced Plant Turnover	PBI	Reduced Plant Turnover Period	Section B.6, Atch B-2-E
E.4	Sustained Production Achievement	PBI	Post-Turnover Operations Capacity	Section B.6, Atch B-2-E
<b>F</b>	<b>DFLAW Design Completion (XXX)</b>	<b>PBI</b>	<b>Completion of Specified Milestones</b>	<b>Section B.12, Atch B-2-F</b>

These incentive fee elements are discussed in summary form below, with specific implementing details in Attachment B-2, *INCENTIVE FEE DETAILS*. Each fee incentive element is calculated independently of the others.

- (a) A – Final Fee Determination for Work Prior to Modification No. A143: The final fee determination for all performance prior to Modification No. A143 is \$102,622,325. This is composed of \$54,500,000 of previously paid fee for schedule milestones, and \$48,122,325 (M147) of previously paid provisional fee (which is considered earned).
- (b) B – Maximum Available Award Fee: Beginning in calendar year (CY) 2009, and through the award fee periods specified in Attachment B-2-B, award fee may be earned by achieving performance objectives set forth in the WTP Performance Evaluation and Measurement Plan (PEMP) and specific Contract terms in Attachment B-2-B. See Contract Section B.7 for award fee administration requirements under the Contract.
- (c) C – Schedule Incentive Fee: The Schedule Incentive Fee consists of two elements:
  - (1) Activity Milestone Completion incentives are earned and payable upon the Contracting Officer's determination of the Contractor's completion of each milestone (listed in Attachment B-2-C) in accordance with the criteria set forth in Section J, Attachment P of the contract. **(230)** The dates are considered as targets.
  - (2) Facility Milestone Completion incentives are earned and payable upon the Contracting Officer's determination of the Contractor's completion in accordance with the criteria set forth in Section C and/or the PEMP, as applicable. Facility Milestone Completion Incentive fees require meeting the specific dates listed in Attachment B-2-C. Fee reductions for late delivery are documented in Attachment B-2-C.

The "Complete Hot Commissioning" Facility Milestone Completion incentive is earned and payable upon the Contracting Officer's determination of the Contractor's meeting or exceeding the minimum throughput requirement (i.e., 60% of design capacity). Capacity testing incentives are included in Operational Incentive Fee Attachment B-2-D.

All Schedule Incentive Fees are earned and payable upon the Contracting Officer's determination of the Contractor's completion of each milestone. Each milestone represents and measures progress towards achieving the Contract requirements and do not represent payment for the specific named milestone itself.

- (d) D – Operational Incentive Fee: Operational Incentive Fee is earned (in specified amounts) and payable upon the Contracting Officer's determination of the Contractor's achievement of prescribed performance testing rates for commissioning as described below and in Attachment B-2-D and applicable portions of Section C.6, *Standard 5 Commissioning*: (e) *Cold Commissioning*, (3) *Testing*, (ii) *Cold Commissioning Capacity Tests*; and (g) *Hot Commissioning*, (4) & (5) *Hot Commissioning Capacity Tests*. Achievement of each milestone is independently measured and earned.
  - (1) Cold Commissioning:  
Operational Incentive Fee in the amount specified in Attachment B-2-D is earned for meeting the Capacity performance testing rates specified in Section C.6, Standard 5, and Table C.6-5.1, *Cold Commissioning Capacity Testing Criteria*, for all Facilities.

(2) Hot Commissioning:

Operational Incentive Fee in the amount specified in Attachment B-2-D is earned for meeting the Capacity performance testing rates specified in Section C.6, Standard 5, Table C.6-5.2, *Hot Commissioning Capacity Testing Criteria*.

A portion of the unearned Operational Incentive Fee from Cold Commissioning may be earned during Hot Commissioning under conditions specified in Attachment B-2-D.

- (e) E – Enhancement Incentive Fee: Enhancement Incentive Fee contains four fee elements designed to reduce life-cycle operating costs of the WTP: (i) Enhanced Plant Capacity; (ii) Sodium Reduction; (iii) Enhanced Plant Turnover; and (iv) Sustained Production Achievement. Details for these sub-elements are provided in Attachment B-2-E. Enhanced Incentive Fee is earned and payable upon the Contracting Officer's determination of the Contractor's achievement of prescribed requirements.
- (f) F - DFLAW Design Incentive Fee (CLIN 2.1): CLIN 2.1 includes two separate interim milestone completion incentives and a cost/schedule incentive for completion of CLIN 2.1. Interim milestone completion incentives are earned and payable upon the Contracting Officer's determination of the Contractor's achievement of the prescribed requirements. The cost and schedule incentive fee is earned and payable upon the Contracting Officer's determination of the Contractor's completion activities in accordance with the criteria set forth in Section J, Attachment Q of the contract. (350)

**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 entitled, *Changes – Cost Reimbursement - Alternate III*, and as expressly provided in other Contract provisions.
- (b) For purposes of Contractor planning, Section J, Attachment I, *Funding Profile* sets forth a funding profile with an assumption that for each fiscal year, at least 25% will be made available by October 31, 50% by January 31, 75% by April 30, and the remainder by July 31. The clause places no obligation on DOE to request funding in accordance with the profile. To the extent that DOE obligates funds to this Contract on a schedule consistent with this funding profile, availability of funds shall not be a basis for equitable adjustment to any of the performance incentive fees described in Section B.

**B.7 INCENTIVE FEE ADMINISTRATION**

The Contractor will notify the Contracting Officer (CO) when the Contractor believes an incentive fee activity, milestone and/or performance measure has been met. The CO will: 1) make a determination whether the requirements of the Contract have been met, 2) make a determination of whether fee is earned, and 3) notify the Contractor of these determinations within thirty (30) calendar days (or such other time period as mutually agreed to between the CO and the Contractor) after receipt by the CO of the Contractor's notification. If the CO determines fee has been earned, then the Contractor can invoice for the fee as outlined in the CO determination on the next available invoice.

## B.8 AWARD FEE ADMINISTRATION

(a) Definitions:

“Award Fee Evaluation Period” – The six (6)-month evaluation periods from January 1 through June 30 (Period 20XX-A), and July 1 through December 31 (Period 20XX-B). 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 is available for meeting a combination of objective performance requirements and subjective performance requirements for each award fee component: Project Management Incentive and Cost Incentive. The Award Fee Evaluation Period for the Project Management Incentive and Cost Incentive will be every six (6) months of each calendar year (CY) starting in CY 2009, **and ending on December 31, 2014**. However, the first award fee period will only be five (5) months, February 1, 2009 through June 30, 2009. Beginning January 1, 2015, the Award Fee Evaluation Period for the Project Management Incentive and Cost Incentive will be every twelve (12) months of each calendar year, ending after CY 2019.

(c) Fee Negotiations: 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 Available Award Fee Amount Earned:

(1) The Government shall, at the conclusion of each specified evaluation period, 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 Incentive and Cost 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 attached to this section and set forth in the PEMP. The Contractor shall be promptly advised in writing of the fee determination, and the basis of the fee determination.

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

ten (10) calendar days, payment will incur a day-for-day delay. When submitting a voucher for payment of the annual award fee earned (effective with the 2015 PEMP), the Contractor shall first deduct the amount of provisional fee previously paid by the Government for the twelve-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 entitled, *FAR 52.232-17, Interest*.

- (f) Contractor Self-assessment: Following each evaluation period, the Contractor may submit a self-assessment, provided such assessment is submitted within ten (10) calendar days after the end of the period. This self-assessment shall address both the strengths and weaknesses of the Contractor's performance during the evaluation period. Where deficiencies in performance are noted, the Contractor shall describe the actions planned or taken to correct such deficiencies and avoid their recurrence. The Contracting Officer will review the Contractor's self-assessment, if submitted, as part of its independent evaluation of the Contractor's management during the period.
- (g) Provisional Payment of Fee:
- (1) Notwithstanding any other term or condition of this contract to the contrary, this clause applies to and has precedence over all other terms and conditions of the contract that provide for provisional payment of fee.
  - (2) The Contractor must notify the Contracting Officer immediately if it believes any incongruence exists between this clause and any other term or condition of this contract that provides for provisional payment of fee. If a term or condition of this contract provides for provisional payment of fee but fails to include all of the requirements of the clause, that term or condition will be considered to include the omitted requirements.
  - (3) This clause conforms to the Federal Acquisition Regulation and Department of Energy fee policy and constructs. The following definitions and concepts apply.
    - (i) *Price* means cost plus any fee or profit applicable to the contract.
    - (ii) The terms *profit* and *fee* are synonymous.
    - (iii) *Incentive* means a term or condition whose purpose is to motivate the Contractor to provide supplies or services at lower costs, and in certain instances with improved delivery or technical performance, by relating the amount of profit or fee earned to the Contractor's performance.
    - (iv) *Earned fee* for an incentive means fee due the Contractor by virtue of its meeting the contract's requirements entitling it to fee. Earned fee does not occur until the Contractor has met all conditions stated in the contract for earning fee.
    - (v) *Available fee* for an incentive means the fee the Contractor might earn but has not yet earned.
    - (vi) *Provisional payment of fee* for an incentive means the Government's paying available fee for an incentive to the Contractor for making progress towards meeting the performance measures for the incentive before the Contractor has earned the available fee.

(vii) Provisional payment of fee has no implications for the Government's eventual determination that the Contractor has or has not earned the associated available fee. Provisional payment of fee is a separate and distinct concept from earned fee. The Contractor could, for example, receive 100% 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 0% 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 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; 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 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 \$525,000 per month (calculated as one-twelfth of 50 percent of the \$12,600,000 maximum annual available PEMP fee). However, the Contracting Officer may reduce the amount in accordance with Section B, Clause B.7 (g) *Provisional Payment of Fee*.

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

In order for the Contractor to be eligible to earn all otherwise available fee under the 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 the 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 entitled, *Integration of Environment, Safety and Health into Work Planning and Execution*. The minimal performance requirements will be set forth in the approved ISMS description document, or similar document. If the Contractor fails to obtain approval of the ISMS or fails to achieve the minimum performance requirements of the System, the FDO, at his/her sole discretion, may reduce the total earned award fee payment for B.1 Project Management Incentive and B.2 Cost Incentive 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 (such as, 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 B.1 Project Management Incentive and B.2 Cost Incentive during the six (6)-month 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 RESERVED**

## **B.11 FEE RISK ALLOCATION**

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

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

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

(b) Waste Delivery:

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

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

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

(d) Regulatory Actions:

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

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

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

The Contractor will not request, seek or claim entitlement to any fee for the first \$350,000,000 of reasonable, allocable and allowable costs for the items identified in paragraph (c) of the Statement of Waiver and Release of Claims contained in Modification A143. The Contracting Officer will determine those reasonable, allocable and allowable costs pursuant to the applicable terms of the contract.

(f) 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(i). This credit shall be determined upon submission of inventory schedules to the Contracting Officer. The intent of this 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.

(g) 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. (a)(3), which arise out of solicitation defects, specification defects, Conceptual Design defects, or deficient historical pricing or cost estimate information in any form.

**B.12 ATTACHMENTS**

ATTACHMENT B-1 – INCENTIVE FEE SUMMARY TABLE

ATTACHMENT B-2 – INCENTIVE FEE DETAILS

ATTACHMENT B-2-A – INCENTIVE FEE A – Final Fee Determination for Work Prior to Modification No. A143.

ATTACHMENT B-2-B – INCENTIVE FEE B – Maximum Available Award Fee

ATTACHMENT B-2-C – INCENTIVE FEE C – Schedule Incentive Fee

ATTACHMENT B-2-D – INCENTIVE FEE D – Operational Incentive Fee

ATTACHMENT B-2-E – INCENTIVE FEE E – Enhancement Incentive Fee

**ATTACHMENT B-2-F – INCENTIVE FEE F – DFLAW Design Incentive Fee (350)**

ATTACHMENT B-3 – REA SETTLEMENT FEE

ATTACHMENT B-3-A – FIXED FEE

ATTACHMENT B-3-B – INCENTIVE FEE

**ATTACHMENT B-1 INCENTIVE FEE SUMMARY TABLE**

<b>Table B-1 - WTP Incentive Fee Structure</b>			
	<b>Description</b>	<b>Reference</b>	<b>Amount</b>
<b>A</b>	<b>Final Fee Determination Prior to Modification No. A143</b>	<b>Attachment B-2-A</b>	<b><u>\$102,622,325</u></b>
<b>B</b>	<b>Maximum Available Award Fee:</b>		
<b>B.1</b>	Project Management Incentive	Attachment B-2-B	\$66,545,997
<b>B.2</b>	Cost Incentive	Attachment B-2-B	\$38,022,560
	*See Table B-2-B-1		
<b>B.3</b>	REA Settlement Fee	Attachment B-3	\$5,397,658
	<b>Total Award Fee:</b>		<b><u>\$109,966,215</u></b>
<b>C</b>	<b>Schedule Incentive Fee:</b>		
<b>C.1.X</b>	Activity Milestone Completion	Attachment B-2-C	\$173,000,000
<b>C.2</b>	Facility Milestones Completion		
<b>C.2.1</b>	LAB Construction Substantially Complete	Attachment B-2-C	\$4,000,000
<b>C.2.2</b>	LAW Construction Substantially Complete	Attachment B-2-C	\$4,000,000
<b>C.2.3</b>	LBL Start Cold Commissioning (SCC)	Attachment B-2-C	\$4,000,000
<b>C.2.4</b>	LBL Complete Hot Commissioning (CHC)	Attachment B-2-C	\$4,000,000
<b>C.2.5</b>	HLW Start Cold Commissioning	Attachment B-2-C	\$9,500,000
<b>C.2.6</b>	PT Start Cold Commissioning	Attachment B-2-C	\$9,500,000
<b>C.2.7</b>	HLW Complete Hot Commissioning	Attachment B-2-C	\$9,500,000
<b>C.2.8</b>	PT Complete Hot Commissioning	Attachment B-2-C	\$9,500,000
	Total – Facility Schedule Incentive		<u>\$54,000,000</u>
	<b>Total Schedule Incentive Fee</b>		<b><u>\$227,000,000</u></b>
<b>D</b>	<b>Operational Incentive Fee:</b>		
<b>D.1</b>	Cold Commissioning:		
<b>D.1.1</b>	PT High Level Waste	Attachment B-2-D	\$10,000,000
<b>D.1.2</b>	PT Low Level Waste	Attachment B-2-D	\$10,000,000
<b>D.1.3</b>	HLW Vitrification	Attachment B-2-D	\$13,000,000
<b>D.1.4</b>	LAW Vitrification	Attachment B-2-D	\$12,000,000
	Subtotal – Cold Commissioning		<u>\$45,000,000</u>
<b>D.2</b>	Hot Commissioning:		
<b>D.2.1</b>	PT High Level Waste	Attachment B-2-D	\$10,000,000
<b>D.2.2</b>	PT Low Level Waste	Attachment B-2-D	\$10,000,000
<b>D.2.3</b>	HLW Vitrification	Attachment B-2-D	\$13,000,000
<b>D.2.4</b>	LAW Vitrification	Attachment B-2-D	\$13,000,000
	Subtotal – Hot Commissioning		<u>\$46,000,000</u>
	<b>Total Operational Incentive Fee</b>		<b><u>\$91,000,000</u></b>
<b>E</b>	<b>Enhancement Incentive Fee:</b>		
<b>E.1</b>	Enhanced Plant Capacity	Attachment B-2-D	\$15,000,000
<b>E.2</b>	Sodium Reduction	Attachment B-2-D	\$15,000,000
<b>E.3</b>	Enhanced Plant Turnover	Attachment B-2-D	\$15,000,000
<b>E.4</b>	Sustained Production Achievement	Attachment B-2-D	\$15,000,000
	<b>Total Enhancement Incentive Fee</b>		<b><u>\$60,000,000</u></b>
<b>F</b>	<b>DFLAW Design Completion Incentive Fee (350)</b>	<b>Attachment B-2-F</b>	<b><u>\$9,000,000</u></b>
	<b>TOTAL MAXIMUM AVAILABLE FEE (A+B+C+D+E+F) (350)</b>		<b><u>\$599,588,540</u></b>

\*Reflects Unearnable Award Fee

## **ATTACHMENT B-2 INCENTIVE FEE DETAILS**

The administrative details of each fee incentive are shown in each attachment listed below:

ATTACHMENT B-2-A – INCENTIVE FEE A – Final Fee Determination for Work Prior to Modification No. A143

ATTACHMENT B-2-B –1 INCENTIVE FEE B – Maximum Available Award Fee

ATTACHMENT B-2-B-2 – INCENTIVE FEE B – Performance Evaluation and Measurement Plan (PEMP)

ATTACHMENT B-2-C – INCENTIVE FEE C – Schedule Incentive Fee

ATTACHMENT B-2-D – INCENTIVE FEE D – Operational Incentive Fee

ATTACHMENT B-2-E – INCENTIVE FEE E – Enhancement Incentive Fee

**ATTACHMENT B-2-F – INCENTIVE FEE F – DFLAW Design Completion Incentive Fee (350)**

**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 following significant construction milestones.

Construction Milestones	Fee (\$)
<b>Low-Activity Waste Facility</b>	
<b>Completion of Facility Superstructure – March 2007</b> <u>Description:</u> Completed installation of structural steel frame, roofing and siding (dried-in).	<b>\$25,600,000</b>
<b>Completion of Process Vessel Installation – December 2006</b> <u>Description:</u> Fourteen process vessels installed and accepted in the wet process cell.	<b>\$3,200,000</b>
<b>Completion of Canister Handling System – March 2008</b> <u>Description:</u> Completed canister handling system in the melter pour caves including turntables, canister elevator, receipt conveyor, bogies and monorails.	<b>\$2,200,000</b>
<b>Analytical Laboratory</b>	
<b>Completion of Facility Superstructure – April 2008</b> <u>Description:</u> Completed installation of structural steel frame, roofing and siding.	<b>\$10,700,000</b>
<b>Completion of Installation of Hotcell Structures – February 2008</b> <u>Description:</u> Completion on physical hotcell structure, shield window frames, monorail, and coatings.	<b>\$2,300,000</b>
<b>Balance of Facilities</b>	
<b>Construction Complete on Steam Plant – September 2007</b> <u>Description:</u> Completed construction and ready for system checks	<b>\$1,400,000</b>
<b>Construction Complete on Cooling Tower Facilities – March 2007</b> <u>Description:</u> Completed construction and ready for system checks	<b>\$1,100,000</b>
<b>Construction Completions on Chiller Compressor Building and Systems – March 2008</b> <u>Description:</u> Completed building structure, support frames, major equipment installation and process piping installation.	<b>\$1,622,325 (M147)</b>

**ATTACHMENT B-2-B – INCENTIVE FEE B – MAXIMUM AVAILABLE AWARD FEE**

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

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	Unearnable
2009	2009-A	\$2,188,838	\$1,584,719	\$4,500,000	\$2,925,000	\$6,688,838	\$4,509,719	\$2,179,119
	2009-B	\$2,188,837	\$1,349,418	\$4,500,000	\$2,250,000	\$6,688,837	\$3,599,418	\$3,089,419
2010	2010-A	\$2,000,000	\$1,379,000	\$4,300,000	\$2,580,000	\$6,300,000	\$3,959,000	\$2,341,000
	2010-B	\$2,000,000	\$1,521,600	\$4,300,000	\$2,623,000	\$6,300,000	\$4,144,600	\$2,155,400
2011	2011-A	\$2,000,000	\$1,348,000	\$4,300,000	\$2,795,000	\$6,300,000	\$4,143,000	\$2,157,000
	2011-B	\$2,000,000	\$1,426,000	\$4,300,000	\$2,451,000	\$6,300,000	\$3,877,000	\$2,423,000
2012	2012-A	\$3,150,000	\$1,571,850	\$3,150,000	\$1,549,800	\$6,300,000	\$3,121,650	\$3,178,350
	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	\$3,175,830
	2013-B	\$5,300,000*	\$2,745,000	\$1,000,000*	\$280,000	\$6,300,000	\$3,025,000	\$3,275,000
2014	2014-A	\$5,300,000*	\$3,580,000	\$1,000,000*	\$390,000	\$6,300,000	\$3,970,000	\$2,330,000
	2014-B	\$3,780,000 **	\$2,671,200	\$2,520,000 **	\$1,423,800	\$6,300,000	\$4,095,000	\$2,205,000
2015	2015	\$9,100,000***	TBD	\$3,500,000***	TBD	\$12,600,000	TBD	
2016	2016	\$9,100,000	TBD	\$3,550,000	TBD	\$12,600,000	TBD	
2017	2017	\$9,100,000	TBD	\$3,500,000	TBD	\$12,600,000	TBD	
2018	2018	\$9,100,000	TBD	\$3,500,000	TBD	\$12,600,000	TBD	
2019	2019	\$9,100,000	TBD	\$3,500,000	TBD	\$12,600,000	TBD	
<b>Totals</b>		<b>\$79,187,675</b>	<b>\$21,045,997</b>	<b>\$53,890,000</b>	<b>\$20,522,560</b>	<b>\$133,077,675</b>	<b>\$41,568,557</b>	<b>\$28,509,118</b>

\*For the 2013-B and 2014-A PEMP award fee periods, the available award fee allocated to Award Fee Objectives 1, 2, and 3 is considered B.1 Award Fee – Project Management Incentive; and the available award fee allocated to Award Fee Objective 4 is considered B.2 Award Fee – Cost Incentive.

\*\*For the 2014-B PEMP award fee period, the available award fee allocated to Award Fee Objectives 1, 2, and 3 is considered B.1 Award Fee – Project Management Incentive; and the available award fee allocated to Award Fee Objectives 4 and 5 is considered B.2 Award Fee – Cost Incentive. (331)

\*\*\*For the 2015 PEMP award fee period, the available award fee allocated to Award Fee Objectives 2, 3, 4, 5, and 6 is considered B.1 Award Fee – Project Management Incentive; and the available award fee allocated to Award Fee Objective 1 is considered B.2 Award Fee – Cost Incentive. (346)

**B.1 PROJECT MANAGEMENT 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 semi-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, etc.

**B.2 COST INCENTIVE**

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 EVMS 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.

**ATTACHMENT B-2-B-2 – INCENTIVE FEE B – PERFORMANCE EVALUATION AND MEASUREMENT PLAN (PEMP) (M171) (346)**

The following PEMPs are incorporated by reference:

**Table B-2-B-2. PEMP**

<b>Calendar Year (CY)</b>	<b>Award Fee Period</b>	<b>PEMP Revision</b>	<b>Effective Date</b>
2009	2009-A	Rev. 0	February 1, 2009
	2009-B	Rev. 0	July 1, 2009
2010	2010-A	Rev. 0	January 1, 2010
	2010-A	Rev. 1	April 19, 2010
	2010-B	Rev. 0	July 1, 2010
2011	2011-A	Rev. 0	January 1, 2011
	2011-B	Rev. 0	July 1, 2011
2012	2012-A	Rev. 0	January 1, 2012
	2012-A	Rev. 1	January 31, 2012
	2012-A	Rev. 2	April 15, 2012
	2012-B	Rev. 0	July 1, 2012
2013	2013-A	Rev. 0	January 1, 2013
	2013-B	Rev. 0	July 1, 2013
2014	2014-A	Rev. 0	January 1, 2014
	2014-B	Rev. 0	July 1, 2014
2015	2015	Rev. 0	January 1, 2015
2016	2016		

2017	2017		
2018	2018		
2019	2019		

**ATTACHMENT B-2-C – INCENTIVE FEE C – SCHEDULE INCENTIVE FEE**

All Schedule Incentive Fees are milestones that represent and measure progress toward achieving the Contract as set forth in Section J, Attachment P of the contract and do not represent payment for the specific named milestone itself. Schedule Incentive Fee Definitions are set forth in Section J, Attachment P of the contract (216).

**ATTACHMENT B-3 –REA SETTLEMENT FEE**

The following Table reflects settlement of fee-bearing Requests for Equitable Adjustment (REA).

**Table B-3-A. Fixed Fee**

REA Number	REA Title	Contract Modification #	Fee Amount
2010-011	E-Verify	200	\$9,661
2010-015	LBL 2015	203	\$44,979
2010-016	Environmental Management System (Executive Orders 13423 and 13514; DOE Orders 430.2B and 450.1A)	251	\$30,606
2011-004	LSIT Phase 1	299	\$183,750
		<b>Total</b>	<b>\$268,996</b>

For REA settlements in which costs have been fully incurred, BNI is authorized to invoice for the entire fee amount upon receipt of a fully executed contract modification.

**Table B-3-B. Incentive Fee**

REA Number	REA Title	Contract Modification #	Designation	Fee Amount	Completion Date
2011-003	Sequential ORR Implementation	282	TBD Per Modification 282 Instructions	2,162,953	TBD Per Modification 282 Instructions
2010-021	Cesium Nitric Acid Recovery Process (CNP) / Cesium Ion Exchange	289	TBD Per Modification 289 Instructions	\$532,842	TBD Per Modification 289 Instructions

	Process System (CXP) Design, Revision 2				
2011-001	Cesium Nitric Acid Recovery Process (CNP) / Cesium Ion Exchange Process System (CXP) Capital Implementation	317	TBD Per Modification 317 Instructions	\$2,432,867	TBD Per Modification 317 Instructions
			<b>Total</b>	<b>\$5,128,662</b>	

For REAs in which costs have not been fully incurred at the time of settlement, BNI is authorized to invoice for the incentive fee as specified in the applicable contract modification.

**C.1 ACTIVITY MILESTONE COMPLETION**

The following Activity Milestones are earned and payable upon successful completion. Schedule Dates shown below are only target dates and are based upon Late Finish schedule dates for each activity. These Milestones are not time-dependent. The fee will be earned and payable when the Contracting Officer determines the milestone has been completed in accordance with the Activity Milestone Definition Sheets set forth in Section J, Attachment P of the contract (216). These sheets contain: Milestone Definitions, Inclusions, Exclusions, Key Predecessor Activities, and Objective Evidence of Milestone Completion.

**INCENTIVE C.1 - ACTIVITY MILESTONE COMPLETION INCENTIVE FEE**

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
LAW-02	1GL36P1027	Plant Equip	CATOX LVP-SKID-0002 Received +Ready to Install	10/06/10	2010	\$ 4,428,000
HLW-04	1GH36P1044	Plant Equip	Receive and Accept Plant Wash Vessel: RLD-VSL-8	02/16/11	2011	\$ 2,500,000
HLW-03	1GHZZE1043	Engineering	Civil Engineering Design Complete (Title II)	02/23/11	2011	\$ 2,500,000
BOF-01	1GB47P1040	Plant Equip	Receive Anhydrous Ammonia System	02/25/11	2011	\$ 2,500,000
PTF-04	1GP30CFM04	Construction	Set Hot Cell Frames for Areas 1, 24, and 25	07/19/11	2011	\$ 2,500,000
HLW-09	1GH27C1249	Construction	Set HEPA Filter Housing Installation at EL 14 Ft	08/31/11	2011	\$ 2,500,000
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
HLW-10	1GH36C1250	Construction	Set Offgas Cat Oxidizers: HOP-SCO-1 and 4 (216)	12/07/11	2011	\$ 2,500,000
PTF-09	1GP31CFM09	Construction	Set PT Vessel FEP-SEP-00001A/1B in Planning Area 02	01/10/12	2012	\$ 2,858,000
PTF-05	1GPZZCFM05	Engineering	C&I Design Complete	03/14/12	2012	\$ 2,858,000
BOF-03	1GB5JC1046	Construction	Complete Chiller Compressor Plant Construction	03/22/12	2012	\$ 2,858,000
HLW-06	1GH47C1146	Construction	Set Offgas Carbon Adsorber	05/31/12	2012	\$ 2,858,000
PTF-08	1GP30CFM08	Construction	Set Remaining Pretreatment Vessel at EL 0 Ft	08/27/12	2012	\$ 2,858,000
PTF-07	1GPZZCFM07	Engineering	Electrical Design Complete	09/04/12	2012	\$ 2,858,000
HLW-11	1GH27C1351	Construction	Installation of HVAC Duct at EL 0 Ft Corridors	11/15/12	2012	\$ 2,858,000
					<b>SUBTOTAL</b>	<b>\$ 102,002,000</b>

**INCENTIVE C.1 - ACTIVITY MILESTONE COMPLETION INCENTIVE FEE (cont.)**

Facility	Milestone Designation	Function	Description	Date	CY	Fee Amount
			<b>SUBTOTAL (from prior page)</b>			<b>\$ 102,002,000</b>
BOF-06	1GB12C1253	Construction	Complete Emergency Diesel Generator Base Slab	03/14/13	2013	\$ 2,500,000
PTF-10	1GP12CFM10	Construction	Complete Concrete Slabs at EL 56 Ft	03/19/13	2013	\$ 2,500,000
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
HLW-13	1GH46C1453	Construction	Set HEME Vessels 2A and 2B at EL 0 Ft	06/12/13	2013	\$ 2,500,000
PTF-14	1GP30CFM14	Construction	Set Filter Cave HEME / HEPA / Demister Equipment	11/05/13	2013	\$ 2,500,000
PTF-06	1GP47CFM06	Plant Equip	Receipt of all PSA Pipe Racks	11/12/13	2013	\$ 2,500,000
HLW-08	1GH15C1248	Construction	Install Pipe and Hangers in PA02B	12/04/13	2013	\$ 2,500,000
PTF-16	1GP15CFM16	Construction	Complete Bulk In-cell Pipe Installation	01/30/14	2014	\$ 3,333,000
PTF-15	1GP28CFM15	Plant Equip	Receipt of Electrical Equipment in Control Building Electrical Rooms	04/03/14	2014	\$ 3,333,000
HLW-16	1GH27C1556	Construction	Set C2V/C3V Air Handling Units at EL 58 Ft	04/21/14	2014	\$ 3,333,000
PTF-13	1GP27CFM13	Construction	Air Handling Units EL 98 Ft	05/23/14	2014	\$ 3,333,000
PTF-12	1GP14CFM12	Construction	Install Roofing at EL 98 Ft	10/28/14	2014	\$ 3,333,000
PTF-18	1GP30CFM18	Construction	Set Hot Cell Major Equipment	10/30/14	2014	\$ 3,333,000
LAW-04	1GL00C1505	Construction	Complete Melter #1 Movement into Building	01/07/15	2015	\$ 1,667,000
HLW-14	1GH12C1454	Construction	Placement of HLW Concrete Slabs at EL 58 Ft	01/12/15	2015	\$ 1,667,000
PTF-19	1GP14CFM19	Construction	Complete Main Building Weathering	02/04/15	2015	\$ 1,667,000
LAW-05	1GL00C1515	Construction	Complete Melter #2 Movement into Building	03/09/15	2015	\$ 1,667,000
PTF-17	1GP11CFM17	Engineering	Complete Pretreatment Design	03/24/15	2015	\$ 1,667,000
HLW-15	1GH46C1555	Construction	Move Melter 1 into Building	04/22/15	2015	\$ 1,667,000
BOF-07	1GB28C1360	Construction	Set (2) Emergency Diesel Generators	05/26/15	2015	\$ 1,667,000
BOF-05	1GBC2S1463	Start Up	Complete Elec Distrb Sys Testing MVE (Site Energization) (216)	05/29/15	2015	\$ 1,667,000
HLW-17	1GH14C1557	Construction	Complete Main Building Weathering	06/16/15	2015	\$ 1,667,000
PTF-21	1GPC2CFM21	Construction	Construction Turnover of PIH Crane to Startup	08/10/15	2015	\$ 1,667,000
PTF-22	1GPC2CFM22	Start Up	Demonstration of Resin Addition to Ion Exchange Columns	10/19/15	2015	\$ 1,667,000
PTF-20	1GPC0CFM20	Construction	Final System Turnover Complete	11/30/15	2015	\$ 1,667,000
HLW-18	1GH00C1558	Construction	Construction Commence Turnover to Startup (Elec Sys Package)	05/26/16	2016	\$ 2,749,000
PTF-23	1GPE2CFM23	E&NS	Submit FSAR 2016 Update	06/29/16	2016	\$ 2,749,000
HLW-20	1GHC2S1660	Construction	Final System Turnover Complete	09/22/16	2016	\$ 2,749,000
HLW-19	1GHC2S1659	Start Up	Demonstrate Canister Lid Weld	12/21/16	2016	\$ 2,749,000
<b>TOTAL</b>						<b>\$ 173,000,000</b>

**C.2 FACILITY MILESTONE COMPLETION**

The following table governs the Facility Milestone Completion Incentive Fee. The fee will be earned and payable when the Contracting Officer determines the milestones have been completed in accordance with the Facility Milestone Definition Sheets set forth in the PEMP. These sheets contain: Milestone Definitions, Inclusions, Exclusions, Key Predecessor Activities, and Objective Evidence of Milestone Completion. Unearned milestone completion fee is total fee available at scheduled dates minus actual schedule completion fee earnings. The “Complete Hot Commissioning” Facility Milestone Completion incentive fee is earned upon meeting or exceeding the minimum hot commissioning throughput requirement (i.e., 60% of design capacity).

**Table B-2-C-1. Facility Milestone Completion Schedule**

Facility	Activity Code	Facility Milestone Description	Schedule Date	Fee Amount
LAB	4TT0999	Substantially Complete Construction	December 31, 2012	\$ 4,000,000
LAW	4LL0009999	Substantially Complete Construction	December 31, 2014	\$ 4,000,000
LAW	5HLC2A0110	Start Cold Commissioning (SCC)	February 28, 2018	\$ 4,000,000
LAW	5HLC4A0010	Complete Hot Commissioning (CHC)	May 30, 2019	\$ 4,000,000
HLW	5HHC2A0115	Start Cold Commissioning	June 30, 2018	\$ 9,500,000
HLW	5HHC4A0010	Complete Hot Commissioning	July 30, 2019	\$ 9,500,000
PT	5HPC2A0115	Start Cold Commissioning	September 30, 2017	\$ 9,500,000
PT	5HPC4A0056	Complete Hot Commissioning	February 28, 2019	\$ 9,500,000
		<b>Total</b>		<b>\$ 54,000,000</b>

Facility Milestone Completion Incentive Fees are subject to the following conditions:

(a) On-Time Milestone Delivery.

If the Contractor completes a Facility Milestone on or before the Schedule Date in Table B-2-C-1 *Facility Milestone Completion Schedule*, the total fee amount for that incentive is achieved and final. If the Complete Hot Commissioning milestone for a facility is achieved, the fee is earned per Table B-2-C-1, *Facility Milestone Completion Schedule*, and in addition, 50% of any unearned Cold Commissioning Fee for that particular facility is earned.

In addition, the Contractor may switch the dates of SCC-LAW/CHC-LAW and SCC-HLW/CHC-HLW. If the Contractor decides to switch the dates, the Contractor shall notify DOE on or before eighteen (18) months prior to the SCC-LAW of its decision to swap the schedule date of the SCC-HLW with the date scheduled for SCC LAW.

(b) Late Milestone Delivery.

(1) Substantially Complete Construction (SubCC) Milestones: If the Contractor completes a SubCC milestone ninety (90) days or longer after the Schedule Date in Table B-2-C-1 *Facility Milestone Completion Schedule*, the Contractor will earn no fee and 50% of the fee will be carried forward and added to the Complete Hot Commissioning milestone for PT fee amount. If the Contractor completes the milestone up to ninety (90) days late, the amount of fee earned will be a straight-line pro-rata share of the fee, with 50% of the unearned balance carried forward to the Complete Hot Commissioning milestone for the LAW fee amount.

- (2) Cold and Hot Commissioning Milestones: If the Contractor is late achieving Start Cold Commissioning (SCC) or Complete Hot Commissioning (CHC) for one of the specified facilities (LAW, HLW, PT), it remains eligible to earn a reduced portion of the available fee for that facility milestone completion incentive, as follows:
- (i) The Facility Milestone Completion incentive fee late start fee reduction criteria are designed to encourage the Contractor to continue to exert best efforts to accomplish SCC and CHC in an expeditious fashion. Accordingly, each of the specified facilities has a specific SCC date and CHC date. The SCC date can be exceeded by 180 days before all SCC fee is unearned and 50% of the unearned balance is carried forward to the Complete Hot Commissioning milestone for that facility. The CHC date can be exceeded by 365 days before all CHC fee as well as any unearned fee from Substantially Complete Construction milestones and/or SCC milestones is lost. The CHC date will not be revised based on late achievement of Substantially Complete Construction milestone and/or SCC milestone.
  - (ii) Late achievement of a Start Cold Commissioning milestone will result in a reduction in fee earned for SCC for that facility according to the following schedule:
    - (A) If the SCC milestone completion is between one (1) and forty-five (45) days late to the Schedule Date, a 0.333% reduction per day to the SCC Milestone incentive fee shall be made, up to a maximum of 15%.
    - (B) If the SCC milestone completion is between forty-six (46) and ninety (90) days late to the Schedule Date, a 0.444% reduction per day to the SCC Milestone incentive fee shall be made, up to a maximum of an additional 20%.
    - (C) If the SCC milestone completion is between 91 and 180 days late to the Schedule Date, a 0.722% reduction per day to the SCC Milestone incentive fee shall be made, up to a maximum of an additional 65%.
    - (D) If the SCC milestone completion occurs more than 180 days late, the Milestone incentive fee for that facility is reduced to zero.
    - (E) Fifty percent (50%) of all unearned SCC milestone fee is carried forward to the Complete Hot Commissioning milestone for that facility.
  - (iii) Late achievement of a Complete Hot Commissioning milestone will result in a reduction in fee earned for CHC for that facility according to the following schedule:
    - (A) If the CHC milestone completion is between one (1) and ninety (90) days late to the Schedule Date, a 0.166% reduction per day to the CHC Milestone incentive fee shall be made, up to a maximum of 15%.
    - (B) If the CHC milestone completion is between 91 and 180 days late to the Schedule Date, a 0.222% reduction per day to the CHC Milestone incentive fee shall be made, up to a maximum of an additional 20%.

- (C) If the CHC milestone completion is between 181 and 365 days late to the Schedule Date, a 0.351% reduction per day to the CHC Schedule Incentive Fee shall be made, up to a maximum of an additional 65%.
- (D) If the CHC milestone completion occurs beyond 365 days late then the Schedule Incentive Fee is reduced to zero.

**Table B-2-C-2. Facility Milestone Completion Fee Earnings Under Early, On Time, and Late Delivery**

<b>If SubCC Is Achieved:</b>	<b>Amount of SubCC Fee Earned Is:</b>	<b>Unearned SubCC Fee Carried Forward to CHC per C.2(b)(1) Is:</b>
Early	All	N/A
On Time	All	N/A
Late < 90 Days	Reduced Per C.2(b)(1)	50% of Unearned Fee
Late ≥ 90 Days	None	50% of Available Fee

<b>If SCC Is Achieved:</b>	<b>Amount of SCC Fee Earned Is:</b>	<b>Unearned SCC Fee Carried Forward to CHC Is:</b>
Early	All	N/A
On Time	All	N/A
Late < 180 Days	Reduced Per C.2(b)(2)(ii)	50% of Unearned Fee
Late ≥ 180 Days	None	50% of Available Fee

<b>If CHC Is Achieved:</b>	<b>Amount of CHC Fee Earned Is:</b>	<b>Carry Forward SubCC and/or SCC Fee Earned Is:</b>
Early	All	All
On Time	All	All
Late < 365 Days	Reduced Per C.2(b)(2)(iii)	None
Late ≥ 365 Days	None	None

**ATTACHMENT B-2-D – INCENTIVE FEE D – OPERATIONAL INCENTIVE FEE**

**Table B-2-D-1. Operational Incentive Fee**

Facility	Plant Capacity Level	
	Minimum	Treatment*
<b>Cold Commissioning:</b>		
PT High Level Waste	\$ 6,000,000	\$ 10,000,000
PT Low Activity Waste	\$ 6,000,000	\$ 10,000,000
HLW Vitrification	\$ 7,500,000	\$ 13,000,000
LAW Vitrification	\$ 7,500,000	\$ 12,000,000
<b>Total Operational Incentive Fee - Cold Commissioning</b>	<b>\$ 27,000,000</b>	<b>\$ 45,000,000</b>
<b>Hot Commissioning:</b>		
PT High Level Waste	\$ 6,000,000	\$ 10,000,000
PT Low Activity Waste	\$ 6,000,000	\$ 10,000,000
HLW Vitrification	\$ 7,800,000	\$ 13,000,000
LAW Vitrification	\$ 7,800,000	\$ 13,000,000
<b>Total Operational Incentive Fee - Hot Commissioning</b>	<b>\$ 27,600,000</b>	<b>\$ 46,000,000</b>

\* As described in Contract Section C.6, Standard 5, Table C.6-5.1, *Cold Commissioning Capacity Testing Criteria*, and Table C.6-5.2, *Hot Commissioning Capacity Testing Criteria*.

