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**OFFICE OF RIVER PROTECTION**  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**MAR 09 2018**

18-ECD-0010

Ms. Alexandra K. Smith, Program Manager  
Nuclear Waste Program  
Washington State  
Department of Ecology  
3100 Port of Benton Blvd.  
Richland, Washington 99354

Ms. Smith:

**FEBRUARY 2018 QUARTERLY REPORT FOR THE STATE OF WASHINGTON VS. U.S. DEPARTMENT OF ENERGY, CASE NO. 08-5085-RMP, FOR WASTE TREATMENT AND IMMOBILIZATION PLANT CONSTRUCTION AND STARTUP ACTIVITIES AND TANK RETRIEVAL ACTIVITIES – OCTOBER 1, 2017, THROUGH DECEMBER 31, 2017**

This letter transmits the U.S. Department of Energy February 2018 Quarterly Report (Attachment) under Section IV-C-1 of the subject referenced Consent Decree, for the period of October 1, 2017, through December 31, 2017. Pursuant to the Consent Decree, this report provides the status and progress made during the reporting period.

As requested by the Washington State Department of Ecology, copies of the directives given to contractors for work required by the Consent Decree are included in the Attachment.

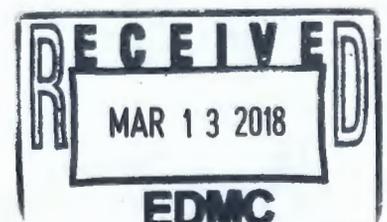
If you have any questions, please contact William F. Hamel, Assistant Manager, Waste Treatment and Immobilization Plant Project, (509) 376-6727, or Glyn D. Trenchard, Assistant Manager, Tank Farms Project, (509) 373-4016.

Brian T. Vance  
Manager

ECD:RLE

Attachment

cc: See page 2



Ms. Alexandra K. Smith  
18-ECD-0010

-2-

cc w/attach:

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S.R. Ross, EM-4.31  
J.S. Decker, Ecology  
J.D. McDonald, Ecology  
K. Niles, Oregon Energy  
D. Rowland, YN

Administrative Record

BNI Correspondence  
WRPS Correspondence

cc w/o attach:

M. Johnson, CTUIR  
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M.J. Turner, MSA  
J. Bell, NPT (Acting)  
G. Bohnee, NPT  
R. Buck, Wanapum  
R. Longoria, YN (Acting)

**Attachment  
18-ECD-0010  
(112 Pages Excluding Cover Sheet)**

**U.S. Department of Energy, Office of River Protection  
Quarterly Report, October 1, 2017, through December 31, 2017, and  
Tank Farm / Waste Treatment and Immobilization Plant  
Direction Letters**

## Office of River Protection Quarterly Report

October 1, 2017, through December 31, 2017<sup>1</sup>

Consent Decree, *State of Washington v. Dept. of Energy*, No: 08-5085-FVS (October 25, 2010)

Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP  
(March 11, 2016)

Second Amended Consent Decree, *State of Washington v. Dept. of Energy*,  
No: 2:08-CV-5085-RMP (April 12, 2016)<sup>2</sup>



2440 Stevens Center Place  
Richland, Washington 99352  
Office of River Protection

  
\_\_\_\_\_  
B.J. Harp, Deputy Manager  
Office of River Protection

3-9-2018  
\_\_\_\_\_  
Date

<sup>1</sup> Except where otherwise expressly stated, the narrative descriptions of progress in this report cover the period from October 1, 2017, through December 31, 2017. Earned Value Management System data and descriptions cover the period ending November 30, 2017.

<sup>2</sup> The cited consent decrees are between the State of Washington and U.S. Department of Energy. For each of these decrees, there are companion, separate consent decrees with the State of Oregon, as Intervener, under the same case numbers.

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## Acronyms and Abbreviations

BNI	Bechtel National, Inc.
BOF	Balance of Facilities
C#V	ventilation system for potential contamination zones C#
CV	cost variance
DFLAW	direct-feed low-activity waste
DOE	U.S. Department of Energy
DSA	documented safety analysis
Ecology	Washington State Department of Ecology
EMF	effluent management facility
EVMS	Earned Value Management System
FY	fiscal year
HEPA	high-efficiency particulate air
HIHTL	hose-in-hose transfer line
HLW	High-Level Waste (Facility)
LAB	Analytical Laboratory
LAW	Low-Activity Waste (Facility)
LBL	Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory
ORP	Office of River Protection
PJM	pulse-jet mixer
PPR	Project Performance Review
PT	Pretreatment (Facility)
SHSV	standard high-solids vessel
SV	schedule variance
USACE	U.S. Army Corps of Engineers
WRPS	Washington River Protection Solutions LLC
WTCC	Waste Treatment Completion Company
WTP	Waste Treatment and Immobilization Plant

## **Introduction**

The U.S. Department of Energy's, Office of River Protection submits the following information to satisfy its obligation to provide "a written report documenting the WTP construction and startup activities and tank retrieval activities," as required by Section IV-C-1 of the Amended Consent Decree in *State of Washington vs. United States Department of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) and Second Amended Consent Decree, same case (April 12, 2016).

Except where otherwise expressly stated, the narrative descriptions of progress in this report cover the period from October 1, 2017, to December 31, 2017. Earned Value Management System data and descriptions cover the period ending November 30, 2017; this includes the facility completion percentage estimates included at various locations in the Waste Treatment and Immobilization Plant section.

As the Washington State Department of Ecology has requested, written directives for the period addressed by this report starting October 1, 2017, for work required by the Amended Consent Decree are included with this report.

**Tank Farm Actions and Milestones**

Number	Title	Due Date	Status
<i>Actions</i>			
D-16E-02	Have a spare A-E-1 <sup>1</sup> reboiler available by December 31, 2018.	12/31/2018	On Schedule
<i>Milestones</i>			
D-16B-03	“Of the 12 Single-Shell Tanks referred to in B-1 and B-2, complete retrieval of tank waste in at least 5.”	12/31/2020	Notice given that a serious risk has arisen. See letter 16-ORP-0097. <sup>2</sup>
D-16B-01	“Complete retrieval of tank waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111.”	03/31/2024	On Schedule
D-16B-02	“Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106, AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3, DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly.”	03/31/2024	Notice given that a serious risk has arisen. See letter 16-ORP-0097. <sup>2</sup>

1 The Consent Decrees referred to the 242-A reboiler as “A-E-1”; the correct designation is “E-A-1.”

2 16-ORP-0097, 2016, “State of Washington v. Moniz, Case No. 2:08-CV-5085-RMP (E.D. WA),” (external letter to M. Bellon, Washington State Department of Ecology), from K.W. Smith, U.S. Department of Energy, Office of River Protection, Richland, Washington, December 6.

DOE = U.S. Department of Energy.

SST = single-shell tank.

WMA-C = C Farm waste management area.