Operational Incentive Fee is subject to the following conditions:

- (a) Definitions:
  - (1) “Minimum Capacity” as specified in Standard 5, Tables C-6.5.1 and C.6-5.2 is at least 60%, but less than 70% of Design Capacity; “Treatment Capacity” as specified in Table C-6.5.1 and C.6-5.2 is 70% of Design Capacity. All percentages are rounded to the nearest tenth.
  - (2) “Unearned Cold Commissioning Fee” is total fee available at Treatment Capacity level minus actual cold commissioning fee earnings.
- (b) Fee achievements for the Operational Incentive Fee are determined on a stand-alone basis for each facility and based on the Cold and Hot Commissioning Performance Test results.
- (c) In the event that during the cold and hot commissioning capacity performance tests throughput for a facility is determined to be less than Minimum capacity, the conditions set forth in Section C.6 (5)(h) shall apply to that facility.
- (d) If a commissioning capacity achieved is equal to or greater than Minimum capacity but less than Treatment capacity, the Minimum capacity fee is subject to increase for results above the Minimum capacity level per the following formula:
  - (1) For Cold Commissioning: Each 0.1% in increase over Minimum capacity results in an increase to the fee of:

- (A) For PT High-Level Waste \$40,000 up to a maximum of 9.9% or \$3,960,000.
  - (B) For PT Low-Activity Waste \$40,000 up to a maximum of 9.9% or \$3,960,000.
  - (C) For HLW \$55,000 up to a maximum of 9.9% or \$5,445,000.
  - (D) For LAW \$45,000 up to a maximum of 9.9% or \$4,455,000.
- (2) For Hot Commissioning: Each 0.1% in increase over minimum capacity results in an increase to the fee of:
- (A) For PT High-Level Waste \$40,000 up to a maximum of 9.9% or \$3,960,000.
  - (B) For PT Low-Activity Waste \$40,000 up to a maximum of 9.9% or \$3,960,000.
  - (C) For HLW \$52,000 up to a maximum of 9.9% or \$5,148,000.
  - (D) For LAW \$52,000 up to a maximum of 9.9% or \$5,148,000.
- (e) If cold commissioning capacity achieved for a particular facility is equal to or greater than Treatment capacity, then Cold Commissioning Treatment Capacity-level fee is earned per Table B-2-D-1 *Operational Incentive Fee*.
- (f) If hot commissioning capacity achieved for a particular facility is equal to or greater than Treatment Capacity, then Hot Commissioning Treatment Capacity-level fee is earned per Table B-2-D-1, *Operational Incentive Fee*, and in addition, 50% of any unearned Cold Commissioning Fee for that particular facility is earned.
- (g) Additional fee for achieving capacity above Treatment Capacity is covered under Incentive Fee E.1 – Enhanced Plant Capacity.

## ATTACHMENT B-2-E – INCENTIVE FEE E – ENHANCED INCENTIVE FEE

### INCENTIVE FEE E.1 – ENHANCED PLANT CAPACITY

Under this performance incentive, the Contractor is afforded the opportunity to demonstrate greater than treatment capacity during commissioning. Capacity values are demonstrated using Cold and Hot Commissioning Performance Testing results. Measurement of each facility capacity will use the approach described in Contract Section C.6, *Standard 5 Commissioning: (e) Cold Commissioning, (3) Testing, (ii) Cold Commissioning Capacity Tests; and (g) Hot Commissioning, (4) & (5) Hot Commissioning Capacity Tests.*

During Cold and Hot Commissioning, enhanced plant capacity fee shall be earned and payable upon the Contracting Officer's determination that the Contractor has achieved capacities as follows up to the maximum amounts contained in Table B-2-E-1:

#### **Cold Commissioning:**

Each 0.1% in increase over Treatment Capacity (70%) results in an increase to the fee of:

1. For PT (High or Low) \$10,000 up to the maximum listed below.

Example, if PT-High achieved a capacity of 84% the resulting Enhanced Plant Capacity fee would be \$1,400,000  $((84-70) = 14\% (140) \times \$10,000 = \$1,400,000)$ .

2. For LAW \$5,833 up to a maximum listed below.

Example, if LAW achieved a capacity of 84% the resulting Enhanced Plant Capacity fee would be \$816,620  $((84-70) = 14\% (140) \times \$5,833 = \$816,620)$ .

3. For HLW \$5,833 up to a maximum listed below.

Example, if HLW achieved a capacity of 84% the resulting Enhanced Plant Capacity fee would be \$816,620  $(84-70) = 14\% (140) \times \$5,833 = \$816,620)$ .

#### **Hot Commissioning:**

Each 0.1% in increase over Treatment Capacity (70%) results in an increase to the fee of:

1. For PT (High or Low) \$5,833 up to the maximum listed below.

Example, if PT-High achieved a capacity of 84% the resulting Enhanced Plant Capacity fee would be \$816,620  $((84-70) = 14\% (14) \times \$5,833 = \$816,620)$ .

2. For LAW \$3,333 up to a maximum listed below.

Example, if Law achieved a capacity of 84% the resulting Enhanced Plant Capacity fee would be \$466,620  $((84-70) = 14\% (140) \times \$3,333 = \$466,620)$ .

3. For HLW \$3,333 up to a maximum listed below.

Example, if HLW achieved a capacity of 84% the resulting Enhanced Plant Capacity fee would be \$466,620  $((84-70) = 14\% (140) \times \$3,333 = \$466,620)$ .

**INCENTIVE FEE E.1 – ENHANCED PLANT CAPACITY (cont.)**

**Table B-2-E-1. Enhanced Plant Capacity**

Activity	Maximum Available Fee
<b>Cold Commissioning:</b>	
PT High Level Waste	\$ 3,000,000
PT Low-Activity Waste	\$ 3,000,000
HLW Vitrification	\$ 1,750,000
LAW Vitrification	\$ 1,750,000
<b>Subtotal - Cold Commissioning</b>	<b>\$ 9,500,000</b>
<b>Hot Commissioning:</b>	
PT High Level Waste	\$ 1,750,000
PT Low-Activity Waste	\$ 1,750,000
HLW Vitrification	\$ 1,000,000
LAW Vitrification	\$ 1,000,000
<b>Subtotal - Hot Commissioning</b>	<b>\$ 5,500,000</b>
<b>Total Fee - E.1 Enhanced Plant Capacity</b>	<b>\$ 15,000,000</b>

**Total Available Fee for E.1 Enhanced Plant Capacity = \$15,000,000**

## **ATTACHMENT B-2-E – INCENTIVE FEE E – ENHANCED INCENTIVE FEE (cont.)**

### **INCENTIVE FEE E.2 – SODIUM REDUCTION**

The Contractor may optimize the process flowsheet, feed delivery and blending considerations, glass formulations, and the physical plant configuration to reduce the quantity of process-added waste sodium. The incentive requires the Contractor to reduce the mass of waste sodium added in the WTP baseline flowsheet compared to the estimate presented in 24590-WTP-MRR-PET-08-002, Rev. 2, *WTP Contract Run-G(2) Dynamic Model Run Results Report*.

This proposal and technical outcome:

- Shall not result in an increase in the quantity of HLW canisters produced over the RPP mission or an extension of the mission duration.
- May include options to limit aluminum leached from HLW solids in combination with improvements of aluminum waste loading in the HLW glass, and pretreatment facility process optimization.

Successful demonstration that sodium additions in the process have been reduced should be determined using process models, technology testing (laboratory, bench and engineering scale), and information from the literature and/or consultants. WTP Cold Commissioning process demonstration of the optimized flowsheet is required. The WTP Cold Commissioning simulant composition and Cold Commissioning strategy shall be selected with DOE concurrence. The recommended stimulant shall consider demonstration of the optimized process flowsheet. The WTP Cold Commissioning demonstration may be part of or separate from the Cold Commissioning performance testing, at the Contractor's discretion.

The Contractor, if electing to pursue this incentive, shall present a proposal to DOE on the strategy, approach, work products, specific measurements, and cost and schedule for achieving this performance objective. Costs associated with developing a proposal shall assume use of WTP Management Reserve (MR) to fund a baseline change proposal, shall not be considered new Contract Scope and shall be accounted for separately. Funding associated with executing a proposal shall be from a mutually agreed apportionment between Contractor's MR and Government's Owner's contingency as reflected in an approved baseline change proposal (BCP). In the event the cost at completion exceeds the BCP value, the difference is funded in the same proportion.

The technical outcome will be provided in an interim and final summary report that shall:

- Identify the proposed optimized flowsheet(s) as a function of feed type and predicted sodium use
- Identify feed staging and blending strategies to reduce sodium use
- Identify glass formulations to increase aluminum loading in HLW glass, to the extent that this approach is used
- Summarize laboratory testing, bench scale testing, engineering scale testing and modeling results that demonstrate the reduced usage
- Specify the plant testing requirements needed to confirm assumptions (interim report)
- Document WTP cold commissioning results used to confirm the assumptions and results

Information and data gained from lab and engineering scale testing to close External Flowsheet Review Team issues about leaching, ultrafiltration performance, and process limits can be credited to earn the sodium reduction fee enhancement.

**INCENTIVE FEE E.2 – SODIUM REDUCTION (cont.)**

Enhanced fee for Sodium Reduction will be determined based on the Contractor’s success in reducing sodium in accordance with the following stepped schedule:

Metric Tons Sodium Reduced		Incentive Fee
At Least	But Less Than	
5,000	10,000	\$ 3,000,000
10,000	15,000	\$ 3,000,000
15,000	20,000	\$ 3,000,000
20,000	25,000	\$ 3,000,000
25,000		\$ 3,000,000
TOTAL		\$ 15,000,000

\* Fee earnings in the table represent earnings at the applicable Sodium-reduction level achieved and are cumulative.

Enhanced fee shall be earned and payable upon the Contracting Officer’s determination of the Contractor’s completion of the following activities:

1. Completion of initial model and bench scale testing for runs demonstrating sodium reduction: 30% of the fee for the predicted improvement. If the runs are also demonstrated on the Pretreatment Engineering Platform and engineering scale melter tests (if aluminum loading in the high-level waste glass is part of the strategy) fee is increased to 50% of the fee for the predicted improvement.
2. Completion of cold commissioning testing and final report (Section C.6, *Standard 5 Commissioning: (e) Cold Commissioning, (5) Cold Commissioning Results and Documentation*): final fee determination, less any fee paid under paragraph (1.) above.

**Total Available Fee for E.2 Sodium Reduction = \$15,000,000**

**ATTACHMENT B-2-E – INCENTIVE FEE E – ENHANCEMENT INCENTIVE FEE (cont.)**

**INCENTIVE FEE E.3 – ENHANCED PLANT TURNOVER**

An enhanced fee is earned and payable to the Contractor upon the Contracting Officer's determination of the Contractor's ability to reduce the six (6)-month plant turnover period for the LAB, LAW, HLW, and PT facilities. The schedule calls for each of these facilities to be transitioned to the Tank Operations Contractor within six (6) months of the completion of hot commissioning. For the LAB, LAW, and HLW facilities, one million dollars is earnable for each facility if the Contractor has reduced the transition period by one (1) month. Three million dollars is earnable for each facility if the Contractor has reduced the transition period by three (3) months. A straight-line incremental amount, on a daily basis, is earnable for each facility (LAB, LAW, and HLW facilities) if the Contractor has reduced the transition period between one (1) month and three (3) months. For the PT Facility, the same criteria are in place, and two million dollars is earnable if the Contractor has reduced the transition period by one (1) month and six million dollars for three (3) months. A straight-line incremental amount, on a daily basis, is earnable if the Contractor has reduced the transition period for the PT Facility between one (1) month and three (3) months. Completion of transition for fee determination purposes is considered complete upon providing items listed in the Facility Transition Plan section of Contract (Section C.6, *Standard 5 Commissioning, (j) Transition*) to the Operating Contractor.

<b>Facility</b>	<b>Per Month Early</b>	<b>Total</b>
LAB	\$1,000,000	\$3,000,000
LAW	\$1,000,000	\$3,000,000
HLW	\$1,000,000	\$3,000,000
PT	\$2,000,000	\$6,000,000
Total		<b>\$15,000,000</b>

**Total Available Fee for E.3 Enhanced Plant Turnover = \$15,000,000**

**ATTACHMENT B-2-E – INCENTIVE FEE E – ENHANCED INCENTIVE FEE (cont.)**

**INCENTIVE FEE E.4 – SUSTAINED PRODUCTION ACHIEVEMENT**

An enhanced fee is earned and payable to the Contractor upon the Contracting Officer’s determination of the Tank Operations Contractor being able to sustain specific plant capacities for a continuous ninety (90)-day period in the first six (6) months after turnover of each process facility (LAW, HLW, and PT). This incentivizes the Contractor to work with the Tank Operations Contractor to achieve sustained operations. Two million dollars is earnable, for PT-High, PT-Low, HLW, and LAW each, if the Contractor has achieved minimum capacity values. An additional two million dollars is earnable, for PT-High, PT-Low, and HLW each, if the Contractor has achieved treatment capacity values and one million dollars for LAW. A straight-line incremental amount is earnable if the Contractor has achieved values between minimum and treatment capacities. The minimum and treatment capacity values are specified in Section C.6, *Standard 5 Commissioning, (g) Hot Commissioning, (4) & (5) Hot Commissioning Capacity Tests, Table C.6-5.2. Hot Commissioning Capacity Testing Criteria.*

<b>FACILITY</b>	<b>MINIMUM CAPACITY</b>	<b>TREATMENT CAPACITY</b>	<b>TOTAL AVAILABLE</b>
PT-High	\$2,000,000	\$2,000,000	\$4,000,000
PT-Low	\$2,000,000	\$2,000,000	\$4,000,000
HLW	\$2,000,000	\$2,000,000	\$4,000,000
LAW	\$2,000,000	\$1,000,000	\$3,000,000
<b>Total</b>	<b>\$8,000,000</b>	<b>\$7,000,000</b>	<b>\$15,000,000</b>

**Total Available Fee for E.4 Sustained Production Achievement = \$15,000,000**

### **ATTACHMENT B-2-F – INCENTIVE FEE F – DFLAW DESIGN COMPLETION FEE (350)**

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 Attachment Q in Section J of the 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, Attachment Q, DFLAW Design Completion, 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 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 10 calendar days or provide a detailed basis for withholding authorization. Notwithstanding the 10 calendar day period in the preceding sentence, DOE will conduct a comprehensive review of the contractor's summary of cost incurred within 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 the 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% 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 30 days of DOE acceptance in accordance with Attachment Q in Section J of the contract. 80% 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-F-1 below.

\* 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 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-F-1. DFLAW Design Completion Fee**

DFLAW Design Completion Fee Milestones	Fee (\$)
<b>DFLAW Design Completion</b>	
<b>Interim Milestone Completion Incentive Fee –</b>	
<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
<b>Cost Incentive Fee –</b>	
<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.	
<b>Schedule Incentive Fee –</b>	
<u>Description:</u> For every full month DFLAW Design Completion is accepted as complete per Section J Attachment Q, 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 Attachment Q.	
In the event DFLAW Design Completion is accepted as complete per Section J Attachment Q after July 31, 2018, total fee available will be reduced to the minimum fee of \$750,000.	
<b>Minimum Fee under DFLAW Design Completion (exclusive of any Interim Milestone Completion Fee)</b>	<b>\$750,000</b>
<b>Target Fee under DFLAW Design Completion (exclusive of any Interim Milestone Completion Fee)</b>	<b>\$4,500,000</b>
<b>Maximum Fee inclusive of Cost, Schedule &amp; Interim Milestone Completion Incentive Fee</b>	<b>\$9,000,000</b>

**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 (LAW) and High-Level Waste (HLW);
- Immobilize the LAW for on-site disposal; and
- Immobilize the HLW for ultimate disposal in the national repository.

The first tank waste fraction, LAW, 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. LAW 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 the Contract.

The second tank waste fraction, HLW, is comprised of the long half-life radioactive tank waste solids (as well as other non-radioactive solids) and the radionuclides separated from the LAW fraction. HLW 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 the Contract.

The Waste Treatment and Immobilization Plant (WTP) is comprised of five major facilities: Pretreatment (PT), LAW Vitrification, HLW Vitrification, Analytical Laboratory, and the Balance of [Plant] Facilities (BOF). The WTP facilities shall be designed in accordance with the specific requirements of the Contract.

The Hanford tank waste treatment mission is defined by the assumptions presented in the *Tank Farm Contractor Operation and Utilization Plan* (HNF-SD-WM-SP-012, Revision 6, January 2007) in terms of the tank waste quantities and compositions to be treated and immobilized. 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.

To perform the activities necessary to remediate the Hanford tank waste, DOE assigned responsibility to the 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.

The DOE Office of River Protection may choose to start the Hanford tank waste treatment mission in phases, starting with the treatment of the LAW waste fraction prior to completion of the PT and HLW Facilities. If such an alternative is implemented, the pretreatment to separate the LAW waste fraction would be accomplished in the Hanford tank farms, and the LAW waste fraction would be provided directly to the LAW Facility for vitrification. This alternative is referred to as Direct Feed LAW (DFLAW). Secondary waste generated during the LAW vitrification process would be managed within the WTP facilities with a fraction recycled back to the tank farms until such time as the PT Facility is fully operational. The Laboratory and BOF would need to be completed and operational to the extent necessary to operate the LAW Facility in isolation from the PT and HLW Facilities. Contract Line Item (CLIN) 2 is included in the Contract to implement a permanent DFLAW capability in the WTP should the decision be made to proceed with a phased startup of the WTP. **(350)**

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

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

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

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

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

### (a) Scope Summary

As defined in Section B of the contract, it is anticipated the contract will incorporate a CLIN structure. CLIN 2.1 is established as of Modification 350.

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

CLIN 2.1 completes modifications of the 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 returns back to the tank farms. 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)**

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

(a) DOE, the Tank Farm Contractor, 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; and
- (10) Collaboratively prepare the WTP systems, personnel, and procedures for plant operations.

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

(b) DOE is responsible as the "Owner" and "Regulator" of the WTP.

- (1) As the Owner, DOE will:
  - (i) Establish requirements, administer the Contract, and confirm that the Contractor meets Contract requirements;
  - (ii) Integrate the WTP into the overall RPP mission;
  - (iii) Approve all changes to the RPP system-level flowsheet, interface control documents, feed and product specifications, design basis, safety basis, and the future WTP operations baseline (269);
  - (iv) Perform design, construction, safety and reliability/availability/maintainability/inspectability (RAMI), and operability oversight of the WTP; where required, engage other contractors to provide design, construction, RAMI, and operability oversight of the WTP;

- (v) Perform review (and where required, engage other contractors) of Contractor environmental, safety, quality, and health actions for compatibility and integration with site-wide Environment, Safety, Quality, and Health (ESQ&H) activities;
- (vi) Provide oversight and approval of the Contractor's operational readiness reviews (**M196**) process per DOE Order 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities* (A190);
- (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 wastes products meet DOE and regulatory requirements for additional treatment or disposal;
- (ix) Manage project progression through the critical decision process (DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD) (M076) (271);
- (x) Provide Quality Assurance (QA) oversight; and
- (xi) Require compatibility of reporting and management systems.

DOE may utilize an Owners Agent to perform some of the functions identified above.

- (2) As the Regulator, DOE will regulate radiological, nuclear, and process safety, as well as non-radiological worker safety and health.
- (c) The Tank Farm Contractor will transition the WTP Conceptual Design to the Contractor upon Contract award.
- (d) DOE, the Tank Farm Contractor, and other Hanford Site contractors provide site services to the Contractor as directed by DOE (see Section C.9, *Interface Control Documents*).
- (e) The 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 Tank Farm Contractor, 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 Sections C.6, *Standards*, C.7, *Facility Specification*, C.8, *Operational Specifications*, and C.9, *Interface Control Documents*.

- (ii) The planned operation of the WTP can achieve the capacity requirements specified in Section C.6, Standard 5, *Commissioning*.
    - (iii) The Contractor shall identify, quantify, and manage process and facility equipment sizing, technical operating performance, environmental permitting and the safety authorization basis to achieve the Contract specified requirements of the WTP.
  - (3) The WTP Contractor shall construct the WTP in accordance with the detailed design, safety basis, pertinent regulations, approved regulatory permits, Section C.6, *Standards*, specified in the Contract, and other approved industry standards, as applicable.
  - (4) In cooperation with DOE (as lead), Tank Farm Contractor, and the other Hanford Site contractors, establish an interface management process to assure effective control of technical, administrative, and regulatory interfaces.
  - (5) Support DOE in external communications on the WTP Project with stakeholders, regulators, Tribal Nations, and other special interest groups.
  - (6) Train commissioning staff to operate and maintain the WTP in accordance with DOE Order 426.2, CRD, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. (M152)(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 non-radiological 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) Non-radiological worker safety and health;
  - (2) Radiological, nuclear, and process safety;
  - (3) QA; and
  - (4) Environmental protection.
- (b) DOE will provide existing ESQ&H documentation with the WTP Conceptual Design and supporting information to allow the Contractor to review, modify, and implement required ESQ&H actions under this Contract.
- (c) The regulatory environment for this Contract is structured into four principal areas of responsibility and requirements on Contractor performance. Detailed Contractor performance requirements are provided in Section C.6, Standard 7, *Environment, Safety, Quality, and Health*.
- (1) Non-Radiological Worker Safety and Health: DOE will regulate non-radiological 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.
- (A) 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.
- (B) The U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and/or the Washington State Department of Health (WDOH) will regulate radioactive and non-radioactive air emissions. The Contractor shall support integration within the Hanford Site-wide air compliance framework, including the Hanford Air Operating Permit.
- (C) 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).
- (D) Ecology, WDOH, 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.
- (E) 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 Effluent Treatment Facility) 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). 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.
- 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 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 Manual 140.1-1B, *Interface with the Defense Nuclear Facilities Safety Board*) and shall ensure that these requirements flow down to the lowest-tier subcontractors.

## C.5 DESCRIPTION OF CONTRACT REQUIREMENTS AND DELIVERABLES

The Contractor shall perform five major activities: (1) Design Transition; (2) Facility and Process Design; (3) Construction Management and Procurement; (4) Acceptance Testing; and (5) Facility Commissioning. Summary-level requirements for each of these activities are provided in this section, with additional requirements provided in Sections C.6, *Standards*; C.7, *Facility Specification*, C.8, *Operational Specifications*; and C.9, *Interface Control Documents*. Best commercial practices shall apply when a Standard, Specification, or Interface Control Document (ICD) is not provided.

- (a) Design Transition: The Contractor shall update the plan for transition submitted as part of the Contractor's proposal, install Contractor management systems, and evaluate the WTP Conceptual Design and supporting information.
- (1) Plan for Transition: The Contractor shall submit a plan for transition to DOE in accordance with Standard 1, *Management Products and Controls*.
  - (2) Receive the Waste Treatment and Immobilization Plant Conceptual Design: The Contractor shall receive the WTP Conceptual Design and supporting information from the Tank Farm Contractor as described in Section J, Attachment K, *Listing of WTP Conceptual Design and Supporting Information*; additional information shall also be provided.
  - (3) Due-diligence Reviews: The Contractor shall evaluate the WTP Conceptual Design and supporting information as part of the Contractor's responsibility as design authority. Key areas of review include:
    - (i) All process and facility design documentation and analyses;
    - (ii) Technology planning and testing information;
    - (iii) Waste form qualification strategies;
    - (iv) Environmental permitting documentation (e.g., Dangerous Waste Permit Application [DWPA], Air Permits);
    - (v) 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 (Pretreatment, HLW Vitrification, LAW Vitrification, Analytical Laboratory, and Balance of [Plant] Facilities [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) Waste Treatment and Immobilization Plant Optimization: The Contractor shall perform optimization as described in Standard 3, *Design*.
  - (5) Design Reviews: The Contractor shall conduct periodic design, constructability, and operability reviews to status the design activities, and resolve design oversight comments from DOE in accordance with Standard 3, *Design*.

Additional requirements are provided in Standard 3, *Design*.

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

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

- (d) Acceptance Testing: The Contractor shall provide integrated construction acceptance test plans and procedures for DOE approval. Additional requirements are provided in Standard 4, *Construction, Procurement, and Acceptance Testing*.

- (e) Facility Commissioning: The Contractor shall commission, demonstrate operational performance, and transition the WTP to the Operations Contractor. Additional requirements are provided in Standard 5, *Commissioning*.
- (f) Objectives for the amount of Contractor self-performed work are contained in Section H, Clause H.13, *Self Performed Work*.
- (g) Table C.5-1.1, Deliverables, summarizes the specific deliverables the Contractor shall provide to DOE and the subsequent DOE actions. Neither the DOE review of the deliverables nor the decision of DOE to proceed with construction or commissioning shall impose any responsibility on the DOE for adequacy, quality, or completeness of the deliverables. The Contractor remains solely responsible for the adequacy, quality, and completeness of such work and the performance of the WTP under this Contract.

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

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

The contractor shall not proceed with implementation of changes to deliverable 3.3(a) of Table C.5-1.1 until 5 working days after DOE receives notification of the change. (M171)

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 [C.5(a)(4)]	A	D	COR (M131)	4/15/2001
1.1	Plan for Transition	Section C.5 [C.5(a)(1)]	A	D	COR (M131)	2/15/2001
1.2	Project Execution Plan	Standard 1 [Std. 1 (b)(2)]	A	D	COR (M131)	12/15/2006 with updates as required
1.3	Earned Value Management System Description	Standard 1 [Std. 1 (a) & (b)(3)]	A	D	COR (M131)	4/15/2001 with updates as required
1.4	Interface Management Plan	Standard 1 [Std. 1 (b)(1) and C.9(b)]	A	D	COR (M131)	6/29/2001 with updates as required
1.5	WTP Project Baseline	Standard 1 [Std. 1 (d)(3)]	A	D	COR (M131)	4/15/2001 with updates as required
1.6	Baseline Risk Plan	Standard 1 [Std.1 (c)(1)]	A	D	COR (M131)	7/1/2001 with annual updates as required

Table C.5-1.1, Deliverables

Item No.	Deliverable	Reference	Action Required	DOE Action Party	Point of Delivery	Contract Due Date
1.7	Monthly Status Report	Standard 1 [Std. 1 (c)(4), (a)(2)(i)(d) & (d)(1), Std 3 (g)(3), and Std 4 (f)(2)]	I	D	COR (M131)	First Wednesday of the second month
1.8	Occurrence Reporting	Standard 1 [Std. 1 (d)(5)] (M147)	A	D	COR (M131)	as required
1.9	ES&H Reporting	Standard 1 [Std. 1 (d)(6)] (M147)	A	D	COR (M131)	as required
1.10	Contract Performance Report	Standard 1 [Std. 1 (d)(2)]	I	D	COR (M131)	Last Wednesday of each month (M147)
1.11	Change Control Program Procedure	Standard 1 [Std. 1 (a) & (a)(4)]	A	D	COR (M131)	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 (M131)	Last Wednesday of each month (M147)
2.1	Updated Research and Technology Program Plan	Standard 2 [Std. 2 (a)(1)(ii) & C.7 Table C.7-1.1 Note 1]	A	D	COR (M131)	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 [Std. 2 (a)(2)(i) & (a)(3)(ix)]	I	D	COR (M131)	as required
2.3	R&T Test Reports	Standard 2 [Std. 2 (a)(2)(ii) & (a)(3)(ix)]	C	D	COR (M131)	as required
2.4	Regulatory Data Quality Objective (DQO)	Standard 2 [Std. 2 (a)(3)(i)(D)]	A	D	COR (M131)	TBD as negotiated

Table C.5-1.1, Deliverables

Item No.	Deliverable	Reference	Action Required	DOE Action Party	Point of Delivery	Contract Due Date
2.5	Operations Research Assessment	Standard 2 [Std. 2 (b)(1) & Std 3 (c)(6)(ii)(A)]	C	D	COR (M131)	12/19/2008, 6/19/2010, FEBRUARY of 2012, MAY of (310) 2014 and 2016 and after completion of Cold Commissioning and completion of Hot Commissioning (239)
2.6	WTP Tank Utilization Assessment	Standard 2 [Std. 2 (b)(2)]	C	D	COR (M131)	12/19/2008, 6/19/2010, FEBRUARY 2012, AUGUST 2014 (310), NOVEMBER 2016 (310), and after completion of Cold Commissioning and completion of Hot Commissioning (239)
2.7	DELETED (230)					
2.8	Technical Report on Oxidative Leaching	Standard 2 [Std. 2 (a)(3)(ix)]	C	D	COR (M131)	TBD
2.9	Test Report on Oxidative Leaching	Standard 2 [Std. 2 (a)(3)(ix); Std 5 (e)(3)(ii)]	C	D	COR (M131)	TBD
2.10	Proposed Process Steps for Sludge Treatment	Standard 2 [Std. 2 (a)(3)(iii) & C.7(d)(1)(vii)]	A	D	COR (M131)	one year before the start of cold commissioning for the Pretreatment Facility <b>(255)</b>
2.11	Proposed Deminimus Organic Concentration in Received Tank Waste	Standard 2 [Std. 2 (a)(3)(viii)]	A	D	COR (M131)	12/31/2012 <b>(255)</b>
3.1	Design Process	Standard 3 [Std. 3 (a)(2)]	I	D	COR (M131)	2/15/2001 1/15/2004
3.2	Functional Specification	Standard 3 [Std. 3 (b)(1)]	I	D	COR (M131)	8/20/2001 with updates as required
3.3 (a)	Basis of Design	Standard 3 [Std. 3 (b)(2) & C.7(b)(1)]	C (M171)	D	COR (M131)	8/20/2001 with updates as required
3.3 (b)	Design Criteria Database	Standard 3 [Std. 3 (b)(3)]	M	D	COR (M131)	30 days after issue of Basis of Design, 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 [Std. 3 (b)(4)]	A for bolded document text and M for non-bolded document text	D	COR (M131)	8/20/2001
3.5	Master Equipment List	Standard 3 [Std. 3 (c)(6)(i)]	C	D	COR (M131)	Prior to ORR completion
3.6	Analytical Laboratory Design Requirements	Standard 3 [Std. 3 (c)(18) & C.7(a)(8 9) (350)]	A	D	COR (M131)	10/1/2001 and as required thereafter
3.7	Site Layout Drawings	Standard 3 [Std. 3 (c)(19)]	A	D	COR (M131)	4/15/2001 and as required thereafter
3.8	Optimization Studies	Standard 3 [Std. 3 (d)]	A	D	COR (M131)	3/15/2001
3.9	Spare Parts List	Standard 3 [Std. 3 (c)(6)(ii, iii, & iv)]	C	D	COR (M131)	Prior to Completion of the Operational Readiness Reviews (M196)
3.10	Deleted					
4.1	Construction, Procurement, and Acceptance Testing Plan	Standard 4 [Std. 4(a), (f)(3) & (i)]	A on initial Deliverable and I for any subsequent updates	D	COR (M131)	As required
4.2	Purchasing System	Standard 4 [Std. 4 (b)(2)]	A	D	COR (M131)	As required
4.3	Construction Bid and Work Packages	Standard 4 [Std. 4(c)]	I	D	COR (M131)	As required
4.4	Construction and Acceptance Testing Program	Standard 4 [Std. 4(f)(1)]	A	D	COR (M131)	Prior to start of construction
4.5	Construction Overview Meetings	Standard 4 [Std. 4(h)]	M	D	COR (M131)	Ongoing
4.6	Construction Emergency Response Plan	Standard 4 [Std. 4(j)]	I	D	COR (M131)	Prior to Start of Limited Construction
4.7	As-built Program Description	Standard 4 [Std. 4(f)(5)]	C	D	COR (M131)	June 2009
5.1	Commissioning Plan	Standard 5 [Std. 5(c)]	A	D	COR (M131)	12 months prior to start of cold commissioning, as required thereafter

Table C.5-1.1, Deliverables

Item No.	Deliverable	Reference	Action Required	DOE Action Party	Point of Delivery	Contract Due Date
5.2	Deleted					
5.3	Waste Form Qualification Tests	Standard 5 [Std. 5 (e)(3)(i)]	P	D	COR (M131)	during cold commissioning
5.4	Cold Commissioning Capacity Tests	Standard 5 [Std. 5 (e)(3)(ii)]	A	D	COR (M131)	during cold commissioning
5.5	DELETED (A029)					
5.6	Resultant Products from Cold Commissioning	Standard 5 [Std. 5 (e)(1)]	P	D	COR (M131)	during cold commissioning
5.7	Environmental Performance Test	Standard 5 [Std. 5 (e)(3)(v)]	A	D	COR (M131)	during cold commissioning
5.8	Cold Commissioning Results	Standard 5 [Std. 5 (e)(5)]	A	D	COR (M131)	prior to hot commissioning
5.9	Certification of Completion of Cold Commissioning	Standard 5 [Std. 5 (e)(6)]	A	D	COR (M131)	when complete
5.10	Certification of Readiness for Hot Commissioning Start	Standard 5 [Std. 5 (g)(1)]	A	D	COR (M131)	prior to hot commissioning
5.11	Certification of Hot Commissioning Start	Standard 5 [Std. 5 (g)(3)]	A	D	COR (M131)	Upon receipt of Tank Farm waste feed
5.12	Hot Commissioning Capacity Tests	Standard 5 [Std. 5(g)(5)]	A	D	COR (M131)	during hot commissioning
5.13	Resultant Products from Hot Commissioning	Standard 5 [Std. 5 (g)(iii & iv)]	P	D	COR (M131)	during hot commissioning
5.14	Hot Commissioning Results and Documentation	Standard 5 [Std. 5 (g)(6)]	A	D	COR (M131)	upon completion of hot commissioning
5.15	Certification of Completion of Hot Commissioning	Standard 5 [Std. 5 (g)(7) & 5(m)(1, 3 & 4)] (350)	A	D	COR (M131)	when complete
5.16	Facility Turnover	Standard 5 [Std. 5(m)(7)]	A	D	COR (M131)	after successful commissioning
5.17	Deleted					
5.18	Cold Commissioning Simulant Definition	Standard 5 [Std. 5 (b) & Table C.6-5.1 Note 1.]	A	D	COR (M131)	24 months prior to the initiation of cold commissioning
5.19	WTP Facility Transition Plan	Standard 5 [Std. 5 (i); (j); & (m)(7)]	A	D	COR (M131)	12 months prior to the initiation of hot commissioning

Table C.5-1.1, Deliverables

Item No.	Deliverable	Reference	Action Required	DOE Action Party	Point of Delivery	Contract Due Date
5.20	Cold Commissioning Capacity Test Criteria	Standard 5 [Std. 5(e)(3)(ii) & Table C.6-5.1 Note 2]	A	D	COR (M131)	Prior to completion of Deliverable 5.8
5.21	Hot Commissioning Capacity Test Criteria	Standard 5 (Std. 5(g)(4) & Table C.6-5.2 Note 1))	A	D	COR (M131)	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) <b>(257)</b>	Standard 5 [Std. 5 (f) (i)]	A	D	COR	9/30/2013 with annual updates thereafter <b>(285)</b>
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 (M131)	2004, 2006, 2008, and as required thereafter
6.2	IHLW Waste Form Compliance Plan	Standard 6 [Std. 2 (a) (3)(vii)(B); Std 5 (e)(1)(i) & (e)(3)(i & ii); Std. 6 (b), (c)(2 & 4), C.7(d)(2)(i), C.8 (Spec. 1 (1.4) & Spec. 13 (13.3.2))]	A	D	COR (M131)	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 (M131)	2004, 2006, 2008, and as required thereafter
6.4	IHLW Product Qualification Report	Standard 6 [Std. 6 (c) (5) & (6)]	C/A	D	COR (M131)	Plan in 2004, report in 2008 and as required thereafter
6.5	Production Documentation for IHLW Product	Standard 6 [Std 6 (c)(9)]	A	D	COR (M131)	at time of production
6.6	ILAW Product Qualification Report	Standard 6 [Std. 6(c)(5) Spec. 2 (2.2.7.1)]	C/A	D	COR (M131)	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 [Std 6(c)(9); C.8 Spec. 2, 2.2.2.6.2 & 2.2.2.7.2]	C/A	D	COR (M131)	at time of production
6.8	Deleted					
6.9	Reserved					
6.10	Secondary Wastes Production Documentation	Standard 6 [Std. 6 (c)(9)]	C/A	D	COR (M131)	at time of production
6.11	Deleted					
7.0	Non-radiological Worker Safety and Health	Standard 7 [Std 7 (e)(1)]	R	D	COR (M131)	per Standard 7.a(1)
7.1	Deleted (M166)					
7.2	Quality Assurance	Standard 7 [Std 7 (e)(3); C.8 Spec 2, 2.3 and Spec 12, 12.3]	A/R	D	COR (M131)	4/15/2001
7.3	Environmental Plan	Standard 7 [Std 7 (e)(4) & (e)(4)(vi)(A)]	A	D	COR (M131)	3/15/2001 and as required thereafter
7.4	Deleted					
7.5	Dangerous Waste Permit Application	Standard 7 [Std 7 (e)(4)(vi)(B)]	A	D	COR (M131)	as required
7.6	Risk Assessment Work Plan	Standard 7 [Std 7 (e)(4)(vi)(C) & Std 5 (e)(3)(v)]	A	D	COR (M131)	as required
7.7	Notice(s) of Construction	Standard 7 [Std 7 (e)(4)(vi)(D)]	A	D	COR (M131)	150 days prior to submission to the regulators
7.8	Prevention of Significant Deterioration (PSD) Permit Application	Standard 7 [Std 7 (e)(4)(vi)(E)]	A	D	COR (M131)	150 days prior to submission to the regulators
7.9	Petition for Exemption or Exclusion for IHLW	Standard 7 [Std 6(c)(7), Std 7 (e)(4)(vi)(F)]	A	D	COR (M131)	06/2005
7.10	Petition for a New Treatment Standard	Standard 7 [Std 6 (c)(8), Std 7 (e)(4)(vi)(G)]	A	D	COR (M131)	08/2003

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 (M131)	see Table S8-1
9.1	Radiological, Nuclear and Process Safety (M166)	Standard 9 [Std 9]	R	D	COR (M131)	Various <b>(303)</b>
C.7-1	Procedure to Determine the Waste Feed Treatment Approach	C.7(d) (1)(vii) Spec. 12	A	D	COR (M131)	one year before the start of cold commissioning for the Pretreatment Facility <b>(255)</b>
<b>C.8-1 (350)</b>	<b>Compositional and radionuclide limits for Envelope E</b>	<b>C.8 Spec 7 (7.2.2.1)</b>	<b>C</b>	<b>D</b>	<b>COR</b>	<b>TBD</b>
C.9.1	Interface Control Documents	Section C.9	J	D	COR (M131)	7/15/2001, 3/15/2002, and as required
H.1	Environmental Permits	Clause H.26 (d) <b>(M152)</b>	A	D	COR (M131)	ongoing
H.2	Litigation Management Plan	Clause H.33	A	D	COR (M131)	4/15/2001
H.3	Deleted					
H.4	Property Management System (M120)	Clause H.51	A	D	COR (M131)	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 Records form. DOE comments that cannot be resolved in the appropriate partnering team shall be elevated to the Project Management Team for resolution.
- D U.S. Department of Energy, Office of River Protection.

COR Contracting Officer's Representative (M131)

- I Information — The deliverable shall be provided for information purposes only. DOE will have the option of reviewing the information and providing comments through the partnering process. Such comments do not require resolution under the Contract.
- J Jointly Developed, Review and Comment — The ICDs shall be jointly developed with DOE, the Tank Farm Contractor, and Hanford Site contractors. The deliverable shall be provided to DOE for review and comment. DOE will have the option for reviewing the information and providing comment. The Contractor shall respond to all written comments. DOE comments that cannot be resolved in the appropriate partnering team shall be elevated to the senior management for resolution.
- M Monitor — The deliverable shall be developed with input from DOE. DOE will be highly involved as the deliverable is developed, and will monitor the progress of the deliverable. DOE comments shall be discussed in the partnering teams as the deliverable develops. If DOE direction is determined to be appropriate, DOE shall provide such direction in writing.
- P Product Acceptance — As defined in Specification 13.
- R Regulatory Deliverable Approval — Will be performed in accordance with Standard 7 or Standard 9, as appropriate.

## C.6 STANDARDS

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

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

## 1.0 References

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

- 1.1 HNF-3638. Revision 1. *Standard Electronic Format Specification for Tank Waste Characterization Data Loader: Version 2.4*
- 1.2 PNNL-12040. Revision 0. *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project*. K.D. Wiemers, et al. Dated December 1998.
- 1.3 PL-W375-EN00003. Revision 1. *Environmental Performance Demonstration Plan*, J.R. Markillie. Dated April 28, 2000
- 1.4 HNF-SD-WM-SP-012. Revision 6. *Tank Farm Contractor Operation and Utilization Plan*. Dated January 2007.
- 1.5 Washington Administrative Code (WAC) 173-303. "Dangerous Waste Regulations"
- 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 (M066) (A143) (M152)*

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 U.S. Department of Energy (DOE) Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD, to enable DOE to meet the data requirements of the Integrated Planning, Accountability, and Budgeting System (IPABS), and to ensure transparency in project performance and efficiency in project execution. The Contractor shall also support the DOE Office of River Protection (ORP) in developing and maintaining the integrated River Protection Project (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 Waste Treatment and Immobilization Plant (WTP) Project. The baseline shall be managed in accordance with the process documented in the Earned Value Management System Description (Table C.5-1.1, Deliverable 1.3) and the Baseline Change Control Program Procedure (Table C.5-1.1, Deliverable 1.11) consistent with the below concepts and provisions:

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

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

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

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

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

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

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

- (i) Contract Statement of Work;
  - (ii) Approved Functional Specification pursuant to Contract Standard 3, paragraph (b)(1);
  - (iii) Approved Basis of Design pursuant to Contract Standard 3, paragraph (b)(2);
  - (iv) Approved Authorization Basis pursuant to 10 CFR 830;
  - (v) Approved Operations Requirements Document (bolded text);
  - (vi) Approved Interface Control Documents;
  - (vii) Permit Requirements; and
  - (viii) Approved Level 2 Work Breakdown Structure (WBS) Dictionary Sheets.
- (2) Schedule Baseline: The WTP baseline schedule shall be an activity-based, logic-driven schedule. The schedule logic shall be integrated with a networked hierarchy containing detailed tasks necessary to ensure successful project execution. The schedule shall support networked summarization at Level 1, Project Summary Schedule, Level 2, Executive Level Schedule, Level 3, Project Intermediate Schedule, to the Level 4, Detailed Working Schedule. The scheduled activities shall be vertically traceable to the RPP Integrated Master Plan (IMP), the WBS, and EVMS control accounts. The WTP schedule shall be used to verify attainability of the contract level milestone defined in Contract Section F.1(b), to evaluate progress toward meeting program objectives through tracking Activity and Facility Milestones as outlined in Section B.4(c), and to integrate the program schedule activities with all related work activities and milestones.