## **Single-Shell Tank Retrieval Program**

**Quarterly Statement:** Tank retrieval activities have complied with milestones already come due as of the date of this report. There are no missed milestones that may affect compliance with other milestones. The U.S. Department of Energy (DOE) formally notified the Washington State Department of Ecology (Ecology) on December 6, 2016, that a serious risk had arisen that DOE may be unable to meet Amended Consent Decree Milestones B-2 and B-3. As stated in DOE's notification letter:

DOE's ability to achieve these milestones has been adversely impacted by the expanded and extended use of self-contained breathing apparatus (SCBA) within all tank farms (i.e., all SST and Double-Shell Tank [DST]) farms resulting from issuance of the June 20, 2016 Demand Letter by the Hanford Atomic Metal Trades Council (HAMTC) to DOE and WRPS; the Stop Work Order issued by HAMTC on July 11, 2016; and the Memorandum of Agreement (MOA) entered into between HAMTC and WRPS on August 31, 2016.

***Tank Farms Assistant Manager:*** Glyn Trenchard

***Federal Program Manager:*** Jeff Rambo

### **Accomplishments during the Reporting Period**

- Executed Tank C-105 third technology waste retrieval operations. Completed the first sluicing, hot water rinse, high pressure water sluicing, caustic dissolution cycles; second high pressure water sluicing cycle, caustic dissolution cycles; and final chemical dissolution cycle to the limits of the approved third technology. Completed second planned water rinse cycle of Tank C-105 third technology retrieval.
- Completed the final rinsing of Tank C-105 and secured retrieval operations.
- Completed AX Tank Farm POR126 and POR127 portable exhauster readiness activities.
- Completed installation of the hose-in-hose transfer lines (HIHTL) from AX Tank Farm to Tank AZ-102.
- Initiated removal of HIHTL shield plates and hose barns between the C Tank Farm and the AN Tank Farm.
- Completed installation of the AX Tank Farm splitter box.
- Completed installation of new 13.8 kV transformer and continued installation of the electrical infrastructure required to provide power for AX Tank Farm retrieval.
- Initiated installation of the caustic/water system piping from A-285 Building to AX Tank Farm.
- Completed redesign of the A Tank Farm exhauster system. This redesign required relocation of the exhausters (POR518/519) and an updated pad design, within A Tank Farm.
- Completed video inspections of waste in Tank A-104 and Tank A-105.

- Removed five thermocouples, two obsolete sluicers, and two obsolete pumps from Tank AX-102 and Tank AX-104.
- Completed Tank AZ-102 drop leg assembly installation in preparation for AX Tank Farm retrieval.
- In follow-up to his letter of September 20, 2017, Principal Deputy Assistant Secretary for Environmental Management James Owendoff met with Maia Bellon, Director of Ecology, on November 9, 2017, to discuss potential initiatives to accelerate cleanup of the Hanford Site. Several of these potential initiatives were discussed at that meeting, including but not limited to, retrieving transuranic waste from the T Tank Farm and the B Tank Farm. Director Bellon responded by letter dated November 17, 2017, indicating Ecology's willingness to participate in further discussions. DOE provided a response to Ecology on December 1, 2017, which summarized DOE's key takeaways from the November meeting, highlighted numerous ideas under consideration including options for retrieving, treating, and disposing of transuranic waste, including possible utilization of the Waste Isolation Pilot Plant, and provided further information, as requested by Ecology, regarding the tank-side cesium removal system and redesign of the Low-Activity Waste Pretreatment System.

#### **Accomplishments Expected in the Next Reporting Period**

- Remove legacy long-length equipment from Tank AX-102 and Tank AX-104
- Complete Tank AX-101 and Tank AX-103 pit cleanouts
- Initiate field work to install exhauster pads for the new A Tank Farm exhausters (POR518/519)
- Construct ingress/egress tent at AN Tank Farm to support 20 HIHTL removals in fiscal year (FY) 2018
- Continue removing shield plates and hose barns for 12 HIHTLs between C Tank Farm and AN Tank Farm
- Begin disconnecting 12 HIHTLs between C Tank Farm and AN Tank Farm
- Begin removing shield plates and hose barns for 8 HIHTLs between the POR104 valve box and Tank C-105
- Start disconnecting 8 HIHTLs between the POR104 valve box and Tank C-105
- Complete Tank C-105 computer/CAD measuring system waste volume video
- Complete Tank C-105 residual waste computer/CAD measuring system calculation
- Remove long-length in-tank equipment to support Tank C-105 post-retrieval sampling
- Continue electrical power infrastructure installation in AX Tank Farm.

### **Issues Encountered during the Reporting Period**

- Reduced worker efficiencies associated with mandatory use of supplied air continues to impact work in the tank farms.
- The schedule for installation of the A Tank Farm portable exhausters was impacted by concerns with placement of the exhausters near the stacks at 242-A Evaporator and AX Tank Farm. Exhaust stack modeling was completed and an alternate location was selected.

### **Issues Expected in the Next Reporting Period**

- Reduced worker efficiencies associated with mandatory use of supplied air are expected to continue to impact work in the tank farms.

### **Actions Initiated or Taken to Address Potential Schedule Slippage**

- Washington River Protection Solutions LLC (WRPS) continues to increase the number of health physics technicians, industrial hygiene technicians, and skilled construction workforce to support tank waste retrieval efforts in the A and AX tank farms to support Amended Consent Decree Milestone B-2, "Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106, AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3, DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly," and Milestone B-3, "Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank wastes in at least 5." These increases are taking place through additional hiring or transfers from other onsite contractors to support the removal of existing in-tank equipment and the installation of the waste retrieval systems in the single-shell tanks.
- A substantial increase in construction personnel is planned. The increase in personnel is expected to recover some schedule slippage. WRPS is increasing construction and support personnel for field work in AX and A tank farms. Currently, there are four crews deployed in AX Tank Farm. With the increase, there will be nine crews working in AX and A tank farms. Schedule slippage refers to the Milestones B-2 and B-3, where DOE has already provided notice to Ecology that a serious risk has arisen that DOE may be unable to meet these milestones. See December 6, 2016, DOE Office of River Protection (ORP) letter 16-ORP-0097.

**Tank Waste Retrieval Work Plan Status**

Tank	TWRWP	Expected Revisions	Retrieval Technology		
			First	Second	Third
AX-101	RPP-RPT-58932, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	–
AX-102	RPP-RPT-58933, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	–
AX-103	RPP-RPT-58934, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	–
AX-104	RPP-RPT-58935, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	–
C-105	RPP-22520, Rev. 8	Complete	MARS-V	MARS-V High-Pressure Water Spray	Chemical Dissolution Process with ERSS

ERSS = extended reach sluicer system.  
 MARS-V = Mobile Arm Retrieval System-Vacuum.  
 TWRWP = tank waste retrieval work plan.

**Accomplishments During the Reporting Period**

- Rev. 1 of all the AX Tank Farm retrieval work plans were submitted to Ecology via letter 17-TF-0072, “Submittal of the 241-AX-101, 241-AX-102, 241-AX-103, and 241-AX-104 Tanks Waste Retrieval Work Plans,” dated October 20, 2017.

**Accomplishments Expected in the Next Reporting Period**

- None.

## Tank Farm Earned Value Management System Quarterly Analysis

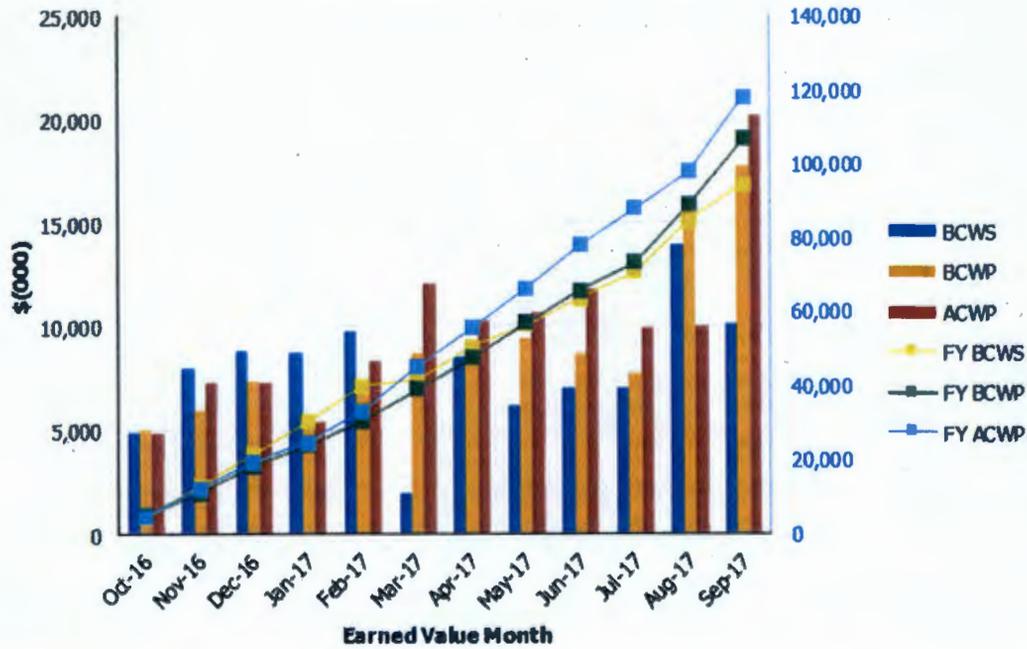
### EXC-01a: Fiscal Year Cost and Schedule Report

Earned Value Data: Fiscal Year 2017

September-17

**Tank Farms ORP-0014**  
**Retrieve and Close SST's 5.02**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	\$4,816	\$4,996	\$4,822	1.04	1.04	\$4,816	\$4,996	\$4,822	1.04	1.04
Nov 2016	\$7,924	\$5,969	\$7,241	0.75	0.82	\$12,740	\$10,965	\$12,063	0.86	0.91
Dec 2016	\$8,772	\$7,401	\$7,262	0.84	1.02	\$21,512	\$18,365	\$19,325	0.85	0.95
Jan 2017	\$8,646	\$5,422	\$5,360	0.63	1.01	\$30,158	\$23,787	\$24,685	0.79	0.96
Feb 2017	\$9,716	\$6,707	\$8,341	0.69	0.80	\$39,874	\$30,495	\$33,026	0.76	0.92
Mar 2017	\$1,903	\$8,675	\$12,056	4.56	0.72	\$41,777	\$39,170	\$45,082	0.94	0.87
Apr 2017	\$8,477	\$8,214	\$10,268	0.97	0.80	\$50,254	\$47,384	\$55,350	0.94	0.86
May 2017	\$6,110	\$9,406	\$10,604	1.54	0.89	\$56,364	\$56,790	\$65,953	1.01	0.86
Jun 2017	\$6,982	\$8,684	\$11,807	1.24	0.74	\$63,345	\$65,474	\$77,761	1.03	0.84
Jul 2017	\$7,043	\$7,702	\$9,910	1.09	0.78	\$70,388	\$73,176	\$87,670	1.04	0.83
Aug 2017	\$13,912	\$15,660	\$10,002	1.13	1.57	\$84,301	\$88,836	\$97,672	1.05	0.91
Sep 2017	\$10,103	\$17,777	\$20,206	1.76	0.88	\$94,404	\$106,613	\$117,878	1.13	0.90
CTD	\$803,571	\$804,663	\$838,552	1.00	0.96					

ACWP = actual cost of work performed.  
 BCWP = budgeted cost of work performed.  
 BCWS = budgeted cost of work scheduled.  
 CPI = cost performance index.

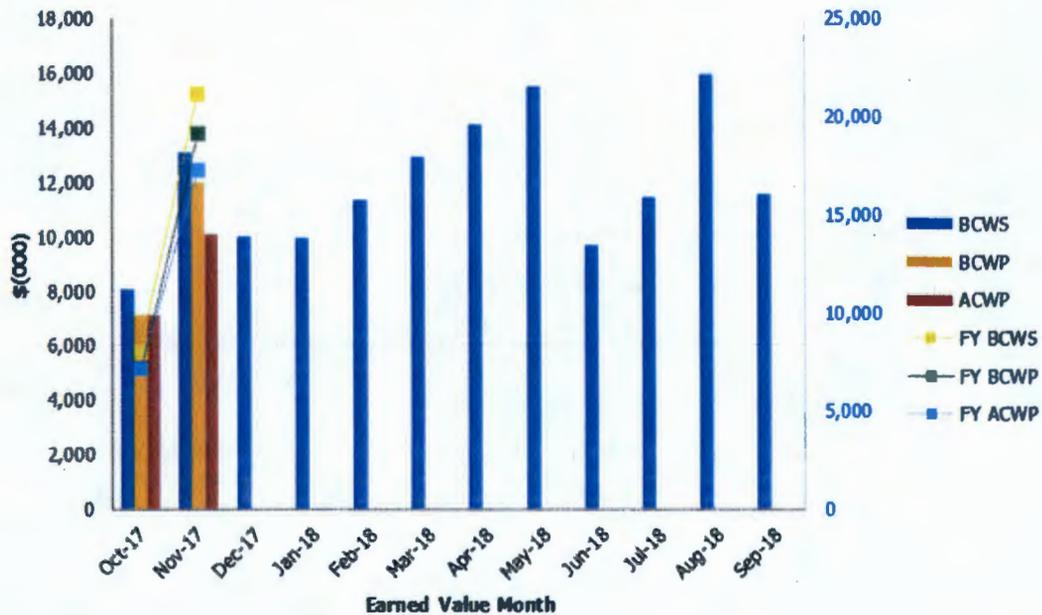
CTD = contract to date.  
 EVMS = earned value management system.  
 FY = fiscal year.  
 SPI = schedule performance index.