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

- (i) Scheduling Requirements: The WTP schedule shall be developed using a 24-month rolling schedule concept which is statused monthly and extended semi-annually. The near-term schedule shall be more detailed than activities past the 24-month cutoff.
  - a. The schedule shall include all significant external interfaces and critical items from suppliers, teammates, or other detailed schedules that depict significant and/or critical elements and Government furnished equipment or information dependencies. The determination of significant and critical Government interface requirements shall be mutually defined and documented.
  - b. The schedule shall be updated according to the Contractor's management control system and shall be submitted no less frequently than monthly. The schedule may reflect data either as of the end of the calendar month or as of the Contractor's accounting period cutoff date, provided it is consistent and traceable to the Monthly Status Report.
  - c. The schedule shall contain discrete tasks/activities through contract completion including Contract milestones contained in Section B, Attachment B-2-C.
  - d. Monthly schedule analysis shall be performed to assess schedule progress to date and included as part of the monthly status report (see paragraph (d)(2)(v)b). The analysis shall include changes to

schedule assumptions, variances above agreed thresholds to the baseline schedule, causes for the variances, potential impacts, and recommended corrective actions to minimize schedule delays. The analysis shall also identify potential problems and an assessment of the critical path and near-critical paths for the five subprojects and the overall contract.

- e. The schedule shall be created using a Critical Path Method (CPM), network capable Commercially Off-The-Shelf (COTS) scheduling software application. The schedule shall be delivered electronically in the native digital format (i.e., an electronic file produced within the Contractor's scheduling tool) as part of the monthly report.
  - f. The level of detail in the schedule (including number and duration of tasks/activities) shall follow the Contractor's Project Controls System Description, program directives, etc. A sequence of discrete tasks/activities in the network that has the longest total duration through each subproject and the overall WTP Contract shall be identified as the subproject and project critical paths, respectively.
- (ii) In addition, the Contractor shall develop the necessary modeling capability at a rough order of magnitude (ROM) 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.
- (3) Cost Baseline: The WTP cost baseline is the latest DOE-approved Performance Measurement Baseline (PMB) and Total Allocated Budget (TAB) including any negotiated or directed changes and approved baseline change proposals, together with the following PMB 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 (DCAA)-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 (CCB).
  - (ii) Authority levels and processes for approving variances and baseline change proposals.
  - (iii) Minimum BCP documentation requirements.
  - (iv) Cost and schedule estimate requirements.
  - (v) Advance Work authorization process.
  - (vi) Incorporating changes into the baseline EVMS cost and/or schedule modules.
  - (vii) Budget source and impact on project risk.
  - (viii) BCP impact on facility BCWS 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 (EAC) as a separate but integrated part of the overall change control process. Change control records shall maintain clear distinction between approved baseline and EACs.
- (6) Reserved (A192)

(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 (products, documents, procedures, services, etc.) through interface control documents (ICD).
- (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. DOE/ORP will identify points of contact for each interface document.
- (vii) Identify, track, and elevate issues for management review in the Monthly Status Report.

(2) Project Execution Plan (PEP): The Contractor shall prepare a PEP that describes the approach for managing and controlling the project at the Contractor level. The PEP shall be approved by DOE (Table C.5-1.1, Deliverable 1.2), and shall focus on Contractor policies, methods, and approaches for the integration of project scope, schedule, and cost information in ensuring compliance with Contract and regulatory requirements. The Contractor PEP shall address the approach the Contractor will use to implement the requirements pertaining to project control processes including:

- (i) Management structure, responsibilities, and authorities;
- (ii) Integrated safety management;

- (iii) Quality assurance;
- (iv) Safeguards and security;
- (v) Permitting;
- (vi) Construction acceptance, test, and evaluation;
- (vii) Acquisition planning;
- (viii) Contract management;
- (ix) Systems engineering;
- (x) Configuration management;
- (xi) Waste Treatment process change control;
- (xii) Information management and reporting;
- (xiii) External Interface management;
- (xiv) Work management;
- (xv) Risk management;
- (xvi) Construction project management; and
- (xvii) Communications and stakeholder involvement.

- (3) Control System Description: The Contractor shall provide for DOE approval a Earned Value Management System Description meeting the requirements of DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD; and ANSI/EIA-748-A-1998, *Earned Value Management Systems* (EVMS) (Table C.5-1.1, Deliverable 1.3). The system description shall describe the management processes and controls that will be utilized to manage and control work and complete contract requirements. Upon approval by the Contracting Officer, the Contractor shall fully implement the project control system. The Contractor shall obtain Contracting Officer approval prior to implementing materially significant changes to the system description. The Contracting Officer may direct compliance reviews to determine whether the Contractor is operating in accordance with the approved system description and producing accurate planning, budgeting, reporting, and change control data. The Contractor shall provide the Contracting Officer or designated representatives with access to all pertinent records, data, and plans for purposes of initial approval, approval of proposed changes, and the ongoing operation of the project control system (271).

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

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

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

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

(c) Risk Management:

- (1) The Contractor shall implement the risk management process defined in the Contractor’s PEP, and DOE Order 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. (A151)
- (2) The Contractor shall provide a monthly status of work scope actions directly attributed to DOE-owned risks (Technology, Programmatic, and Operational). The Contractor shall also support the identification, categorization, and development of risk-handling strategies for newly identified DOE-owned risks,

- and support the annual update to the RPP Risk Management Plan as requested by DOE.
- (3) Risk and decision management activities, for DOE owned risks, shall be coordinated on a continuing basis with DOE (as lead), Tank Farm Contractor, and Hanford Site contractors. Contractor risk analysis information pertaining to “cross-cutting” decisions shall be communicated to DOE, the Tank Farm Contractor, and Hanford Site contractors, including recommendations as to who should have the lead for managing each risk. The Contractor shall document risks associated with ICDs and prepare issue resolution plans for DOE approval.
  - (4) The Contractor shall include forecasts of expected changes to risk assessment status in the Monthly Status Report (Table C.5-1.1, Deliverable 1.7).
- (d) Project Reporting: The Contractor shall develop a reporting system that reports project performance on the technical scope, schedule, and cost profile. The requirements and procedures for this system shall be defined in the Earned Value Management Systems Description. The following routine reports are required:
- (1) Monthly Status Report: The Contractor shall prepare a monthly status report representing the prior month’s performance and transmit it to DOE by the first Wednesday (M147) 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 (A192)
    - (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 (OMB) Contract Status Report formats (DID-MGMT-81466) or equivalents, representing the prior month's performance and transmit the report to DOE by the last Wednesday of the month following data cutoff (Table C.5-1.1, Deliverable 1.10). Reporting requirements below shall be reviewed on an annual basis and necessary adjustments will be authorized by the Contract Officer.
- (i) Format 1, DD Form 2734/1, Mar 05, Work Breakdown Structure (WBS);
    - a. At Level 2 WBS, Control Account Level (CA)
  - (ii) Format 2, DD Form 2734/2, Mar 05, Organizational Categories;
    - a. At Level 2 Organizational Breakdown Structure (OBS), Level 3 OBS, CA
  - (iii) Format 3, DD Form 2734/3, Mar 05, Baseline;
    - a. At the Control Account Level by Contract changes, management reserve application, and internal replanning categories
  - (iv) Format 4, DD Form 2734/4, Mar 05, Staffing;
    - a. At Level 2 Organizational Breakdown Structure (OBS), Level 3 OBS, CA
  - (v) Format 5, DD Form 2734/5, Mar 05, Explanations and Problem Analysis;
    - a. Variance Analysis in accordance with the following thresholds:
      - i. At the Control Account Level
        - (a) Current Period Variance: \$250K
        - (b) Cumulative Variance: +/- 10 percent or \$1,000K, whichever is less
        - (c) Variance at Completion: +/- 10 percent or \$5,000K, whichever is less
      - b. Schedule analysis in accordance with Data Item Description DI-MGMT-81650, Integrated Master Schedule:
        - i. WBS Level 2 critical paths against construction completion: < 0 days total float; critical paths addressed through the monthly report (paragraph (1)(xiv)) do not have to be duplicated in Format 5.
        - ii. Progress against milestones; performance against milestones addressed through the monthly report (paragraph (1)(viii)) do not have to be duplicated in Format 5.
        - iii. Performance against planned system turnover and startup sequence
        - iv. Provide analysis native files of the following:
          - 1. 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.

2. 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 CPR format 5 as well as electronically.
  3. 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.
  4. 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.
  5. All graphical data shall be provided in tabular form.
  6. Graphical presentation of cumulative number of baseline activities scheduled to be complete and number of those activities that did not complete.
- (vi) 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 CPR Format 3 detail, Contract Budget Base Log; Performance Measurement Baseline Log; and Baseline Change Proposal Log.
- (4) Electronic Data: Earned value data provided via compact disc for the following: (a) Engineering Performance and Progress Report data files; (b) Quantity Unit Rate Report data files; (c) COBRA data files and reports; (d) baseline schedule; (e) current schedules; (f) Cost and Commitment Log; (g) Equipment Management System database; (h) Inception to Date Report for Permanent Plant Equipment Awards; (i) Bechtel Estimating Tool Kit (BETK); (j) Commodity Curves; (k) Special Purpose Charge Code Activity Log for all Not to Exceed Contracting Officer Authorizations; (l) Earned Purchase Order Value (EPOV) data; (m) Engineering Job Hour Variance Analysis Reports; (n) Work Package variance analyses, as available; and (o) Area and Project Review presentation packages. Earned value data is to be provided on the last Wednesday of the month following the data cutoff to the Contracting Officer and the Contracting Officer's Representative (Table C.5-1.1, Deliverable 1.12). (A151)
- (5) Occurrence Reporting: The Contractor shall adhere to DOE Order 232.2, *Occurrence Reporting and Processing of Operations Information*, Supplemental Contractor Requirements Documents (SCRD), with Hanford Site-specific requirements and methods for notification (Table C.5-1.1, Deliverable 1.8). The Contractor shall also adhere to the requirements of the ORP Supplemental (S) CRD to DOE Order 232.2 **(256)**.

- (6) Environment, Safety, and Health Reporting: In addition to the *Occupational Safety and Health Act of 1970* and the *Price Anderson Amendments Act of 1988* (10 CFR 820) reporting requirements, the Contractor shall report all information specified in DOE Order 231.1B (310). The Contractor process will specify this requirement in contracts down to the lowest-tier subcontractor. The Contractor process will accumulate and provide a single report responding to requirement information for both the Contractor and all subcontractors (Table C.5-1.1, Deliverable 1.9). For occurrence reporting the Contractor shall adhere to the requirements of the Supplemental Contractor Requirements Document (SCRD) of DOE Order 232.2 **(256)**.
- (7) Accident Investigation: The Contractor and, as necessary, all subcontractors shall support accident investigations for accidents that may occur during Contractor activities. The Contractor and all its subcontractors shall establish and maintain readiness to respond to accidents, mitigate potential consequences, assist in collecting and processing evidence, and assist with the accident investigation. This shall include preserving the accident scene and providing support to the accident investigation board.
- (8) Reserved (A192)
- (9) Electronic Data Upload to PARS II: Each month the contractor shall upload WTP performance data to the new DOE Project Assessment and Reporting System (PARS II), using a DOE-provided data extractor for cost and schedule data, by the last workday of the month following the fiscal month end, for the fiscal month period. Change Control and variance analysis data will be provided to PARS II by an upload of a Portable Document Format (PDF) of the appropriate monthly reports for the fiscal month period as well.

Standard 2: Research, Technology, and Modeling

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

(a) Research and Technology Testing Program:

(1) Research and Technology Program Plan:

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

(2) Research and Technology Requirements:

- (i) The Contractor shall provide DOE copies for information of the Contractor-approved draft test plans for all process verification, including the determination of process operating limits and product qualification testing, at least fifteen (15) calendar days in advance of conducting the test(s). Approved test plans shall be provided to DOE (Table C.5.-1.1 Deliverable 2.2).
- (ii) DOE will be provided draft copies of test reports for comment during the Contractor report review period, and the Contractor shall provide to DOE completed test reports for process verification testing and product qualification within two (2) months after the approval by 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 the *Quality Assurance Requirements and Description Document (QARD)*, DOE/RW-0333P, 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 *Standard Electronic Format Specification for Tank Waste Characterization Data Loader: Version 2.4* (HNF-3638, 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 HWMA and RCRA de-listing technical requirements in accordance with Specification 1, *Immobilized High-Level Waste*, and for producing a Land Disposal Restrictions (LDR)-compliant ILAW form

in accordance with Specification 2, *Immobilized Low-Activity Waste*.

- (C) The Contractor shall determine if the sample materials meet Specification 7, *Low-Activity Waste Envelopes Definition*, limits for LAW samples and Specification 8, *High-Level Waste Envelope Definition*, limits for HLW samples. The entrained solids in the LAW feed samples shall be characterized (where solids of sufficient quantity are available in the treatability samples) in accordance with Specification 7.2.2.1.
- (D) The Contractor shall implement and execute the Regulatory Data Quality Objectives (DQO) entitled *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project*, K.D. Wiemers, et al., dated December 1998, Revision 0, No. PNNL-12040 (Table C.5-1.1, Deliverable 2.4).

During the Contract period, the Contractor shall propose to 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.

- (E) 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), <sup>137</sup>Cs, <sup>90</sup>Sr, and TRU elements, to meet ILAW product requirements. Activities shall address 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 <sup>90</sup>Sr and TRU removal precipitation reaction mechanism shall be characterized via testing.
  - (iii) Validation of Sludge-Washing Process: The Contractor shall conduct sludge treatment testing using radioactive samples provided by DOE, and nonradioactive testing to develop and demonstrate process flowsheets and equipment systems to perform sludge washing, caustic leaching and oxidative leaching to minimize the volume of HLW glass produced.

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

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

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

- (iv) Immobilized Low-Activity Waste Process Testing: The Contractor shall conduct testing to determine the appropriate operating conditions for the LAW melter. Information to be obtained shall include:
- (A) Determination of maximum waste loading (including sulfate incorporation) and melter throughput rates for waste envelopes A, B, and C. The Contractor shall continue to investigate glass formulations optimized to incorporate sulfate. These glasses prepared from simulants shall be subjected to the Product Consistency Test and Vapor Hydration Test in accordance with ILAW Specification 2.2.2.17, *Waste Form Testing*. In addition, the process ability of the glass formulation shall be assessed.
  - (B) Determination of offgas compositions for regulatory purposes and effects on the mass material balance due to recycle streams and secondary waste streams.
  - (C) Confirmation of the design concept for selected offgas equipment.
  - (D) Determination of operating conditions or melter feed additive requirements to minimize foaming and process-upset conditions.
  - (E) Monitor testing to assist in estimating maximum offgas flow requirements in an upset condition.
  - (F) Determination that glasses produced from a continuously-fed melter meets product specifications and requirements.
  - (G) Ability to remotely fill and seal full scale packages to Contract requirements (Specification 2).
- (v) Immobilized Low-Activity Waste Qualification Testing:
- (A) The Contractor shall prepare laboratory scale samples of ILAW glasses from the waste samples provided by DOE. The waste samples shall have been pretreated in accordance with the Contractor's LAW feed pretreatment processes.
  - (B) The Contractor shall use glasses prepared from DOE-supplied samples and Contractor prepared simulants to demonstrate that Contract requirements can be met (Specification 2). The tests

shall be consistent with the DOE-concurred upon ILAW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.3). Glass composition ranges that meet operating and contract requirements shall be identified with non-radioactive glass testing. A planned target composition shall be identified for each glass composition range.

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

(vii) Immobilized High-Level Waste Qualification Testing:

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

The Contractor shall prepare full-scale prototype IHLW canister waste forms composed of simulated IHLW glass within the 4.5-meter tall, austenitic stainless steel canister. After filling the canister with simulated IHLW glass and canister closure, the Contractor shall test the IHLW canister to demonstrate compliance with the *Waste Acceptance System Requirements Document (WASRD)*, Specification 4.8.3, *Dimensional Envelope for HLW Canisters*, and 4.8.4, *Filled HLW Canister Weights*. Drop tests shall be conducted to demonstrate compliance with WASRD Specification 4.8.8, *HLW Canister Drop*. (M047)

- (viii) Effects of Separable Organics: The Contractor shall evaluate the effects of trace quantities (~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 waste 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 waste loading in the glass waste form. The Contractor shall test a minimum of (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 Deliverables 2.2 and 2.3), identify operating limits for plant processes, and to determine any impacts to the facility throughput and/or availability. The Contractor shall make recommendations to ORP for the modification of Specification 12, *Procedure to Determine the HLW Feed Treatment Approach* and Specification 1, *Immobilized High-Level Waste*, Table TS-1 limits for Cr<sub>2</sub>O<sub>3</sub> and sulfate, based upon the results of this experimentation. (Table C.5-1.1 Deliverable 2.9, Test Report on Oxidative Leaching).

- (x) Vessel Mixing: The Contractor shall plan and perform large scale testing of pulse jet mixed vessels for both non-Newtonian and Newtonian vessel designs. Scope to be addressed includes planning, preparation, and performance of testing, including completion of test reports that supports:
- 1) Substantiation of the committed design;
  - 2) Engineering, procurement, and construction risk reduction;
  - 3) Design confirmation including benchmarking or validating Computational Fluid Dynamic models and low order models; and
  - 4) Waste Treatment and Immobilization Plant (WTP) commissioning risk reduction.

Key equipment such as test vessels used in this work shall be designed such that reuse in potential future post commissioning testing to support

continued WTP operations is not precluded.

Detailed objectives for testing shall include:

1. Confirmation of scaling parameters for both non-Newtonian and Newtonian vessels. If scaling is not confirmed, alternate methods, such as full scale testing shall be performed as needed. Simulants shall include non-Newtonian and Newtonian slurries as applicable;
2. Confirmation of mixing performance with complex simulants including Newtonian and non-Newtonian that challenge the range of expected tank waste physical properties;
3. Definition and demonstration of heel removal system capability;
4. Determination and demonstration of mixing system limiting conditions of design including safety limits and operating limits;
5. Confirmation of prototypic level and density instrument function;
6. Confirmation of integrated pulse jet fluidics, mixing, sampling, and transfer system operations; and
7. Demonstrating the PJM control strategy including logic and transition with prototypic equipment through the range of operating conditions.

Large scale test objectives shall be documented and substantiated in a formal Request for Technology Development (RTD). The RTD shall be provided to DOE for review and comment. The results of test work shall be subject to error analysis prior to use in the final design. Simulant design and analysis requirements shall be specified. Simulant preparation shall be governed by a procedure, and the simulant shall be verified and validated to meet requirements before testing is initiated.

**(221) (300) – This sub-paragraph (x) is superseded by paragraph (h) in Standard 3.**

(b) Process and Facility Modeling Requirements:

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

- (1) Operations Research Assessment of the Waste Treatment and Immobilization Plant:  
The Contractor shall conduct Operations Research assessments for the Pretreatment Facility, HLW Vitrification Facility, LAW Vitrification Facility, and Analytical Laboratory 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 Balance of Facilities (BOF) including the glass former facility and where separate evaluations show a BOF system's predicted availability could impact integrated plant availability. Integrated facility assessments shall be performed to evaluate compliance with Contract Section C.7 (b) integrated facility availability. The scope of the assessments to estimate WTP facility availability shall include:
  - (i) Sampling and analysis requirements including sample turnaround times;
  - (ii) Vessel capacities;
  - (iii) Times to conduct individual process steps in unit operations;

- (iv) Time for mechanical handling steps;
- (v) Equipment reliability and availability time estimates;
- (vi) Failure rates of critical instrumentation and control systems;
- (vii) Time to diagnose equipment failures and preparation for repair; and
- (viii) Time estimates for maintenance and repair of facility and process systems.

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

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

The Operations Research Assessment shall be used to provide a basis for establishing the spare parts inventory list (Standard 3(c)(6)).

Where reliability, availability, maintainability, and inspectability (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 U.S. Department of Energy (DOE) for review and approval prior to completion of the model runs used to demonstrate Section C.7 compliance with treatment capacity requirements.

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

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

- (2) Waste Treatment and Immobilization Plant Tank Utilization Assessments:  
The Contractor shall perform Tank Utilization Assessments under specific feed vector assumptions provided by DOE and will be based upon the compositional limits defined in Specification 7, *Low-Activity Waste Envelopes Definition* and Specification 8, *High-Level Waste Envelope Definition*, tank waste inventory estimates, and the results of testing with actual tank waste samples. The Contractor shall perform Tank Utilization Assessments to support assessments of design changes that would affect model outcomes. The models shall reflect the latest design and information from research and technology. DOE shall review and approve the specific assumptions when the Tank Utilization Assessment model is used to evaluate Contract Section C.7 (b) design capacity requirements. The primary software used to run the dynamic flowsheet shall be Gensym G2 or other software as agreed to by DOE. The Contractor shall assess utilization of process tank capacity and supporting equipment capability and operational characteristics, to ensure that the tanks are appropriately sized to support process operations, sampling and analysis turnaround times, process control requirements, and waste form qualification requirements. The model assessments shall include material balance summaries of major chemical and radiochemical components to support

demonstration of model assessment integrity. Results shall be provided to DOE for review and comment (Table C.5-1.1, Deliverable 2.6).

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

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

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

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

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

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

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

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

Standard 3: Design

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

(a) Design Process:

The Contractor shall perform the following activities:

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

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

- (1) Functional Specification: The Contractor shall prepare a Functional Specification that defines the technical operational requirements of the WTP based on the WTP Conceptual Design and supporting documentation (Table C.5-1.1, Deliverable 3.2). This document shall define the waste treatment requirements, environmental compliance requirements, and authorization basis requirements of the facility as currently known and understood. The Functional Specification shall describe the process/functional requirements of the WTP, including:
  - (i) WTP feed characteristics including quantities, treatment rates, and mechanical, physical, chemical, and radiological properties (by ranges, envelopes, tanks, or transfer batches);
  - (ii) ILAW and IHLW product characteristics such as quantities, mechanical, physical, chemical, and radiological properties (by ranges, envelopes, tanks, or transfer batches);
  - (iii) Services and utility requirements, operating materials and supplies, and other inputs;
  - (iv) Estimates of effluents, emissions, solid wastes, by-products, and other outputs; and
  - (v) WTP operations limits.
- (2) Basis of Design: The Contractor shall prepare for DOE review and comment (Table C.5-1.1, Deliverable 3.3(a)), and as changes occur (M171) a Basis of Design Document that identifies directly or by reference design requirements and design codes and standards that will serve as a basis for the continued design of the WTP. The Basis of Design shall be based on the WTP Conceptual Design, (including the Basis of Design directly developed in that phase), and supporting documentation. The Basis of Design shall be generally organized by discipline and shall at a minimum identify:

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

- (xv) Prevention of Significant Deterioration to the Environment (when submitted/approved); and
  - (xvi) Interface Control Documents.
- (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 (Balance of Facilities, Pretreatment, HLW Vitrification, and LAW Vitrification);
  - (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.
- (c) Establish and Maintain Design Documentation: The Contractor is required to establish a design process including design documentation and media, that complies with the Design Criteria Documents identified in Standard 3, (b).

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

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

Information shall contain relevant references, such as, system descriptions, process data sheets, and equipment data sheets and shall address Pretreatment, LAW Immobilization, HLW Immobilization, Analytical Laboratory, and Balance of Facilities. 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 (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., Balance of Facilities, Pretreatment, LAW Conditioning, Analytical Laboratory, HLW Vitrification, and LAW Vitrification). 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 developed in an electronically sortable format with sufficient information to provide traceability to the WTP design, sufficient information to procure qualified spare parts, and 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 by:
    - (A) Assessment of the mean time before failure of equipment as identified by the Operational Research Assessments (Standard 2, Deliverable 2.5); and
    - (B) Assessment of the time required to procure and modify replacement equipment.
    - (C) Ensuring that the spare parts list supports WTP operations for one (1) year following completion of Hot Commissioning.
  - (iii) Protected storage locations shall be identified for storage of the spare parts. The Spare Parts List shall be turned over to the Operations Contractor at the time of Contract completion.
  - (iv) The Spare Parts List, and basis, shall be provided to DOE for review and comment (Table C.5-1.1, Deliverable 3.9).
- (7) 3-Dimensional Design Model (3-D Model): The Contractor shall provide access to all files of the 3-Dimensional Design Model (3-D 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 Pretreatment Plant, HLW Vitrification Plant, and LAW Vitrification Plant. 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 Pretreatment, HLW Vitrification, Analytical Laboratory, and LAW Vitrification 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 Pretreatment, HLW Vitrification, Analytical Laboratory, and LAW Vitrification 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 Pretreatment, HLW Vitrification, LAW Vitrification, Analytical Laboratory, and Balance of Facilities. 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 Pretreatment, HLW Vitrification, Analytical Laboratory, and LAW Vitrification facilities.
- (15) Facility Ventilation System Design: The Contractor shall prepare the ventilation flow diagrams and heating, ventilation, and air conditioning system design for the Pretreatment, HLW Vitrification, LAW Vitrification, Analytical Laboratory, and Balance of Facilities. 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 Pretreatment, HLW Vitrification, LAW Vitrification, Analytical Laboratory, and Balance of Facilities. 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 facilities for Pretreatment, HLW Vitrification, LAW Vitrification, 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 Pretreatment, HLW Vitrification, LAW Vitrification, Analytical Laboratory, and Balance of Facilities. 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) maybe 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 Analytical Laboratory to support the WTP.

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

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

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

The Analytical Laboratory 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.
- (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 (such as improved radiochemical separations), facility design (such as improved space utilization), and technologies (such as second generation treatment and immobilization technologies that are ready for demonstration and application); these will affect the Contract requirements (Table C.5-1.1, Deliverable 3.8). Optimization studies that do not affect the Contract requirements are the Contractor's responsibility and are separate from this activity. The Contractor shall seek input from DOE and the Tank Farm Contractor in developing the list of proposed studies. DOE and the Contractor shall jointly agree upon which studies shall be performed. All optimization studies shall address the following:
- (1) Description of the item, process, system, or facility to be optimized and the basis for such optimization;
  - (2) Description of the research and technology program elements that are required to validate the required performance prior to incorporating the change into the baseline;
  - (3) Description of the design changes that are required to incorporate the change into the baseline;
  - (4) Effects of the proposed optimization on the tank farm operator authorization basis and the authorization basis interfaces between the WTP and the Tank Farm Contractor;
  - (5) Effects on WTP cost, schedule, plant capacity, and waste loading;
  - (6) Near-term impacts for Tank Farm Contractor;
  - (7) Estimated life cycle cost impacts to ORP;
  - (8) An evaluation of potential impacts on long-term interfaces with the Tank Farm Contractor;
  - (9) Technical risks eliminated, changed, or amplified by the proposed change;
  - (10) Regulatory issues eliminated, changed, or amplified by the proposed change;

- (11) Potential changes in secondary waste and on returnable material volume and type; and
- (12) An evaluation of the potential changes in energy needs and other ORP supplies material quantity.

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

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

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

In order to improve communications, the Contractor shall provide dedicated office space in the Contractor's design facilities for DOE staff on the fourth (4<sup>th</sup>) floor of the Project Office, and other facilities as may be necessary.

- (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 Follow-up 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 (EFRT):

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

- (1) Prepare Issue Response Plans (IRP) for the 28 technical and design issues identified in the EFRT Report. DOE approval on the IRPs 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 (Deliverable 1.7 in Table C.5-1.1). 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 IRP 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, transfer and sampling functions.
- (v) Prepare a charter for a Joint Test Group and lead the Joint Test Group.
- (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 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 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) **DFLAW Design (350):**

The DFLAW Design effort represents the engineering scope necessary to modify the current WTP facility to allow for the operation of the LAW facility in a stand alone fashion with a direct feed capability as well as integrated facility operations.

(1) Design of BOF Utility Modifications: (329)

The current BOF Utility Facilities are designed for full WTP Operation; therefore modification of these facilities will be required to support reduced throughput during DFLAW operation. Design modifications shall include; updating of control system software, providing for mechanical and electrical isolation, updating of all engineering primary documents and/or calculations, new instrumentation, providing piping modifications for extended layup, piping modifications for secondary headers with additional pumps, and new major pieces of equipment such as air compressors. Safety evaluations, permitting, and hazard analyses to perform the modifications are included in the scope of work.

(2) Design of BOF Effluent Management Facility: (330)

Design an Effluent Management Facility to store effluents (48 hours of storage capacity)

that meet interface acceptance criteria for discharge to the Liquid Effluent Retention Facility and the Effluent Treatment Facility for subsequent treatment or discharge to the Tank Farm Double Shell Tank system. The facility will be designed to allow for the recycling/blending of this concentrated effluent back into the LAW waste stream and allow for the ability to truck this concentrated effluent, if deemed feasible at a later date. The facility will allow for flushing between the Tank Farm Operation Company and LAW with limited impact on waste loading and allow for return of off specification waste.

(3) Design of BOF Effluent Management Facility: (339)

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: operating island fence, modified roadways, final grade and storm water drainage, sanitary sewer system, utility isolation, operating contractor interface, underground utilities, effluent and waste transfer lines, LAW waste and effluent valve pit, and a sodium hydroxide offloading pad. These are permanent plant modifications that allow operation of ~~DFLAW the LAW facility in in the event that the PF Facility is not available~~ a standalone fashion with a direct feed capability as well as integrated facility operations (350).

(4) DFLAW Engineering Support: (350)

The Contractor shall provide engineering support through completion of the activities defined in Section J, Attachment Q.

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 Owners Agent will be allowed to observe system turnover from Construction to Commissioning. Acceptance does not refer to DOE acceptance of the WTP from the Contractor; DOE acceptance of the WTP will not occur until “Completion of Hot Commissioning”.

(a) Construction, Procurement, and Acceptance Testing Plan: The Contractor shall prepare and submit a Construction, Procurement, and Acceptance Testing Plan for DOE approval (Table C.5-1.1, Deliverable 4.1) and update the Plan as required after initial submission. The Plan shall include:

- (1) Description of procurement, construction bid, and work packages;
- (2) Construction management and force account construction;
- (3) Construction site management;
- (4) Acceptance testing; and
- (5) Descriptive linkage to the Project Execution Plan (PEP) described in Standard 1 and the Environment, Safety, Quality, and Health program described in Standard 7.

(b) Procurement:

- (1) The Contractor shall procure all required material and equipment; prepare bid packages and solicitations; evaluate, award, and manage subcontracts; accept

- subcontractor materials and equipment; and verify subcontractor acceptance tests.
- (2) The Contractor shall submit a Purchasing System for DOE approval in accordance with Section I Clause, *Subcontracts* (Table C.5-1.1, Deliverable 4.2, Purchasing System).
- (c) Construction Bid and Work Packages: The Contractor shall prepare bid and work packages; solicit, evaluate, award, and manage subcontracts; accept subcontractor construction; and verify subcontractor acceptance tests (Table C.5-1.1, Deliverable 4.3).
- (d) Construction Management and Force Account Construction: The Contractor shall manage or perform all: supervision; required construction; furnish labor, equipment, and 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/non-conforming 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, any spare parts sufficient to maintain all structures, systems, and components (SSC) 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, Pretreatment, LAW Vitrification, or HLW Vitrification.
- (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. “*Completion of Facility Acceptance*” is defined when all components and systems associated with the Pretreatment, LAW Vitrification, and HLW Vitrification, 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 Hanford Emergency Management Plan, DOE/RL-94-02, and the emergency and fire prevention requirements of 29 CFR 1910 and 29 CFR 1926. (Table C.5-1.1, Deliverable 4.6) (215) (256).
- (k) Procurement of BOF Utility Modifications and LAW Valve Vault Materials: The current BOF Utility Facilities are designed for full WTP Operation, therefore modification of these facilities will be required to support reduced throughput during DFLAW operation. Procurements based upon design modifications shall include; mechanical isolations, piping modifications for extended layup, piping modifications for secondary headers with additional pumps, and new major pieces of equipment such as air compressors. The LAW Valve Vault provides isolation features that allow routing alignment for receiving waste and for transferring effluents in the DFLAW piping configuration or the PT facility configuration. The Valve Vault shall provide: safe personnel access to the isolation features, secondary containment of leaks and leak detection, sloped to a sump equipped with a sump pump for removal of liquid, sealed or covered to prevent intrusion of rain water, and designed for seismic events.
- (l) BOF Isolation Construction: The current BOF Utility Facilities are designed for full WTP Operation, therefore modification of these facilities will be required to support reduced throughput during DFLAW operation. Construction activities shall include; excavations and backfill, mechanical and electrical isolations, piping installations for extended layup, piping installations for secondary headers with additional pumps installed, pneumatic and hydrostatic testing, and new major pieces of equipment such as air compressor installation. (348)

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 with a planned 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 Commissioning process begins with 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 Standard 5. The Contractor may choose to commission the facilities in a sequential order or a parallel order.

- (a) Objectives: The Contractor shall:
  - (1) Demonstrate that the waste treatment capacity performance of the WTP facilities meets the facility minimum capacity criteria 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 operations;
- (5) Ensure WTP facilities, programs, and personnel are prepared for, and successfully complete an Operational Readiness Reviews (**M196**) in accordance with DOE Order 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities* (A190), prior to start of Hot Commissioning;
- (6) Complete Critical Decision (CD) 4 in accordance with DOE Order 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.

A 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 Pre-treatment, this (350) simulant may be comprised of a baseline composition that with spiking will demonstrate water washing, caustic, and oxidative leaching to solubilize aluminum (Al) and chromium (Cr). 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 Pretreatment Facility simulant properties for demonstrating capacity shall:

- Support caustic and oxidative leaching;
- 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, Revision 2, *WTP Contract Run – (G2) Dynamic Model Run Results Report, August 25, 2008*);
- Have average physical properties including particle size, particle density and rheological properties;
- Contain the major chemical constituents required to cost effectively demonstrate treatment; and
- 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 introduction of waste feed simulant to the WTP facilities (i.e., start of cold commissioning). The Plan shall:

- (1) Meet the Commissioning objectives stated in Standard 5, (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 program;
- (5) Define the Cold Commissioning and Hot Commissioning phase organizations; and
- (6) Identify planned actions to ensure readiness, prior to Hot Commissioning of the associated facility, for Operational Readiness Reviews (ORRs) **(M196)** per DOE Order 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (A190)* (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/Lab, PT, and HLW). **(M196) (257)**.

The Commissioning Plan shall be updated as required and provided to DOE for approval.

- (d) Joint Test Group (JTG): The Contractor 's JTG 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 program; and
  - (6) Confirming successful conduct and performance of Technical Safety Requirements (TSR) surveillance.

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

The JTG will approve the test procedures and results for Safety Class (SC), Safety Significant (SS), Environmental Performance, and DOE/RW-0333P QARD system acceptance testing during Commissioning, as well as Contract technical performance test results as defined in Standard 5, (e) for *Cold Commissioning* and Standard 5, (g) for *Hot Commissioning*.

- (e) Cold Commissioning: 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 non-radioactive 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 Pretreatment, LAW Vitrification, and HLW Vitrification facilities to:

- (i) Verify through the Waste Form Qualification Tests (e)(3)(i) that the WTP can produce qualified waste products (Specification 1, *Immobilized High Level Waste* and Specification 2, *Immobilized Low-Activity Waste*) and secondary wastes based upon DOE-approved waste compliance plans (Deliverable 6.1, 6.2 and 6.3, Table C.5-1.1).
- (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) Perform the Integrated Operations as described further in (e)(3)(iii).
- (iv) Demonstrate through the Remotability Test (e)(3)(iv) the remotability of components installed in areas designed for remote operations.
- (v) 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.5-1.0, 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 *Interface Control Documents*. During the tests, the Contractor shall provide documentation of the waste form products for DOE acceptance in accordance with Specification 13, *Commissioning Waste Product Inspection and Acceptance*.

- (2) Request for Approval to Initiate Cold Commissioning: Cold Commissioning begins with introduction of simulants into the process facility, vessels as defined in the PEMP. 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 Order 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities* (A190). 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 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 non-radioactive products (ILAW and IHLW) and secondary wastes in

accordance with the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1), ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3), and IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2). Applicable process unit operations, sampling and analysis, process control systems, and operating procedures shall be utilized in these qualification tests in a manner that represents planned operations with actual wastes. Test results will be evaluated and documented as part of the waste form qualification reports identified in Standard 6, *Product Qualification, Characterization, and Certification*.

(ii) Cold Commissioning Capacity Tests:

Cold commissioning testing shall be conducted to demonstrate the capacity of the WTP as noted in Table C.6-5.1. Waste form products and secondary wastes will be produced in accordance with the qualification strategies and requirements identified in the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1), ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3), and IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2), and meet the relevant specification and interface requirements. The results shall be provided to DOE for review and approval. (Table C.5-1.1, Deliverable 5.4).

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

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

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

- The HLW and LAW Vitrification facilities shall be operated for 20 days.
- The Pretreatment testing duration is based on four Ultrafiltration cycles (two in each Ultrafiltration train).
- An Ultrafiltration cycle is a series of process steps including receipt, treatment, and transfer.
- The Cold Commissioning Capacity Test is based on the measurement of waste treated between the following points:
  - For HLW Pretreatment (i.e., solids) between UFP-VSL-00001A/B and HLP-VSL-00027A/B or HLP-VSL-00028.
  - For LAW Pretreatment (i.e., sodium) 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 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 Pretreatment	2244 MT Na per year	2620 MT Na per year	3740 MT Na per year
HLW Pretreatment	735 MT as-delivered solids per year	860 MT as-delivered solids per year	1225 MT as-delivered solids per year
LAW Vitrification	18 MT Glass per day	24 21 (350) MT Glass per day	30 MT Glass per day
HLW Vitrification	3.6 MT Glass per day	4.2 MT Glass per day	6.0 MT Glass per day

Notes to Table C.6-5.1

1. Production rates in Table C.6-5.1 are based on the Facility Specification treatment capacity for treating all waste feed batches from the HNF-SD-WM-SP-012, Revision 6, Tank Farm Contractor Operation and Utilization Plan (TFCOUP Revision 6, feed vector.) Characterization of the as-delivered DOE approved simulant (Deliverable 5.18, Table C.5-1.1) 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 Pretreatment Engineering Platform testing. Changes to the model reflecting design, assumptions, and administrative controls shall be approved by DOE.
2. The revised values for Table C.6-5.1 will be documented in Cold Commissioning Capacity Test Criteria (Deliverable 5.20, Table C-5.1-1) due prior to completion of Deliverable 5.8. The Contract will be revised to incorporate the new table.
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: The Contractor may choose to perform Cold Commissioning Capacity Tests of each of the facilities in a sequential order or in parallel, but ultimately shall be required to perform 10-day integrated operations demonstration of all five (5) WTP facilities. If sufficient recycle streams are not available, appropriate simulated recycle streams will be used. Credit for the 10-day integrated operations may be taken during the Cold Commissioning Capacity Test or the 10-day integrated operations demonstration may be performed separately.

The recycle of process streams are to be simulated in the process flowsheet if the facilities are operated in a sequential operating mode and representative recycle solutions are not available. The WTP process is comprised of a number of unit batch operations which are performed concurrently and in series to produce a number of discrete IHLW canisters and ILAW containers. The unit batch operations are linked by lag storage vessels which serve to decouple the process and preclude process interruptions. At no time are all operations expected to be occurring simultaneously.

- (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 the 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) Completing Cold Commissioning: Cold Commissioning is considered complete, for Operational Performance Fee determination purposes, at the point when the capacity tests for Cold Commissioning described in Standard 5, (e(3)(ii) are complete and the test results are approved by the JTG (except as otherwise provided in Standard 5(h)). The Contractor shall not proceed to Hot Commissioning until Table C.6-5.1 Minimum Treatment Capacity values have been achieved or otherwise accepted by DOE as completed in accordance with Standard 5(h).
- (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(d) (Table C.5-1.1, Deliverable 5.9) or as outlined in Standard 5(h).

(f) Readiness:

- (i) Operational Readiness Support Plan (257): Prior to Operational Readiness Reviews, 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 (Pretreatment, HLW, LAW, LAB, BOF). Topical areas for review may include (but are not limited to):
- Management Self-Assessment process;
  - Start-up notification report;
  - Procedures;
  - Training and testing activities; and
  - Cold and hot commissioning
- (ii) Operational Readiness Review(s) (M196): The WTP Operational Readiness Review process shall be conducted in accordance with DOE Order 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (A190)*, 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 Order 425.1D, CRD, *Verification of Readiness to Start Up or Restart Nuclear Facilities (A190)*. 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 Pretreatment 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 Capacity Tests (Table C.5-1.1; Deliverable 5.21): Hot commissioning testing shall be conducted to demonstrate ~~the~~ **(350)** capacity of the WTP as identified in Table C.6-5.2.
- (5) The plant capacity test results shall be demonstrated using the plant instrumentation, and sampling, analyses, and product control systems. The JTG approved results of the Hot Commissioning Capacity Tests shall be provided to DOE for review and approval (Table C.5-1.1, Deliverable 5.12).

The ~~capacity~~ **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.

The leaching process shall be performed as required per Specification 12 and consistent with the process model used to develop Table C.6-5.2. Leaching effectiveness is not a criterion for acceptability of Hot Commissioning Capacity Test results.