Earned Value Data: Fiscal Year 2018

November-17

**Tank Farms ORP-0014**  
**WBS 5.2 - Retrieve and Close SSTs**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$8,053	\$7,119	\$7,127	0.88	1.00	\$8,053	\$7,119	\$7,127	0.88	1.00
Nov 2017	\$13,058	\$11,996	\$10,119	0.92	1.19	\$21,111	\$19,115	\$17,245	0.91	1.11
Dec 2017	\$9,964									
Jan 2018	\$9,928									
Feb 2018	\$11,311									
Mar 2018	\$12,899									
Apr 2018	\$14,099									
May 2018	\$15,461									
Jun 2018	\$9,662									
Jul 2018	\$11,460									
Aug 2018	\$15,929									
Sep 2018	\$11,558									
<b>CTD</b>	<b>\$824,682</b>	<b>\$823,777</b>	<b>\$855,797</b>	<b>1.00</b>	<b>0.96</b>					

CWP = actual cost of work performed.  
 BCWP = budgeted cost of work performed.  
 BCWS = budgeted cost of work scheduled.  
 CPI = cost performance index.

CTD = contract to date.  
 EVMS = earned value management system.  
 FY = fiscal year.  
 SPI = schedule performance index.

### **Earned Value Management System Quarterly Analysis:**

Project Earned Value Management System (EVMS) reflects data for September 2017, October 2017, and November 2017.

#### **Schedule Variance Summary:**

For the September EVMS reporting period, a net **favorable** schedule variance (SV) of \$7,674,000 was reported, primarily due to the following:

- Retrieval operations for Tank C-105 third technology operations started in mid-August and were able to operate on a 24-hour, 7-day per week operating schedule, which accelerated the completion of the caustic dissolution – Phase 1, and the start of the sluicing – Phase 2, in September, thereby accomplishing work scheduled in future months.
- Accelerated delivery of several long-lead procured items, including exhausters and ventilation equipment for A Tank Farm and extended reach sluicer systems for Tank AX-101 and Tank AX-103.

For the October EVMS reporting period, a net **unfavorable** SV of (\$934,000) was reported, primarily due to the following:

- Delays due to higher priority work and work package unavailability for the HIHTL from Tank AX-102 and Tank AX-104 diversion boxes to the splitter boxes within AX Tank Farm resulted in schedule changes.
- Delays due to vendors needing additional time in the preparation and submittal of their bids for the construction contract for the underground water and caustic system piping in the A/AX Tank Farm chemical and water service building.
- Retrieval operations crew at Tank C-105 was able to operate on a 24-hour, 7-day per week operating schedule, which accelerated the completion of the third technology operations, thereby partially offsetting the unfavorable SVs mentioned above.

For the November EVMS reporting period, a net **unfavorable** SV of (\$1,062,300) was reported, primarily due to the following:

- Delays in work package planning to install the tanks AX-102 and AX-104 HIHTL from the diversion boxes to the splitter boxes within AX Tank Farm due to conflicting priorities and the lack of work package planner availability.
- Delays associated with unexpected site conditions related to both the Tank AX-104, Pit-C, Riser 1A sluicer removal and the Tank AX-102, Pit-A, Riser 5A spray-ring removal (after removal of the pump) that required additional time to plan, prepare, and safely remove.

**Cost Variance Summary:**

For the September EVMS reporting period, a net **unfavorable** cost variance (CV) of (\$2,428,000) was reported, primarily due to the following:

- Accelerated delivery of several long-lead items resulted in early payments.
- Delays in the removal of equipment from Tank AX-104, due to degraded condition of the sluicer in riser 1B, the failure of the 801A concrete cap to meet specifications, and resulting rework contributed to the unfavorable CV.

For the October EVMS reporting period, a net **unfavorable** CV of (\$8,000) was reported as minimal.

For the November EVMS reporting period, a net **favorable** CV of \$1,876,600 was reported, primarily due to the following:

- Operating Tank C-105 third technology retrieval operations on a 24-hours, 7-day per week operating schedule resulted in operational efficiencies, which allowed retrieval operations to complete ahead of schedule and under budget.

**Retrieval Labor Hours on Self-Contained Breathing Apparatus**

*Tank Farms Assistant Manager:* Glyn Trenchard

*Federal Program Manager:* Jeff Rambo

Labor Hours Expended on Single-Shell Tank Retrieval Self-Contained Breathing Apparatus  
 October 1, 2017, through December 31, 2017

	<b>SCBA Direct Labor Hours</b>	<b>SCBA Subcontractor Hours<sup>1</sup></b>	<b>Total SST Operation Hours</b>	<b>Total Hours<sup>2</sup></b>	<b>Total Percent on SCBA</b>	<b>Detrimental Impacts Days<sup>3</sup></b>
C Tank Farm	20,539	940	21,479	92,102	23%	42
A/AX Tank Farms	13,479	1,650	15,129	61,696	25%	43
<b>Total</b>	<b>34,018</b>	<b>2,590</b>	<b>36,608</b>	<b>153,798</b>	<b>24%</b>	<b>43</b>

<sup>1</sup> Subcontractor hours include labor hours from subcontractors including North Point Electrical Contracting, Inc.; Geophysical Survey, Inc.; Fowler General Construction; American Electric; BNL Technical Services; and Intermech Inc.

<sup>2</sup> Includes all labor hours supporting SST farms in retrieval including support outside farm fence (Engineering, Project Management, and other support accounts).

<sup>3</sup> Detrimental impacts are presented as the number of days in which a stop work related to SCBA use prevented field operations from continuing. It is limited to SCBA stop works only and excludes vapor impacts (i.e., AOP-15 events).

SCBA = self-contained breathing apparatus.

SST = single-shell tank.

## **Spare Reboiler Requirement Status**

***Tank Farms Assistant Manager:*** Glyn Trenchard

***Federal Program Manager:*** Paul Hernandez

Description of activity and progress made for the spare E-A-1 reboiler for the 242-A Evaporator, including a description of cost and schedule performance:

- WRPS awarded a not-to-exceed design/build contract to ABW Technologies in the amount of \$461,000 for fabrication of a spare reboiler, with delivery prior to December 31, 2018. Total estimate at completion is \$776,000.
- WRPS has approved the reboiler final design. ABW Technologies completed all material procurements and initiated fabrication of the spare reboiler in November 2017. WRPS remains on schedule to have a spare E-A-1 reboiler available for the 242-A Evaporator by December 31, 2018, as required by the Second Amended Consent Decree.

### **Written Directives for Tank Farms**

Written directives given by DOE to the Tank Operations Contractor from October 1, 2017, through December 31, 2018, for work required by the Consent Decrees.

Six letters of direction were issued to WRPS during the reporting period in reference to Contract No. DE-AC27-08RV14800. The letters are listed below and copies are attached:

- 17-TF-0085, “U.S. Department of Energy, Office of River Protection Request for Design Description and Total Project Cost Estimate to Implement an Optimized Low-Activity Waste Pretreatment System Design Strategy,” dated October 4, 2017.
- 17-TF-0088, “U.S. Department of Energy, Office of River Protection Request for Proposal for a Technology Demonstration of a Tank-Side Cesium Removal Capability,” dated October 4, 2017.
- 17-TF-0101, “The U.S. Department of Energy, Office of River Protection Request for Proposal for the Balance of Plant Workslope to Operate the Tank-Side Cesium Removal Technical Demonstration,” dated November 2, 2017.
- 17-TF-0102, “U.S. Department of Energy, Office of River Protection Concurrence with Deferral of SY Exhauster Upgrades Scope,” dated November 2, 2017.
- 17-TF-0096, “U.S. Department of Energy, Office of River Protection, Direction to Suspend Selected Low-Activity Waste Pretreatment System Design and Testing Activities,” dated November 16, 2017.
- 17-TF-0121, “U.S. Department of Energy, Office of River Protection Concurrence on Recommendation for Simplified Low-Activity Waste Pretreatment System Design Path Forward,” dated December 21, 2017.