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

- The HLW and LAW Vitrification facilities shall be operated for 20 days.
- The Pretreatment testing duration is based on four Ultrafiltration cycles (two in each Ultrafiltration train). An Ultrafiltration cycle is a series of process steps including receipt, treatment, and transfer.
- The Hot Commissioning Capacity ~~Test 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., sodium) 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 Pretreatment 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	2244 MT Na per year	2620 MT Na per year	3740 MT Na per year
HLW Pretreatment	735 MT as-delivered solids per year	860 MT as-delivered solids per year	1225 MT as-delivered solids per year
LAW Vitrification	18 MT Glass per day	24 21 (350) MT Glass per day	30 MT Glass per day
HLW Vitrification	3.6 MT Glass per day	4.2 MT Glass per day	6.0 MT Glass per day

Notes to Table C.6-5.2:

1. Production rates in Table C.6-5.2 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, Revision 6, 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 (Deliverable 5.21, Table C-5.1-1) due prior to completion of Deliverable 5.14. The Contract will be revised to incorporate the new table.
2. Waste feed delivery delays, and other interface service delays in excess of that assumed in the process models used to create Table C.6-5.2 shall not be counted in the duration of the capacity runs.
3. If Supplemental LAW Treatment lag storage facilities are not available to receive the excess treated LAW, the LAW Pretreatment rates will be adjusted to align with LAW Vitrification performance.
  - (i) HLW Pretreatment: The HLW Pretreatment line shall be operated in order to produce feed to HLW Vitrification that results in IHLW in compliance with Specification 1.
  - (ii) LAW Pretreatment: The LAW Pretreatment line shall be operated to produce feed to the LAW that results in ILAW in compliance with Specification 2.
  - (iii) Low-Activity Waste Vitrification: The LAW Vitrification 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. documentation requirements for the production of the ILAW containers are described in Specification 13, and shall be transmitted to DOE per deliverable, Resultant Products from Hot Commissioning (Table C.5.1-1, Deliverable 5.13).

- (iv) High-Level Waste Vitrification: The HLW Vitrification 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. Documentation requirements for the production of the IHLW canisters are described in Specification 13, and shall be transmitted to DOE per deliverable, Resultant Products from Hot Commissioning (Table C.5.1-1, Deliverable 5.13).
  
- (6) Hot Commissioning Results and Documentation: The Contractor shall provide Hot Commissioning test results to DOE for review and approval (Table C.5-1.1, Deliverable 5.14). The information shall be in the form of controlled copies or electronic media as requested by DOE. The information shall include, but not be limited to:
  - (i) Test Plans and Test Reports for demonstrating and establishing permitting conditions (RCRA, authorization basis, air, performance test plan, etc.);
  - (ii) Test Plans and Test Reports for process verification and product qualification, including documentation and certification, that the IHLW and ILAW products meet requirements per Specification 1 and Specification 2, respectively.
  - (iii) Updated process model assessments (Standard 2, (b)) that are reconciled with Cold and Hot Commissioning test data to demonstrate that the WTP has the capability to process the waste feed compositional variations that will be provided by the Tank Farm;
  - (iv) Certify waste product (ILAW and IHLW ) and secondary waste acceptability per Standard 6, *Product Qualification, Characterization and Certification* through implementation of the Waste Compliance Plans;
  - (v) Copies of required information sent to regulators (RCRA, air, authorization basis, etc.), and as required elsewhere in the Contract.
  
- (7) Certification of Completion of Hot Commissioning Results and Documentation: **(350)** The Contractor shall provide Certification of Completion of Hot Commissioning. The Contractor shall certify to DOE that the Hot Commissioning is complete and that the Contractor met the requirements contained in Standard 5(g) (Table C.5-1.1, Deliverable 5.15 or as outlined in Standard 5(h)).

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

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

- (1) If the deficiency results from an inadequate and/or incomplete test procedure, the Contractor shall correct the test procedure and re-test within its scope of Commissioning;
  - (2) If the deficiency results from a design or construction nonconformance, the Contractor shall correct the nonconformity and re-test within its scope of Commissioning;
  - (3) If the cause of a deficiency cannot be determined, the Contractor shall propose a reasonable investigation program to determine the cause and following ORP approval of the investigation cost and schedule, shall implement the investigation program.
  - (4) If DOE does not wish to fund additional remedial expenses, the related testing is consequently accepted as completed at the Minimum level defined in Section B.11 Attachment B-2-D.
- (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 rate of the facilities. 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 (Deliverable 5.19, Table C.5-1.1).
- (i) Safety Management Programs (SMPs) to ensure safe accomplishment of work (A190).
  - (ii) Facility safety documentation (normally DSA (Documented Safety Analysis) and TSRs that describes the safety envelope of the facility (A190).
  - (iii) Program to confirm and periodically reconfirm the condition and operability of Vital Safety Systems (VSS). This includes examinations of records of tests and calibration of these systems (A190).

- (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 (A190).
- (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 (A190).
- (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 (A190).
- (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 Conduct of Operations program.
- (viii) The selection, training, and qualification programs for operations and operations support personnel (M152) (A190).

The facility transition period shall be planned to complete transition of all facilities within ninety (90) days following DOE's acceptance of the Contractor's Certification of Completion of Hot Commissioning (Table C.5-1.1, Deliverable 5.15).

- (k) Completion of Contract Workscope Requirements: The Contractor shall complete post-Critical Decision 4 activities, *Approve Start of Operations or Project Closeout*, in accordance with DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CRD (271).

- (l) Post-Commissioning Services:

Following hot commissioning, the Contractor shall conduct necessary activities to ensure that the facility is safe and ready for hot operations and facility turnover.

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

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

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

- (m) Project Closeout: Project Closeout is complete when:
  - (1) DOE approves the Contractors Certification of Completion of Hot Commissioning (Table C.5-1.1, Deliverable 5.15).
  - (2) DOE accepts all ILAW and IHLW waste 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) (M152) in accordance with the approved WTP Facility Transition Plan (Table C.5-1.1, Deliverable 5.19).

Standard 6: Product Qualification, Characterization, and Certification

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

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

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

- (c) The Contractor shall complete the following activities and prepare the documentation identified below:
- (1) Update the ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3) for DOE review and approval.
  - (2) Update the IHLW Waste Form Compliance Plan (Table C.5-1.1, Deliverable 6.2) for DOE review and approval that addresses the requirements of the WASRD and identified in Specification 1, *Immobilized High-Level Waste Product*, for DOE approval. The Contractor shall provide documentation and technical support to DOE during the approval process. (M047)
  - (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 the Contract.
  - (6) The IHLW Product Qualification Report shall be submitted for DOE approval during the facility cold and hot commissioning activities. The Contractor shall provide documentation and technical support to DOE during the approval process.
  - (7) In accordance with Standard 7, DOE will be responsible for submitting the Contractor developed petition for exempting or excluding the IHLW product from RCRA and HWMA regulation (Table C.5-1.1, Deliverable 7.9). The Contractor shall develop the petition and support DOE in the petitioning process. If the exemption or exclusion is obtained, the Contractor shall implement the necessary procedures to provide IHLW that is exempted or excluded from RCRA and HWMA.
  - (8) In accordance with Standard 7, DOE will be responsible for submitting the Contractor-developed petition for a new treatment standard, specific to Hanford tank waste. The Contractor shall support DOE during the petitioning process, in accordance with Standard 7 (Table C.5-1.1, Deliverable 7.10). If the petition is approved, the Contractor shall implement the necessary procedures to treat the waste in accordance with the new treatment standard.
  - (9) Prepare production documentation for ILAW (Table C.5-1.1, Deliverable 6.7) and IHLW (Table C.5-1.1, Deliverable 6.5) products, and secondary wastes (Table C.5-1.1, Deliverable 6.10). The production documentation shall verify that the analyses, demonstrations, inspections and testing to characterize each product package, canister, or liquid stream for transfer and provide a basis for certification that each product and secondary waste complies with Section C.8, *Operational Specifications*, and requirements of this Contract.

- (10) Submit to DOE all required documentation that qualifies, characterizes, quantifies, and certifies each immobilized waste product, and secondary wastes conforms to Contract requirements.

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 40CFR268, "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 40CFR761.50 (b)(7)(ii); and (5) to comply with applicable laws, regulations, permits, licenses, other regulatory authorizations and approvals, and this Contract.

(e) Dangerous and Hazardous Waste Requirements for the Immobilized Low-Activity Waste Product (Specification 2):

The Contractor shall plan and perform process and product development testing, sampling, analysis, reporting, and certification necessary to:

- (1) Characterize, support, and designate the ILAW product for dangerous waste characteristics, dangerous waste criteria, and dangerous waste sources pursuant to WAC 173-303-070 and demonstrate that the ILAW product does not exhibit any dangerous waste characteristics, WAC 173-303-090, and does not meet any dangerous waste criteria, WAC 173-303-100.
- (2) The Contractor shall plan, develop, obtain, report, and certify the information required to:
  - (i) Demonstrate that the treated waste in the ILAW product is not prohibited from land disposal pursuant to WAC 173-303-140 and 40 CFR 268, "Land Disposal Restrictions";

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

Table S6-2. Qualification and Characterization

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

Legend

- A = Analysis
- D = Demonstration
- I = Inspection
- T = Testing

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

Analysis (A) — As used in the specifications, an analysis is a set of engineering or scientific calculations that demonstrate that a product meets or exceeds a specification requirement. These calculations are typically based upon available data and assumptions regarding process operating conditions or materials. Analysis is required to identify conditions or assumptions, which might limit validity, and to identify specific documentation or measurements made during production to ensure validity (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: (a) approved by DOE; and (b) 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 non-destructive 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 non-radiological worker safety and health; radiological, nuclear, and process safety; environmental protection; quality assurance; and (2) identify specific deliverables the Contractor shall submit to DOE.

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

- (a) The primary objectives of ESQ&H are to:
  - (1) Demonstrate compliance with established requirements;
  - (2) Apply best commercial practices to provide conventional non-radiological 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 environment, safety, quality, and health 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 non-radiological worker safety and health; radiological, nuclear, and process safety; and environmental protection. The Contractor shall implement its program, and submit the deliverables described in paragraphs (d) and (e) of this Standard.
- (d) The Contractor shall develop and implement an integrated standards-based safety management program to ensure that radiological, nuclear, and process safety requirements are defined, implemented, and maintained. The Contractor shall conduct work in accordance with the Contractor developed and DOE approved Safety Requirements Document (SRD). The SRD is the set of ESQ&H tailored requirements as referenced in Section I Clause, *Laws, Regulations, and DOE Directives*.
- (e) The specific deliverables and program requirements are divided into four categories: (1) non-radiological worker safety and health protection; (2) radiological, nuclear, and process safety; (3) quality assurance; 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) Non-radiological 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 non-radiological 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. (M114) (215)
  - (iii) DOE is responsible for the conduct of worker safety and health inspections and granting variances. (M114)
  - (iv) Proposed changes that impact cost and/or schedule will be analyzed under RL/REG-98-14, *Regulatory Unit Position on New Safety Information and Back-fits*, and if implemented, will be dispositioned in accordance with Section I Clause entitled, *Changes*.
  - (v) Deleted (215)
  
- (2) Deleted (M166)

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
	Maintenance Implementation 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):

The Contractor shall develop a QA Program, documented in a QA program manual(s), and supported by documentation that describes overall implementation of QA requirements. Supporting documentation shall include procedures, instructions, plans, and manuals used to implement the Contractors QA program within the Contractors scope of work. Specific requirements for process development, waste form qualification and testing are described in Standards 2 and 6. The Contractor's QA program manual(s) shall be submitted to DOE for review and approval (Table C.5-1.1, Deliverable 7.2). The Contractor shall utilize a technically defensible graded approach to develop the QA program based upon the requirements of: (M066)

- (i) QA for radiological, nuclear, and process safety shall be conducted in accordance with 10 CFR 830.120, Subpart A and DOE O 414.1C. (M066)
- (ii) QA for process development, waste form qualification and testing shall be conducted as described in Standards 2 and 6. QA program requirements for all HLW and ILAW work shall be covered by the approved QA program. The QA program manual(s) shall address the following requirements: (M066):
  - (A) The Contractor shall implement the Office of Civilian Radioactive Waste Management's, *Quality Assurance Requirements and Description Document (QARD)*, DOE/RW-0333P, Revision 20, for elements of the Contractor's scope that may affect the Immobilized High-Activity Waste (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*, Part I and Part II, Subpart 2.7 for elements of the Contractor's scope that may affect product quality of the Immobilized Low-Activity Waste (ILAW) product, entrained solids, and sludge washing, including, but not limited to, waste form development, qualification, characterization, production process control, certification of ILAW product, entrained solids, and sludge washing. Furthermore, all research and technology activities (other than IHLW – see (A)) shall be conducted in accordance with NQA-1. (M066)
- (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 Order 414.1C. The Contractor shall maintain its QA program in accordance with DOE Order 414.1C. The Contractor has the option to not incorporate the elements of ANSI/ASQ Q 9001-2000, *Quality Management System*, requirements (for non-nuclear activities), which is referenced in the Contractor Requirements Document of DOE Order 414.1C. (M066) (A143) (M152)

- (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. (M066)
  - (vi) DOE or its designee(s) shall have access to and the right to conduct assessments, audits, and/or surveillance 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. WA 7890008967).

Dangerous Waste Codes are identified in the *Double-Shell Tank System Unit Permit Application* (DOE/RL-88-21, October 1, 1996).

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.

The Contractor shall develop and implement a plan for DOE review and approval for revising the Dangerous Waste Permit Application and obtaining the final status permit modification. The plan shall be developed in cooperation with DOE and the regulatory agencies. The Contractor shall revise the Dangerous Waste Permit Application (Table C.5-1.1, Deliverable 7.5), support

the dangerous waste permitting process, and work with the regulatory agencies and DOE to obtain final status under the Dangerous Waste Regulations to support WTP construction and commissioning activities. Construction of the treatment facility may commence prior to a final status permit being issued provided the regulatory agencies agree.

- (C) Risk Assessment Work Plan (Table C.5-1.1, Deliverable 7.6): The Contractor shall implement the Risk Assessment Work Plan as agreed to with DOE and the regulatory agencies, and conduct environmental performance tests during commissioning to validate the risk assessment and demonstrate WTP performance. The Risk Assessment Work Plan shall be the documented outcome of the Contractor's negotiated agreement with regulators to demonstrate that WTP will meet required environmental performance standards for a thermal treatment facility. The Risk Assessment Work Plan (Table C.5-1.1, Deliverable 7.6) may be a supplement to the Dangerous Waste Permit Application.
- (D) Notice(s) of Construction (Table C.5-1.1, Deliverable 7.7): The Contractor shall prepare Notice(s) of Construction (NOC) for both radioactive and non-radioactive air emissions related to Contractor activities in accordance with applicable regulations. NOCs (Table C.5-1.1, Deliverable 7.7) shall be submitted for DOE approval no less than 150 days prior to scheduled submission to the regulators. The Contractor shall also provide draft permit modification language for the air-operating permit to the appropriate site contractor based on regulator approvals of NOC and consistent with the project schedule, Environmental Plan, and provisions of this Contract.
- (E) Prevention of Significant Deterioration Permit Application (Table C.5-1.1, Deliverable 7.8): The Contractor shall prepare a Prevention of Significant Deterioration (PSD) Permit Application for air emissions related to Contractor activities in accordance with applicable regulations. The Permit Application (Table C.5-1.1, Deliverable 7.8) shall be submitted for DOE review, comment, and approval no less than 150 days prior to scheduled submission to the regulators. The Contractor shall also be responsible for providing draft permit modification language to the appropriate site contractor for the air-operating permit consistent with the project schedule and provisions of this Contract.
- (F) Petitions for Exemption or Exclusion for Immobilized High-Level Waste (Table C.5-1.1, Deliverable 7.9): The Contractor shall develop a set of documents for DOE use in petitioning Ecology and EPA to exempt or exclude the IHLW from regulation under HWMA and RCRA and their implementing regulations, respectively. The petitions and supporting technical and regulatory materials shall be developed in accordance with applicable law, regulation, and permit. The Contractor shall include DOE-provided information in the petitions, and shall be responsible for establishing a schedule with DOE for when such information is needed. The Contractor shall collect and analyze characterization data and demonstration-scale treated waste product data to support the petition and compliance demonstration. The Contractor shall support DOE in

the petitioning process and interactions with the regulators. The petition (Table C.5-1.1, Deliverable 7.9) shall be submitted to DOE for review and approval.

- (G) Petition for a New Treatment Standard for Hanford Tank Waste (Table C.5-1.1, Deliverable 7.10): The Contractor shall develop a petition for submittal to the regulatory agencies that proposes vitrification as the specified treatment technology for Hanford tank waste. The Contractor shall collect and analyze characterization data and demonstration-scale treated waste product data to support the petition and compliance demonstration. The Contractor shall support DOE in the petitioning process and interactions with the regulators. The Contractor shall obtain, report, and certify required information to DOE to demonstrate that the ILAW product is acceptable for land disposal. The petition (Table C.5-1.1, Deliverable 7.10) shall be submitted to DOE for review and approval.

Standard 8: Safeguards and Security

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

- (a) The Contractor shall develop and implement an SAS Program to ensure the protection of DOE-owned material, property, and information. The Contractor shall maintain and update all relevant aspects of the SAS Program that was previously concurred upon by DOE or part of the WTP Conceptual Design and supporting documentation.
- (b) The SAS Program shall ensure the protection of DOE-owned material, property, and information.
  - (1) The scope of DOE SAS requirements includes:
    - (i) Physical protection;
    - (ii) Material control and accountability if found applicable throughout the period of the Contract;
    - (iii) Protection of DOE information and the Hanford Site access requirements; and
    - (iv) Government property protection.
  - (2) The Contractor's program shall comply with the applicable regulations, DOE Orders, and DOE-provided top-level SAS requirements stipulated in the DOE approved *Hanford Tank Waste Treatment and Immobilization Plant Safeguards and Security Plan*, 24590-WTP-PL-SS-02-001. The Contractor shall design the facility in a manner to provide adequate response time for the Hanford Patrol.
  - (3) The SAS deliverables shall be updated per Table S8-1 and as required to reflect known changes.
- (c) The Contractor shall comply with the "Richland Regional Office Site Counterintelligence Support Plan Hanford Site - Bechtel National, Inc." (SCSP), and subsequent ORP approved revisions of the SCSP. The SCSP incorporates requirements listed in DOE Order 475.1 *Counterintelligence Program*, and its CRD O 475.1. (M071)

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 <sup>1</sup>	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.			

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

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

1. 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. Radiological, nuclear, and process safety requirements shall be adapted to the specific hazards associated with the Contractor's WTP activities.
2. 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*, and DOE-STD-3009, Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses.
3. 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 per BNI procedures:
  - a. Criticality Safety Evaluation Report;
  - b. Safety Evaluation(s) (SE) that support Justifications for Continued Design, Procurement, and Installation (JCDPI); **(293)**
  - c. Authorization Basis Amendment Requests (ABAR)
4. The Contractor shall submit the Documented Safety Analysis (DSA) for each facility no less than six (6) months prior to the need for ORP approval, and associated hazards analysis documents for information, to support Commissioning activities for those facilities.
5. The Contractor shall establish and implement a program to maintain the facility-specific Preliminary Documented Safety Analyses (PDSA) and Hazards Analysis Reports (HAR) current. The program shall establish a process to screen and evaluate proposed changes to the design of WTP facilities based on the potential to impact the hazards and accident analyses as defined in the facility-specific PDSAs. The procedure that implements this program shall be approved by DOE.

All other changes (i.e., those within the analyzed safety basis document) will be incorporated into the PDSA via a direct page change within 60 days of contractor approved design changes or DOE-issued Safety Evaluation Reports (SER) unless an alternative duration is specified by DOE.

Changes that are determined to be "unreviewed" in accordance with the DOE approved program procedure described in Section 5 of this Standard, shall be submitted to DOE for review and approval prior to implementation.
6. DOE may attend WTP hazards analysis, accident analysis, and control selection meetings as observers. DOE may observe WTP 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.
7. The Contractor shall provide quarterly, a listing of screenings and evaluations prepared in accordance with Standard 9, Item 5, above, that were determined to be within the analyzed safety basis and therefore already approved by DOE.

8. The Contractor shall ensure a mechanism exists to allow efficient and timely DOE review of engineering documents reviewed by the Contractor for safety basis impacts.
9. The Contractor shall identify and maintain the list of documents that constitute the authorization basis for each WTP nuclear facility. This list will be used by qualified screeners and evaluators to determine if a proposed design change is within the analyzed safety basis document(s). This list shall be provided to DOE annually, and upon DOE approval of any DSA, as part of the annual update submittal thereafter in conformance with 10 CFR § 830.202, Safety basis.
10. The Contractor shall maintain the Safety Requirements Document (SRD) consistent with the design of WTP facilities. Changes to the SRD will be processed consistent with Standard 9, Item 5, above. Changes that do not impact the safety basis documents will be implemented into the design criteria basis.

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

Laboratory facility shall be defined in the Analytical Laboratory Design Requirements (Table C.5-1.1, Deliverable 3.6).

- (10) Have the ability to receive and process slightly contaminated sodium hydroxide (NaOH) with trace quantities of radionuclides (Na-22, Cs-137, H-3) for use as a process chemical. This sodium (Na) will be converted to sodium hydroxide (NaOH) prior to use at the WTP. The quantity and radionuclide content of the Na is provided in ICD 29, *Waste Na*.
- (11) Capability to obtain samples of ILAW and IHLW glass to support process and product control needs for WTP.
- (12) Include process and facility design features to safely and efficiently facilitate deactivation, decontamination, decommissioning, and RCRA closure of the facilities.
- (13) Comply with applicable Federal, State, and local requirements, including environmental permits and other regulatory approvals and authorizations. The WTP shall be designed and operated to ensure that exposure to the maximally exposed off-site individual (non-acute) is ALARA but not more than 1.5 mrem per year and hazardous organic emissions are ALARA but not more than 0.375 tons per year from components regulated under 40 CFR 265, Subpart AA.
- (14) Include office space at the WTP Site sufficient for the exclusive use of eight full-time DOE personnel and temporary space for ten transient DOE personnel.
- (15) Identify fifteen (15) acres on the WTP site, north of the Pretreatment Facility, to allow for the expansion of the WTP LAW vitrification 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 the Contract. Achievement of this requirement is demonstrated through research and technology, design reviews, and DOE's design oversight:
  - (i) Use of services and utilities including: ICD 1, *Raw Water*; ICD 2, *Potable Water*; ICD 11, *Electricity*;
  - (ii) Generation of secondary wastes, including: *Radioactive Solid Wastes, Dangerous Wastes, Non-Radioactive, Non-Dangerous Liquid Effluents; Radioactive, Dangerous Liquid Effluents*; and
  - (iii) Primary product volumes through improved waste loading greater than the Contract minimums: Specification 1, *Immobilized High-Level Waste Product*, and Specification 2, *Immobilized Low-Activity Waste Product*.
- (17) Include the capability to manage tank waste streams to prevent or minimize undesirable precipitation. This capability shall include mitigation of precipitation following ultrafiltration using techniques including maintaining the post-filtration process stream above the filtration temperature. Approaches should minimize the need for sodium 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. WTP 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 Vitrification	30 MT Glass per day	21 MT Glass per day
HLW Vitrification	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
<p>Notes:</p> <ol style="list-style-type: none"> <li>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, <i>Low Activity Waste Envelopes Definition</i> and soluble Na from the HLW Envelope in accordance with Specification 8, <i>High Level Waste Envelope Definition</i>. 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.</li> <li>As delivered solids represents the mass of the solid cations and anions delivered in the waste feed batches provided by the TFCOUP Revision 6.0 Feed Vector.</li> <li>Confirmation that the WTP design will achieve the listed design capacities is contained in document 24590-WTP-MRR-PET-08-002, Revision 2, WTP Contract Run - (G2) Dynamic Model Run Results Report, August 25, 2008.</li> </ol>		

The Contractor shall evaluate the design capacity of the WTP Pretreatment, LAW Vitrification, and HLW Vitrification facilities using the Standard 2, (b), (2), *WTP Tank Utilization Assessment Model*. The design capacity is determined by the estimated average processing rate when treating all waste as defined by TFCOUP, Revision 6.0.

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

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

The 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. As 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 (Deliverable 3.3(a), Table C.5-1.1)

- (2) The LAW Vitrification Facility shall be designed to support a facility design capacity of 30 MTG/day.
  - The LAW Vitrification Facility shall be capable of vitrifying treated LAW Envelopes A, B, ~~and C and E (350)~~ in compliance with the waste loading specifications identified in Specification 2.2.2.2., *Waste Loading*.
- (3) The HLW Vitrification 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 Pretreatment 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 Pretreatment Facility shall have the feed-forward capability for a nominal 240,000 gallons of feed lag storage for HLW vitrification facility operations, based upon the facility design capacity, while being capable of receiving without interruption no less than 145,000 (**M183**) gallons of HLW feed per batch. HLW feed batch receipt facilities shall be designed to allow receipt without interruption to waste feed processing.
- (6) The Pretreatment Facility shall have the capability to prepare at least 81,000 gallons of transferable and blended HLW feed within a single vessel for transfer to the HLW Vitrification Facility.
- (7) The Pretreatment Facility shall have the established capability to conduct sludge washing, caustic leaching, and oxidative leaching on HLW sludge and entrained

solids. The Pretreatment 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 and 90°C to enhance leaching kinetics.
  - (iv) Include the capability to remove heels from the ultrafiltration feed vessels to move treated solids forward in the process and minimize recycle.
  - (v) Operate filtration at 45°C or higher to increase filter flux rates and potentially reduce caustic required in leaching.
  - (vi) Add caustic to ultrafilter permeate vessels to minimize the potential for post-filtration precipitation of aluminum species and reduce the volume of permeate that must pass through the ultrafilters.
  - (vii) Increase the capacity of the cesium ion exchange system to a nominal 30 gallon/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, HVAC, 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) Pretreatment can connect to a potential new facility designed to receive and treat the Hanford cesium (Cs) and strontium (Sr) capsules prior to incorporation into the HLW feed for immobilization in the HLW Vitrification 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 Pretreatment Facility where connections to a potential new facility could be easily accomplished.

- (3) Analytical Laboratory capabilities shall be included in the initial design to support an increase in LAW waste treatment capacity described in (b)(1) above.
  - (4) HLW Immobilization can connect to a potential new facility for the interim storage of IHLW canisters. Space on the facility site plan shall be provided to accommodate this additional storage capacity.
  - (5) Provide four piping stub-outs from the Pretreatment 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 Pretreatment 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 Pretreatment 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 Pretreatment Facility hot cell areas used for the ultrafiltration system (Pretreatment 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 Vitrification operations at a design capacity of 30 MTG/day, and HLW Vitrification 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 Vitrification 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 Pretreatment Unit Operations, HLW Vitrification Unit Operations, and LAW Vitrification Unit Operations.
- (1) Pretreatment Unit Operations: Pretreatment 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) Sr/TRU Removal: This operation removes <sup>90</sup>Sr and TRU elements to allow for production of an ILAW waste product that meets Specification 2.2.2.8, *Radionuclide Concentration Limitations*. The technology for the removal of <sup>90</sup>Sr is an isotopic dilution process that uses non-radioactive Sr as the reagent. The removal of TRU is accomplished using sodium permanganate

for de-complexation and adsorption of the TRU elements.

- (iii) Cs Removal: This operation removes  $^{137}\text{Cs}$  from the filtered supernatant to allow for production of an ILAW waste product that meets the Specification 2.2.2.8, *Radionuclide Concentration Limitations*. In addition,  $^{137}\text{Cs}$  will be further removed, to achieve a  $0.3 \text{ Ci/m}^3$  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 (Tc) Removal: This operation removes  $^{99}\text{Tc}$  (in the sodium [Na] pertechnetate form) from the filtered supernatant to allow for production of an ILAW waste product that meets the Specification 2.2.2.8, *Radionuclide Concentration Limitations*. The Contractor shall not design or procure equipment relating to the Technetium Ion Exchange System. However, the Contractor shall provide space within the Pretreatment Facility for such equipment should it become necessary to provide technetium removal capability in the future. Contractor shall place floor embedments and wall penetrations within the facility to ensure that the option to install the Technetium 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 cesium 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 Effluent Treatment Facility (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 HLW Solids:  
The Pretreatment Facility shall have the capability to conduct washing, leaching and oxidative leaching of HLW solids. Washing, caustic leaching, and oxidative leaching shall be performed using the process steps proposed by the Contractor. The objective of the water washing process step is to remove soluble Na and sulfate so that the HLW glass waste oxide loading is not limited by Na and/or sulfate. Water washing is defined as the dilution of dissolved waste constituents either with process water or very diluted caustic solution. The objective of the caustic leaching process step is to remove aluminum from the feed to HLW Vitrification so that the HLW glass waste oxide loading is not limited by aluminum. The objective of the oxidative leaching process is to remove chromium from the feed to HLW Vitrification so that the HLW glass waste oxide loading is not limited by chromium. These objectives are not absolute requirements, but will be balanced as described in Specification 12 with other operational parameters. For example, if the approved flowsheet or process steps (Standard 2(a)(3)(iii)) results in glass limited by aluminum (Al), chromium (Cr) sulfate, or sodium (Na) it is acceptable.

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

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

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

- (iv) High-Level Waste Canister Closure, Decontamination, and Inspection:  
The HLW canister is sealed via welding. The canister is decontaminated using a chemical etching process that uses [cerium] Ce (IV) as the chemical reagent. (M047)
- (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 Vitrification: 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) CLIN 2.1 Direct Feed LAW Vitrification Unit Operations Design (350): Modification to implement DFLAW shall provide the capability to operate LAW, BOF and the Analytical Laboratory [collectively the (LBL)] in integrated configuration both with feed from PT and in the DFLAW configuration. Operation in each configuration is not simultaneous.  
  
Transfer line(s) for LAW feed from the Tank Farm (TF) and liquid effluent return shall be routed from the LAW Facility to the TF/WTP interface point as defined in Interface Control Document (ICD) 30 and 31, respectively. The WTP Project contractor shall perform required modification at the interface point.
  - (iv) Low-Activity Waste Melter Off-gas 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.
- (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 Pretreatment Facility control room, LAW Vitrification Facility control room, and HLW Vitrification 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 DOE 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*, ICN 1. U.S. Department of Energy, Office of Civilian Radioactive Waste Management. Washington, D.C.
  - 1.2.1.2 DOE Manual 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. (M047) (M114)
  - 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. (M047) (M114)
  - 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. (M114)
  - 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-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 waste 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 US Department of Energy, Office of Civilian Radioactive Waste Management (DOE-RW, or OCRWM). These requirements must be met before the IHLW waste glass canisters will be accepted by the DOE Office of River Protection (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/m<sup>2</sup> for alpha and 36,700 Bq/m<sup>2</sup> for beta-gamma. (M047)

1.2.2.1.3 Condition at Delivery: At time of delivery to DOE, the HLW form shall stand upright without support on a flat horizontal surface and properly fit into a right-circular, cylindrical cavity (64-cm diameter and 4.51-m 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 non-volatile 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. (M152)

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 <sub>2</sub> O <sub>3</sub>	12.5
Al <sub>2</sub> O <sub>3</sub>	11.0
Na <sub>2</sub> O + K <sub>2</sub> O	15.0
ZrO <sub>2</sub>	10.0
UO <sub>2</sub>	8.0
ThO <sub>2</sub>	4.0
CaO	7.0
MgO	5.0
BaO	4.0
CdO	3.0
NiO	3.0
PbO	1.0
TiO <sub>2</sub>	1.0
Bi <sub>2</sub> O <sub>3</sub>	2.0
P <sub>2</sub> O <sub>5</sub>	3.0
F	1.7
Al <sub>2</sub> O <sub>3</sub> + ZrO <sub>2</sub>	14.0
Al <sub>2</sub> O <sub>3</sub> + ZrO <sub>2</sub> + Fe <sub>2</sub> O <sub>3</sub>	21.0
MgO + CaO	8.0

Component	Weight Percent in HLW Glass
Cr <sub>2</sub> O <sub>3</sub>	0.5
SO <sub>3</sub>	0.5
Ag <sub>2</sub> O	0.25
Rh <sub>2</sub> O <sub>3</sub> + Ru <sub>2</sub> O <sub>3</sub> +PdO	0.25
Any single waste oxide (exclusive of Si) not specifically identified in Specification 8, TS-8.1 and 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 Manual 435.1-1. July 9, 1999. *Radioactive Waste Management Manual*. U.S. Department of Energy, Washington, D.C.

- 2.2.1.14 NRC. January 1995. *Branch Technical Position on Concentration Averaging and Encapsulation*. Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C.
  - 2.2.1.15 NRC. January 1991. *Technical Position on Waste Form*, Revision 1, Low-Level Waste. Division Management Branch, Office of Nuclear Material Safety and Safeguards, U. S. Nuclear Regulatory Commission, Washington, D.C.
  - 2.2.1.16 NUREG/BR-0204. July 1998. *Instructions for Completing NRC's Uniform Low-Level Radioactive Waste Manifest*. U.S. Nuclear Regulatory Commission, Washington, D.C.
  - 2.2.1.17 SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.
  - 2.2.1.18 WA 7890008967. Revision 2. August 1995 (as modified). *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage and Disposal of Dangerous Waste at the Hanford Facility*. Washington State Department of Ecology, Olympia, Washington.
  - 2.2.1.19 WAC 173-303. "Dangerous Waste Regulations." *Washington Administrative Code*, as amended.
  - 2.2.1.20 Vitreous State Laboratory, 1998. *Glass Formulation and Testing with TWRS LAW Simulants*. The Catholic University of America, Washington, D.C.
  - 2.2.1.21 *Appendix I.7: ILAW Special Packaging Authorization of the Hanford Sitewide Transportation Safety Document, Revision 1-E, DOE/RL-2001-36, May 2011. (293)*
- 2.2.2 Product Requirements:
- 2.2.2.1 Package Description: The ILAW product shall be in the form of a package. The constituent parts of each package are a sealed stainless-steel container enclosing a poured glass waste form and an optional filler material of sand or glass. If an optional filler is used, DOE approval on the filler composition is required.
  - 2.2.2.2 Waste Loading: The loading of waste sodium from Envelope A in the ILAW glass shall be greater than 14 weight percent based on Na<sub>2</sub>O. The loading of waste sodium from Envelope B in the ILAW glass shall be greater than 3.0 weight percent based on Na<sub>2</sub>O. The loading of waste sodium from Envelope C in the ILAW glass shall be greater than 10 weight percent (wt%) based on Na<sub>2</sub>O.
  - 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"), and the diameter shall be 1.22 m (48"). 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 and 49 CFR 172.101 (Table 2). Technetium-99 (<sup>99</sup>Tc) shall be considered to be significant at concentrations greater than 0.003 Ci/m<sup>3</sup> 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. In addition, the average glass concentrations of cesium-137 (<sup>137</sup>Cs) and strontium-90 (<sup>90</sup>Sr) shall be limited as follows: <sup>137</sup>Cs < 3 Ci/m<sup>3</sup> and <sup>90</sup>Sr < 20 Ci/m<sup>3</sup>. 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) as defined by DOE/RL-2001-36 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/m<sup>2</sup>. 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/(m<sup>2</sup> 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 Pa when tested in accordance with ASTM C39/C39M-99 or an equivalent testing method.

2.2.2.19 DELETED

2.2.2.19.1 DELETED

2.2.2.19.2 DELETED

2.2.2.19.3 DELETED

2.2.2.19.4 DELETED

2.2.2.20 Dangerous Waste Limitations: The ILAW product shall be acceptable for land disposal under the State of Washington *Dangerous Waste Regulations*, WAC 173-303, and RCRA LDR in 40 CFR 268.

2.2.2.21 Compression Testing: Each fully loaded package shall be able to withstand a compression load of five (5) times the weight of the filled container. Compliance with this specification shall be established by using the compression (stacking) test described in 49 CFR 173.465(d) or evaluated against this test by any of the methods authorized by 49 CFR 173.461(a). The integrity of the package shall be demonstrated by showing that the seal remains intact in accordance with Specification 2.2.2.12, *Closure and Sealing*.

2.2.2.22 Container Material Degradation: The container and handling appurtenances shall be designed to allow safe lifting and movement (in accordance with Specification 2.2.3.1) after a storage period of fifty (50) years.

2.2.2.23 Manifesting: A shipping manifest shall be prepared for delivery with each shipment of ILAW product. Information on the manifest shall satisfy the requirements in DOE Manual 435.1-1, 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. WA 7890008967).

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. (M066)

2.4 Inspection and Acceptance: The DOE-approved ILAW Product Compliance Plan (Table C.5-1.1, Deliverable 6.3), described in Standard 6, *Product Qualification, Characterization, and Certification*, defines the content and delivery of documentation required to demonstrate compliance with the requirements of this specification. Product inspection and acceptance shall be performed in

accordance with Specification 13, *Waste Product Inspection and Acceptance*, and the required ILAW QA Program. In addition to Specification 13 requirements for ILAW, the Contractor shall conform to the Contractor Certification Program as described in DOE Manual 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 ~~three~~ **four (350)** LAW feed envelopes, Waste Envelopes A, B, and C (~~feed from the tank farms per ICD 19~~) and waste envelope E (~~Direct Feed from LAWPS, per ICD 30~~) **(350)**. Each waste envelope provides the compositional limits for chemical and radioactive constituents in the waste feed to be provided to the WTP. The WTP shall be designed to treat the waste envelopes with the limits established in this specification. Waste composition information from TFCOUP Revision 6 is used to establish overall WTP design capacity as defined in Section C.7 and is not otherwise used for design.

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 DOE/RL-88-21, Revision 10. December 21, 1999. *Double Shell Tank Unit Permits Application*. U.S. Department of Energy, Richland Operations Office, Richland, Washington.

7.2.2 Envelope Requirements:

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

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

\*The feed delivery batch size shall be such that, after receipt in WTP and blending with pre-existing receipt tank contents, the sodium molarity will not exceed 7 **(M183)**.

The Contractor shall work with the TF Contractor to develop compositional and radionuclide limits for Envelope E (Table 5.1-1, Deliverable C.8-1). Preliminary information and requirements to consider include:

Envelope E concentration of radionuclides shall meet the criteria to produce acceptable ILAW including <sup>137</sup>Cs less than or equal to 0.3 Ci per cubic meter of glass, an external dose rate of less than or equal to 500 mRem/hr. be non-transuranic, not exceed class C limits as defined in 10 CFR 61.55 and <sup>90</sup>Sr less than 20 Ci/m<sup>3</sup>. The E envelope activity limit for <sup>137</sup>Cs is 0.095 µCi/mL and the activity limit for gross alpha/beta is 1.6E-02 µCi/mL. **(350)**

The LAW feeds may contain up to 3.8 weight percent (wt%) solids and will be delivered to the WTP after there has been sufficient settling time to ensure solids that settle faster than 0.03 ft/min have settled below the transfer location within the tank farms feed tank (**M183**). 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, <sup>60</sup>Co, <sup>90</sup>Sr, <sup>99</sup>Tc, <sup>137</sup>Cs, <sup>154</sup>Eu, <sup>239/240</sup>Pu, <sup>241</sup>Am, 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 <sup>60</sup>Co, and <sup>154</sup>Eu 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 the *Double-Shell Tank System Unit Permit Application* (DOE/RL-88-21, December 21, 1999). Multi-source leachate (F039) is included as a waste derived from non-specific source wastes F001 through F005.

7.2.2.2 **Radioactive Material Concentration:** The maximum <sup>137</sup>Cs concentration equivalent in the transferred Envelope A, Envelope B, and Envelope C wastes feeds shall not exceed 1.2 Ci/l. The maximum <sup>137</sup>Cs 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 <sup>3</sup>
Al	2.5E-01	2.5E-01	2.5E-01
Ba	1.0E-04	1.0E-04	1.0E-04

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 <sup>3</sup>
Ca	4.0E-02	4.0E-02	4.0E-02
Cd	4.0E-03	4.0E-03	4.0E-03
Cl	3.7E-02	8.9E-02	3.7E-02
Cr	6.9E-03	2.0E-02	6.9E-03
F	9.1E-02	2.0E-01	9.1E-02
Fe	1.0E-02	1.0E-02	1.0E-02
Hg	1.4E-05	1.4E-05	1.4E-05
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 <sub>2</sub>	3.8E-01	3.8E-01	3.8E-01
NO <sub>3</sub>	8.0E-01	8.0E-01	8.0E-01
Pb	6.8E-04	6.8E-04	6.8E-04
PO <sub>4</sub>	3.8E-02	1.3E-01	3.8E-02
SO <sub>4</sub>	1.0E-02	7.0E-02	2.0E-02
TIC <sup>1</sup>	3.0E-01	3.0E-01	3.0E-01
TOC <sup>2</sup>	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.
2. Mole of organic carbon atoms/mole sodium.
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
<sup>137</sup> Cs	4.30E+09	1.16E+05	2.00E+10	5.41E+05	4.30E+09	1.16E+05
<sup>90</sup> SR	4.40E+07	1.19E+03	4.40E+07	1.19E+03	8.00E+08	2.16E+04

<sup>99</sup> Tc	7.10E+06	1.92E+02	7.10E+06	1.92E+02	7.10E+06	1.92E+02
<sup>60</sup> Co	6.10E+04	1.65E+00	6.10E+04	1.65E+00	3.70E+05	1.00E+01
<sup>154</sup> Eu	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.

<sup>2</sup>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 <sup>90</sup>Sr and <sup>137</sup>Cs, 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.

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

Specification 8: High-Level Waste Envelope Definition

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

8.2 Requirements:

8.2.1 References:

- 8.2.1.1 HNF-SD-WM-SAR-067, Revision 1-I. March 2000. *Tank Waste Remediation System Final Safety Analysis Report*. CH2M HILL Hanford Group, Inc., Richland, Washington.
- 8.2.1.2 HNF-SD-WM-TSR-006, Revision 1-HE. March 2000. *Tank Waste Remediation System Technical Safety Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.
- 8.2.1.3 OSD-T-151-00007, Revision H-22. June 14, 2000. *Operating Specification for 241-AN, AP, AW, AY, AZ, and SY Tank Farms*. CH2M HILL Hanford Group, Inc., Richland, Washington.
- 8.2.1.4 DOE/RL-88-21, Revision 10. December 21, 1999. *Double Shell Tank Unit Permits Application*. U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 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 sodium molarity of less than three (3), the liquid shall be treated as if 3 molar sodium were present for feed certification purposes. The *Radioactive Material Concentration* specification contained in Specification 7.2.2.2 does not apply to Envelope A, B, or C liquids. The composition range of the Envelope D unwashed solids is given in Tables TS-8.1, TS-8.2 and TS-8.3, and TS-8.4. The feed concentration will be between 10 and 200 grams of unwashed solids/liter, except for feeds from waste Tanks AZ-101 and AZ-102, where minimum-solids content does not apply. The feed delivery batch size will be such that, after receipt in WTP and blending with pre-existing receipt tank contents, the concentration will not exceed a linear range of 107 grams of unwashed solids/liter at 0.1 molar sodium up to 144 grams/liter at 7 molar sodium **(M183)**.

Compositions for Envelope D unwashed solids (Tables TS-8.1, TS-8.2 and TS-8.3, and TS-8.4) are defined in terms of elemental or anion concentrations

and radionuclide activities per 100 grams equivalent non-volatile waste oxides. The non-volatile waste oxides include sodium 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 waste 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 the *Double-Shell Tank System Unit Permit Application* (DOE/RL-88-21, December 21, 1999). Multi-source leachate (F039) is included as a waste derived from non-specific source wastes F001 through F005.

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

Non-Volatile Element	Maximum (grams / 100 grams waste oxides)	Non-Volatile 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 <sub>3</sub> <sup>-2</sup>	30
NO <sub>2</sub>	36 (total NO <sub>2</sub> /NO <sub>3</sub> ) as NO <sub>3</sub>
NO <sub>3</sub>	
TOC	11
CN	1.6
NH <sub>3</sub>	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)
<sup>3</sup> H	6.5E-05	<sup>129</sup> I	2.9E-07	<sup>237</sup> Np	7.4E-05
<sup>14</sup> C	6.5E-06	<sup>137</sup> Cs	1.5E00	<sup>238</sup> Pu	3.5E-04
<sup>60</sup> Co	1E-02	<sup>152</sup> Eu	4.8E-04	<sup>239</sup> Pu	3.1E-03
<sup>90</sup> Sr	1E+01	<sup>154</sup> Eu	5.2E-02	<sup>241</sup> Pu	2.2E-02
<sup>99</sup> Tc	1.5E-02			<sup>241</sup> Am	9.0E-02
<sup>125</sup> Sb	3.2E-02	<sup>233</sup> U	4.5E-06 (all tanks except AY-101/C-104)(2.0E-04 for AY-101/C-104 only)	<sup>243+244</sup> Cm	3.0E-03
<sup>126</sup> Sn	1.5E-04	<sup>235</sup> U	2.5E-07		

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

Non-Volatile Element	Maximum (grams / 100 grams waste oxides)	Non-Volatile 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 ~~the~~ return of any feed material to the Hanford tanks, and the requirements for return of any LAW process stream recycle materials during direct feed LAW operations per CLIN 2.1. (350)
- 9.2 Requirements:
- 9.2.1 References:
- 9.2.1.1 Greenburg, A.E., L.S. Clesceri, and A.D. Eaton, eds. *Standard Methods for the Examination of Water and Wastewater*. 19th edition 1995, American Public Health Association, Washington, D.C.
- 9.2.2 Product Requirements:
- 9.2.2.1 Product Composition: The elemental composition of the product shall be provided: (1) for all elements (excluding oxygen) constituting more than 0.5 weight percent (wt%) of the product on a dry basis; (2) for all radionuclides present in concentrations greater than five percent of the total activity; and (3) for all elements and compounds required to meet regulatory or Contract requirements.
- 9.2.2.2 Composition Limits and Transport Properties: The composition and transport properties shall comply with all applicable Hanford Site tank farms waste acceptance criteria.
- 9.2.2.3 Criticality: The plutonium (Pu) concentration in the returned material shall meet all applicable Hanford Site tank farm criteria. The isotopic concentration of the fissile materials in the returned product shall be provided to DOE prior to transfer.
- 9.2.2.4 Storage: A visible separate organic phase shall not develop during prolonged storage of the product materials in the Double-Shell Tank System.
- 9.2.2.5 Heat Generation: The Contractor shall determine and report the heat generation rate for product in the Secondary Wastes Compliance Plan (Table C.5-1.1, Deliverable 6.1).
- 9.2.2.6 Physical Parameters: The Contractor shall determine and report the specific gravity, viscosity, solids content, particle size distribution and particle density, pH, and temperature of the product at the time of transfer to DOE. Procedure 2540F, *Settled Solids*, from *Standard Methods for the Examination of Water and Wastewater*, or an equivalent methodology shall be used to determine the volume of solids in the liquid or slurry.
- 9.2.2.7 Radioactive Material Concentration: The returned intermediate product shall not contain more than 6 curies per liter (Ci/l) equivalent of <sup>137</sup>Cs. 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 (Table C.5-1, Deliverable C.7-1) (M152)

12.1 Scope: This Specification defines requirements to develop a procedure to determine the waste feed treatment approach for a batch of feed slurry. Waste feed treatment requirements to caustic leach, or oxidative leach shall be established based on results of this testing.

12.2 Requirements:

12.2.1 References: None.

12.2.2 Waste Treatment Flowsheet: The process flowsheet for waste feed caustic leaching, and oxidative leaching shall be approved by DOE as required by Standard 2 (a)(3)(iii). The Contractor shall implement the approved process flowsheet during facility operations.

12.2.3 Procedure:

12.2.3.1 Procedure Objective: During WTP operations, including hot commissioning, testing shall be performed to predict the quantity of IHLW and ILAW product produced in WTP as a result of (1) solids washing; (2) caustic leaching and washing; and (3) caustic leaching, washing, and oxidative leaching.

12.2.3.2 Procedure Definition: The Contractor shall establish a laboratory test procedure to prescribe waste treatment within the given design and operating capabilities of the WTP. The procedure shall take a representative sample of slurry, characterize the initial sample, characterize the sample after treatment, forecast the quantity of IHLW product and ILAW product produced as a result of the plant process, and prescribe the process conditions for optimizing facility performance during the treatment process. The prescribed process shall consider all reagents, process parameters, and recycle impacts associated with waste treatment. The Contractor shall define the process location from where the representative sample of slurry is taken. Definition of this point shall consider representativeness of the sample, heel blending, recycle, and requirements for process control. The procedure shall be submitted to DOE for review and approval.

12.2.4 Criteria: The Contractor shall propose specific criteria to determine the required waste treatment approach for DOE's approval. These criteria will be based on objectives to reduce the number of IHLW canisters, shorten WTP processing mission duration, and reduce WTP operations cost. Minimization of IHLW produced will have greater importance than minimization of ILAW produced.

12.3 Quality Assurance: A QA Program (Table C.5-1.1, Deliverable 7.2) for the work to be performed is required. The QA Program shall be based upon NQA-1. (M066)

Specification 13: Waste Product Inspection and Acceptance

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

13.2 ILAW Product and Production Acceptance Requirements:

13.2.1 Acceptance of ILAW Product for On-Site Disposal

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

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

13.2.2 Compliance of ILAW Product with Hot Commissioning Capacity Testing Criteria

The Contractor shall submit the production records to comply with Deliverable 5.13 (Resultant Products for Hot Commissioning) to certify that the ILAW product complies with the requirements for the Hot Commissioning Capacity Testing identified in Standard 5 (*Hot Commissioning Capacity Tests*). 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).
- Summaries of the following information for each ILAW product unit produced during commissioning (lot basis):
  - Sodium waste loading
  - Radionuclide content
  - Non-Radionuclide chemical composition
  - Glass weight and percent fill per container

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

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

Non-conforming ILAW product other than as noted above will not be credited for determination of the WTP plant production capability, per the Hot Commissioning Capacity Testing.

### 13.2.3 DOE Acceptance of Production Documentation

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

## 13.3 IHLW Product and Production Acceptance Requirements:

### 13.3.1 Acceptance of IHLW Product for On-Site Interim Storage

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

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

### 13.3.2 Compliance of IHLW Product with Hot Commissioning Capacity Testing Requirements

The Contractor shall submit the production records to comply with Deliverable 5.13 (Resultant Products for Hot Commissioning) to certify that the IHLW product complies with the requirements for the Hot Commissioning Capacity Testing, identified in Standard 5 (*Hot Commissioning Capacity Tests*). The content of the IHLW production documentation shall be consistent with the IHLW Waste Form Compliance Plan (Deliverable 6.2, Table C.5-1.1) 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).
- Summaries of the following information for each IHLW product unit produced during commissioning (lot basis):
  - Waste loading
  - Radionuclide content
  - Non-Radionuclide chemical composition

- Glass weight and percent fill per container

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

The non-conforming IHLW product shall be clearly identified. 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 interim storage.

The corrective action plan shall also describe how to prevent recurrence of the non-conforming 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 1. DOE will accept these canisters and provide credit for these canisters in the Hot Commissioning Capacity Test. The Contractor shall describe the approach to minimize the number of canisters that do not meet waste loading requirements in the commissioning plan.

Non-conforming IHLW product other than noted above will not be credited for determination of the WTP plant production capability, per the Hot Commissioning performance testing.

#### 13.3.3 DOE Acceptance of Production Documentation

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

## C.9 INTERFACE CONTROL DOCUMENTS

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

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

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

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

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

- (2) Post-award ICDs:

ICD 28:	Pit 30 Aggregate Supply for Construction
ICD-29:	Waste Na
ICD 30:	Direct LAW Feed
ICD 31:	<del>DF LAW Radioactive, Dangerous Liquid Effluents</del> DFLAW Effluent Returns to Double-Shell Tanks (350)

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

**SECTION H**  
**SPECIAL CONTRACT REQUIREMENTS**

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**SPECIAL CONTRACT REQUIREMENTS**

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## SECTION H

### SPECIAL CONTRACT REQUIREMENTS

#### H.1 TECHNICAL DIRECTION

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

- (e) A failure of the Contractor and Contracting Officer to agree that the technical direction is within the scope of the Contract, or a failure to agree upon the contract action to be taken with respect thereto shall be subject to the provisions of the Section H Clause entitled, *Alternative Dispute Resolution*.

## **H.2 MODIFICATION AUTHORITY**

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

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

## **H.3 KEY PERSONNEL (291)**

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

## **H.4 SMALL BUSINESS SUBCONTRACTING PLAN**

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

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

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

## **H.6 DISPLACED EMPLOYEE HIRING PREFERENCE – This section deleted.**

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

## H.8 LABOR RELATIONS

- (a) The Contractor, and its major subcontractors, will respect the rights of employees to (1) organize, form, join, or assist labor organizations; bargain collectively through representatives of the employees own choosing; and engage in other protected concerted activities for the purpose of collective bargaining, or (2) refrain from such activities.
- (b) To the extent required by law, the Contractor and its major subcontractors shall give notice to any lawfully designated representative of its employees for purposes of collective bargaining and, upon proper request, bargain to good faith impasses or agreement, or otherwise satisfy applicable bargaining obligations.
- (c) The Contractor shall promptly advise the Contracting Officer of, and provide all appropriate documentation regarding, any labor relations developments at the prime or subcontract level that involve or appear likely to involve:
  - (1) Possible strike situations affecting the facility;
  - (2) Referral to the Energy Labor-Management Relations Panel;
  - (3) National Labor Relations Board at any level;
  - (4) Recourse to procedures under the *Labor-Management Act of 1947*, as amended, or any other Federal or state labor law; and
  - (5) Any grievance that may reasonably be assumed to be arbitrated under a Collective Bargaining Agreement.

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

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

## H.9 IMPLEMENTATION OF THE HANFORD SITE STABILIZATION AGREEMENT

- (a) The Hanford Site Stabilization Agreement (HSSA) for all construction work for DOE at the Hanford Site, which is referenced in this Clause, consists of a Basic Agreement dated September 10, 1984, plus Appendix A, both of which may be periodically amended. The HSSA is hereby incorporated into this Contract by reference.
- (b) Deleted.

- (c) This Section applies to employees performing work, under contracts (or subcontracts thereunder) administered by the DOE, which are subject to the *Davis-Bacon Act*, in the classifications set forth in the Hanford Site Stabilization Agreement (HSSA) for work performed at the Hanford Site.
- (d) Contractors and subcontractors at all tiers who are parties to an agreement(s) for construction work with a local union having jurisdiction over DOE construction work performed at the Hanford Site, or who are parties to a national labor agreement for such construction work, shall become signatory to the Hanford Site Stabilization Agreement (HSSA) and shall abide by all of its articles, including all current appendices thereto. Subcontractors at all tiers who have subcontracts with a signatory contractor or subcontractor shall become signatory to the HSSA and shall abide by all of its articles, including all current appendices thereto.

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

- (1) Article VII, Employment, Section 2 only
  - (2) Article XII, Non-Signatory Contractor Requirements
  - (3) Article XIII, Hours of Work, Shifts, and Overtime
  - (4) Article XIV, Holidays
  - (5) Article XV, Wage Scales and Fringe Benefits, Sections 1 and 2 only
  - (6) Article XVII, Payment of Wages - Checking In & Out, Section 3 only
  - (7) Article XX, General Working Conditions
  - (8) Article XXI, Safety and Health
- (e) The obligation of the Contractor and its subcontractors to pay fringe benefits shall be discharged by making payments required by this Contract in accordance with the Articles of the amendments to the *Davis-Bacon Act* contained in the Act of July 2, 1964 (Public Law 88-349-78, Statutes 238-239), and the U.S. Department of Labor regulations in implementation thereof (29 Code of Federal Regulations (CFR) Parts 1, 3, 5).
  - (f) DOE may from time to time provide notice to the Contractor of any changes in wages, fringe benefits, and the parties may modify other employee compensation as the Hanford Site Stabilization Agreement, including all current appendices thereto from time to time. The Contractor shall not be entitled to any change in fee **(M155)** due to any change in wages or fringe benefits under the Hanford Site Stabilization Agreement during the term of the Contract.
  - (g) The requirements of this Section are in addition to, and shall not relieve the Contractor of any obligation imposed by other sections or subsections of the Contract.

- (h) The Contractor agrees to maintain its bid or proposal records showing rates and amounts used for computing wages and other compensation, and its payroll and personnel records during the course of work, and to preserve such records for a period of three (3) years thereafter, for all employees performing such work. Such records will contain the name and address of each such employee, the employee's correct classification, rate of pay, daily and weekly number of hours worked, and dates and hours of the day within which work was performed, deductions made, and amounts for wages and other compensation covered in this Section. The Contractor agrees to make these records available for inspection by the Contracting Officer and will permit him/her to interview employees during working hours on the job.
- (i) The Contractor agrees to insert the clauses of this Section in all subcontracts for the performance of work subject to the *Davis-Bacon Act* administered by DOE at the Hanford Site.
- (j) The rights and remedies of the Government provided in this Clause shall not be exclusive and are in addition to any other rights and remedies of the Government provided by law or under this Contract.

#### **H.10 DETERMINATION OF APPROPRIATE LABOR STANDARDS**

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

#### **H.11 AGE DISCRIMINATION IN EMPLOYMENT**

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

#### **H.12 OPERATIONS AND ENGINEERING MULTI-EMPLOYER PENSION PLAN**

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

### **H.13 SELF-PERFORMED WORK**

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

### **H.14 PAYMENT BONDS AND PERFORMANCE BONDS**

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

### **H.15 GUARANTEE OF PERFORMANCE**

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

### **H.16 DOE ACCESS TO CONTRACTOR MANAGEMENT AND CONTRACT DOCUMENTATION**

- (a) In order to facilitate interactions with the U.S. Department of Energy (DOE), support safe and efficient performance of the Contract and effective contract administration, the Contractor shall locate Contractor offices on the Hanford Site or in the Tri-Cities, Washington area for, at a minimum, senior level management responsible for the following major project management functions: Project Management; Environment, Safety, Quality and Health (ESQ&H); Project Cost and Schedule Control; Procurement/Contracting; Environmental Compliance; Technology Management; Labor Relations; Human Resources; Engineering; Construction Management; and Design Management for Systems, Facilities, and/or Engineering Disciplines.
- (b) Although not all work is required to be performed in the Tri-Cities area, the Contractor shall use judgment in relocation of project staff to the Tri-Cities to facilitate the objectives of cost efficiency, project integration and meeting DOE's needs for frequent and informative interactions.
- (c) The design process must have the capability for efficient electronic integration. Video teleconferencing shall also be used to facilitate communications with satellite work locations where critical work is to be performed.
- (d) All major design reviews shall be held in the Tri-Cities area unless otherwise approved by the Contracting Officer.

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

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

#### **H.18 RESPONSIBLE CORPORATE OFFICIAL**

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

Name:	Craig M. Albert (291)
Position:	President
Company/Organization:	Bechtel National, Inc.
Address:	12011 Sunset Hills Rd., Reston, VA 20190-5919
Phone:	703-429-6330
Facsimile:	703-429-6045
E-mail:	<a href="mailto:cmalbert@bechtel.com">cmalbert@bechtel.com</a>

#### **H.19 ASSIGNMENT OF SUBCONTRACTS**

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

## **H.20 OTHER GOVERNMENT CONTRACTORS**

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

## **H.21 ASSIGNMENT**

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

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

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

- (a) An ESQ&H program that is compliant with applicable local, State, Federal and DOE regulatory requirements;
- (b) Employees are properly trained and equipped to perform their assigned work. The subcontractor has established an orientation program for new hires, which includes ESQ&H;
- (c) Policies and procedures are in place to eliminate accidents, injuries/illnesses, and damage to property and equipment;
- (d) ESQ&H records are adequately and properly maintained;
- (e) Accidents/incidents are investigated promptly and required reports are generated. If the investigation discovers inadequacies in either the work process or the policies and procedures, the appropriate processes are put in place to avert the accident/incident in the future and personnel are provided proper training;
- (f) Hazards are identified and appropriate measures are taken to ensure that personnel and equipment are adequately protected as a result of identified hazards;
- (g) Employees have the right to report unsafe conditions and to interrupt or stop work without fear of reprisal;
- (h) The frequency of ESQ&H meetings with employees to discuss the work to be performed and the hazards associated with the work is based on the scope of work and commensurate with the work hazards;
- (i) ESQ&H inspections/audits are conducted to evaluate effectiveness of the program;

- (j)
  - (1) The subcontractor has provided its Experience Modification Rate (EMR), for the previous three (3) years, and Occupational Safety and Health Administration (OSHA) Total Recordable and Lost Workday case rates for the previous three (3) years.
  - (2) The subcontractor has an EMR of 1.0 or better and an average not greater than the most currently published rates by the Bureau of Labor and Statistics for the Construction Industry for OSHA Total Recordable and Lost Workday case rates for the previous three (3) years.
  - (3) The subcontractor has provided an explanation for the increase should the subcontractor's rates exceed the above stated rates and a documented mitigation plan. All mitigation plans shall be submitted to the BNI Safety Assurance Manager or designee for review and concurrence **(204)**.
- (k) The subcontractor has an established written Hazard Communication Program and a system within the program to maintain Material Safety Data Sheets (MSDS);
- (l) The subcontractor has had no significant willful citations from OSHA or other regulatory organizations during the previous three (3) years;
- (m) The subcontractor has received no citations, other than those determined to be minor violations, or fines for Price-Anderson Amendments Act (PAAA) non-compliances during the previous three (3) years; and
- (n) The subcontractor has received no fines for Nuclear Regulatory Commission non-compliances during the previous three (3) years.

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

### **H.23 TRI-PARTY AGREEMENT**

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

### **H.24 EMERGENCY CLAUSE**

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

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

## H.25 STOP-WORK AND SHUTDOWN AUTHORIZATION (M162)

(a) Definitions:

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

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

**Stop Work Criteria:**

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

(b) DOE Stop Work Order.

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

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

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

(c) DOE Stop Work Action.

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

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

(d) Contractor Stop Work Action

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

e. Restart work only after the unsafe condition is mitigated.

(e) Stop Work Policy.

The following represents the site's Stop Work Policy:

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

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

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

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

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

## **H.26 ENVIRONMENTAL PERMITS**

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

- (a) Environmental Permits: The Contractor shall accept as co-operator assignment or transfer of permits currently held by the U.S. Department of Energy (DOE) and its existing contractor for the Waste Treatment and Immobilization Plant (WTP). The Contractor is responsible to DOE for operation of the treatment, storage, and/or disposal unit known as the WTP in compliance with the laws, regulations, etc., as stated in the paragraph above and in accordance with the terms of the environmental permits.
- (b) Contractor and DOE as Joint Permittees: Where appropriate, required by law, or required by applicable regulatory agencies, DOE shall sign permits as owner or co-operator with the Contractor as the operator or co-operator. DOE will co-sign Hazardous Waste and State Dangerous Waste Permit Applications as owner/co-operator where required by applicable law. In this scenario, the Contractor must coordinate its actions with DOE. The Contractor shall accept assignment as co-operator of the State Dangerous Waste Permit Application, which has been submitted to the Washington State Department of Ecology for the WTP. DOE is responsible for timely notification to the Contractor of any issues or changes in the regulatory environment that impact or may impact Contractor implementation of any permit requirement. The Contractor is responsible for timely notification to DOE of any issues or changes in the regulatory environment that impact or may impact Contractor implementation of any permit requirement.
- (c) Multiple Contractors as Permittees: Where appropriate, in situations where multiple contractors are operators or co-operators of operations requiring environmental permits, DOE shall sign such permits as owner or co-operator and affected contractors shall sign as operators or co-operators. In this scenario, the Contractor must coordinate as appropriate with DOE and other contractors affected by the permit.
- (d) Permit Applications: The Contractor shall provide to DOE for review and comment in draft form any permit applications and other regulatory materials and permits necessary to be submitted to regulatory agencies for the purposes of obtaining a permit for construction or operation of the WTP. In the event the permit application is required to be co-signed, submitted by DOE, or is related to a permit in which DOE is a permittee, the Contractor shall provide the application for review and comment. Whenever reasonably possible, all such materials shall be provided to DOE initially not later than 150-days prior to the date they are to be submitted to the regulatory agency. The Contractor shall normally provide final regulatory documents to DOE at least 30-days prior to the date of submittal to the regulatory agencies for DOE's final review and signature or concurrence that shall be performed by DOE in a prompt manner. Special circumstances may require permits to be submitted in a shorter time frame. The Contractor may submit for DOE's consideration, requests for alternate review, comment, or signature schedules for environmental permit applications or other regulatory materials covered by this Clause. Any such requests shall be submitted 180-days prior to the date the materials are to be submitted to the regulatory agencies. Any such schedule revision shall be effective only upon approval from the Contracting Officer. (Table C.5-1.1, Deliverable H.1) **(M152)**

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

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

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

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

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

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

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

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

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

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

#### **H.28 ALLOCATION OF RESPONSIBILITIES FOR CONTRACTOR ENVIRONMENTAL COMPLIANCE ACTIVITIES**

- (a) This Clause allocates the responsibilities of the U.S. Department of Energy (DOE) and the Contractor, referred to collectively as the "parties" for implementing the environmental requirements at facilities within the scope of the Contract. In this Clause, the term "environmental requirements" means requirements imposed by applicable Federal, State and local environmental laws and regulations, including, without limitation, statutes, ordinances, regulations, court orders, consent decrees, administrative orders or compliance agreements including the *Hanford Federal Facility Agreement and Consent Order*, consent orders, permits and licenses.

- (b) Liability and responsibility for civil fines or penalties arising from or related to violations of environmental requirements shall be borne by the party that caused the violation irrespective of the fact that the cognizant regulatory authority may assess any such fine or penalty upon either party or both parties without regard to the allocation of responsibility or liability under this Contract. This contractual allocation of liability for any such fine or penalty is effective regardless of which party signs permit applications, manifests, reports or other required documents, is a permittee, or is the named subject of an enforcement action or assessment of a fine or penalty.
- (c) Regardless of which party to this Contract is named subject of an enforcement action for noncompliance with environmental requirements by the cognizant regulatory authority, provisions of this Contract related to allowable costs will govern liability for payment of any fine or penalty. If the named subject of an enforcement action or assessment of a fine or penalty is DOE and the fine or penalty would not otherwise be reimbursable under the allowable cost provisions of this Contract if the Contractor was the named subject of the enforcement action, the Contractor will either pay the fine or penalty or reimburse the DOE (if DOE pays the fine or penalty).

### **H.29 HAZARDOUS MATERIALS**

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

### **H.30 PRESERVATION OF ANTIQUITIES AND LAND AREAS**

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

### **H.31 INFORMATION**

- (a) Release of Information
  - (1) The Contractor shall be responsible for developing, planning, and coordinating timely dissemination of information regarding performance of work under the Contract.
  - (2) The Contractor shall be responsible for following the U.S. Department of Energy (DOE) guidelines and/or procedures for all oral, written and audio/visual information material prepared for public use, including technical information.

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

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

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

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

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

### H.32 COSTS ASSOCIATED WITH WHISTLEBLOWER ACTIONS

(a) Definitions.

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

*Employee whistleblower action* encompasses any action filed by an employee in Federal and State court for redress of a retaliatory act by a contractor and any administrative procedure brought by an employee under 29 Code of Federal Regulations (CFR) Part 24, 48 CFR subpart 3.9, 10 CFR Part 708 or 42 United States Code (U.S.C.) 7239.

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

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

(b) For costs associated with employee whistleblower actions where a retaliatory act is alleged against a covered contractor or subcontractor, the Contracting Officer:

- (1) May authorize reimbursement of costs on a provisional basis, in appropriate cases;
- (2) Must consult with the DOE Office of General Counsel whistleblower cost point of contact before making a final allowability determination; and
- (3) Must determine allowability of defense, settlement, and award costs on a case-by-case basis after considering the terms of the contract, relevant cost regulations, and the relevant facts and circumstances, including Federal law and policy prohibiting reprisal against whistleblowers, available at the conclusion of the employee whistleblower action.

(c) Covered contractors and subcontractors must segregate legal costs including costs of in-house counsel, incurred in the defense of an employee whistleblower action so that the costs are separately identifiable.

(d) If a Contracting Officer provisionally disallows costs associated with an employee whistleblower action for a covered contractor or subcontractor, funds advanced by the U.S. Department of Energy (DOE) may not be used to finance costs connected with the defense, settlement and award of an employee whistleblower action.

(e) Contractor defense, settlement and award costs incurred in connection with the defense of suits brought by employees under Section 2 of the *Major Fraud Act of 1988* are excluded from coverage of this Section.

### H.33 LITIGATION MANAGEMENT PLAN

The Contractor shall prepare a Litigation Management Plan that shall be submitted to the Contracting Officer for approval within ninety (90) days following Contract award. The purpose of the Plan will be to control the cost of litigation and implement the DOE policy favoring the use of Alternative Dispute Resolution (ADR) techniques where appropriate and beneficial to the Government. The *Litigation Management Plan* should, at a minimum, follow the procedures and cost guidelines in the policy statement published in the Federal Register on April 3, 1996, (61 FR 147.63). The Plan should also cover legal costs not connected with litigation. The Plan will be revised from time to time to conform to litigation management and ADR policies established by DOE. (Table C.5-1.1, Deliverable H.2) **(M152)**

### H.34 ALTERNATIVE DISPUTE RESOLUTION

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

- (a) Dispute Avoidance
  - (1) DOE and the Contractor agree to participate in a partnering workshop to be conducted by an experienced professional jointly agreed upon by the parties, within 60 days after Contract award.
  - (2) The parties agree to jointly select a "standing neutral" within 30 days of completion of the partnering workshop. The "standing neutral" will be available to help resolve disputes, as they arise. This can be an individual, a board comprised of three independent experts, or a company with specific expertise in the Contract area. If a "standing neutral" cannot be agreed upon, the DOE Office of Dispute Resolution will make a selection. The specific ADR processes and procedures, as well as the process for selecting the "standing neutral" will be determined at the partnering workshop.
- (b) Early Resolution of Disputes
  - (1) DOE and the Contractor shall use their best efforts to informally resolve any dispute, claim, question, or disagreement by consulting and negotiating with each other in good faith, recognizing their mutual interests, and attempting to reach a just and equitable solution satisfactory to both parties. If an agreement cannot be reached through informal negotiations after 30 days, then such agreement shall be referred to the "standing neutral," pursuant to the procedures jointly developed in the partnering workshop.
  - (2) The "standing neutral" will not render a decision, but will assist the parties in reaching a mutually satisfactory agreement. In the event the parties are unable after 30 days to reach such an agreement either party may request, and the neutral will render a non-binding advisory opinion. Such opinion shall not be admissible in evidence in any subsequent proceeding. All costs incurred by the Contractor in connection with this mediation procedure, shall if reasonable, be an allowable cost under this Contract. Section J, Attachment N – Alternative Dispute Resolution provides mutual agreement for Standing Neutral procedures. **(M147)**

(c) Formal Complaint

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

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

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

**H.36 COOPERATION DURING TRANSITION TO OPERATIONS**

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

**H.37 ADVANCE UNDERSTANDING ON COSTS**

The U.S. Department of Energy (DOE) and the Contractor will, within 60 days after Contract award, reach advance understandings regarding certain costs under this Contract. Such advance understandings enable both DOE and the Contractor to determine the allocability, allowability, and reasonableness of such costs prior to their incurrence, thereby avoiding subsequent disallowances and disputes, and facilitating prudent expenditure of public funds. It is expected that costs covered by such advance understandings will include employee travel and relocation, corporate home office, employee compensation and benefits, and facilities capital costs of money. Generally, DOE expects the incurrence of costs to be consistent with the Contractor's corporate-wide policies consistently and uniformly applied throughout its domestic operations subject to the specific limitations, conditions, and exclusions of subpart 31.2 of FAR as supplemented by Department of Energy Acquisition Regulation (DEAR) 931.2, and such understanding shall be consistent with DOE Order 350.1, *Contractor Human Resource Management*. Such policies will be summarized and submitted to DOE for approval. Advance understandings will be appended to the Contract in Section J, Attachment J, *Advance Understanding on Costs*.

**H.38 ADDITIONAL RIGHTS IN INVENTIONS AND TECHNICAL DATA**

In addition to rights specified elsewhere, the Contractor agrees that it will, upon request by the Government, grant to the Government, and others acting on behalf of the Government, an irrevocable, non-exclusive, paid-up license in and to any inventions or discoveries regardless of when conceived or actually reduced to practice or acquired by the Contractor and any other intellectual property, including technical data, which are owned or controlled by the Contractor, at any time through the completion of this Contract. The right of the Government shall apply to inventions, discoveries, and intellectual property, including technical data that are incorporated or

embodied in the construction or design of the Waste Treatment and Immobilization Plant (WTP) or which are utilized in the operation of the WTP or which cover articles, materials, or products manufactured at the WTP. The acceptance or exercise by the Government of the aforesaid rights and license shall not prevent the Government at any time from contesting the enforceability, validity, or scope of, or title to, any rights or patents or other intellectual property herein licensed.

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

#### **H.39 PATENT INDEMNITY - SUBCONTRACTS**

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

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

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

#### **H.41 THIRD PARTIES**

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

#### **H.42 CONTRACT DUE DATES**

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

#### **H.43 DOE MENTOR-PROTÉGÉ PROGRAM**

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

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

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

#### **H.45 RESERVED**

**H.46 DOE O 226.1B IMPLEMENTATION OF DEPARTMENT OF ENERGY OVERSIGHT POLICY (M069) (M108) (M128) (310)**

The Contractor shall comply with the Contractor Requirements Document of DOE O 226.1B, and will implement the approved WTP Assurance Program Description 24590-WTP-CASP-MGT-06-0001, Revision 0, dated 8 August 2006, which was transmitted to ORP under Contractor letter number 143142 dated 9 August 2006. The Contractor shall comply with subsequent ORP approved revisions of the assurance program description.

**H.47 PROTECTION OF PERSONALLY IDENTIFIABLE INFORMATION (PII) (M073)**

(a) Definitions.

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

(b) Requirements.

- (1) All suspected or confirmed cyber security and physical security incidents involving PII are to be reported to the DOE Cyber Incident Advisory Capability (CIAC) within 45 minutes of discovering the incident. Reports to the CIAC may be sent via email to [ciac@ciac.org](mailto:ciac@ciac.org), by phone to (925) 422-8193, or by fax to (925) 423-8002. The CAIC website is [www.caic.org](http://www.caic.org).
- (2) All CIAC Incident Reports must be immediately provided to the DOE Richland Operations Office Safeguards and Emergency Services Division and DOE Office of River Protection Manager or designee.
- (3) All suspected or confirmed cyber security and physical security incidents involving PII shall be reported telephonically within 45 minutes of discovering the incident to: (i) the EM-3 Chief Operating Officer; and (ii) the ORP Manager, Deputy Manager, or off-hours Duty Officer.
- (4) While an informal, telephonic notice may occur, all notices must be in writing and signed by a senior Contractor official. Notices must at a minimum contain factual information describing both the circumstances surrounding the loss and the information that was compromised. All notifications shall include the name and telephone number of a contact person.
- (5) Appropriate steps shall be taken to minimize identity theft risks to the affected individuals.
- (6) The Contractor shall notify all employees and others affected by the PII loss unless after consultation with law enforcement officials, the Assistant Secretary for Environmental Management determines that notification will significantly compromise the investigation.

**H.48 DELETED (M175)**

#### **H.49 CORPORATE OPERATING EXPERIENCE DOE O 210.2A (M077) (M128) (M310)**

The Contractor is responsible for complying with the Contractor Requirements Document (CRD) of DOE Order 210.2A "Corporate Operating Experience Program."

#### **H.50 OFFICIAL USE ONLY INFORMATION (M087) (M091)**

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

#### **H.51 PROPERTY MANAGEMENT SYSTEM (M120)**

The contractor shall provide major changes/revisions to the approved Property Management System to the Office of River Protection (ORP) for review prior to implementation. In addition, a copy of the Property Management System shall be provided to ORP annually. (Table C.5-1.1, Deliverable H.4) **(M152)**

#### **H.52 REPORT AND APPROVAL REQUIREMENTS FOR CONFERENCE RELATED ACTIVITIES**

The contractor is required to report and obtain approval from the contracting officer before incurring any costs associated with conference related activities. Conference expenses are defined as follows:

Conference expenses are defined as all direct and indirect conference costs paid by the Government, whether paid directly by agencies or reimbursed by agencies to contractors, travelers or others associated with the conference, but do not include funds paid under Federal grants to grantees. Conference expenses include any associated authorized travel and per diem expenses, rental of rooms for official business, audiovisual use, light refreshments, registration fees, ground transportation, and other expenses as defined by the Federal Travel Regulations (FTR). All outlays for conference preparation and planning should be included, but employee time for conference preparation should not be included. The FTR provides some examples of direct and indirect conference costs included within conference expenses. See 41 CFR 301-74.2. Conference expenses should be net of any fees or revenue received by the agency or contractor through the conference. **(M298)**

#### **H.53 DFLAW DESIGN COMPLETION (SUB-CLIN 2.1) (350)**

- (a) The following provisions pertain to CLIN 2.1, DFLAW, Design, only. Nothing included below shall be construed in such a manner as to modify or supersede any term and/or condition of the contract, which remain in full force and effect. Any inconsistency between provisions in H.53 and any other term or condition of the contract shall be resolved pursuant to the contract clause I.12 FAR 52.215-8 entitled Order of Precedence—Uniform Contract Format (OCT 1997).

- (b) **Government Furnished Services and Information.** The parties acknowledge that provision of these services and information is essential to the Contractor's ability to perform CLIN 2.1 and recognize that either party's failure to comply may constitute as basis for equitable relief pursuant to the Changes clause of the contract.
- 1) All Contractor requested approvals and/or requests for information will be provided and/or replied to by DOE within 30 calendar days.
  - 2) DOE will prioritize DFLAW regulatory reviews for permits, Temporary Authorization (TA) requests, clarifications and regulatory approvals in support of the DFLAW baseline schedule. The baseline project schedule shall reflect typical DOE time allotments for these items. DOE will assert its best efforts to support a total review cycle by DOE- ORP and Ecology of one year. DOE will support prioritization of regulatory reviews of Temporary Authorizations (TAs) to facilitate a response within 60 days of receipt of an acceptable request from the Contractor.
  - 3) All Contractor requests for code deviations and Basis of Design Change Notices (BODCN) will be responded to by DOE within 30 calendar days.
  - 4) Any requirements, codes, standards, and regulations and modifications to performance requirements invoked after the AIP (Agreement In Principle) is signed will be provided for the Contractor to assess cost and schedule impacts consistent with the terms and conditions of the contract.
  - 5) DOE shall respond to procurement NTE requests required to support CLIN 2.1 design development consistent with the response to initial DFLAW CLIN 2.1 NTE requests. DOE will assert its best efforts to respond and provide appropriate funding within 30 days of receipt of a written Contractor request that provides adequate supporting justification demonstrating both the technical and schedule necessity of said request(s).
- (c) **Critical Design Inputs.** The following design parameters form a basis for the cost and schedule targets as set forth in section B-2-F. It is acknowledged by the parties that changes to these critical design inputs may materially impact the Contractor's ability to complete CLIN 2.1 and give rise to relief pursuant to the Changes clause of the contract.
- 1) Preliminary Hazard Category 3 (HC-3) designation of the Direct Feed Low Activity Waste (DFLAW) Effluent Management Facility (EMF) and preliminary Seismic Category IV (SC-IV) designation of the EMF, low point drain tank, valve/jumper vault, and transfer lines.
  - 2) The Waste Acceptance Criteria (WAC) and design inputs per 15-WTP-0023 dated March 17, 2015, are the inputs to support design of DFLAW. The flow design inputs represents an acknowledgement of the ability to handle the stated transfer volumes from EMF to either the LERF/ETF or return to the DST.