## **Waste Treatment and Immobilization Plant Project**

*Federal Project Director:* Bill Hamel

*Deputy Federal Project Director:* Joni Grindstaff

**Quarterly Statement:** The Waste Treatment and Immobilization Plant (WTP) Project has complied with applicable milestones already come due as of the date of this report. There are no missed milestones that may affect compliance with other milestones.

The WTP Project currently employs approximately 2,910 full-time equivalent contractor (Bechtel National, Inc. [BNI]) and subcontractor personnel. This includes 668 craft, 722 non-manual, and 160 subcontractor full-time equivalent personnel working at the WTP construction site (all facilities).

The WTP Project continues to focus on completion of the Low-Activity Waste (LAW) Facility, Balance of Facilities (BOF), and the Analytical Laboratory (LAB) (collectively referred to as LBL, including direct-feed low-activity waste [DFLAW] and LBL Facility services).

As of November 2017, DFLAW was 35 percent complete, engineering design was 72 percent complete, procurement was 18 percent complete, construction was 22 percent complete, and startup and commissioning was 0 percent complete. As of November 2017, LBL Facilities were 60 percent complete, engineering design was 86 percent complete, procurement was 70 percent complete, construction was 77 percent complete, and startup and commissioning was 23 percent complete.

### **Accomplishments During the Reporting Period**

- Principal Deputy Assistant Secretary for Environmental Management James Owendoff met with Ecology Director Maia Bellon on November 9, 2017, to discuss potential initiatives to accelerate cleanup of the Hanford Site. Several of these potential initiatives were discussed at that meeting, including but not limited to, keeping the High-Level Waste (HLW) and Pretreatment (PT) Facilities in preservation mode to allow ORP to focus on bringing DFLAW into operation. Director Bellon responded by letter dated November 17, 2017, indicating Ecology's willingness to participate in further discussions. DOE provided a response to Ecology on December 1, 2017, which summarized DOE's key takeaways from the November meeting, highlighted numerous ideas under consideration including exploring extension of HLW and PT facilities preservation, and provided additional information.
- In October, DOE conducted a Project Performance Review (PPR) on the WTP Project and held a completion optimization workshop on DFLAW. The PPR Team and workshop participants identified potential opportunities for process improvement and mission advancement. ORP issued letter 17-WTP-0208 REISSUE, "Programmatic Actions Needed to Ensure Certainty of Completion of Waste Treatment and Immobilization Plant Facilities Needed for Direct Feed Low-Activity Waste," to BNI dated October 31, 2017. The letter identified near-term actions for BNI to complete to "improve confidence in the timely completion of design, procurement, construction,

startup, and commissioning of the WTP Facilities needed for DFLAW.” The status of specific near-term actions are discussed throughout this report.

- Other significant accomplishments during the prior three months are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

#### **Accomplishments Expected Next Reporting Period**

- As a result of the PPR, ORP will continue to provide oversight of WTP contractor progress on the areas of the WTP Project recommended by the PPR.
- Following up on a meeting between ORP Manager Brian T. Vance and Ecology Nuclear Waste Program Manager Alex Smith, ORP will continue to meet with Ecology about the matters discussed in this report and will update Ecology as circumstances develop.
- Other accomplishments expected in the next three months are noted in the project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

#### **Issues Encountered During the Reporting Period**

- Congress provided funding to DOE and other federal agencies during the reporting period through several continuing resolutions. In FY 2016, Congress appropriated \$690 million for the WTP; it appropriated \$690 million for the WTP in FY 2017. In FY 2018, funding for the WTP is currently subject to a Continuing Resolution that maintains the funding to the level appropriated in FY 2017.
- Other issues encountered during the reporting period are noted in project reports for PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

#### **Issues Expected in the Next Reporting Period**

- FY 2018 (as of February 21, 2018) funding for the WTP Project is currently subject to a Continuing Resolution that maintains funding to the level appropriated in FY 2017 levels.
- Other issues expected in the next reporting period are noted in project reports for PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

**Waste Treatment and Immobilization Plant Milestones**

<b>Milestone</b>	<b>Title</b>	<b>Due Date</b>	<b>Status</b>
<b>Waste Treatment and Immobilization Plant Project</b>			
D-00A-06	Complete Methods Validations	06/30/2032	On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033	Under Analysis <sup>1</sup>
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	Under Analysis <sup>1</sup>
<b>Pretreatment Facility</b>			
D-00A-18	Complete Structural Steel Erections Below Elevation 56' in PT Facility	12/31/2009	Complete
D-00A-19	Complete Elevation 98' Concrete Floor Slab Placements in PT Facility	12/31/2031	On Schedule
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-00001A/1B	12/31/2031	On Schedule
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	Under Analysis <sup>1</sup>
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	Under Analysis <sup>1</sup>
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	Under Analysis <sup>1</sup>
<b>High-Level Waste Facility</b>			
D-00A-20	Complete Construction of Structural Steel to Elevation 14' in HLW Facility	12/31/2010	Complete
D-00A-21	Complete Construction of Structural Steel to Elevation 37' in HLW Facility	12/31/2012	Complete
D-00A-02	HLW Facility Construction Substantially Complete	12/31/2030	Under Analysis <sup>1</sup>
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	Under Analysis <sup>1</sup>
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	Under Analysis <sup>1</sup>
<b>Low-Activity Waste Facility</b>			
D-00A-07	LAW Facility Construction Substantially Complete	12/31/2020	On Schedule
D-00A-08	Start LAW Facility Cold Commissioning	12/31/2022	On Schedule
D-00A-09	LAW Facility Hot Commissioning Complete	12/31/2023	On Schedule

Milestone	Title	Due Date	Status
<b>Balance of Facilities</b>			
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete
<b>Analytical Laboratory</b>			
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

<sup>1</sup> As described in *Accomplishments Expected in the Next Reporting Period* in the HLW Facility and PT Facility sections, the U.S. Department of Energy (DOE) is considering an option to continue preservation and maintenance of the PT and HLW Facilities for a period of 3 to 5 years, while DOE is focusing its efforts on bringing direct-feed low-activity waste into operation. Accordingly, certain milestones in this table are marked as "Under Analysis." As discussed below, DOE has asked the U.S. Army Corps of Engineers to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain HLW- and PT-related milestones. DOE is considering Milestone A-1 and A-17 as being "Under Analysis" because the definition of Section IV-A-2: "'Hot Start of Waste Treatment Plant' means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-level Waste (HLW) Facility and Low-activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product." Hence, if one of the five facilities is "Under Analysis", DOE is conservatively considering the WTP milestone as "Under Analysis".