**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	Code of Federal Regulations
CO	Contracting Officer
COR	Contracting Officer Representative
CPI	Cost Performance Index
CPIF	Cost Plus Incentive Fee
CSPI	Cost and Schedule Performance Index
DEAR	Department of Energy Acquisition Regulation
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
ECOLOGY	Washington State Department of Ecology
EMR	Experience Modification Rate
EPA	U.S. Environmental Protection Agency
EPCRA	<i>Emergency Planning and Community Right-To-Know Act of 1986</i>
ERISA	<i>Employee Retirement Income Security Act of 1974</i>
ES&H	Environment(al), Safety and Health
ESQ&H	Environment(al), Safety, Quality and Health
FAR	Federal Acquisition Regulation
FOCI	Foreign Ownership, Control or Influence
FY	Fiscal Year
HCA	Head of the Contracting Activity
HLW	High-Level Waste
HUBZone	Historically Underutilized Business Zone
HWMA	<i>Hazardous Waste Management Act</i>
ICD	Interface Control Document
ISMS	Integrated Safety Management System
JOBBS	Job Opportunities Bulletin Board System
LAW	Low Activity Waste
LDR	Land Disposal Restrictions
MEPP	Multiple Employer Pension Plan
MS	Mail Stop
MSDS	Material Safety Data Sheet
MTG	Metric Tons of Glass
NEPA	<i>National Environmental Policy Act of 1969</i>
NQA	Nuclear Quality Assurance
NOC	Notice of Construction
NOV	Notice of Violation
NOAV	Notice of Alleged Violation
NRC	Nuclear Regulatory Commission
NTE	Not to Exceed

OCI	Organizational Conflict of Interest
ORP	U.S. Department of Energy, Office of River Protection
OSHA	Occupational, Safety and Health Administration
PBS	Project Breakdown Structure
PSD	Prevention of Significant Deterioration
PAAA	<i>Price Anderson Amendments Act of 1988</i>
PL	Public Law
PCB	Polychlorinated biphenyls
PPA	<i>Pollution Prevention Act of 1990</i>
ppm	Parts Per Million
QARD	Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RFP	Request for Proposal
RL	U.S. Department of Energy, Richland Operations Office
ROD	Record of Decision
RPP	River Protection Project
SAS	Safeguards and Security
SEB	Source Evaluation Board
SF	Standard Form
SIC	Standard Industrial Classification
SPI	Schedule Performance Index
SRD	Safety Requirements Document
TBD	To Be Determined
TIN	Taxpayer Identification Number
TPA	<i>Hanford Federal Facility Agreement and Consent Order</i> (also known as Tri-Party Agreement)
TRU	Transuranic (waste)
TSCA	<i>Toxic Substances Control Act of 1976</i>
TSR	Technical Safety Requirements
UCNI	Unclassified Controlled Nuclear Information
USC	United States Code
WAC	Washington Administrative Code
WBS	Work Breakdown Structure
WDOH	Washington State Department of Health
WTP	Hanford Tank Waste Treatment and Immobilization Plant

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

Reserved

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

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

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

<b>Waste Treatment Plant Project                  SMALL BUSINESS SUBCONTRACTING PLAN</b>		
<b>1. Name of Prime Contractor:</b>	Bechtel National, Inc. (BNI)	
Address:	2435 Stevens Center Place Richland, WA 99354	
<b>2. Prime Contract Number:</b>	DE-AC27-01RV14136	
Total Estimated Contract Cost (TECC):	\$10,673,961,576	
Contract Period of Performance:	12/11/2000 through 8/15/2019	
Place of Performance:	Hanford Site, Richland, WA	
<p>Description of Contract Requirements: Bechtel National, Inc. 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.</p> <p>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.</p> <p>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:</p>		
<b>Total estimated dollars available for subcontracting:</b>	<b><u>\$4,857,719,913 (45.51% of TECC)</u></b>	
Category	Subcontracting Planned Dollar Amount	Percentage of Total Estimated Subcontracting Effort
Total planned and available for subcontracting to SB concerns	\$1,962,518,845	40.4%
Total planned and available for subcontracting to Small Disadvantaged Business (SDB) concerns (included in SB concern numbers)	\$170,020,197	3.5%
Total planned and available for subcontracting to Woman-Owned SB (WOSB) concerns (included in SB concern numbers)	\$194,308,797	4.0%
Total planned and available for subcontracting to Historically Underutilized Business Zone (HUBZone) SB concerns (included in SB concern numbers)	\$77,723,519	1.6%
Total planned and available for subcontracting to Native American Owned (NAB) concerns (includes both Large Business (LB) and SB NABs; SB NAB numbers are included in SB concerns; LB and SB NAB numbers are included in SDB concerns)	\$48,577,199	1.0%
Total planned and available for subcontracting to Veteran-owned SB concerns (included in SB concern numbers)	\$242,885,996	5.0%
Total planned and available for subcontracting to Service-Disabled Veteran-owned SB concerns (included in SB concern numbers)	\$7,286,580	0.15%

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

Total dollars for subcontracting to Washington and Oregon-based businesses (includes large and small businesses)	\$1,700,201,970	35.0%
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**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
<b>Construction</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<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
<b>Pipe/Valves/Fittings</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Civil/Structural/Architectural</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
<i>Concrete Anchors</i>	x	x		x	x		
<i>Fabricated Metal Embeds</i>	x						
<b>Electrical</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
<i>Fiber Optic/Power Cable</i>	x	x	x	x	x	x	
<i>ITS Fused Panels</i>	x						
<i>Through Wall Lighting</i>	x					x	
<b>Instrumentation &amp; Controls</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
<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	
<b>Jumpers/Melter</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>	
<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	
<b>Mechanical/HVAC</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<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			

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

<i>Chemicals/Storage</i>	x	x	x			x	x
<b>Technical/Engineering Services &amp; Office Products</b>	<b>X</b>						

**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 business, 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.

## Waste Treatment Plant Project SMALL BUSINESS SUBCONTRACTING PLAN

- Establish and maintain a relationship with the Small Business Administration and representatives to obtain assistance in finding competent small, small disadvantaged business, 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 Subcontract 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 business, small disadvantaged business, woman-owned small business, HUBZone small business, Native American owned, veteran-owned small business, 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, specifications, and delivery schedules to facilitate participation.
- Participate in small business, small disadvantaged business, woman-owned business, HUBZone, veteran-owned small business, 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 \$650,000 (\$1,500,000 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](http://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](http://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](http://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 business, woman-owned small business, HUBZone small business, Native American owned business, veteran-owned small business, and service-disabled veteran-owned small business concerns.
- b. Organizations contacted in an attempt to locate sources that are small business, small disadvantaged business, woman-owned small business, HUBZone small business, Native American owned business, veteran-owned small business, or service-disabled veteran-owned small business concerns.
- c. Records on each subcontract solicitation resulting in an award of more than \$150,000, indicating:

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

- Whether small business concerns were solicited and, if not, why not;
  - Whether small disadvantaged business concerns were solicited and, if not, why not;
  - Whether woman-owned small business concerns were solicited and, if not, why not;
  - Whether HUBZone small business concerns were solicited and, if not, why not;
  - Whether Native-American owned business concerns were solicited and, if not, why not;
  - Whether veteran-owned small business concerns were solicited and, if not, why not;
  - Whether service-disabled veteran-owned small business concerns were solicited and, if not, why not; and
  - If applicable, the reason award was not made to a small business concern.
- d. Records of any outreach efforts to contact:
- Trade associations
  - Business development organizations
  - Conferences and trade fairs to locate small business, small disadvantaged business, woman-owned small business, HUBZone small business, Native American owned business, veteran-owned small business, and service-disabled veteran-owned small business sources.
- e. Records of internal guidance and encouragement provided to acquisition personnel through:
- Workshops, seminars, training, etc.
  - 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 G. McCullough Date: 13 Dec 2013

Typed Name: M. G. McCullough

Company: Bechtel National, Inc., Waste Treatment Plant Project

Title: Project Director

Plan Accepted by: Ronnie L. Dawson 01/30/14  
(ORP-WTP Contracting Officer)

Date: 01/30/14

**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 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 (M130)
		DELETED (M166)
RL/REG-97-04	08/02	DELETED (206)
RL/REG-97-05	07/19/01	DELETED (206)
		DELETED (M166)
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, CRD	12/22/05	Facility Safety (Partial Implementation per CCNs 168377 (ORP 07-WTP-306) and 170076) (M133) to include Office of Environmental Interim Policy, "Code of Record for Nuclear Facilities" dated September 3, 2009. (M170) (M175)
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 (M175) (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
<del>06-AMD-050</del> (CCN 144548)		DELETED (310)	
DOE/RL-88-21	10/01/96 12/21/99	Double-Shell Tank Unit Permit Application	Contract Clause C.6, Standard 7(e)(4)(vi)(B) & Contract Clause C.8, Specification 7, 7.2.1.4 and 7.2.2.1; Specification 8, 8.2.1.4 and 8.2.2.1 (M175)

<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>TITLE</b>	<b>CROSS REFERENCE</b>
DOE/EM-0093	12/96	Waste Acceptance Product Specifications for Vitrified High Level Waste Forms (WAPS) Revision 2 <b>(M114)</b>	Contract Clause C.8, Specification 1, 1.2.1.4 and 1.2.2.1.1 <b>(M175)</b>
DOE/RL-94-02, Rev 6 (336)	06/2014 (336)	Hanford Emergency Management Plan <b>(A197)(310)</b> (Revision 6, June 2014) (336)	Contract Clause C.6, Standard 4(j) and Standard 7(e)(1) Table S7-1 <b>(M175) (A197) (336)</b>
DOE M 140.1-1B, CRD	03/30/01	Interface with Defense Nuclear Facilities Safety Board.	Contract Clause C.4 (d) <b>(M175)</b>
DOE O 142.3A, CRD	10/14/10	Unclassified Foreign Visits and Assignments Program. <b>(M047) (M124) (204)</b>	The order is effective regardless of comment above at (b) <b>(M175)</b>
<del>DOE O 205.1A, CRD</del>		<del>DELETED <b>(M194)</b></del>	
<del>DOE M 205.1-2</del>		<del>DELETED <b>(M175)</b></del>	
<del>DOE M 205.1-5, CRD</del>		<del>DELETED <b>(M194)</b></del>	
<del>DOE M 205.1-6, CRD</del>		<del>DELETED <b>(M194)</b></del>	
<del>DOE M 205.1-7, CRD</del>		<del>DELETED <b>(M194)</b></del>	
<del>DOE M 205.1-8, CRD</del>		<del>DELETED <b>(M194)</b></del>	
DOE O 206.1, CRD	01/16/09	DOE Privacy Program <b>(235)</b>	The order is effective regardless of comment above at (b). Contractor shall implement in accordance with CCN 231161 <b>(321)</b>
DOE O 206.2, CRD	02/19/13	Identity, Credential, and Access Management <b>(307)</b>	The order is effective regardless of comment above at (b) <b>(307)</b>
DOE O 210.2A, CRD	04/8/11	DOE Corporate Operating Experience Program <b>(M077) (310)</b>	Contract Clause H.49 <b>(M175)</b> Refer to Note 10 <b>(310)</b>

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
DOE O 221.1A, CRD	04/19/08	Reporting Fraud, Waste, and Abuse to the Office of Inspector General. <b>(M133)</b>	Refer to Note 3 <b>(M175)</b>
DOE O 221.2A, CRD	02/25/08	Cooperation with the Office of Inspector General. <b>(M133)</b>	Refer to Note 3 <b>(M175)</b>
DOE O 226.1B, CRD	04/25/11	Implementation of Department of Energy Oversight Policy <b>(M069)</b> <b>(M108)(310)</b>	Contract Clause H.46 <b>(M175)</b> Refer to Note 11 <b>(310)</b>
DOE O 231.1B	6/27/2011	Environment, Safety, and Health Reporting <b>(M033)</b> <b>(310)</b>	Contract Clause C.6, Standard 1(d)(6) <b>(M175)</b> <b>(310)</b>
<del>DOE M 231.1-1A, Change 2, CRD (332)</del>		DELETED (332)	
<del>DOE M 231.1-2, CRD</del>		DELETED <b>(256)</b>	
<del>SCRD M 231.1-2</del>		DELETED <b>(256)</b>	
SCRD O 232.2 Admin. Change 1 (332)	8/30/11	Occurrence Reporting and Processing of Operations Information, Revision 1 <b>(268)</b>	Contract Clause C.6, Standard 1(d)(5) and (6). Contractor shall implement in accordance with CCN 269738 (332)
<del>HFID 232-1B</del>		DELETED <b>(256)</b>	
<del>DOE N 234.1, CRD</del>		DELETED (310)	
<del>DOE O 241.1, CRD</del>		DELETED (310)	
DOE/RW- 0333P	10/01/08	Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program (QARD) – Revision 20 <b>(M099)</b> <b>(M134)</b>	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 <b>(M175)</b>
DOE O 350.1, Chg 3, CRD	02/23/10	Contractor Human Resource Management Program <b>(M171)</b> <b>(M175)</b>	Contract Clause H.37 <b>(M175)</b>

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
DOE/RW-0351	5/31/07	Waste Acceptance System Requirements Document (WASRD) - Revision 5 <b>(M114)</b>	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 <b>(M175)</b>
<del>DOE O 413.3A, CRD</del>		DELETED <b>(271)</b>	
<del>DOE M 413.3-1</del>		DELETED <b>(271)</b>	
DOE O 413.3B, CRD	11/29/10	Program and Project Management for the Acquisition of Capital Assets. Refer to Note 7 for implementation <b>(271)</b> .	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 (M066)	Contract Clause C.6, Standard 7(e)(3)(i) & (iv) <b>(M175)</b>
DOE 414.1D, CRD, Chg 1 (349)	05/08/13 (349)	Quality Assurance (349)	The order is effective regardless of comment above at (b) and implemented in accordance with Note 14. (349)
DOE O 420.1B, Chapter V	12/22/05	Facility Safety (245)	The order is effective regardless of comment above at (b)
DOE O 422.1, CRD	06/29/10	Conduct of Operations <b>(207)</b>	The notice is effective regardless of comment above at (b). Contractor shall implement consistent with CCN 229138.
DOE O 425.1D, Chg 1, CRD	04/16/10	Verification of Readiness to Start Up or Restart Nuclear Facilities (M033) (A190)(310)	Contract Clause C.6, Standard 5(a)(5), (c)(6), (e)(2), (f)(ii), and (g) <b>(M175) (310)</b>

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
DOE O 433.1B, Admin Chg 1 (342)	04/21/10 (342)	Maintenance Management Program for DOE Nuclear Facilities (342)	The order is effective regardless of comment above at (b) and implemented in accordance with Note 13. (342)
DOE O 435.1, Chg 1, CRD	08/28/01	Radioactive Waste Management.	Implementation of this DOE CRD using the graded approach; approved by 05-WED- 047; CCN 136281 satisfies the comment above at (b). (M130) (M175) (278)
DOE M 435.1-1	07/09/99	Radioactive Waste Management Manual	Contract Clause C.8, Specification 2, 2.2.1.13, 2.2.2.23, & 2.4 (M175)
DOE M 441.1-1, CRD	03/07/08	Nuclear Material Packaging	The manual is effective regardless of comment above at (b) (M130) (M175)
DOE O 442.2, CRD	07/29/11	Differing Opinions for Technical Issues Involving Environment, Safety, and Health <b>(271)</b>	The order is effective regardless of comment above at (b) and implemented as described in CCN 246747.
DOE O 442.1A & Supplemente d Rev. 3 CRD (332)	06/06/01	Department of Energy Employee Concerns Program (A029) (293)	The order is effective regardless of comment above at (b) (M175) and implemented as described in CCN 249676. <b>(293)</b> Contractor shall implement in accordance with CCN 266683. (332)
<del>DOE M 442.1-1 CRD</del>		DELETED (271)	
<del>DOE M 450.4-1, CRD</del>		DELETED (310)	
DOE M 470.4-1, CRD	08/26/05	Safeguards and Security Program Planning and Management (M136) (M171)	Refer to Note 1 (M175)

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE
<del>DOE M 470.4-2A, CRD</del>		DELETED (310)	
DOE M 470.4-4A	01/16/09	Information Security Manual (M145)	Refer to Note 2 (M175)
DOE O 471.3, CRD	4/9/03	Identifying and Protecting Official Use Only Information (M087)	Contract Clause H.50 (M175)
DOE M 471.3-1, Chg 1, CRD	4/9/03	Manual for Identifying and Protecting Official Use Only Information (M087) (310)	Contract Clause H.50 (M175) Refer to Note 12 (310)
DOE O 475.1, CRD	12/10/04	Counterintelligence Program (M071)	Contract Clause C.6, Standard 8(c) (M175)
DOE/RW-0511, Volume I, Rev. 4	03/07/2008	Integrated Interface Control Document (IICD), High-Level Radioactive Waste and U.S. Department of Energy and Naval Spent Nuclear Fuel to the Civilian Radioactive Waste Management System (M114)	Contract Clause C.8, Specification 1,1.2.1.5 and 1.2.2.1.1 <b>(321)</b>
DOE O 551.1D, CRD	04/02/12	Official Foreign Travel. Refer to Note 4. (M141) (M175) (283)	Contract Clause I.109 (M175). Implemented in accordance with CCN 243970 and 12-WTP-0272 (CCN 251792). (283)
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).
<del>RL/REG-2000-04</del>		DELETED (215)	
<del>DOE/ORP-2000-06</del>		Deleted through Contract Modification M082 (M175)	
<del>DOE STD 3009</del>		DELETED (310)	
<del>DOE O 5480.20A, Change 1, CRD</del>		DELETED (310)	

<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>TITLE</b>	<b>CROSS REFERENCE</b>
SCSP	5/9/06	Richland Regional Office Site Counterintelligence Support Plan Hanford Site - Bechtel National, Inc. (M071)	Contract Clause C.6, Standard 8(c) (M175)
DOE-0361	03/28/11	Hanford Site-Wide Emergency Planning and Community Right-to-know Act (EPCRA) procedure (310)	The order is effective regardless of comment above at (b).
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 (342)	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	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 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	03/04/11	Accident Investigations (310)	Refer to Note 9 (310)
DOE STD 3009	1994	Preparation Guide for DOE Nonreactor Nuclear Facility Safety Analysis Reports (Change Notice 3, March 2006) (A029) (M152) (321)	Contract Clause C.6, Standard 9, paragraph 2. (321)

DOCUMENT NUMBER	DATE	TITLE	CROSS REFERENCE

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 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 attend 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 01, 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.
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, as described in CCN 249671.
10. The Contractor shall implement DOE O 210.2A, CRD, as described in CCN 249671.
11. The Contractor shall implement DOE O 226.1B, CRD, as described in CCN 249671.
12. The Contractor shall implement DOE M 471.3-1, Chg 1, CRD, as described in CCN 249671.
13. The Contractor shall implement DOE O 433.1B, Admin Chg 1 & DOE-RL-92-36, as described in CCN 202791.
14. The Contractor shall implement DOE O 414.1D, CRD, Chg 1, as described in CCN 222763 and 15-QAD-0014.

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

<b><u>Key Position</u></b> <b>(M110) (M130) (M133) (M147) (M152)</b> <b>(M158) (A164) (M181) (206) (208) (242)</b> <b>(261) (276) (291) (303) (308) (332) (336)</b>	<b><u>Current Employee</u></b>
Project Director	Margaret McCullough
Project Manager	Joseph St. Julian
Manager of Design, Operations & Integration	Edward (Ward) Sproat
Manager of Environment, Safety & Health	Richard Nugent
Manager of Nuclear Safety Engineering	Robert (R.T.) Brock
Manager of Quality	Linda M. Weir
Plant Operations Manager	Ken Wells
Project Technical Director & Design Authority	Russell Daniel
Manager of Production Engineering	Mark Johnson
Manager of Commissioning & Operations	Mark Lindholm
Manager of Construction	Brian S. Kerr (336)
Business Services Manager	Lori Baker

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

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

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

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

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

Guarantor agrees to assure that it shall cause this Performance Guarantee Agreement to be unconditionally binding upon any successor(s) to its interests regardless of (i) the reorganization, merger, or consolidation of Guarantor into or with another entity, corporate or otherwise, or the liquidation or dissolution of Guarantor, or the sale or other disposition of all or substantially all of the capital stock, business, or assets of Guarantor to any other person or party, or (ii) the institution of any bankruptcy, reorganization, insolvency, debt agreement, or receivership proceedings by or against Guarantor, or adjudication of Guarantor as a bankrupt.

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

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

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

**BECHTEL NATIONAL, INC.**

Original Signed By  
**T. F. Hash, President**

GUARANTEE AGREEMENT ON  
BEHALF OF GUARANTOR

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

Original Signed By  
D. W. Price, Assistant Secretary

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

**Staffing**

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

**INTERIM DESIGN CONTRACTOR EMPLOYEES EXPERIENCE  
 SUMMARY AS OF 8/30/00**

<b>DISCIPLINE</b>	<b>SENIOR LEVEL</b>	<b>JUNIOR LEVEL (1-5 Years)</b>	<b>YEARS EXPERIENCE</b>	<b>AVERAGE YEARS EXPERIENCE</b>
<b><u>Engineers:</u></b>				
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
<b>Subtotal</b>	<b>81</b>	<b>9</b>		
<b><u>Designers:</u></b>				
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
<b>Subtotal</b>	<b>43</b>	<b>5</b>		
<b>Total</b>	<b>124</b>	<b>14</b>		
<b>Total Interim Design</b>	<b>138</b>			

**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:

<b>Subcontractor</b>	<b>Current Scope</b>	<b>Number of Staff</b>
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
Scientech	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 (SRTC), GTS-Duratek (including the Vitreous State Laboratory (VSL) at Catholic University), Pacific Northwest National Laboratory, and IBC, Inc. for significant Science and Technology (S&T) support to the WTP Project in the following areas:

S&T Provider	Scope
SRTC	Chemical and radiochemical separations, waste form qualification
PNNL	Chemical and radiochemical separations, waste form qualification
GTS-D	Pilot melter testing, melter testing, and glass development
IBC, Inc.	Ion exchange media development and testing

**SECTION J – LIST OF ATTACHMENTS**  
**ATTACHMENT I – FUNDING PROFILE**

Fiscal Year (FY)	Budget Authority (\$1M)*
2001	\$ 348**
2002	\$ 671**
2003	\$ 676**
2004	\$ 682**
2005	\$ 695**
2006	\$ 487**
2007	\$ 614**
2008	\$ 741**
2009	\$ 690
2010	\$ 690
2011	\$ 740
2012	\$ 840
2013	\$ 970
2014	\$ 890
2015	\$ 790
2016	\$ 600
2017	\$ 380
2018	\$ 355
2019	\$ 240
2020	\$63

\*Includes Contractor Fee

\*\* Actual Funding Amounts As of Modification No. A143

**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. (BSII) policy dated January 1, 2010 (Revision 15), effective January 1, 2010 **(A164)**, submitted under BNI letter CCN 210586 dated December 30, 2009 **(A164)**. 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. **(M134)**
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 01, 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 Campus only) and Eastern Washington University (Cheney 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 01, 2008, at which time the limit was eliminated with PAI, Revision 10. **(M126)**
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 the Contract. Costs to implement the BNI Six Sigma Program 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.
  4. Costs to implement the BNI Sharing For Success Program to enhance craft productivity and reduce overall project costs 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.
  5. Effective from the date of Contract award, facilities capital cost of money shall be an allowable cost under the 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 the Contract, subject to other required tests of allowability under the 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 the Contract, subject to other required tests of allowability under the 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 the Contract, subject to other required tests of

allowability under the 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 the Contract, subject to other required tests of allowability under the Contract, the Federal Acquisition Regulation, and the Department of Energy Acquisition Regulation.
10. Multi-Employer Pension Plan (MEPP) **(M152)**
  - a. The costs and expenses of the Contractor's participation in the Multi Employer Pension Plan (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 (MSA) 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 the Contract subject to availability of funds under the 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 the 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 A029.

Case No.	Title
	<b>Issued to ORP</b>
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, LAW and HLW Facilities
	PI-24590-01-00117 Commissioning Maintenance Requirements
17	PI-24590-01-00118 Plant Operator Qualification & Training Facility
	PI-24590-01-00119 Commissioning Materials & Vendor Support
	PI-24590-01-00120 Commissioning Testing and Operations Requirements
	PI-24590-01-00121 Risk Assessment and Reporting
19	PI-24590-01-00122 Analytical Laboratory and Temporary Laboratory Facilities
	PI-24590-01-00131 Hazards/Accident Analysis Post PSAR Submittal
	PI-24590-01-00133 Commissioning Procedure Writers
	PI-24590-01-00135 QC Support to Commissioning
	PI-24590-01-00136 Commissioning Training
	PI-24590-01-00138 Environmental Interface
	PI-24590-01-00140 Operation Authorization Request (OAR) Development and

Case No.	Title
	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 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
	<b>2001 Approved Trends</b>
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 PT Integrated Pilot Facility – Infrastructure & Testing IX Processes
	<b>2002 Approved Trends</b>
12	PI-24590-02-00341 Radiological Monitoring Standards Change from ANSI-N13.1-1969 to 1999
7	PI-24590-02-00356 Critical Decision 3 – Extended Independent Review
22	PI-24590-02-00358 Steam Reformer Technology Demonstration Acquisition
20	PI-24590-02-00382 Evaluate and Test CS & TC Exchange Resins
15	PI-24590-02-00395 DOE Order 420.1 Fire Safety Impact Assessment Study
	PI-24590-02-00396 Melt Pool Corrosion of LAW Bubblers (Part 2)
	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

Case No.	Title
	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 years, from March 26, 2007 to March 25, 2009, with a not-to-exceed total cost of \$150,000, and one 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 year of employment (332). The policies establishing the program, and the applicable time periods are:
  - Program as contained in contractor letter, CNN 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. **(M086, M123)**
  - 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 (332).
  
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. **(M101) (M130) (M136) (A143) (M155)**

<b>13-A. Not-To-Exceeds Definitized by Modification No. A143 (M155)</b>	
<b>DOCUMENT ID.</b>	<b>TITLE</b>
TN 24590-03-01341	Seismic Attenuation Study to Support ORP <b>(M101)</b>
TN 24590-03-01071	Maximum Achievable Control Technology/ Destructive and Removal Efficiency Testing <b>(M101)</b>
TN 24590-03-01318	Supplemental LAW Treatment Study <b>(M101)</b>
TN 24590-03-01317	QA Testing of HEPA Filters at DOE Filter Test Facility (FTF) <b>(M101)</b>
TN 24590-03-01482	Earned Value Management System (EVMS) Criteria Crosswalk <b>(M101)</b>
TN 24590-03-01315	PTF Black Cell Access Trend <b>(M101)</b>
TN 24590-03-01213	Concentrate Receipt Vessels (CRV) Deletion <b>(M102)</b>
TN 24590-05-01906	PNNL Seismic Borehole Drilling Support <b>(M102)</b>
TN 24590-06-01930	Technical Feasibility Study of WTP Startup Sequencing <b>(M098) (M130)</b>
TN 24590-06-02430	Perform Impact Assessment of Borehole Data <b>(M098) (M130)</b>
BCP-24590-06-03419	Implementation of ASME NQA-1 2000 and QARD Revision 18 for performance by BNI subcontractor Duratek, Inc. <b>(M135)</b>
ORP 08-AMD-213 (10/06/08) (CCN 187713) TN 24590-06-03628	DOE ORP Direction to Cancel the Temporary Low Activity Waste (LAW) Melter Assembly Building Procurement <b>(M141)</b>

<b>13-B. Not-To-Exceeds Not Included in Modification No. A143 Definitization (M155)</b>		
<b>DOCUMENT ID.</b>	<b>TITLE</b>	<b>DEFINITIZATION MODIFICATION NO.</b>
BCP-24590-06-02279	Expansion of DWP Requirements (permit Modifications) <b>(M122) (M130)</b>	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 <b>(M136)</b>	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) <b>(M141)</b>	276
ORP 08-NSD-059 (10/15/08) (CCN 188217) TN 24590-06-	Direction to Implement New Justification for Continued Design, Procurement, and Installation (JCDPI) <b>(M152)</b>	A164

03753		
Modification M090 & 09-AMD-205 (07/18/08) (CCN 202423)  TN 24590-06-02145 & -02381	Direction to Implement DOE 205.1A, Cyber Security Management Program (M155)	217
Modification M154  TN 24590-06-04133	Direction to Implement Pretreatment Engineering Platform (PEP) dry layup (M155)	A167
Modification M196 BCP 24590-06-04489 BCP 24590-06-04784 BCP 24590-06-05085	Direction to Implement Multiple Operational Readiness Strategy (218)	282
Modification M196 BCP 24590-06-04853 ORP 10-AMD-139 (05/06/10; CCN 218244)	Direction to Implement CXP Equipment Option (218)	317
Modification 221 ORP 11-WTP-219 (06/17/11; CCN 236247); Modification 247 ORP 11-WTP-437 (12/01/11; CCN 242351); Modification 264 ORP 12-WTP-0109 (03/15/12; CCN 245985); Modification 286 ORP 12-WTP-317 (09/24/12)	Direction to Proceed with Large Scale Testing (MOD 221, MOD 247, MOD 264, MOD 286)	299 - Partial
Modification 273	Direction to participate in the Hanford Site Organizational Climate and Safety Conscious Work Environment (SCWE) Survey	290
Modification 245 ORP 11-WTP-429	Direction to proceed with the implementation of DOE Order (O) 420.1B, <i>Facility Safety</i> , Chapter V, <i>Systems Engineer Program</i> . (245)	276
Modification 300 ORP 13-CPM-0099 (05/06/13); Mod 304 ORP 13-CPM-0133 (06/05/13); Modification 313 ORP 13-CPM-0299 (11/25/13)	Direction to Proceed with Full Scale Vessel Testing Program in lieu of the existing Computational Fluid Dynamics and Large Scale Vessel testing Program as a Design Verification Tool (300, 304, 313)	
Modification 329 ORP 14-CPM-0172	Direction to proceed with Section C, Statement of Work, Standard 3 Design, paragraph (i) Design of BOF Utility Modifications	350
Modification 330 ORP 14-CPM-0181	Direction to proceed with Section C, Statement of Work, Standard 3 Design, paragraph (j) Design of BOF Effluent Management Facility	350

Modification 334 ORP 14-CPM-0228	Direction to proceed with Pretreatment Facility vessel mixing design verification.	
Modification 339 ORP 15-CPM-0008	Direction to proceed with Section C, Statement of Work, Standard 3 Design, paragraph (k) Design of Balance of Facilities Underground and Site-Wide Modifications necessary to support the Direct Feed of LAW (DFLAW)	<b>350</b>
Modification 342 ORP 15-CPM-0064	Direction to proceed with the implementation of DOE Order (O) 433.1B, Maintenance Management Program for DOE Facilities and DOE/RL-92-36, Hoisting and Rigging Manual. (342)	
Modification 344 ORP 15-CPM-0092	Direction to proceed with initiation of procurement of BOF modifications and LAW Valve Vault materials to support DFLAW; add Interface Control Documents 30 and 31	
Modification 348 ORP 15-CPM-0128	Direction to proceed with initiation of BOF isolation construction to support DFLAW	
Modification 349 ORP 15-CPM-0136	Direction to proceed with the implementation of DOE Order (O) 414.1D, CRD, Chg. 1, Quality Assurance. (349)	

14. (Reserved)

15. (Reserved)

16. The following Advance Agreements are incorporated and made a part of this contract. **(M130)**

TITLE	REFERENCES
Offsite Beryllium Medical Exam Costs <b>(M130)</b>	CCN 150302 (06-ESQ-166; 28DEC06)
Relocation Costs Associated with Establishing a Frederick, MD WTP Project Office <b>(M130)</b>	Advance Agreement signed by J. J. Short/C. E. Rogers 20JUL06; CCN 143197
Steps to Bring BNI Billings and DOE Financial System into Agreement <b>(M130)</b>	Advance Agreement signed by J. J. Short/C. E. Rogers 24JUL06; CCN 143195
Costs Related to Safety Award to WTP Construction Site Employees <b>(M130)</b>	Advance Agreement signed by T. M. Williams/N. F. Grover 28NOV07; CCN 169002
Costs Related to WTP College Hire Conference <b>(M130)</b>	Advance Agreement signed by T. M. Williams/N. F. Grover 08AUG07; CCN 169228
Costs Related to Per Diem Expenses for Certain Employees <b>(M130)</b>	Advance Agreement signed by T. M. Williams/N. F. Grover 03JUL07; CCN 169230
Costs Related to Living Away From Home Option (LAFHO) <b>(M130)</b>	Advance Agreement signed by T. M. Williams/N. F. Grover 12DEC07; CCN 169233
Costs Related to Voluntary Protection Program (VPP) <b>(M133)</b>	Advance Agreement signed by T. M. Williams/N. F. Grover 20JUN08; CCN 181338

Costs Related to Per Diem Expenses for Specific Employees July 2008 <b>(M134)</b>	Advance Agreement signed by T. M. Williams/N. F. Grover 18JULY08; CCN 184046
Construction Project Review Subsistence <b>(A197)</b>	Advanced Agreement described in CCN 224972 (27Oct 10) and approved by R. L. Dawson on 04NOV10; 10-AMD-370 (CCN 227552)
Costs Related to 2011 Safety Award to WTP Construction Site Employees <b>(285)</b>	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 <b>(285)</b>	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 non-routine corrective maintenance/rehabilitation – are specified in CCN 220281, Letter from N.F. Grover to R.L. Dawson, “Contract Section J, Attachment J, Item 17 – Thresholds for Repair of Government Property,” dated August 4, 2010 and are incorporated into this contract. The Property Administrator is authorized to approve repairs costing less than \$25,000. **(M136) (M145) (M186)**
18. Inclusions from Equitable Adjustment Settlement. The Trends and Baseline Change Proposals listed on Attachment J, Sub-attachment A are specifically included in the Statement of Release with Modification No. A143, and are released from any further equitable adjustment. **(A143)**
19. Exclusions from Equitable Adjustment Settlement. The Modifications, Trends and Baseline Change Proposals listed on Attachment J, Sub-attachment B are specifically excluded from the Statement of Release with Modification No. A143, and may be eligible for equitable adjustment provided all Contract change requirements are met. **(A143)**
20. All emergency-related repairs or emergency related maintenance on BNI leased facilities less than or equal to \$25,000, no CO approval is required. Alterations made to any BNI leased facility greater than or equal to \$100,000, CO approval is required (09-AMD-164 dated May 28, 2009; CCN 200168). **(M155)**

**SECTION J – LIST OF ATTACHMENTS**

**ATTACHMENT K  
LISTING OF WTP CONCEPTUAL DESIGN AND SUPPORTING INFORMATION**

The following information associated with the Waste Treatment and Immobilization Plant (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 Low Activity Waste (LAW) Land Disposal Restrictions (LDR) Compliance
  - Environmental Report Revision
- (f) Integrated Safety Management Program, Hazards and Safety Analysis Information
  - Documentation prepared for, and correspondence between the DE-AC06-96RL13308 Contractor Organization and the U.S. Department of Energy (DOE) Regulatory Unit can be found at <http://www.hanford.gov/osr/osr.asp>.

- (g) Cost and Schedule Documentation
  - Integrated Master Plan
  - Government Fair Cost Estimate
- (h) Quality Assurance
  - Quality Assurance Program Description

**SECTION J – LIST OF ATTACHMENTS  
 ATTACHMENT L  
 SMALL DISADVANTAGED BUSINESS PARTICIPATION PROGRAM TARGETS**

A — Bechtel Washington

SIC Code	Description of SIC Major Group	SDB Dollars	Percentage**
N/A			

B — Subcontractors

SIC Code	Description of SIC Major Group	SDB Dollars	Percentage**
23	Apparel and other finished products made from fabrics	\$26,880	.0007
25	Furniture and fixtures	248,700	.0063
28	Chemicals and allied products	1,747,750	.0441
34	Fabricated metal products	9,564,827	.2412
36	Electronic and other electrical equipment and components, except computers	15,730,940	.3967
38	Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks	720,120	.0182
48	Communications	711,489	.0179
50	Wholesale trade, durable goods	3,340,970	.0843
51	Wholesale trade, nondurable goods	2,403,444	.0606
52	Building materials, hardware, garden supply, and mobile home dealers	491,220	.0124
73	Business services	125,468	.0032
87	Engineering, accounting, research, management, and related services	16,046,472	.4047
89	Miscellaneous services	512,040	.0129
	Subtotal ***	\$51,670,320	1.3032

C — Total (A + B)

SIC Code	Description of SIC Major Group	SDB Dollars	Percentage**
23	Apparel and other finished products made from fabrics	\$26,880	.0007
25	Furniture and fixtures	248,700	.0063
28	Chemicals and allied products	1,747,750	.0441

34	Fabricated metal products	9,564,827	.2412
36	Electronic and other electrical equipment and components, except computers	15,730,940	.3967
38	Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks	720,120	.0182
48	Communications	711,489	.0179
50	Wholesale trade, durable goods	3,340,970	.0843
51	Wholesale trade, nondurable goods	2,403,444	.0606
52	Building materials, hardware, garden supply, and mobile home dealers	491,220	.0124
73	Business services	125,468	.0032
87	Engineering, accounting, research, management, and related services	16,046,472	.4047
89	Miscellaneous services	512,040	.0129
	Subtotal ***	\$51,670,320	1.3032

Total Estimated Contract Value = \$3,965,000,000

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\* SDB participation from industries eligible for the 10% Price Evaluation Adjustment

\*\* All percentages shown as a percent of the estimated total Target Cost

\*\*\* Total SDB target cost

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

General Decision Number WA20080009, dated February 6, 2009 (M147) is hereby incorporated by reference. (M147)

**SECTION J – LIST OF ATTACHMENTS**  
**ATTACHMENT N**  
**ALTERNATIVE DISPUTE RESOLUTION (M147)**

**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 non-binding, in the interest of early dispute resolution, both Parties shall seriously consider such advisement. The DOE Contracting Officer (CO) shall issue the final DOE written dispute determination to BNI within five (5) business days after receipt of the SN's settlement recommendation. BNI shall advise the CO, 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 the Contract.




**SECTION J – LIST OF ATTACHMENTS  
 ATTACHMENT P  
 COMPLETION DEFINITION SHEETS FOR INCENTIVE FEE C.1 ACTIVITY MILESTONE COMPLETION  
 INCENTIVE**

The following Activity Milestones have been earned and schedule incentive fee paid as of modification 265.

<b>INCENTIVE C.1 - ACTIVITY MILESTONE COMPLETION INCENTIVE FEE</b>						
<b>COMPLETED MILESTONES</b>						
<b>Facility</b>	<b>Milestone Designation</b>	<b>Function</b>	<b>Description</b>	<b>Date Approved</b>	<b>CY</b>	<b>Fee Amount</b>
LAB-01	1GT00E0918	Engineering	Title II Design Complete	05/18/09	2009	\$ 3,875,000
BOF-04	1GB16C1050	Construction	Complete Installation of Cathodic Protection System	07/14/10	2010	\$ 3,875,000
PTF-02	1GP12CFM02	Engineering	IFC Draw ings for Concrete Walls EL 56 - 77 Ft	06/01/09	2009	\$ 3,875,000
LAB-02	1GT48P0921	Plant Equip	Receive Waste Transfer System Equipment	02/25/10	2010	\$ 3,875,000
LAW-06	1GL14C0915	Construction	Erect Sw itchgear Building	12/14/09	2009	\$ 3,875,000
HLW-02	1GH48P0942	Plant Equip	Receive and Accept Melter Cave 1 Crane Maintenance Shield Door HSH-DOOR-05	12/08/09	2009	\$ 3,875,000
PTF-01	1GP14CFM01	Engineering	DOE Approval of M-12 Closure	01/06/10	2010	\$ 3,875,000
HLW-05	1GH13C1145	Construction	Erect Structural Steel EL 0 Ft - EL 14 Ft	03/30/10	2010	\$ 4,428,000
PTF-03	1GP15CFM03	Engineering	PD Rack Design - IFC Complete	12/17/10	2010	\$ 4,428,000
LAB-04	1GT47P1036	Plant Equip	Receive Autosampler (ASX) Equipment	10/28/10	2010	\$ 4,428,000
HLW-01	1GHZZE0941	Engineering	Complete HVAC Design (Title II)	07/28/10	2010	\$ 4,428,000
HLW-03	1GHZZE1043	Engineering	Civil Engineering Design Complete (Title II)	03/15/11	2011	\$ 2,500,000
BOF-02	1GB5MC1043	Construction	Complete Construction Water Treatment Building	06/01/11	2011	\$ 4,428,000
PTF-11	1GP12CFM11	Construction	Complete 5th Lift Walls	12/15/11	2011	\$ 2,500,000
LAW-03	1GL46P1030	Plant Equip	Melter #2 Lid+Bal of Components Ready for Assembly	01/10/12	2012	\$ 4,428,000
HLW-12	1GH14C1352	Construction	Complete Annex Building Weathering	01/13/12	2012	\$ 2,500,000
HLW-07	1GH15C1247	Construction	Complete Pipe and Hanger Installtion in PA06	02/07/12	2012	\$ 2,500,000
				<b>SUBTOTAL</b>		<b>\$ 63,693,000</b>



### **CONTRACT FEE MILESTONES**

The following conditions apply to all non-time-dependent fee-bearing milestones

- Key predecessor activities listed on the milestone sheets will be complete.
- Bechtel will notify DOE-WTP within five days of milestone completion and provide supporting documentation within 20 days of completion.
- DOE-WTP will confirm completion within 30 days of receiving the documentation.
- Bechtel will provide a listing of any milestone exceptions and open quality documents (including punch lists, construction deficiency reports, non-conformance 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 the contract.
- Any changes that occur after the achievement of the milestone will not invalidate completion.
- All documents (including memos 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.

**Contract Fee Milestones  
 PTF-04**

Facility	Activity ID	Description
PTF	1GP30CFM04	Set Hot Cell Frames for Areas 1, 24, and 25

**Milestone Definition**

Set into final location the upper and lower support frames located at elevation 0 ft, in areas 1, 24, and 25 of the hot cell room number P-0123, column lines 4 through 24, and E through H (reference PA21).

Area 1 Upper Frame Tag Ref. FRP-JMPS-10002	Area 1 Lower Frame Tag Ref. FRP-JMPS-10001
Area 24 Upper Frame Tag Ref. FRP-JMPS-10004	Area 24 Lower Frame Tag Ref. FRP-JMPS-10003
Area 25 Upper Frame Tag Ref. FEP-JMPS-10003	Area 25 Lower Frame Tag Ref. FEP-JMPS-10001

Inclusions

1. Installation and inspection acceptance of the as-designed upper and lower support frames listed above in their final location including final attachment to the building structure support.
2. Installation of liner plate required to be completed for installation of the frames.

Exclusions

1. Installation of items agreed as unsuitable to be installed in a construction environment and could be subject to potential damage.
2. Equipment located on the support frames and associated jumpers.
3. Removal of any temporary construction aids where it can be demonstrated that these are required for follow-on construction activities and they do not impact the follow-on construction activities.
4. Open punch list items and open nonconformance reports, construction deficiency reports, and field checklists that are not related to the functionality of the frames and will not prevent follow-on construction activities from taking place.
5. Installation of temporary protection for construction.

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP4521005	PT – Hot Cell Area 01 – Set Wall Upper Frames	4PP4521020	PT- Hot Cell Area 01 – Set Lower Frame
4PP4521145	PT – Hot Cell Area 24 – Set Wall Upper Frames	4PP4521720	PT – Hot Cell 24 – Set Lower Frame
4PP4521155	PT – Hot Cell Area 25 – Set Wall Upper Frames	4PP4521770	PT – Hot Cell Area 25 – Set Lower Frame

Ref. original ID# N/A

**Objective Evidence of Milestone Completion**

- Copy of installation inspection report with sign offs that show the frame is set in the final location, inclusive of permanent attachment to the base/wall support.

**Contract Fee Milestones  
 PTF-05**

Facility	Activity ID	Description
PTF	1GPZZCFM05	Controls and Instrumentation Design Complete

**Milestone Definition**

Complete the Controls and Instrumentation (C&I) design. All deliverables mentioned are for the committed stage of design and include the supporting calculations and evaluations:

- System block diagrams (alpha revisions which do not incorporate vendor data or physicalization)
- Safety system requirement specifications to include APC (additional protection class) report and system safety design sketches
- Software functional specifications (to be incorporated into piping & instrumentation diagram schematic diagrams and logic diagrams)
- Material requisitions for quote
- Equipment specifications
- Datasheets
- Installation specifications
- Discipline design criteria documents
- Supporting calculations
- Design proposal drawings
- System descriptions to support committed system design

This scope does not include the layout and routing of C&I instrumentation cable, incorporation of vendor information, programming of software, or physicalization typically associated with confirmation activities.

Inclusions: Included in Definition  
Exclusions: N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
3EP10EJCMP	PT - C&I Engineering Complete	3EP17HT003	PT - C&I SFS - C1V System Rev 0 (100%)
3EP17C1FNJ	PT- C&I – SBD FNJ	3EP17SR0FM	PT-C&I SSRS Rev 0 Completion
3EP17C1SUM	PT-C&I-EIT Report SUM		

Ref. original ID# 3EPZZEJGM

**Objective Evidence of Milestone Completion**

- At the time of completion, BNI will transmit a list of the drawing numbers to the DOE Federal Project Manager for the drawing type codes listed:
  - J1 - system block diagram
  - 3PS - safety system requirements specification
  - M6 - piping and instrument diagrams (control data from software functional specifications will be incorporated into piping and instrumentation diagrams)

**Contract Fee Milestones  
 PTF-06**

Facility	Activity ID	Description
PTF	1GP47CFM06	Receipt of all Plant Service Air System Pipe Racks

**Milestone Definition**

Receive and accept all PSA system pipe racks at the Marshalling Yard, to include the following:

PSA-RK-00018	PSA-RK-00028	PSA-RK-00014	PSA-RK-00003	PSA-RK-00037
PSA-RK-00020	PSA-RK-00033	PSA-RK-00016	PSA-RK-00005	PSA-RK-00039
PSA-RK-00021	PSA-RK-00035	PSA-RK-00023	PSA-RK-00006	PSA-RK-00052
PSA-RK-00022	PSA-RK-00036	PSA-RK-00024	PSA-RK-00008	PSA-RK-00053
PSA-RK-00031	PSA-RK-00047	PSA-RK-00027	PSA-RK-00009	PSA-RK-00054
PSA-RK-00032	PSA-RK-00048	PSA-RK-00038	PSA-RK-00010	PSA-RK-00055
PSA-RK-00025	PSA-RK-00049	PSA-RK-00001	PSA-RK-00011	PSA-RK-00056
PSA-RK-00026	PSA-RK-00050	PSA-RK-00002	PSA-RK-00012	

Inclusions

N/A

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
9ZP47257B1	PT QC/MRR – Release 1 – 56+ Racks – Rooms 311/322 Q-MA-PH02-08	9ZP47257E1	PT-MY QC&MRR-Release 4 – 77+ Racks-Rooms 415/423/423A Q-MA-PH02-03
9ZP47257C1	PT-MY QC&MRR-Release 6 – 77+ Rooms 431 A/B 422A/402 Q-MA-PH02-06	9ZP47257G1	PT-MY QC&MRR-Release 3 – 77+ Racks – Rooms 426/410/425 Q-MA-PH02-12
9ZP47257D1	PT-MY QC&MRR-Release 5 – 77+ Racks-Rooms 423A/B Q-MA-PH02-04	9ZP47257H1	PT-MY QC&MRR-Release 2 – 77+ Racks-Room 410 Q-MA-PH02-11

Ref. original ID# 9FP472093X

**Objective Evidence of Milestone Completion**

- 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.

**Contract Fee Milestones  
 PTF-07**

Facility	Activity ID	Description
PTF	1GPZZCFM07	Electrical Design Complete

**Milestone Definition**

Complete the Pretreatment electrical design. All deliverables mentioned are for the committed stage of design and include the supporting calculations and evaluations:

- Single line diagrams
- Cable tray and raceway drawings
- Cable and wire routing
- Schematics
- Lighting drawings
- Grounding drawings
- Cathodic protection design
- Lightning protection drawings
- Communications layout drawings
- Material requisitions for quote
- Equipment specifications
- Datasheets
- Installation specifications
- Discipline design criteria documents
- Supporting calculations
- Design proposal drawings
- System descriptions to support committed system design

This scope does not include the layout and routing of C&I instrumentation cable, or incorporation of vendor information, or field requested changes typically associated with confirmation activities.

Inclusions

Included in Definition

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
3EP16SRCKE	PTF-Sum- EE Setroute Cable Routing-Electrical CLOSE	3EP16CMLA	PTF-EE Communication Layouts Annex
3EP16EEDFZ	PT - EE - Single Lines Design Freeze	3EP16112A3	PTF – EE Single Line Diagrams
3EP16CRDSN	PT – Design Substantially Complete	3EP16MVE01	PTF – EE 13.8kV SWGR Relay Set points IFC

**Contract Fee Milestones  
 PTF-07**

3EP16LDM01	PT-EE 120V Load List	3EP16PD004	PT-EE Unscheduled Physical Design – FY12
3EP16PD005	PT-EE Cable Tray Layout	3EP16T3501	PT-EE-PT-Electrical Equipment List
3EP16PR500	PT-EE-PR-Electrical Equipment List	3EP16C4STA	PT-EE-Setroute Terms (BNG/DIW/FEP/HPS/LVE/MVE/PCW/PSW/SCW)
3EP16C1CBA	PT-EE-CBD (BNG/DIW/FEP/HPS/LVE/MVE/PCW/PSW/SCW)	3EP16C4STB	PT-EE-Setroute Terms (LPS/DCE/UPE/BSA/C2V/C3V/C5V/ISA/SPA)
3EP16C1CBB	PT-EE-CBD (BSA/C2V/C3V/C5V/DCE/ISA/LPS/PSA/UPE)	3EP16C4STD	PT-EE-Setroute Terms (DOW/FRP/PFH/PIH/PJV/RWH/TLP/UFP)
3EP16C1CBC	PT-EE-CBD (AFR/ASX/CHW/FDE/NAR/PVP/PVV/RDP/RLD/SHR/SPR/TCP)	3EP16C4STE	PT-EE-Setroute Terms (C1V/CNP/CRP/CXP/DWJ/EMJ/FNJ/HLP/MHJ/PTJ/PWD/PCJ/PPJ/RPJ/SDJ)
3EP16C1CBD	PT-EE-CBD (DOW/FRP/PFH/PIH/PJV/RWH/TLP/UFP)	3EP16C1CBE	PT-EE-CBD (C1V/CNP/CRP/CXP/DWJ/EMJ/FNJ/HLP/MHJ/PTJ/PWD/PCJ/PPJ/SDJ/RPJ)

Ref. original ID# 3EPZZEPPGM

**Objective Evidence of Milestone Completion**

- At the time of completion, BNI will transmit a list of the drawing numbers to the DOE Federal Project Manager for the drawing type codes listed:
  - E0 - Multipurpose - general drawings
  - E1 - One lines / single lines
  - E2 - Underground / embedded conduit plans / plot plans / layouts
  - E2-E53T – Above ground raceway and exposed conduit layout
  - E4 - Electrical layouts / hazard topography
  - E4 - Electrical layouts
  - E5 - Control / logic
  - E6 - Schematics / elem / block diagrams / riser diagrams
  - E7 - Connection / wiring diagrams
  - E8 - Electrical load list / panel schedules
  - E9 - Details / sections
  - EC - 480V motor control center schedules
  - Setroute report identifying released cables and raceway

**Contract Fee Milestones  
 PTF-08**

Facility	Activity ID	Description
PTF	1GP30CFM08	Set Remaining Pretreatment Vessels at Elevation 0 Ft

**Milestone Definition**

Set the remaining in-cell vessels (listed below) in place in their final location.

UFP-VSL-0001A	UFP-VSL-0002A	HLP-VSL-00022	HLP-VSL-0027B	PWD-VSL-00044
UFP-VSL-0001B	UFP-VSL-0002B	HLP-VSL-00028	HLP-VSL-0027A	PVP-SCB-0002
PVP-VSL-00001				

Inclusions

Installation and inspection acceptance of the vessels listed above, verifying the vessels are in the correct final location and orientation; vessels will be in their final operational condition and will not require repair, modification, or upgrades.

Exclusions

1. Pipe work connections to the vessels
2. Final welding into position
3. Installation of the man access cover
4. Removal of any temporary construction aids where it can be demonstrated that these are required for follow-on construction activities
5. Removal of any shipping aids where it can be demonstrated that a logical case exists for removal at a later date and that these do not impede installation or construction activities
6. Open punch list items and nonconformance reports, construction deficiency reports, and field checklists that are not related to the functionality of the vessels, do not impact the follow-on activities, and are documented with justification to be excluded from the milestone
7. Internal cleanliness inspection acceptance
8. Outstanding vendor documentation that does not prevent the vessels from being used for installation or follow-on construction activities
9. Installation of temporary protection for the construction phase
10. Labeling

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP30201A9	PT- PA02E Set Vessel UFP-VSL-00001A	4PP30012AC	PT - PA04W Set Vessel HLP-VSL-22
4PP30031B	PT-PA03 Set Vessel UFP-VSL-1B & Weldout	4PP30012AB	PT - PA04E Set Vessels HLP-VSL-27B
4PP30032A	PT-PA03 Set Vessel UFP-VSL-2A & Weldout	4PP30012AA	PT - PA04E Set Vessels HLP-VSL-27A
4PP30032B	PT-PA03 Set Vessel UFP-VSL-2B & Weldout	4PP3004001	PT-PA04W Set & Weldout Vessel PVP-VSL-00001
4PP300344	PT-PA03 Set Vessel PWD-VSL-44 & Weldout	4PP3004002	PT-PA04W Set Vessel HLP-VSL-28
4PP300302	PT-PA03 Set Vessel PVP-SCB-2 & Weldout		

**Contract Fee Milestones**

Ref. original ID# N/A

**Objective Evidence of Milestone Completion**

- Copy of the installation inspection report with sign offs for vessel setting activities that demonstrates the vessel is in its final location.

**Contract Fee Milestones  
 PTF-09**

Facility	Activity ID	Description
PTF	1GP31CFM09	Set Pretreatment Vessels FEP-SEP-00001A and -00001B in PA02

**Milestone Definition**

Set Pretreatment vessels FEP-SEP-00001A and -00001B in place in their final location in PA02.

Inclusions

1. Installation and inspection acceptance that the vessels listed above are located in their correct final location and orientation including final fixing into position. Vessels will be in their final operational condition and will not require repair, modification, or upgrades
2. Installation and inspection acceptance of the support tower structure and square base frame support

Exclusions

1. Pipe work connections to the vessels
2. Installation of the man access cover
3. Removal of any temporary construction aids where it can be demonstrated that these are required for follow-on construction activities
4. Removal of any shipping aids where it can be demonstrated that a logical case exists for removal at a later date and that these do not impede installation or construction activities
5. Open punch list items and nonconformance reports, construction deficiency reports, and field checklists that are not related to the functionality of the vessels, do not impact the follow-on activities, and are documented with justification to be excluded from the milestone
6. Internal cleanliness inspection acceptance
7. Outstanding vendor documentation that does not prevent the vessels from being used for installation or follow-on construction activities
8. Installation of temporary protection for the construction phase
9. Labeling

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP30013A1	PT - PA02 Set FEP-SEP-00001B	4PP30013AC	PT – PA02 Set FEP-SEP-00001A

Ref. original ID# 4PP31013AE

**Objective Evidence of Milestone Completion**

- Copy of the installation inspection report with sign offs for vessel setting activities that demonstrates the vessel is located and fixed in its final location.

**Contract Fee Milestones  
 PTF-10**

Facility	Activity ID	Description
PTF	1GP12CFM10	Complete Pretreatment Concrete Slabs at Elevation 56 Ft

**Milestone Definition**

Complete the placement of the remaining elevation 56 ft concrete slabs as follows:

FREP EL Slab - 5607	FREP EL Slab - 5618	FREP EL Slab - 5631	FREP EL Slab - 5641
FREP EL Slab - 5608	FREP EL Slab - 5619	FREP EL Slab - 5632	FREP EL Slab - 5644
FREP EL Slab - 5609	FREP EL Slab - 5620	FREP EL Slab - 5634	FREP EL Slab - 5645
FREP EL Slab - 5610	FREP EL Slab - 5625	FREP EL Slab - 5635	FREP EL Slab - 5646
FREP EL Slab - 5611	FREP EL Slab - 5626	FREP EL Slab - 5636	FREP EL Slab - 5647
FREP EL Slab - 5612	FREP EL Slab - 5627	FREP EL Slab - 5637	FREP EL Slab - 5648
FREP EL Slab - 5614	FREP EL Slab - 5628	FREP EL Slab - 5638	FREP EL Slab - 5649
FREP EL Slab - 5615	FREP EL Slab - 5629	FREP EL Slab - 5639	FREP EL Slab - 5650
FREP EL Slab - 5616	FREP EL Slab - 5630	FREP EL Slab - 5640	

Note - The following slabs have been completed: 5601, 5602, 5603, 5604, 5605, 5606, 5613, 5621, 5622, 5623, 5624, 5633, 5642, and 5643.

Reference field sketches 24590-PTF-FSK-CON-L-04-005 and 24590-PTF-FSK-CON-L-04-006.

Placement and acceptance of concrete and all associated embeds and penetrations

Inclusions

1. Formwork and/or shoring removal

2. Pour backs for construction access

3. Cosmetic surface repairs

4. Open punch list items and nonconformance reports, construction deficiency reports, and field checklists that do not impact the structural integrity of the concrete

5. Coatings

Exclusions

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP125633G	PT - FREP EL Slab - 5648 - South	4PP1256B13	PT - PA13E Cell Top FREP - 5616
4PP125633H	PT - FREP EL Slab - 5649 - South	4PP1256B14	PT - PA13W Cell Top FREP - 5615
4PP125634A	PT - FREP EL Slab - 5630 - MH Area (incl Shoring at +52)	4PP1256C02	PT - PA02E Cell Top FREP PA02 - 5635 East

4PP1256B05	PT - PA04-W Cell Top FREP [EL 56] (WP to Include Decking) WP PCC5637	4PP1256C09	PT - Cell Top FREP PA09 – 5614 (WP to Include Installation of Decking)
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**Contract Fee Milestones  
PTF-10**

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Ref. original ID# 4PP1200M09

**Objective Evidence of Milestone Completion**

- Copies of concrete pour cards with sign off for placement acceptance.
- Sketch showing scope of construction access at elevation 56 ft, marked up to indicate areas excluded for construction access.
- Indication to demonstrate the milestone scope depicted on the sketch or drawing is covered by signed pour cards.

**Contract Fee Milestones  
 PTF-12**

Facility	Activity ID	Description
PTF	1GP14CFM12	Install Roofing at Elevation 98 Ft

**Milestone Definition**

Complete the installation of roofing on the PT Facility main building at the elevation 98 ft.

Inclusions

Erection and final fixing into position to the building structure of roof panels and associated supports in their final location and design condition to provide weather protection

Exclusions

1. Roof panels left out to provide construction access where it can be demonstrated that these are necessary for follow-on construction activities to provide access\*
2. Open punch list items and open nonconformance reports, construction deficiency reports, and field checklists that do not interfere with immediate weather protection
3. Coatings and coatings touch up
4. Permanent penetration seals
5. Removal of temporary construction aids where it can be demonstrated these are required for follow-on activities
6. Grounding attachments
7. Attachment of lighting fixtures and other equipment items

\*Roof panels that are excluded to provide construction access will be identified on drawing or sketch, marked up to indicate exclusions.

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP1450098	PT – S/C Install Roofing at Elev +98		

Ref. original ID# 4PP1452000

**Objective Evidence of Milestone Completion**

- Approved engineering drawing and specification for roof system and sketch or drawing showing scope of the roof completed marked up to indicate areas excluded for Construction access.
- Indication to demonstrate that the milestone scope completed is covered by the signed subcontractor inspection records.
- Copy of signed subcontractor installation records for roof installation acceptance; these will be endorsed by BNI confirming milestone completion.

**Contract Fee Milestones  
 PTF-13**

Facility	Activity ID	Description
PTF	1GP27CFM13	Set Air Handling Units at Elevation 98 Ft 0 In.

**Milestone Definition**

Set into place in the final location the C2 air handling units located at elevation 98 ft in room P-0520, column lines 25 through 30, and column lines B through H.

Air handling unit (AHU) tag reference numbers:

24590-PTF-MA-C2V-AHU-00001A	24590-PTF-MA-C2V-AHU-00001B
24590-PTF-MA-C2V-AHU-00001C	24590-PTF-MA-C2V-AHU-00001D

Inclusions

Setting the AHUs in their final location and final fixing into position

Exclusions

1. Final alignments, AHU internals for motor/fan couplings, and final adjustments to support startup activities
2. Electrical and grounding connections
3. Piping and instrument connections
4. Duct connections
5. Painting and painting touch up
6. Fireproofing and fireproofing touch up
7. Labeling and tags
8. Outstanding vendor documentation that does not impact the installation activities, such as spare parts list and operations and maintenance manuals
9. Removal of temporary construction aids and shipping where it can be demonstrated that these are required for follow-on activities
10. Installation of temporary protection for construction
11. Open punch list items and nonconformance reports, construction deficiency reports, and field checklists that are not related to the functionality of the AHUs (i.e., will not prevent connection of duct and hook-up of controls and utilities) or do not impact the installation activities
12. Internal cleanliness inspection and acceptance

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP1577820	PT – S/C Fire Protection EI 98 Lower Layer		

Ref. original ID# 4PP2756H10

**Objective Evidence of Milestone Completion**

- Copy of installation inspection report with sign offs that show the AHUs are set in their final location.

**Contract Fee Milestones  
 PTF-14**

Facility	Activity ID	Description
PTF	1GP30CFM14	Set Filter Cave High-Efficiency Mist Eliminator, HEPA, and Demister Equipment

**Milestone Definition**

Initial set into final location the HEPA and high-efficiency mist eliminator filter housings and demister vessels identified below, located at elevation 56 ft, in the filter cave room number P-0335, column lines 17 through 28 and column lines H through L (reference PA31).

C5V-HEPA-00003A	C5V-HEPA-00003F	PJV-HEPA-00001A	PJV-HEPA-00001F	PJV-DMST-00002B
C5V-HEPA-00003B	C5V-HEPA-00003G	PJV-HEPA-00001B	PJV-HEPA-00001G	PJV-DMST-00002C
C5V-HEPA-00003C	C5V-HEPA-00003H	PJV-HEPA-00001C	PVV-HEPA-00001A	PVP-HEME-00001A
C5V-HEPA-00003D	C5V-HEPA-00003I	PJV-HEPA-00001D	PVV-HEPA-00001B	PVP-HEME-00001B
C5V-HEPA-00003E	C5V-HEPA-00003J	PJV-HEPA-00001E	PJV-DMST-00002A	PVP-HEME-00001C

Inclusions

Installation and inspection acceptance of the filter housing, vessels, and associated support structure of the equipment listed above, verifying correct location and orientation

Exclusions

1. Installation of equipment components that are agreed to be unsuitable for installation in a construction environment and would be subject to potential damage (e.g., filters and instruments)
2. Electrical/grounding connections
3. Piping and instrument connections
4. Duct work connections
5. Labeling and tags
6. Removal of temporary construction aids and shipping aids where it can be demonstrated that these are required for follow-on activities or a more appropriate time to remove the item exists
7. Installation of temporary protection for construction
8. Open punch list items and open nonconformance reports, construction deficiency reports, and field checklists that are not related to the functionality of the filter housing structure and will not prevent the follow-on construction activities from taking place
9. Internal cleanliness inspection and acceptance
10. Installation of temporary protection for construction

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP30E18	PT - PA31 OTT Heavy Rigging CL 17-24	9FP362150R	PT - DMY - PJV-DMST-2A/2B/2C PJV Demisters
9FP2700140	PT - DMY- Rem C/O HEPA Filter Hsings (MKH0-02) +56	9FP361850R	PT - DMY - PVP-HEME-1A/1B/1C High Mst Elimntr
4PP3631001	PT - Install PVP/PVV HEME Vessels	4PP361560	PT - Install PJV Demisters - PJV DMST-00002A/2B/2C

**Contract Fee Milestones  
PTF-14**

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Ref. original ID# N/A

**Objective Evidence of Milestone Completion**

- Copy of installation inspection report with sign offs that show the HEPA and high-efficiency mist eliminator filter housing/demister vessels are set in their final locations, inclusive of permanent attachment to the base support.

**Contract Fee Milestones  
 PTF-15**

Facility	Activity ID	Description
PTF	1GP28CFM15	Receipt of Electrical Equipment for the Control Building Electrical Rooms

**Milestone Definition**

Receive and accept the electrical equipment for the control building electrical rooms at the Marshalling Yard, which includes the following:

LVE-MCC-10033A	Motor Control Center	UPE-BATT-10003	UPS Battery
LVE-MCC-10033B	Motor Control Center	UPE-BATT-10007	UPS Battery
LVE-MCC-10201A	Motor Control Center	UPE-BATT-10018	UPS Battery
LVE-MCC-10201B	Motor Control Center	UPE-UPS-10002A	Uninterruptible Power Supply
UPE-BATT-10001A	UPS Battery	UPE-UPS-10002B	Uninterruptible Power Supply
UPE-BATT-10001B	UPS Battery	UPE-UPS-10003	Uninterruptible Power Supply
UPE-BATT-10002A	UPS Battery	UPE-UPS-10007	Uninterruptible Power Supply
UPE-BATT-10002B	UPS Battery	UPE-UPS-10018	Uninterruptible Power Supply

Reference rooms PA140, PA146, and PA147 on general arrangement drawing 24590-PTF-P1-P01T-00020.

N/A

Inclusions

N/A

Exclusions

**Key Predecessors**

Activity ID	Description	Activity ID	Description
9ZP28EU11M	PT-MY QC & MRR Release 6 – UPS Non-ITS	9ZP28EU13M	PT-MY QC & MRR Release 2 – UPS ITS
9ZP28EC4M	PT-MY QC & MRR Rel 6-480V MCC Non-ITS +0	9ZP28EU14M	PT-MY QC & MRR Release 3 (Batteries) – UPS ITS
9ZP28EC11M	PT-MY QC & MRR Release 3 – 480V MCC Non-ITS	9ZP2835401	PT-QC/MRR OPT5 BATT MR

Ref. original ID# N/A

**Objective Evidence of Milestone Completion**

- 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.

**Contract Fee Milestones  
 PTF-16**

Facility	Activity ID	Description
PTF	1GP15CFM16	Complete Bulk In-cell Pipe Installation

**Milestone Definition**

Complete bulk pipe work installation in PA01, PA02, PA03, PA04, PA07, PA08, PA09, PA10, PA11, and PA13.

Inclusions

Erection and inspection acceptance of pipe work and stock coded pipe hangers. Pipe installation includes stick build installation and pipe work installed as part of a module installation concept as appropriate

Exclusions

1. Pipe and hangers left out to provide construction access for follow-on construction activities
2. Pressure testing, leak testing, flushing, blowing, drying, layup preservation of piping
3. In-line components left out for startup activities
4. Closure spools/welds to nozzles/equipment
5. Open punch list items and open nonconformance reports, construction deficiency reports, and field checklists that do not prevent the piping from being tested
6. Coatings and coatings touch up
7. Removal of temporary construction aids and/or temporary hangers where it can be demonstrated that this needed for follow-on activities
8. Labeling and tags
9. Insulation
10. Final adjustment of pipe hanger components (spring can adjustments, for example, subsequent to pressure testing)
11. Completion of multi-commodity hangers insofar as the uncompleted items are not for pipe if applicable
12. Instrument connections, instrument tubing

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP155S01C	PT - PA01[A] Stick-Build Pipe (Post Mod)	4PP155S07C	PT - PA07 Stick-Build Pipe (Post Mods)
4PP155S02B	PT-PA02 Upper Piping UFP-VSL-00062A/B	4PP155S08C	PT - PA08 Stick-Build Pipe (Post Mods)
4PP155S03B	PT - PA03 Stick-Build Pipe (After CT)	4PP155S09B	PT - PA09 Install Stick-Build Pipe (Post Mod)
4PP155S04C	PT - PA04E Stick-Build Pipe (Post Mod)	4PP155S10A	PT - PA10 Install Stick-Build Pipe
4PP155S04D	PT - PA04W Stick-Build Pipe (Post Mod)	4PP155S11C	PT - PA11 Install Stick-Build Pipe (Post Mod)
4PP155S13A	PT - PA13E Install Stick-Build Pipe - Early	4PP155S13B	PT - PA13W Install Stick-Build Pipe - Early

**Contract Fee Milestones  
PTF-16**

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Ref. original ID# 4PP1500M06

**Objective Evidence of Milestone Completion**

- Sketch or drawing showing scope of piping and hangers in planning area, marked up to indicate piping and/or hangers excluded for follow-on construction activities.
- Indication to demonstrate the milestone scope is covered by signed inspection records.
- Document numbers for signed off installation records for piping and hanger installation corresponding to the milestone scope. These consist of the following types of records (or the equivalent in use at time of milestone completion): above ground piping inspection record, pipe support installation record.
- Welding, nondestructive examination, and bolt torquing records are not included in the objective evidence because completion and acceptance of these is required prior to signing the piping and hanger installation records.

**Contract Fee Milestones  
PTF-17**

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<b>Facility</b>	<b>Activity ID</b>	<b>Description</b>
PTF	1GP11CFM17	Complete Pretreatment Design

**Milestone Definition**

Complete the definitive stage of project design for all engineering disciplines. The conceptual design will have been completed and the detail design activities have been completed, which are necessary to support a bid for construction and procurement activities, and issued for construction or issued for quote drawings, specifications, and datasheets, suitable for soliciting bids from contractors and suppliers.

The following is a list of the deliverables that are included:

Design deliverables in the PT Facility engineering design complete include those that are specific to initiating the Pretreatment procurement and construction activities:

- All disciplines:
  - Material requisitions for quote for PT Facility related equipment specifications
  - Datasheets
  - Discipline design criteria documents
  - Supporting calculations
  - Design proposal drawings
  - System descriptions to support committed system design
- Mechanical and Process:
  - Piping and instrumentation diagrams and associated lists
  - Process flow diagrams
  - Ventilation and instrumentation diagrams and associated lists
  - Sampling and analysis requirement documents
- Plant Design:
  - 3D model
  - General arrangement drawings
  - Isometrics
  - Pipe stress and support interim calculations
  - Equipment location diagrams
- Civil/Structural/Architectural:
  - Architectural plans, elevations, and sections
  - Concrete drawings
  - Structural steel drawings
  - Rebar drawings
- Electrical:
  - Single line diagrams
  - Cable tray and raceway drawings
  - Schematics
  - Lighting drawings

**Contract Fee Milestones  
 PTF-17**

- Grounding drawings
- Lightning protection drawings
- Communications layout drawings
- Cable and wire routing
  
- Controls and Instrumentation:
  - Instrument location drawings
  - System block diagrams
  - Physical controls and instrumentation design documents
  
- Mechanical Handling:
  - Mechanical handling diagrams
  - Mechanical sequence diagrams

Design deliverables are for the committed stage of design and include the work for the supporting calculations and evaluations. The confirmed stage of design that incorporates vendor information/changes/impacts is not included in this milestone; they are part of the engineering support activities, which will continue through start-up.

Inclusions

N/A

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
		3EP10ENDSN	PT - MS Design Complete
3EP10EJCMP	PT - C&I Engineering Complete	3EP10EPDCN	PT - PD Design Complete Milestone
3EP10ECDSN	PT – CSA - Civil/Structural Design Complete	3EP10EPCMP	PT - PD Plant Design Engineering Complete Milestone
		3EP10EECMP	PT – Electrical Engineering Complete Milestone

Ref. original ID# 3EPZZ0099F

**Objective Evidence of Milestone Completion**

At the time of completion, BNI will transmit a list of the document numbers to the DOE Federal Project Manager for the listed document types. Completion will be indicated by the completion of the work packages in engineering progress and performance reports that support the physical design complete, and will be verified by the documents being available in Project Document Control. BNI will provide Control Account Manager's email notification of milestone completion to the Area Project Manager, Functional Manager, and DOE Federal Project Manager; documents are available for review in Project Document Control. Document type codes for the documents below are described in 24590-WTP-DNT-PADC-02-001, Rev 10, Table 6-5.

**Contract Fee Milestones  
PTF-17**

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- All disciplines:
  - Material requisitions for quote for PT Facility related equipment specifications
  - Datasheets
  - Discipline design criteria documents
  - Supporting calculations
  - Design proposal drawings
  - System descriptions to support committed system design
- Mechanical and Process:
  - M6 - Piping and instrumentation diagrams and associated lists
  - M5 - Process flow diagrams
  - M8 - Ventilation and instrumentation diagrams and associated lists
  - Sampling and analysis requirement documents
- Plant Design:
  - P1 - General arrangement drawings
  - P3 - Isometrics
  - P6C - Pipe stress and support interim calculations
  - P1 - Equipment location diagrams
- Civil/Structural/Architectural:
  - A1, A2, and A3 - Architectural plans, elevations, and sections
  - DB - Concrete drawings
  - SS - Structural steel drawings
  - DG - Rebar drawings
- Electrical:
  - E0 - Multipurpose - general drawings
  - E1 - One lines / single lines
  - E2 - Underground / embedded conduit plans / plot plans / layouts
  - E2-E53T - Aboveground raceway and exposed conduit layout
  - E4 - Electrical layouts / hazard topography
  - E4 - Electrical layouts
  - E5 - Control / logic
  - E6 - Schematics / elem / block diagrams / riser diagrams
  - E7 - Connection / wiring diagrams
  - E8 - Electrical load list / panel schedules
  - E9 - Details / sections
  - EC - 480V motor control center schedules
  - Set route report identifying released cables and raceway
- Controls and Instrumentation:
  - J2 - Instrument location drawings
  - J1 - System block diagrams
  - J9D - Physical controls and instrumentation design documents (cabinet/rack general arrangement data sheets)

**Contract Fee Milestones  
PTF-17**

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- Mechanical Handling:
  - M7 - Mechanical handling diagrams
  - M1 - Mechanical sequence diagrams

**Exceptions**

- Plant Design:
  - 3D model will not be available as a document in Project Document Control; it exists as electronic media

**Contract Fee Milestones  
 PTF-18**

Facility	Activity ID	Description
PTF	1GP30CFM18	Set Hot Cell Major Equipment

**Milestone Definition**

Set into final location the hot cell major equipment items identified below on their permanent support structure located at elevation 0 ft, in room P-0123 column lines 4 through 24 and column lines E through H (reference PA21).

CNP-HX-00001	FEP-PMP-00007B	HLP-PMP-00017B	UFP-FILT-00002A	UFP-PMP-00042A
CXP-HX-00001A	FEP-PMP-00008A	HLP-PMP-00019B	UFP-FILT-00002B	UFP-PMP-00042B
CXP-HX-00001B	FEP-PMP-00008B	HLP-PMP-00021	UFP-FILT-00003A	UFP-PP-00001A
CXP-IXC-00001	FEP-PMP-00009A	HLP-PMP-00019A	UFP-FILT-00003B	UFP-PP-00001B
CXP-IXC-00002	FEP-PMP-00009B	RDP-PMP-00008A	UFP-FILT-00004A	UFP-PP-00002A
CXP-IXC-00003	FRP-PMP-00001	RDP-PMP-00008B	UFP-FILT-00004B	UFP-PP-00002B
CXP-IXC-00004	FRP-PMP-00002A	TLP-PMP-00001	UFP-FILT-00005A	UFP-PP-00003A
CXP-PMP-00001A	FRP-RBLR-00001A	TLP-RBLR-00001	UFP-FILT-00005B	UFP-PP-00003B
CXP-PMP-00001B	FRP-RBLR-00001B	UFP-FILT-00001A	UFP-PMP-00041A	
FEP-PMP-00007A	HLP-PMP-00017A	UFP-FILT-00001B	UFP-PMP-00041B	

Inclusions

Installation and inspection acceptance of the as designed hot cell equipment listed above and associated support structure verifying correct location and orientation

Exclusions

1. Installation of items agreed as unsuitable to be installed in a construction environment and which would be subject to potential damage
2. Jumper/pipe work connections to the vessels
3. Installation of the man access cover to vessels
4. Removal of any temporary construction aids where it can be demonstrated that this is needed for follow-on activities
5. Open punch list items and open nonconformance reports, construction deficiency reports, and field checklists that do not relate to the functionality of the equipment/vessels and will not prevent follow-on construction activities from taking place
6. Internal cleanliness inspection and acceptance
7. Installation of temporary protection for construction

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP2021020	PT – Hot Cell Area 02 – Set Equipment	4PP2021190	PT – Hot Cell Area 28 – Set Equipment
4PP2021030	PT – Hot Cell Area 03 – Set Equipment	4PP2021220	PT – Hot Cell Area 31 – Set Equipment
4PP2021050	PT – Hot Cell Area 05 – Set Equipment	4PP2021230	PT – Hot Cell Area 32 – Set Equipment
4PP2021060	PT – Hot Cell Area 06 – Set	4PP2021120	PT – Hot Cell Area 17 – Set

Equipment	Equipment
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**Contract Fee Milestones  
 PTF-18**

4PP2021070	PT – Hot Cell Area 07 – Set Equipment	4PP2021270	PT – Hot Cell Area 36 – Set Equipment
4PP2021080	PT – Hot Cell Area 08 – Set Equipment	4PP2021280	PT – Hot Cell Area 37 – Set Equipment
4PP2021150	PT – Hot Cell Area 24 – Set Equipment	4PP2021290	PT – Hot Cell Area 38 – Set Equipment
4PP2021160	PT – Hot Cell Area 25 – Set Equipment	4PP2021300	PT – Hot Cell Area 39 – Set Equipment
4PP2021170	PT – Hot Cell Area 26 – Set Equipment	4PP2021250	PT – Hot Cell Area 34 – Set Equipment
4PP2021180	PT – Hot Cell Area 27 – Set Equipment	4PP2021260	PT – Hot Cell Area 35 – Set Equipment
4PP2021090	PT – Hot Cell Area 09 – Set Equipment		
4PP2021110	PT – Hot Cell Area 11 – Set Equipment		

Ref. original ID# N/A

**Objective Evidence of Milestone Completion**

- Copy of installation inspection report with sign offs that show the major equipment is set in the final location inclusive of permanent attachment to the base support.

**Contract Fee Milestones  
 PTF-19**

Facility	Activity ID	Description
PTF	1GP14CFM19	Complete Main Building Weathering

**Milestone Definition**

Complete the installation of siding and roofing for the PT Facility main building.

Inclusions

Erection and final fixing into position to the building structure of the siding and roof panels and associated supports in their final location and design condition

Exclusions

1. Siding and roof panels left out to provide construction access where it can be demonstrated that these are necessary for follow-on construction activities to provide access\*
2. Open punch list items and nonconformance reports, construction deficiency reports, and field checklists that do not interfere with immediate weather protection
3. Coatings and coatings touch up
4. Permanent penetration seals
5. Removal of temporary construction aids where it can be demonstrated these are required for follow-on activities
6. Grounding attachments
7. Labeling and signs
8. Attachment of lighting fixtures and other equipment items
9. Permanent doors and windows where it can be demonstrated these have been excluded for construction impacts

\*Panels that are excluded to provide construction access will be identified on drawing or sketch marked up to indicate exclusions

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4PP1441000	PT - S/C Install Elevation Siding EL 98 to 119	4PP1451000	PT - S/C Install Roofing at EL +119 North

Ref. original ID# 4PP1400M07

**Objective Evidence of Milestone Completion**

- Approved engineering drawing and specification for roof system and sketch or drawing showing scope of main building siding and roof completed, marked up to indicate areas excluded for construction access.
- Indication to demonstrate that the milestone scope completed is covered by the signed subcontractor inspection records.
- Copies of signed subcontractor installation records for siding and roof installation acceptance; these will be endorsed by BNI confirming milestone completion.

**Contract Fee Milestones  
 PTF-20**

Facility	Activity ID	Description
PTF	1GPCOCFM20	Final System Turnover Complete

**Milestone Definition**

Complete the construction of the PT Facility as represented by turnover of the final system to Startup.

Inclusions

N/A

Exclusions

1. TCP system category B and E punch list items as defined by 24590-WTP-GPG-CON-1601, *Control of Punch List Items*
2. Testing activities that are Startup scope per CCN 065971, *Division of Responsibility - Construction Department and Commissioning & Training*
3. Removal of temporary construction aids (temporary power, etc.)
4. Turnover of all documentation
5. Startup final acceptance signatures of TCP system turnover
6. Systems not scheduled to complete prior to target construction completion date

**Key Predecessor Listing**

Activity ID	Description	Activity ID	Description
5HPC2DCEIA	PT SU Accept From Construction DCE	5HPC2STRIA	PT SU Accept From Construction STR
5HPC2MVEIA	PT SU Accept From Construction MVE	5HPC2DOWIA	PT SU Accept From Construction DOW
5HPC2LVEIA	PT SU Accept From Construction LVE	5HPC2HTEIA	PT SU Accept From Construction HTE
5HPC2C1VIA	PT SU Accept From Construction C1V	5HPC2HPSIA	PT SU Accept From Construction HPS
5HPC2ISAIA	PT SU Accept From Construction ISA	5HPC2CPEIA	PT SU Accept From Construction CPE
5HPC2NLDIA	PT SU Accept From Construction NLD	5HPC2GREIA	PT SU Accept From Construction GRE
5HPC2PCJIA	PT SU Accept From Construction PCJ	5HPC2FPWIA	PT SU Accept From Construction FPW
5HPC2PSWIA	PT SU Accept From Construction PSW	5HPC2LPSIA	PT SU Accept From Construction LPS
5HPC2UPEIA	PT SU Accept From Construction UPE	5HPC2C3VIA	PT SU Accept From Construction C3V
5HPC2CHWIA	PT SU Accept From Construction CHW	5HPC2CMEIA	PT SU Accept From Construction CME
5HPC2LTEIA	PT SU Accept From Construction LTE	5HPC2DWJIA	PT SU Accept From Construction DWJ
5HPC2PCWIA	PT SU Accept From Construction PCW	5HPC2FEPIA	PT SU Accept From Construction FEP
5HPC2PSAIA	PT SU Accept From Construction PSA	5HPC2PTJIA	PT SU Accept From Construction PTJ

**Contract Fee Milestones  
 PTF-20**

5HPC2RLDIA	PT SU Accept From Construction RLD	5HPC2PVVIA	PT SU Accept From Construction PVV
5HPC2SCWIA	PT SU Accept From Construction SCW	5HPC2UFPIA	PT SU Accept From Construction UFP
5HPC2SNDIA	PT SU Accept From Construction SND	5HPC2SCEIA	PT SU Accept From Construction SCE
5HPC2AFRIA	PT SU Accept From Construction AFR	5HPC2PFHIA	PT SU Accept From Construction PFH
5HPC2C5VIA	PT SU Accept From Construction C5V	5HPC2C2VIA	PT SU Accept From Construction C2V
5HPC2DIWIA	PT SU Accept From Construction DIW	5HPC2MHJIA	PT SU Accept From Construction MHJ
5HPC2FDEIA	PT SU Accept From Construction FDE	5HPC2TLPIA	PT SU Accept From Construction TLP
5HPC2FRPIA	PT SU Accept From Construction FRP	5HPC2NARIA	PT SU Accept From Construction NAR
5HPC2HLPPIA	PT SU Accept From Construction HLP	5HPC2BSAIA	PT SU Accept From Construction BSA
5HPC2PJVIA	PT SU Accept From Construction PJV	5HPC2ASJIA	PT SU Accept From Construction ASJ
5HPC2PVPPIA	PT SU Accept From Construction PVP	5HPC2CRPIA	PT SU Accept From Construction CRP
5HPC2PWDIA	PT SU Accept From Construction PWD	5HPC2SDJIA	PT SU Accept From Construction SDJ
5HPC2SHRIA	PT SU Accept From Construction SHR	5HPC2TCPIA	PT SU Accept From Construction TCP
5HPC2SNRIA	PT SU Accept From Construction SNR	5HPC2SPRIA	PT SU Accept From Construction SPR

**Exception Systems**

Activity ID	Description	Activity ID	Description
5HPC2EMJIA	PT SU Accept From Construction EMJ	5HPC2PPJIA	PT SU Accept From Construction PPJ
5HPC2ASXIA	PT SU Accept From Construction ASX	5HPC2CNPIA	PT SU Accept From Construction CNP
5HPC2RPJIA	PT SU Accept From Construction RPJ	5HPC2RDPIA	PT SU Accept From Construction RDP
5HPC2CXPIA	PT SU Accept From Construction CXP	5HPC2RWHIA	PT SU Accept From Construction RWH
5HPC2PIHIA	PT SU Accept From Construction PIH		

Ref. original ID# 4PPCONPGM

**Objective Evidence of Milestone Completion**

- Copy of Construction Management signed turnover package for the final system.
- Copies of open B and E punch list items for the final system.

**Contract Fee Milestones  
 PTF-21**

Facility	Activity ID	Description
PTF	1GPC2CFM21	Construction Turnover of PIH System Crane to Startup

**Milestone Definition**

Complete the turnover of the PIH system to Startup.

Inclusions

1. System turnover will include all system components required for completing the startup activities including all documentation required by startup to support startup activities.
2. The crane system includes such features as the crane bridge, trolley with power manipulator , control system, and cable reel system.

Exclusions

1. PIH system category open punch list items that do not prevent the PIH system from being turned over to start up and do not prevent completion of startup activities
2. Testing activities that are Startup scope per CCN 065971, *Division of Responsibility - Construction Department and Commissioning & Training*
3. Removal of temporary construction aids (temporary power, etc.)
4. Startup final acceptance signatures of TCP System turnover

**Key Predecessor Listing**

This milestone will be FF to S/U activity 5HPC2PIHIA - PT SU Accept From Construction PIH.

Activity ID	Description	Activity ID	Description
5HPC2PIHBA	PT SU Construction T/O to Startup PIH (includes Walkdowns & Punchlist Review)		

Ref. original ID# N/A

**Objective Evidence of Milestone Completion**

- Copies of turnover certificates signed by construction indicating system is complete and ready to hand over to the receiving organization.

**Contract Fee Milestones  
 PTF-22**

Facility	Activity ID	Description
PTF	1GPC2CFM22	Demonstration of Resin Addition to Ion Exchange Columns

**Milestone Definition**

Demonstrate filling an ion exchange (IX) column in the PT Facility hot cell, using the IX Fresh Resin Addition system.

N/A

Inclusions

N/A

Exclusions

**Key Predecessors**

Activity ID	Description	Activity ID	Description
5HPC2CRPIA	PT SU Accept from Construction CRP	5HPC2CXPIA	PT SU Accept from Construction CXP
5HPC2CRPAA	PT SU Perform Component Testing CRP	5HPC2CXPAA	PT SU Perform Component Testing CXP
5HPC2CRPEA	PT SU Perform System Testing CRP		

Ref. original ID# 5HPC2CXPAA

**Objective Evidence of Milestone Completion**

- Completed copy of the test section(s) related to resin addition to an IX column. Resin transfer will be from CRP Fresh Resin Addition tank to hot cell IX column and meet design transfer rates.

**Contract Fee Milestones  
 PTF-23**

Facility	Activity ID	Description
PTF	1GPE2CFM23	Submit Final Safety Analysis Report

**Milestone Definition**

Submit Final Safety Analysis Report. This gatepost is the revision and submission of the 10CFR830 compliant 2016 Update of the PT Documented Safety Analysis for DOE-WTP review and approval.