HLW = high-level waste.

PT = pretreatment.

LAB = analytical laboratory.

WTP = Waste Treatment and Immobilization Plant.

LAW = low-activity waste.

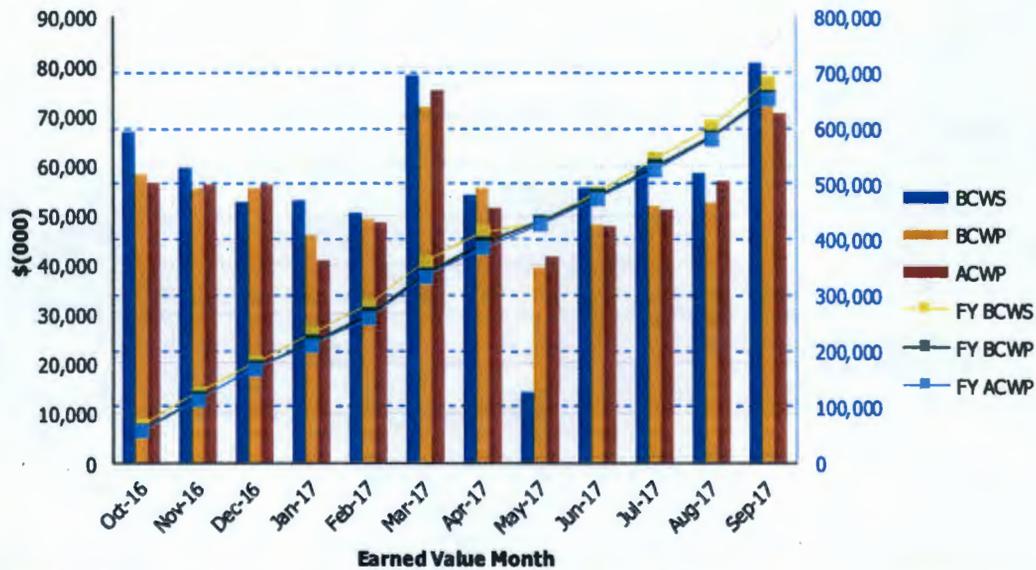
**EXC-01a: Fiscal Year Cost and Schedule Report**

Data Set: FY 2017 Earned Value Data

Data as of: September 2017

**River Protection Project  
 Waste Treatment Plant (WTP) Project**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	\$67,019	\$58,321	\$56,633	0.87	1.03	\$67,019	\$58,321	\$56,633	0.87	1.03
Nov 2016	\$59,361	\$55,681	\$56,299	0.94	0.99	\$126,379	\$114,002	\$112,932	0.90	1.01
Dec 2016	\$52,654	\$55,489	\$56,125	1.05	0.99	\$179,033	\$169,491	\$169,057	0.95	1.00
Jan 2017	\$52,807	\$46,077	\$40,881	0.87	1.13	\$231,840	\$215,568	\$209,938	0.93	1.03
Feb 2017	\$50,489	\$49,354	\$48,627	0.98	1.01	\$282,329	\$264,922	\$258,565	0.94	1.02
Mar 2017	\$78,183	\$72,145	\$75,415	0.92	0.96	\$360,512	\$337,067	\$333,981	0.93	1.01
Apr 2017	\$54,085	\$55,376	\$51,509	1.02	1.08	\$414,597	\$392,443	\$385,490	0.95	1.02
May 2017	\$13,975	\$39,451	\$41,659	2.82	0.95	\$428,572	\$431,894	\$427,148	1.01	1.01
Jun 2017	\$55,640	\$48,136	\$47,667	0.87	1.01	\$484,211	\$480,030	\$474,815	0.99	1.01
Jul 2017	\$59,893	\$51,954	\$50,998	0.87	1.02	\$544,105	\$531,985	\$525,813	0.98	1.01
Aug 2017	\$58,557	\$52,729	\$56,871	0.90	0.93	\$602,662	\$584,714	\$582,685	0.97	1.00
Sep 2017	\$80,817	\$72,173	\$70,640	0.89	1.02	\$683,479	\$656,887	\$653,325	0.96	1.01
PTD	\$10,511,594	\$10,457,897	\$10,383,414	0.99	1.01					

- |   |  |
|---|--|
| ACWP = actual cost of work performed.   | EVMS = earned value management system. |
| BCWP = budgeted cost of work performed. | FY = fiscal year.                      |
| BCWS = budgeted cost of work scheduled. | PTD = project to date.                 |
| CPI = cost performance index.           | SPI = schedule performance index.      |

## WTP Earned Value Management System Quarterly Analysis

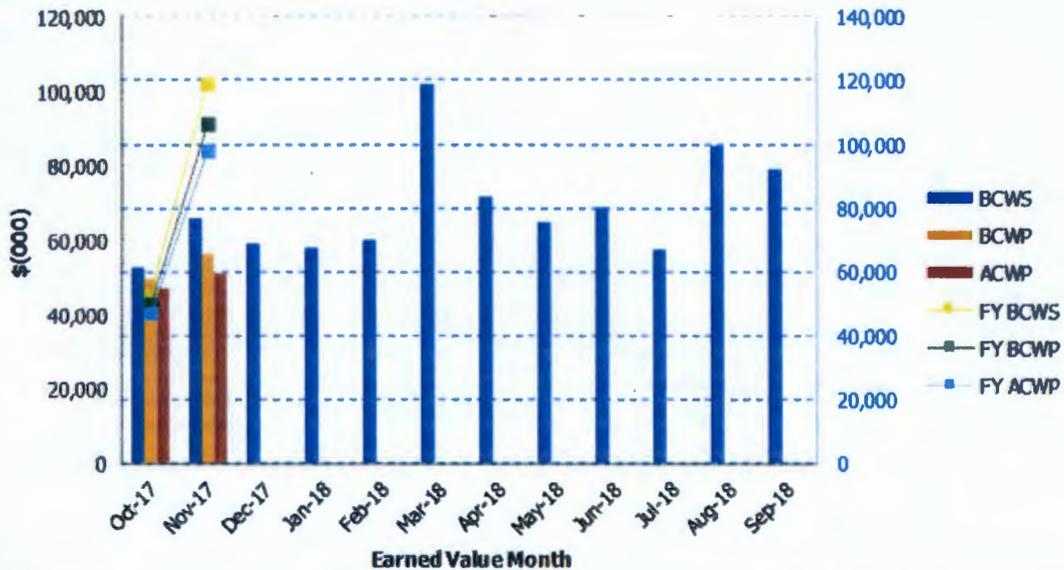
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: November 2017

**River Protection Project**  
**Waste Treatment Plant (WTP) Project**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$52,662	\$49,804	\$46,894	0.95	1.06	\$52,662	\$49,804	\$46,894	0.95	1.06
Nov 2017	\$65,935	\$56,513	\$51,026	0.86	1.11	\$118,597	\$106,317	\$97,920	0.90	1.09
Dec 2017	\$58,797									
Jan 2018	\$57,834									
Feb 2018	\$59,856									
Mar 2018	\$102,057									
Apr 2018	\$71,422									
May 2018	\$64,735									
Jun 2018	\$68,494									
Jul 2018	\$57,245									
Aug 2018	\$85,467									
Sep 2018	\$79,004									
<b>PTD</b>	<b>\$10,630,192</b>	<b>\$10,564,214</b>	<b>\$10,481,334</b>	<b>0.99</b>	<b>1.01</b>					

ACWP = actual cost of work performed.  
 BCWP = budgeted cost of work performed.  
 BCWS = budgeted cost of work scheduled.  
 CPI = cost performance index.

PTD = project to date.  
 EVMS = earned value management system.  
 FY = fiscal year.  
 SPI = schedule performance index.

<b>Performance Tracking</b>	<b>SV (\$x1,000)</b>	<b>CV (\$x1,000)</b>
Cumulative (through Nov. 2017)	(\$65,978)	\$82,880
Fiscal Year 2018 to-date	(\$12,280)	\$8,398
November 2017	(\$9,422)	\$5,487
October 2017	(\$2,858)	\$2,911
September 2017	(\$8,644)	\$1,533

SV = schedule variance.

CV = cost variance.

### **Earned Value Management System Analysis**

The EVMS is intended to provide a status of how the contractor is progressing against its planned work (i.e., schedule), and whether it is costing more or less to complete the work than planned. The project plan is measured by expressing the schedule in terms of dollars spread over the anticipated project duration, and then for each month, determining how much of the planned work was accomplished or “earned,” as measured in equivalent dollars. If more work is accomplished than planned, then the project is ahead of schedule and has a favorable SV. Similarly, if less work is accomplished, the project is behind schedule and has an unfavorable SV. Accomplished work is reported in the month it was completed, which may not be when it was planned. For example, work completed in a month earlier than planned would be reported as a favorable SV for the month in which it was completed, but would be reported as an unfavorable SV in the month it was planned. The end result would be the overall cumulative SV netting out to zero over these months. Likewise, work completed late will recover an earlier reported unfavorable SV.

The CV measures the actual cost of work performed against the earned dollar value of that performed work. As an example, assume \$10,000 of work was planned to-date, \$8,000 was reported as being performed (earned), at an actual cost of \$9,000. This work would be reported as being \$2,000 behind schedule [a negative or unfavorable SV:  $\$8,000 - \$10,000 = (\$2,000)$ ], and has cost \$1,000 more [a negative or unfavorable CV:  $\$8,000 - \$9,000 = (\$1,000)$ ] than was planned for completing that work scope. Likewise, a favorable or positive CV would be reported if it cost less to complete the work than the performed dollar value of the work.

The SV and CV are reported for each monthly period, fiscal year to-date, as well as for the project-to-date value. The monthly variances can fluctuate significantly (for reasons noted earlier), so the fiscal year or cumulative-to-date report provides a better indicator of the overall project completion status, and can give a reasonable projection of how the project will finish, based on the progress-to-date.

**Schedule Variance Summary:**

For the November EVMS reporting period, a net **unfavorable** SV of approximately (\$9.4 million) was reported, primarily due to the following:

- LBL/DFLAW Plant Equipment reported an unfavorable SV because of an earlier procurement/delivery of the LAW Facility safety uninterruptable power supply, and delays with the thermocouple/resistance temperature detectors/thermowell procurement due to seismic qualification and analysis – which changed the design. BOF reported a favorable SV because of resolution of a contractor's request for equitable adjustment on the glass former equipment procurement.
- LBL Commissioning reported an unfavorable SV because current spending priorities are different than the existing plan. Revised plans are currently being developed for implementation so that commissioning activities are aligned with the available spend plan.
- DFLAW Construction reported an unfavorable SV because of delays in a construction subcontract change process for liner plate work scope.
- LBL Construction, Startup, and Commissioning reported an unfavorable SV because work planned for this month was performed ahead of schedule, and prior to implementation of the Waste Treatment Completion Company (WTCC) project documents.

For the October EVMS reporting period, a net **unfavorable** SV of approximately (\$2.9 million) was reported, primarily due to the following:

- LBL Commissioning reported an unfavorable SV because current spending priorities are different than the existing plan. Revised plans are currently being developed for implementation so that commissioning activities are aligned with the available spend plan.
- LBL Construction, Startup, and Commissioning reported an unfavorable SV because work planned for this month was performed ahead of schedule, and prior to implementation of the WTCC project documents.
- DFLAW Plant Material reported an unfavorable SV because of delays in delivery of the underground transfer line purchase order items. However, transmittals are now in process with delivery forecasted to begin in December.
- The LAW Facility Plant Equipment reported a favorable SV because of early time-phased releases of purchase orders for stack discharge instruments and actuated butterfly valves and early delivery of melter power supply components.

For the September EVMS reporting period, a net **unfavorable** SV of approximately (\$8.6 million) was reported, primarily due to the following:

- LBL/DFLAW reported an unfavorable SV because work planned for this month was performed ahead of schedule and prior to implementation of the WTCC accounts; LBL

Engineering remains unfavorable because nuclear safety engineering resources continue to be focused on the process hazards analysis, safety strategy summary documents, and comment resolution of the draft preliminary documented safety analysis (DSA); DFLAW construction is unfavorable because a pipe rack delivery for the Effluent Management Facility (EMF) continues to be delayed.

- The PT Facility reported an overall unfavorable SV. Plant Material is unfavorable because of a delayed request for equitable adjustment from a subcontractor, the early receipt of pre-buy pipe spools from a different subcontractor, and a delay in receipt of scrapping piping materials from a third subcontractor.
- The HLW Facility reported an overall unfavorable SV. Plant Equipment is unfavorable because mitigation for mounted cranes associated with seismic overstress conditions was not completed in this month as planned.

#### **Cost Variance Summary:**

For the November EVMS reporting period, a net **favorable** CV of approximately \$5.4 million was reported, primarily due to the following:

- LBL Commissioning reported a favorable CV because current spending priorities are different than the existing plan. Revised plans are currently being developed for implementation so that commissioning activities are aligned with the available spend plan.
- LBL Startup reported a favorable CV because of efficiencies in procedure development, and level-of-effort positions not being staffed up as anticipated due to system turnovers not occurring in November as planned.
- The PT Facility reported a favorable CV because the technical teams needed less support than planned from the national laboratories after completion of pulse-jet mixer (PJM) testing. In addition, utilizing staff efficiencies in the labor mix and a procurement cost correction from PT to LBL resulted in a favorable CV.

For the October EVMS reporting period, a net **favorable** CV of approximately \$2.9 million was reported, primarily due to the following:

- LBL Construction, Startup, and Commissioning reported an unfavorable CV because of a correction needed to align construction bulk material and distributable work scope and budget to new WTCC accounts.
- LBL Engineering reported an unfavorable CV because nuclear safety engineering resources from other organizations continue to be focused on efforts to support finalization of the LAW Facility DSA. BOF reported an unfavorable CV because of greater than planned engineering support needed to resolve construction deficiency reports, nonconformance reports, and startup field reports.
- LBL Commissioning reported a favorable CV because current spending priorities are different than the existing plan. Revised plans are currently being developed for

implementation so that commissioning activities are aligned with the available spend plan.