Inclusions

N/A

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
7KPE21M444	PT - Prepare DSA Update 1		

Ref. original ID# N/A

**Objective Evidence of Milestone Completion**

- Transmittal of the 2016 Pretreatment Documented Safety Analysis Update for DOE approval via letter.
- DOE-WTP to determine acceptability for review of the document within two weeks of receipt.

**Contract Fee Milestones  
 HLW-04**

Facility	Activity ID	Description
HLW	1GH36P1044	Receive and Accept Plant Wash Vessel RLD-VSL-8

**Milestone Definition**

Receive and accept plant wash vessel RLD-VSL-8 at the Material Handling Facility.

Included in Definition

Inclusions

N/A

Exclusions

**Key Predecessors**

Activity ID	Description	Activity ID	Description
9ZH361244M	MRR Plant Wash Vessel RLD-VSL-08		

**Objective Evidence of Milestone Completion**

- Documented evidence to DOE of the receipt of equipment.
- 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.

**Contract Fee Milestones  
 HLW-06**

Facility	Activity ID	Description
HLW	1GH47C1146	Set Offgas Carbon Adsorber

**Milestone Definition**

Initial set in place in final location of adsorbers HOP-ADBR-00001A, -00001B, -00002A, and -00002B, excluding permanent installation

Inclusions

1. Installation and inspection acceptance that the adsorbers are located in their correct location and orientation
2. Adsorbers will be in a condition that will not require repair, modification, or upgrades

Exclusions

1. Installation of platforms, ladders, handrails, and stairs associated with the adsorbers
2. Electrical and grounding connections
3. Piping and instrument connections to the skid
4. Installation of loose items and internals
5. Painting and painting touch up
6. Fireproofing and fireproofing touch up
7. Labeling
8. Removal of temporary construction aids and shipping aids
9. Installation of temporary protection for construction
10. Internal cleanliness inspection and acceptance

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH47208S1	Set Offgas Carbon Adsorber HOP-ADBR-1A&B 2A&B	4HH121005	FREP Slab on grade 1005

**Objective Evidence of Milestone Completion**

- Interim copy of special instruction for setting of adsorbers with sign offs for setting activities; alternatively, if the same scope is documented on a tank/vessel inspection record then this may also be used as objective evidence.

**Contract Fee Milestones  
 HLW-08**

Facility	Activity ID	Description
HLW	1GH15C1248	Install Pipe and Hangers in PA02B

**Milestone Definition**

Complete pipe and pipe hanger installation in planning area PA02B.

Inclusions

1. Erection and inspection acceptance of pipe, valves, fittings, and in-line components
2. Erection and inspection acceptance of engineered and stock code pipe hangers

Exclusions

1. Pipe and hangers left out to provide construction access for follow-on construction activities
2. Pressure testing, leak testing, flushing, blowing, drying, layup preservation of piping
3. In-line components left out per Startup request
4. Closure spools/welds to nozzles/equipment
5. Coatings and coatings touch up
6. Removal of temporary construction aids and/or temporary hangers
7. Grounding attachments
8. Labeling and tags
9. Insulation
10. Items and activities that do not prevent the piping from being tested
11. Final adjustment of pipe hanger components (spring can adjustments for example subsequent to pressure testing)
12. Completion of multi-commodity hangers insofar as the uncompleted items are not for pipe
13. Instrument connections, instrument tubing, and instruments
14. Hook up of electrically or pneumatically operated valves
15. Installation of access items (platforms, ladders, etc.) for piping access
16. Installation of valve handles
17. Subcontractor fire protection piping
18. Vendor piping on equipment skids

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH15PA2B1	HLW - Install Pipe & Hangers PA02B	4HH122130	FREP Conc Wall 2130 (EL14)
4HH122170	FREP Conc Wall 2129B (EL 27.5 to 37)	4HH122132	FREP Conc Wall 2132 (EL 14 To 26.5)

**Objective Evidence of Milestone Completion**

- Sketch or drawing showing scope of piping and hangers in PA2B, marked up to indicate piping and/or hangers excluded for follow-on construction activities.

**Contract Fee Milestones**

**HLW-08**

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- Indication to demonstrate the milestone scope depicted on the sketch or drawing is covered by signed inspection records.
- Document numbers for signed off installation records for piping and hanger installation corresponding to the milestone scope. These consist of the following types of records (or the equivalent in use at time of milestone completion): aboveground piping inspection records and pipe support installation records.
- Welding, nondestructive examination, and bolt torquing records are not included in the objective evidence because completion and acceptance of these is required prior to signing the piping and hanger installation records.

**Contract Fee Milestones  
 HLW-09**

Facility	Activity ID	Description
HLW	1GH27C1249	Set HEPA Filter Housings at Elevation 14 Ft

**Milestone Definition**

Initial set in place in final location of the HEPA filter housing for C5V, HOP, and PJV system HEPA filters, excluding permanent installation.

Inclusions

Installation and inspection acceptance of the filter housing and support structure verifying correct location and orientation

Exclusions

1. Installation of platforms, ladders, handrails, and stairs associated with the filter housing
2. Electrical and grounding connections
3. Piping and instrument connections
4. Duct connections
5. Installation of loose items and internals
6. Painting and painting touch up
7. Fireproofing and fireproofing touch up
8. Labeling and tags
9. Removal of temporary construction aids and shipping aids
10. Installation of temporary protection for construction
11. Items and activities that will not prevent installation of HEPA filters
12. Internal cleanliness inspection and acceptance

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH2720595	HLW-Set PJV Filter Housings	4HH2720605	HLW-Set C5V Filter Housings
4HH2720525	HLW-Set HOP Filter Housings		

**Objective Evidence of Milestone Completion**

- Copy of material receiving report for HEPA filter housings.
- Interim copy of special instruction (or alternative record in use at time of installation) for installation of HEPA filter housing with sign offs for installation activities inclusive of permanent attached to base support.

**Contract Fee Milestones  
 HLW-10**

Facility	Activity ID	Description
HLW	1GH36C1250	Set Offgas Catalytic Oxidizers HOP-SCO-00001 and 00004

**Milestone Definition**

Initial set in place in final location of the catalytic oxidizers HOP-SCO-00001 and HOP-SCO-00004, excluding permanent installation.

Inclusions

1. Installation and inspection acceptance that the oxidizers listed above are located in their correct location and orientation
2. Oxidizers will be in a condition that will not require repair, modification, or upgrades

Exclusions

1. Installation of platforms, ladders, handrails, and stairs associated with the catalytic oxidizers
2. Electrical and grounding connections
3. Piping and instrument connections
4. Installation of loose items and internals
5. Painting and painting touch up
6. Fireproofing and fireproofing touch up
7. Labeling
8. Removal of temporary construction aids and shipping aids
9. Installation of temporary protection for construction phase
10. Internal cleanliness inspection and acceptance

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH123004	FREP Slab 3004	4HH123005	FREP Slab 3005
4HH36208AA	Set – HOP-SKID-5 & 7 with HOP-SCO-1 & 4		

**Objective Evidence of Milestone Completion**

- Interim copy of special instruction for setting of catalytic oxidizers with sign offs for setting activities; alternatively, if the same scope is documented on a tank/vessel inspection record then this may also be used as objective evidence.

**Contract Fee Milestones  
 HLW-11**

Facility	Activity ID	Description
HLW	1GH27C1351	Installation of HLW HVAC Duct at Elevation 0 Ft Corridors

**Milestone Definition**

Complete the installation of HVAC duct at elevation 0 ft corridors.

Inclusions

1. Erection and inspection acceptance of HVAC duct and associated hangers
2. Dampers and in-line components

Exclusions

1. Duct left out to provide construction access for follow-on construction activities
2. Leak testing
3. In-line components left out per Startup request
4. Coatings touch up
5. Fireproofing and fireproofing touch up
6. Penetration seals
7. Removal of temporary construction aids and/or temporary hangers
8. Grounding attachments
9. Labeling and tags
10. Insulation
11. Installation of smoke detectors
12. Items and activities that will not prevent duct from being leak tested
13. Completion of multi-commodity hangers insofar as the uncompleted items are not for duct
14. Instrument connections, instrument tubing, and instruments
15. Electrical and instrumentation cabling
16. Installation of access items (platforms, ladders, etc.) for duct and duct equipment access
17. Final connections to equipment

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH2710810	S/C Install HVAC Duct (EL 0 ) PA #08	4HH27211D0	S/C Install HVAC Duct (EL +0) PA #11D
4HH27211C1	HLW – S/C Install HVAC Duct (EL+0) PA#11C	4HH27211A1	HLW- S/C Install HVAC Duct PA #11A
4HH27211E1	S/C Install HVAC Duct (EL 0) Planning Area 11E	4HH27211F1	S/C Install HVAC Duct (EL 0) Planning Area 11F
4HH27211B1	S/C Install HVAC Duct & C5V-CCL-6 H-B044	4HH27211G1	S/C Install HVAC Duct (EL 0) Planning Area 11G
4HH27110B2	S/C Install HVAC Duct HMB048 PA#10B		

**Contract Fee Milestones  
HLW-11**

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**Objective Evidence of Milestone Completion**

- Sketch or drawing showing scope of HVAC duct at elevation 0 ft, marked up to indicate duct excluded for access for follow-on construction activities.
- Indication to demonstrate the milestone scope depicted on the sketch or drawing is covered by signed subcontractor inspection records
- Copies of signed subcontractor inspection records for duct installation acceptance.

**Contract Fee Milestones  
 HLW-13**

Facility	Activity ID	Description
HLW	1GH46C1453	Set HLW HEME Vessels 2A and 2B at Elevation 0 Ft

**Milestone Definition**

Initial set in place in final location of high-efficiency mist eliminator vessels HOP-HEME-0002A and -0002B, excluding permanent installation.

Inclusions

1. Installation and inspection acceptance that the vessels listed above are located in their correct location and orientation including final fixing into position
2. Vessels will be in a condition that will not require repair, modification, or upgrades

Exclusions

1. Installation of platforms, ladders, handrails, and stairs associated with the vessels
2. Electrical and grounding connections
3. Piping and instrument connections
4. Installation of loose items and internals
5. Painting and painting touch up
6. Fireproofing and fireproofing touch up
7. Labeling and tags
8. Removal of temporary construction aids and shipping aids
9. Installation of temporary protection for construction phase
10. Internal cleanliness inspection and acceptance

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH123158	FREP Concrete Wall 3109B	4HH123148	FREP Concrete Wall 3107A
4HH13202B6	S/C Install SS Liner (EI+0) PA2B H-0106	4HH123156	FREP Concrete Wall 3108A
4HH46102BB	Set Melter HEME Vessels – 2A/2B		

**Objective Evidence of Milestone Completion**

- Copy of material receiving report for high-efficiency mist eliminator vessels.
- Copy of special instruction for installation of vessels with sign offs for setting activities, alternatively, if the same scope is documented on tank/vessel inspection records then these may also be used as objective evidence.

**Contract Fee Milestones  
 HLW-14**

Facility	Activity ID	Description
HLW	1GH12C1454	Placement of HLW Concrete Slabs at Elevation 58 Ft

**Milestone Definition**

Complete the placement of elevation 58 ft concrete slabs.

Inclusions

Placement and inspection acceptance of concrete and all associated embeds and penetrations

Exclusions

1. Formwork and/or shoring removal
2. Pour backs for construction access
3. Cosmetic surface repairs
4. Coatings
5. Items and activates that do not affect the structural integrity of the concrete slabs

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH124001	FREP Slab 4001	4HH124017	FREP Slab 4017
4HH124002	FREP Slab 4002	4HH124018	FREP Slab 4018
4HH124003	FREP Slab 4003	4HH124020	FREP Slab 4020
4HH124004	FREP Slab 4004	4HH124021	FREP Slab 4021
4HH124005	FREP Slab 4005	4HH124022	FREP Slab 4022
4HH124006	FREP Slab 4006	4HH124023	FREP Slab 4023
4HH124007	FREP Slab 4007	4HH124024	FREP Slab 4024
4HH124008	FREP Slab 4008	4HH124025	FREP Slab 4025
4HH124009	FREP Slab 4009	4HH124026	FREP Slab 4026
4HH124010	FREP Slab 4010	4HH124027	FREP Slab 4027
4HH124011	FREP Slab 4011	4HH124028	FREP Slab 4028
4HH124012	FREP Slab 4012	4HH124029	FREP Slab 4029
4HH124013	FREP Slab 4013	4HH124030	FREP Slab 4030
4HH124014	FREP Slab 4014	4HH124031	FREP Slab 4031
4HH124015	FREP Slab 4015	4HH124032	FREP Slab 4032
4HH124016	FREP Slab 4016	4HH124033	FREP Slab 4033
4HH124019	FREP Slab 4019	4HH124034	FREP Slab 4034
4HH124036	FREP Slab 4036	4HH124035	FREP Slab 4035

**Objective Evidence of Milestone Completion**

- Sketch or drawing showing scope of slabs at elevation 58 ft, marked up to indicate slabs excluded for construction access.
- Indication to demonstrate the milestone scope depicted on sketch or drawing is covered by signed pour cards.

- Copies of concrete pour cards with sign offs for placement acceptance checklist.

**Contract Fee Milestones  
 HLW-15**

Facility	Activity ID	Description
HLW	1GH46C1555	Move HLW Melter 1 into Building

**Milestone Definition**

Move melter 1 to design location to allow melter jumper installation to proceed.

Inclusions

Moving the melter into design location

Exclusions

1. Installation of melter jumpers
2. Final alignments
3. Coatings and coatings touch up
4. Removal of temporary construction aids and restraints
5. Labeling and tags
6. Subsequent movement of melter for potential remotability testing
7. Items and activities that do not prevent jumper installation

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH46202A9	Assembly - Melter 1	4HH46102A2	HLW - Move - Melter 1 into building

**Objective Evidence of Milestone Completion**

- Copies of signed off record(s) for melter movement; this will consist of special instructions signed off to indicate movement is complete (or equivalent inspection records in use at time of setting door).

**Contract Fee Milestones  
 HLW-16**

Facility	Activity ID	Description
HLW	1GH27C1556	Set C2V/C3V Air Handling Units at Elevation 58 Ft

**Milestone Definition**

Initial set in place in final location of C2V system air handling units C2V-AHU-00004A, -00004B, and -00004C, and C3V system air handling units C3V-AHU-00001A and -00001B at elevation 58 ft, excluding permanent installation

**Inclusions**

1. Installation and inspection acceptance that the air handling units listed above are located in their correct location and orientation including final fixing into position
2. Units will be in a condition that will not require repair, modification, or upgrades

**Exclusions**

1. Final alignments for motor/fan couplings
2. Installation of associated control panels
3. Electrical and grounding connections
4. Piping and instrument connections
5. Duct connections
6. Installation of loose items and internals
7. Painting and painting touch up
8. Fireproofing and fireproofing touch up
9. Labeling and tags
10. Removal of temporary construction aids and shipping aids
11. Installation of temporary protection for construction
12. Internal cleanliness inspection and acceptance
13. Items and activities that will not prevent connection of the duct, controls and utilities

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH124021	FREP Slab 4021	4HH124023	FREP Slab 4023
4HH124022	FREP Slab 4022	4HH27514CD	Set C2V-AHU-4A-C PG4
4HH2714120	Set C3V-AHU-1 A&1B PG7		

**Objective Evidence of Milestone Completion**

- Copy of material receiving report for air handling units.
- Copy of special instructions (or alternative record in use at time of installation) for setting C2V and C3V system air handling units, with sign offs for setting activities.

**Contract Fee Milestones  
 HLW-17**

Facility	Activity ID	Description
HLW	1GH14C1557	Complete HLW Main Building Weathering

**Milestone Definition**

Complete the installation of siding and roof for HLW main building.

Inclusions

Erection and inspection acceptance of siding and roof panels and associated supports for the main HLW building in accordance with specifications

Exclusions

1. Siding and roof panels left out to provide construction access (not exceeding one percent of total surface area)
2. Coatings and coatings touch up
3. Permanent penetration seals
4. Removal of temporary construction aids
5. Grounding attachments
6. Labeling and signs
7. Attachment of lighting fixtures and other equipment items
8. Doors, windows, and louvers
9. Items and activities that do not interfere with immediate weather protection

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4HH1471010	S/C Install Siding Elev 60 to 91 and Roof - Main Bldg		

**Objective Evidence of Milestone Completion**

- Sketch or drawing showing scope of main HLW building siding and roof marked up to indicate areas excluded for construction access.
- Indication to demonstrate the milestone scope depicted on the sketch or drawing is covered by signed subcontractor inspection records.
- Copies of signed subcontractor inspection records for siding and roof installation acceptance.
- Copies of open punch list items and open nonconformance reports, construction deficiency reports, and field checklists.

**Contract Fee Milestones  
HLW-18**

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<b>Facility</b>	<b>Activity ID</b>	<b>Description</b>
HLW	1GH00C1558	HLW Construction Commence Turnover to Startup (Electrical System Package)

**Milestone Definition**

Demonstrate HLW construction readiness to commence turnover to Startup by completing turnover of the electrical system package. This consists of the low (LVE) and medium (MVE) voltage systems.

Inclusions

Included in Definition

Exclusions

1. Electrical system (LVE and MVE) category B and E punch list items as defined in 24590-WTP-GPG-CON-1601, *Control of Punch List Items*
2. Testing activities that are within Startup scope per, division of responsibility contained in 24590-WTP-GPP-MGT-042, *Construction to Startup Turnover*
3. Removal of temporary construction aids (temporary power, etc.)
4. Turnover of all documentation
5. Startup final acceptance signatures of electrical system package turnover (LVE and MVE)

**Key Predecessors**

- Refer to BNI target schedule for key predecessors.

**Objective Evidence of Milestone Completion**

- Copy of signed (by Construction Management) electrical system turnover package (LVE and MVE).
- Copies of electrical system (LVE and MVE) open B and E punch list items.

**Contract Fee Milestones  
 HLW-19**

Facility	Activity ID	Description
HLW	1GHC2S1659	Demonstrate Canister Lid Weld

**Milestone Definition**

Demonstrate that the canister lid welder installed in the canister handling cave produces a satisfactory canister weld as evidenced by meeting the welder’s test acceptance criteria. Key predecessor activities for the HPH system exclude equipment unrelated to operation of the welder.

Inclusions

Included in Definition

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
5HHC2HPHIA	Startup Accept from Construction HPH	5HHC2HPHAA	HLW SU Perform Component Testing HPH

**Objective Evidence of Milestone Completion**

- Copy of the test report section(s) related to the canister welder or test report section(s) viewable in Project Document Control.

**Contract Fee Milestones  
 HLW-20**

Facility	Activity ID	Description
HLW	1GHC2S1660	HLW Final System Turnover Complete

**Milestone Definition**

Demonstrate HLW construction completion by acceptance of turnover of the final system by Startup.

Included in Definition

Inclusions

N/A

Exclusions

**Key Predecessors**

Activity ID	Description	Activity ID	Description
5HHC2CHWIA	HLW SU Accept From Construction CHW	5HHC2HRHIA	HLW SU Accept From Construction HRH
5HHC2DIWIA	HLW SU Accept From Construction DIW	5HHC2MH1IA	HLW SU Accept From Construction HMM1
5HHC2DOWIA	HLW SU Accept From Construction DOW	5HHC2SH1IA	HLW SU Accept From Construction HSH1
5HHC2ISAIA	HLW SU Accept From Construction ISA	5HHC2AMRIA	HLW SU Accept From Construction AMR
5HHC2PSWIA	HLW SU Accept From Construction PSW	5HHC2EMJIA	HLW SU Accept From Construction EMJ
5HHC2HPSIA	HLW SU Accept From Construction HPS	5HHC2MH2IA	HLW SU Accept From Construction HMM2
5HHC2LPSIA	HLW SU Accept From Construction LPS	5HHC2MP1IA	HLW SU Accept From Construction HMP1
5HHC2PCWIA	HLW SU Accept From Construction PCW	5HHC2NARIA	HLW SU Accept From Construction NAR
5HHC2SCWIA	HLW SU Accept From Construction SCW	5HHC2RLDIA	HLW SU Accept From Construction RLD
5HHC2DCEIA	HLW SU Accept From Construction DCE	5HHC2SHRIA	HLW SU Accept From Construction SHR
5HHC2LVEIA	HLW SU Accept From Construction LVE	5HHC2ASXIA	HLW SU Accept From Construction ASX
5HHC2MVEIA	HLW SU Accept From Construction MVE	5HHC2C3VIA	HLW SU Accept From Construction C3V
5HHC2LTEIA	HLW SU Accept From Construction LTE	5HHC2HPHIA	HLW SU Accept From Construction HPH
5HHC2HTEIA	HLW SU Accept From Construction HTE	5HHC2FDEIA	HLW SU Accept From Construction FDE
5HHC2NLDIA	HLW SU Accept From Construction NLD	5HHC2FPWIA	HLW SU Accept From Construction FPW
5HHC2UPEIA	HLW SU Accept From Construction UPE	5HHC2SH2IA	HLW SU Accept From Construction HSH2
5HHC2GF1IA	HLW SU Accept From Construction HGF1	5HHC2PWDIA	HLW SU Accept From Construction PWD

**Contract Fee Milestones  
 HLW-20**

5HHC2GF2IA	HLW SU Accept From Construction HGF2	5HHC2C2VIA	HLW SU Accept From Construction C2V
5HHC2C1VIA	HLW SU Accept From Construction C1V	5HHC2HFHIA	HLW SU Accept From Construction HFH
5HHC2FP1IA	HLW SU Accept From Construction HFP1	5HHC2RPJIA	HLW SU Accept From Construction RPJ
5HHC2FP2IA	HLW SU Accept From Construction HFP2	5HHC2RWHIA	HLW SU Accept From Construction RWH
5HHC2PJVIA	HLW SU Accept From Construction PJV	5HHC2MP2IA	HLW SU Accept From Construction HMP2
5HHC2CMEIA	HLW SU Accept From Construction CME	5HHC2HDHIA	HLW SU Accept From Construction HDH
5HHC2MHJIA	HLW SU Accept From Construction MHJ	5HHC2OP1IA	HLW SU Accept From Construction HOP1
5HHC2PCJIA	HLW SU Accept From Construction PCJ	5HHC2BSAIA	HLW SU Accept From Construction BSA
5HHC2PPJIA	HLW SU Accept From Construction PPJ	5HHC2HEHIA	HLW SU Accept From Construction HEH
5HHC2PTJIA	HLW SU Accept From Construction PTJ	5HHC2OP2IA	HLW SU Accept From Construction HOP2
5HHC2C5VIA	HLW SU Accept From Construction C5V		

**Objective Evidence of Milestone Completion**

- Copy of signed (by Startup Manager) accepted turnover package for the final HLW system or final system turnover package viewable in Project Document Control.

**Contract Fee Milestones  
 LAW-01**

Facility	Activity ID	Description
LAW	1GL47P0922	Receive Offgas Mercury Adsorber, PA #09A EL+48

**Milestone Definition**

Receive and accept at Marshalling Yard the offgas mercury adsorbers. Includes the following tag IDs:

- LVP-ADBR-00001A
- LVP-ADBR-00001B

Inclusions

N/A

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
9ZL471510M	LAW - MY QC/MRR Offgas Mercury Adsorber		

**Objective Evidence of Milestone Completion**

- BNI shall provide documented evidence to DOE of the receipt of equipment per WTP procedure 24590-WTP-GPP-GPT-00100 "Traffic and Logistics".
- Completion of the milestone will include issuance to PDC 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.

**Contract Fee Milestones  
 LAW-02**

Facility	Activity ID	Description
LAW	1GL36P1027	CATOX LVP-SKID-00002 Received and Ready to Install

**Milestone Definition**

Receive and accept the LAW melter offgas catalytic oxidizer procured under MBT0-00007. Includes the following tag ID:

- LVP-SKID-00002

Inclusions

N/A

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
9FL36426L3	LAW-MS DMY: MBT0-07 Thermal Catalytic Oxidizer	9ZL363790M	LAW – QC/MRR MBT0-07 Thermal Catalytic Oxidizer

**Objective Evidence of Milestone Completion**

- BNI shall provide documented evidence to DOE of the receipt of equipment per WTP procedure 24590-WTP-GPP-GPT-00100 "Traffic and Logistics".
- Completion of the milestone will include issuance to PDC 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.

**Contract Fee Milestones  
 LAW-04**

Facility	Activity ID	Description
LAW	1GL00C1505	Complete Melter 1 Movement into Building

**Milestone Definition**

Scope to include completion of Melter #1 site assembly and movement from the melter assembly pad to the permanent plant location.

Inclusions

N/A

Exclusions

1. Melter offgas pipe, electrical buss, and general jumper connections (installations to be sequenced with the startup component check out requirements)
2. Final alignments
3. Open punch list items that do not impede follow on activities (note above)
4. Coatings and final touch up
5. Removal of temporary construction aids
6. Labeling and tags
7. Subsequent movement of melter for potential remotability testing

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4LL004698F	LAW - Melter #1 Move Into Building	4LL4602B81	LAW - Move & Install Melter #1

**Objective Evidence of Milestone Completion**

- Provide notification of contract completion milestone along with signed test copies. Provide copy of signed off record(s) for melter movement. This will consist of special instructions signed off to indicate movement is complete (or equivalent inspection records in use at time of movement).

**Contract Fee Milestones  
 LAW-05**

Facility	Activity ID	Description
LAW	1GL00C1515	Complete Melter 2 Movement into Building

**Milestone Definition**

Scope to include completion of Melter #2 site assembly and movement from the melter assembly pad to the permanent plant location.

Inclusions

N/A

Exclusions

1. Melter offgas pipe, electrical buss, and general jumper connections (installations to be sequenced with the startup component check out requirements)
2. Final alignments
3. Open punch list items that do not impede follow on activities (note above)
4. Coatings and final touch up
5. Removal of temporary construction aids
6. Labeling and tags
7. Subsequent movement of melter for potential remotability testing

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4LL004699F	LAW - Melter #2 Move Into Building	4LL4602B82	LAW - Move & Install Melter #2

**Objective Evidence of Milestone Completion**

- Provide notification of contract completion milestone along with signed test copies. Provide copy of signed off record(s) for melter movement. This will consist of special instructions signed off to indicate movement is complete (or equivalent inspection records in use at time of movement).

**Contract Fee Milestones  
 LAB-03**

Facility	Activity ID	Description
LAB	1GT47C1356	Complete Installation of Autosampler System

**Milestone Definition**

Scope to include mechanical completion of the Autosampler System in the LAB facility only.

Inclusions

N/A

Exclusions

Pneumatic transfer (flight tube) components yet to be sequenced with the pipe rack installation (PT access priorities)

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4TT4705	LAB - Install Autosampler Systems Completion	9FT4719D8	LAB - ASX Equipment DMY
9ZT471913M	LAB - MY QC & MRR - ASX - Autosamplers	3ET47191C1	LAB - MS All VPs to Code 1

**Objective Evidence of Milestone Completion**

- Following physical walk-down, inspections, and records review, BNI to provide notification of contract milestone completion to DOE-WTP.

**Contract Fee Milestones  
 BOF-01**

Facility	Activity ID	Description
BOF	1GB47P1040	Receive Anhydrous Ammonia System

**Milestone Definition**

BOF receive Anhydrous Ammonia equipment procured under CM-MRA-MS00-00021 and QL-MRA-MVSC-00002. Includes the following tag IDs:

- CM-MRA-MS00-00021: AMR-VPR-00002 & 00003
- QL-MRA-MVSC-00002: AMR-VSL-00003 & 00004

Inclusions

N/A

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
9FB47376C2	BOF - DMY - Anhydrous Ammonia Strg/Sply	9ZB47376C3	BOF - MS- MRR- Anhydrous Ammonia Strg/Sply
9FB47353F3	BOF - DMY - Anhydrous Ammonia Strg AAS Vessels	9ZB47353F4	BOF MS MRR- Anhydrous Ammonia Strg AAS Vessels

**Objective Evidence of Milestone Completion**

- BNI shall provide documented evidence to DOE of the receipt of equipment per WTP procedure 24590-WTP-GPP-GPT-00100 "Traffic and Logistics".
- Completion of the milestone will include issuance to PDC 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.

**Contract Fee Milestones  
 BOF-03**

Facility	Activity ID	Description
BOF	1GB5JC1046	Complete Chiller Compressor Plant Construction

**Milestone Definition**

This milestone assumed complete when the physical work for the facility has been completed and is in a state that allows systematic turnover to the startup group to proceed.

Inclusions

Substantial installation of commodities, verified by a joint construction walk-down and use of other Bechtel reporting tools

Exclusions

1. Coatings touch up
2. Penetration seals
3. Partition wall repairs, if any
4. Labeling and tags
5. Equipment and/or pipe insulation
6. Items held out at Startup's request (for example):
  - a. Pipe flush spool removal
  - b. Final pipe hanger settings
  - c. Piping in-line devices (for flushing)
  - d. General instrumentation (for damage)
  - e. Electrical cable terminations (formed but not landed)
7. Removal of construction aids (scaffold, other)
8. Final work package documentation
9. CME and DCS/ICN (PCJ) system scope

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4BB13CCP01	BOF - Misc. Steel - Chiller/Comp Plant	4BB17010Z	BOF - Instrumentation - CCP
4BB10GM105	BOF - Cmpt Const Chiller/Compressor Plant		

**Objective Evidence of Milestone Completion**

- Following physical walk-down, inspections and records review, BNI to provide notification of contract milestone completion to DOE-WTP.

**Contract Fee Milestones  
 BOF-05**

Facility	Activity ID	Description
BOF	1GBC2S1463	Complete Electrical Distribution System Testing MVE (Site Energization)

**Milestone Definition**

All component and system level testing within the BOF power distribution systems (MVE) has been completed. Scope of checkout and energization to within switchgear building #87.

Inclusions

N/A

Exclusions

1. Power distribution checkout in each individual BOF facility outside switchgear building #87.
2. Power distribution from building #89 (Diesel Generator Facility) which includes the Standby Diesel Generator.

**Key Predecessors**

Activity ID	Description	Activity ID	Description
5HBC2A5PZA	BOF SU Perform Component Testing SG	5HBC2A5PEA	BOF SU Perform System Testing SG

**Objective Evidence of Milestone Completion**

- Provide notification of contract completion milestone to DOE-WTP along with signed test copies.

**Contract Fee Milestones  
 BOF-06**

Facility	Activity ID	Description
BOF	1GB12C1253	Complete Emer. Diesel Gen. Base Slab

**Milestone Definition**

Complete formwork, reinforcing bar, embeds, and concrete placement of the base slab for the Emergency Diesel Generator facility. Predecessors may be updated per #TN-BCP-3672 once approved.

Inclusions

N/A

Exclusions

N/A

**Key Predecessors**

Activity ID	Description	Activity ID	Description
4BB122048B	BOF FREP Emergency Diesel Tank Foundations -DG	3EG360981G	MS Award Pres Vsl Shop Fab Q-MA-MVSC-01
3EB12CS400	C/S - Design Emergency - DSL GEN FDN	9FB360982X	MS - VP Code 1/SDDR: Q-MA-MVSC-01 DFO
9ZB3606560	BOF- Vendor Foundation Loads - (DSL TNKS)		

**Objective Evidence of Milestone Completion**

Following physical walk-down, inspections and records review, BNI to provide notification of contract milestone completion to DOE-WTP.

Note: This Milestone Definition is currently undergoing a revision, which will be documented in a future contract modification.

**Contract Fee Milestones**  
**BOF-07**

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Facility	Activity ID	Description
BOF	1GB28C1360	Set (2) Emergency Diesel Generators

**Milestone Definition**

Receive on site and rough set (2) ITS Diesel Generators. Predecessors may be updated per #TN-BCP-3672 once approved.

Inclusions

N/A

Exclusions

Permanent anchorage and follow-on pipe and electrical attachments are excluded. Also, excludes installation of the standby diesel generators.

**Key Predecessor Listing**

Activity ID	Description	Activity ID	Description
4BB28048A	BOF - Set (2) ITS Diesel Generators		

**Objective Evidence of Milestone Completion**

- Following physical walk-down, inspections and records review BNI to provide notification of contract milestone completion to DOE-WTP.

Note: This Milestone Definition is currently undergoing a revision, which will be documented in a future contract modification.

**SECTION J – LIST OF ATTACHMENTS**  
**ATTACHMENT Q**  
**DFLAW DESIGN COMPLETION CRITERIA INCENTIVE DEFINITIONS (350)**

The DFLAW Design effort in CLIN 2.1 consists of several fee incentives as outlined in Section B.5(f). 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 (MD) 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-F, Table B-2-F-1 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-F. Evidence of completion of the Activities defined in the MD 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-F. 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.

DF-01 Cost Incentive Milestone Definition Sheet

WTP Contract No. DE-AC27-01RV14136

Facility	Activity ID	Description
DFLAW		CLIN 2.1 DFLAW Design Completion

### Milestone Definition

Completion of major design activities associated contained in Section 1 constitutes completion of the Schedule incentive/disincentive portion of the DFLAW Design Completion fee. Completion of the Residual Scope Elements in Section 2, and Section 3 defines objective evidence for completion of CLIN 2.1 Design for the purposes of calculating the Cost Incentive Fee as set forth in Section B-2-F-1.

### Section 1: Major Design Elements

- SDD/FDD (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
- P&IDs / Line and Valve Lists
- V&IDs and Lists
- Plant layout design detailed planning (3d model)
- Detailed Piping Design
- Stress and Support design
- Architectural Design Renderings, Layouts, details and schedules
- Structural / Foundation Design Concrete
- Structural / Foundation Design Steel
- Civil Design drainage, grading, paving underground
- Radiation Safety Design Criteria
- Hazards Analysis
- Fire Analysis
- Preliminary Documented Safety Analysis (PDSA)

### Section 2: Residual Scope Elements:

- Arc Flash Calculations
- Final Termination Schedules
- Software Requirements
- Final Instrument Index
- Functional Acceptance Testing (Operations and Engineering Testing)
- Develop ICN Simulator Software for LAW/EMF
- Final Public Reviews / Permitting – operating and final installation permit for DWP equipment in EMF (Evaporator and tanks)
- Management of Acquired Software. IT-14 is the old procedure for software quality and putting software on the baseline, this procedure will be replaced with a new engineering procedure

### Section 3: Objective Evidence of Milestone Completion and DFLAW Activity ID Key Predecessors

Completion of this milestone shall be measured by submittal of a “Declaration of Completion” (DOC) package by BNI. Separate DOC packages shall be submitted for the Schedule and Cost

**components of this milestone supported by evidence of completion. The Schedule DOC package shall include evidence of completion of the Major Design Elements defined in section 1. The DOC package for the cost component of this milestone shall include evidence of completion of Residual Scope elements defined in Sections 1 and 2. The Cost DOC shall include evidence of completion of those activities which would support a bid for procurement and construction of the DFLAW project. The Cost DOC submittal shall include the following elements of work:**

- **Engineering report for DFLAW scope with confirmed calculations and drawings.**
- **Confirmed specifications and datasheets, suitable for soliciting bids from contractors and suppliers**
- **Initial issuance of the preliminary safety analysis and preliminary fire hazard analysis**

**The following list of Key Predecessors will be completed:**

<b>Activity ID</b>	<b>Description</b>	<b>Activity ID</b>	<b>Description</b>
3ED90BODCN	EMF - E1 - BODCN Completion	3ED900011	EMF - E1 - Perform 30% Review
3ED900025	EMF - E1 - DFLAW - ICD 30	3ED90HAZD	EMF - E1 - Hazardous Analysis Completion
3ED900026	EMF - E1 - DFLAW - ICD 31	3ED4800008	EMF - EN - Issue Water DIW / DOW / PCW/PSW P&IDs & Lists - Rev 0
3ED900027	EMF - E1 - DFLAW - ICD 6	3ED4800009	EMF - EN - Issue Air BSA/ISA/PSA P&IDs & Lists - Rev 0
3ED4800004	EMF - EN - Issue Drains / Vents / Interfaces P&IDs & Lists - Rev 0	3ED4800006	EMF - EN - Issue Steam LPS / HPS / SCW P&IDs & Lists - Rev 0
3ED4800014	EMF - EN - Issue Evaporator P&IDs & Lists - Rev 0	3ED2700017	EMF - EH - Issue Fire Protection P&ID (1) - Rev 0
3ED4800017	EMF - EN - Issue Major Water DIW / DOW / PCW / PSW Equipment Datasheets - Rev 0	3ED4800118	EMF - EN - Issue Major Air BSA/ISA/PSA Equipment Datasheets - Rev. 0
3ED4800114	EMF - EN - Issue Evaporator Equipment Datasheets - Rev. 0	3ED4800115	EMF - EN - Issue Major Drains/Vents/Interfaces Equipment Datasheets Rev. 0
3ED4800116	EMF-EN-Issue Major Equipment Datasheets to Support Permitting -Rev. 0	3ED1700108	EMF - EJ - Develop and Issue HVAC and Fire Protection Instruments Data Sheets Rev. 0
3ED1700069	EMF - EJ - Develop and Issue Steam LPS/HPS/SCW Instruments Data Sheets Rev. 0	3ED1700042	EMF - EJ - Develop and Issue Water DIW/DOW/PCW/PSW Instruments Data Sheets Rev. 0
3ED1700086	EMF - EJ - Develop and Issue Air BSA/ISA/PSA Instruments Data Sheets Rev. 0	3ED1700081	EMF - EJ - Develop and Issue Evaporator Instruments Data Sheets Rev. 0
3ED1700098	EMF - EJ - Develop and Issue Drains Instruments Data Sheets Rev. 0	3ED1700042	EMF - EJ - Develop and Issue Water DIW/DOW/PCW/PSW Instruments Data Sheets Rev. 0
3ED4800118	EMF - EN - Issue Major Air BSA/ISA/PSA Equipment 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
3ED1700069	EMF - EJ - Develop and Issue Steam LPS/HPS/SCW	3ED1700086	EMF - EJ - Develop and Issue Air BSA/ISA/PSA Instruments Data

	Instruments Data Sheets Rev. 0		Sheets Rev. 0
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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

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 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; CSA, Electrical, 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 30% Design Reviews is commenced:

- BOD (Basis of Design) 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 Descriptions (SDD), Part 1 (Not issued)
- Preliminary Facility Design Descriptions (FDD) (Not issued)

*Basis of Design*

- System Requirements Document
- Design Criteria
- Code of Record
- Scope of Facilities
- Operations and Maintenance Requirements (ORD)

*Nuclear Safety*

Preliminary hazard analysis, accident analysis, and control selection

Technical Issues - Identified

- Preliminary Functional Requirements
- Preliminary Technical Safety Requirements
- Preliminary Radiation Zone Maps
- Preliminary Shielding Criteria

*Process Engineering*

Establish basis for design and identify applicable codes and standards

- Process Analysis Model >90%
- Waste streams identified
- Input Basis of Design >90%
- Revision A Process Flow Diagrams (PFDs)
- 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 (FD)
- Preliminary V&IDs
- Preliminary Heating/Cooling Loads
- Preliminary Equipment List
- Preliminary Duct Routing (major runs)
- Preliminary MR/Spec/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 (Civil, Structural & Architectural)*

Establish basis for design and identify applicable codes and standards.

- Preliminary Structural Model Complete
- Preliminary Structure Framing Plans/Sections
- Preliminary Concrete drawings
- Preliminary Calculations
- Preliminary Plot Plan
- Preliminary Drainage Plan
- Preliminary Plans, Sections, Elevations
- Preliminary Architectural Details
- Preliminary Architectural Schedules

*Plant Design*

- Major Commodities – 30% of Budget Quantities In the Model
- Major Process and HVAC Equipment Modelled
- Space Allocation Plan Implemented
- Preliminary General Arrangement Drawings
- Preliminary Building Plumbing and Drains
- Preliminary HVAC Orthographic Drawings
- Preliminary Piping Specifications
- Preliminary Piping Class Sheets

*Electrical*

Establish basis for design and identify codes and standards

- Preliminary Calculations
- Preliminary One-Line Diagram
- Preliminary Electrical Load Summary
- Preliminary Power Distribution System Layout (Load Centers, Switchgear, MCCs, Panel Boards)
- Preliminary MR/Spec/Datasheets for Long Lead Procurements

*Controls and Instrumentation*

Establish basis for design and identify applicable codes and standards

- Preliminary Calculations
- Preliminary Control Strategy
- Preliminary Control Requirements (manual, semi, automatic)
- Preliminary Communication protocol
- Preliminary Security, data storage, retrieval and security
- Reliability, Availability, Maintainability (RAM) parameters identified for key systems
- Preliminary MR/Spec/Datasheets for Long Lead Procurements

*Other*

- Issued for Use Interface Control Documents (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 Issued 30% 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 10 days of receipt.

**Key Predecessors**

<b>Activity ID</b>	<b>Description</b>	<b>Activity ID</b>	<b>Description</b>
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	7KLDL327	DFLAW Hazard Analysis

DF-03 Interim Milestone Definition Sheet

WTP Contract No. DE-AC27-01RV14136

Facility	Activity ID	Description
EMF		DLFAW Safety Basis Change Package (PDSA)

**Milestone Definition**

Prepare and issue the DFLAW EMF Safety Basis Change Package (SBCP)/Preliminary Documented Safety Analysis (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 10 working days of receipt. In the event DOE provides notice of material deficiencies after 10 working days, the Contractor shall be granted day for day relief to the schedule decrement outlined in Table B-2-F-1.

DOE shall provide approval of the SBCP/PDSA within 90 days of accepted submission.

**Key Predecessors**

Activity ID	Description	Activity ID	Description
7KLDFL327	DFLAW Hazard Analysis		
7KLDFL3430	DFLAW Preliminary Documented Safety Analysis (PDSA)		