- DFLAW Construction reported a favorable CV because work tied to hydrostatic pipe testing and steam plant modifications cost less than expected.
- The PT Facility reported a favorable CV because technical teams needed less support than planned from the national laboratories and local personnel after completion of PJM testing on the standard high-solids vessel (SHSV) design prototype.

For the September EVMS reporting period, a net **favorable** CV of approximately \$1.5 million was reported, primarily due to the following:

- Project Services reported a favorable CV because actual labor charges were less than planned for this month due to unfilled positions.
- The PT Facility reported a favorable CV because of WTCC staffing prioritization to support LBL/DFLAW activities, along with a delay of gravel upgrades at the Material Handling Facility.
- The HLW Facility reported an overall favorable CV. Procurement freight deliveries and audits cost less than planned. In addition, actual costs for construction level-of-effort field non-manual accounts and preventive maintenance activities were less than planned.

#### **WTP Project Cumulative through November 2017**

The WTP Project is behind the planned work scheduled by approximately (\$65.9 million) through November 2017, but it has cost approximately \$82.8 million less to perform the work than originally estimated. The cumulative-to-date SVs and CVs are reported against the LBL/DFLAW Performance Measurement Baseline. Please note that the HLW Facility, PT Facility, and Project Services baselines have not been updated since 2012, hence, variances are reported against the BNI work plan (also referred to as the Internal Forecast).

## Project Performance Review

As a result of the PPR, BNI is expected to complete the listed near-term actions to effect a step-wise change in the execution of the WTP Project elements needed for DFLAW. Completion of the following actions will immediately improve confidence in the timely completion of design, procurement, construction, startup, and commissioning of the WTP Facilities needed for DFLAW:

- BNI is expected to complete the LAW Facility DSA with ORP approval.
  - *BNI delivered the 85 percent draft of the LAW Facility DSA on January 29, 2018, to ORP for review.*
- BNI is expected to complete design of the LAW Facility.
  - *BNI completed and froze the design of the LAW Facility.*
- BNI is expected to complete and freeze design of the BOF.
  - *BNI completed the requirements verification matrices and development of all BOF system draft test matrices. BNI completed and froze the design for BOF.*
- BNI is expected to complete and freeze design of the LAB.
  - *BNI completed the requirements verification matrices and development of all LAB system test matrices. BNI completed and froze the design for LAB.*
- BNI is expected to award LAW Facility programmable protection system hardware and software procurements.
  - *BNI awarded the LAW Facility programmable protection system software (December) and hardware (January) procurements.*
- BNI is expected to restructure its procurement processes to improve efficiency in support of startup and commissioning.
  - *BNI completed its plan to restructure its procurement processes to improve efficiency in support of startup and commissioning.*
- BNI is expected to complete an implementation plan to transition its engineering resources to field operations.
  - *BNI completed an implementation plan to transition its engineering resources to field operations.*
- BNI and ORP are expected to evaluate the efficacy of the One System organization with WRPS and achieve efficiencies in management and interface control processes.
  - *BNI and ORP completed evaluation of the efficacy of the One System organization with WRPS with the goal to achieve efficiencies in management and interface control processes.*

- BNI is expected to develop a plan to optimize the permitting approach for EMF.
  - *BNI and ORP have continued ongoing discussions with Ecology to optimize the permitting process. Ecology has issued several temporary authorizations. BNI has submitted several EMF equipment package permit modifications for review.*
- BNI is expected to reduce project services and facility services infrastructure to achieve a more efficient skill mix.
  - *BNI completed the first phase of its plan to reduce project services and facility services infrastructure to achieve a more efficient skill mix.*
- BNI is expected to accelerate its identification of equipment affected by aging and obsolescence.
  - *BNI is expected to implement its plan to accelerate identification of equipment affected by aging and obsolescence by the end of February 2018.*
- BNI is expected to resolve and close all “low-significance” and “find and fix” level C condition reports to eliminate the backlog of these condition reports.
  - *BNI is expected to resolve and close all “low-significance” and “find and fix” level C condition reports to eliminate the backlog of these condition reports by the end of April 2018.*
- BNI is expected to develop a strategy to complete an operational readiness review prior to the start of cold commissioning.
  - *BNI is expected to begin evaluating a strategy to complete an operational readiness review prior to the start of cold commissioning.*
- BNI is expected to streamline WTP baseline change management processes (i.e., frequency and efficiency) to achieve baseline execution objectives.
  - *BNI is expected to streamline WTP baseline change management processes (i.e., frequency and efficiency) to achieve baseline execution objectives.*

## **Pretreatment Facility**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Wahed Abdul

The PT Facility will separate radioactive tank waste into HLW and LAW fractions, and transfer each waste type to the respective vitrification facility for immobilization. As of September 2012, the PT Facility was 56 percent complete overall, with engineering design 85 percent complete, procurement 56 percent complete, construction 43 percent complete, and startup and commissioning 3 percent complete. The physical percent complete analysis for the PT Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

ORP and BNI continue to work on resolving the remaining technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees<sup>3</sup>, which includes,<sup>4</sup> “Ensuring Control of the Pulse Jet Mixers” (i.e., T4 in relation to PJM vessel mixing and control); “Protecting Against Possible Erosion and Corrosion” (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels); and “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process off-gas treatment).

Work is also being performed to evaluate the facility design using the SHSV test design prototype (i.e., T6 in relation to design redundancy and in-service inspection) and to evaluate vessel and equipment structural integrity (i.e., T7 in relation to seismic ground motion criteria changes around 2005).

ORP and BNI completed final stage testing of the PJM SHSV design to replace a number of vessel designs in the PT Facility to resolve concerns over PJM vessel mixing and control (i.e., T4). A prototype of the 16-foot-diameter SHSV was commissioned in December 2016. Testing results will provide the required design and operations information to support PT Facility design. Full-scale PJM controls testing was completed in April 2017. Final mixing testing was completed in September 2017. This testing substantiated PJM control parameters and the control approach to be used for the qualification of the design for the SHSV.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

### **Accomplishments During the Reporting Period**

- In November, BNI completed engineering study 24590-PTF-ES-ENG-17-001, *PT Facility Standard High-Solids Vessel Concept Design Alternative Study*, documenting

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<sup>3</sup> *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) (ECF-221).

<sup>4</sup> At the outset of U.S. Department of Energy’s identification of the technical issues, the issues were grouped into eight issues. During the litigation, some issues were combined with others into five groups of issues. Consequently, the descriptions of the issues listed above may be both different by number and somewhat different by description.

SHSV conceptual design functions and requirements that will provide support for resolving issues related to design redundancy and in-service inspection (i.e., T6).

- In November, BNI completed engineering study 24590-PTF-ES-ENG-16-002, *Evaluation of SHSV Concept Design Alternative on PT Facility PVP-PVV System*. The document provides technical support for a determination that the PT Facility vessel vent process system can support normal and post-design basis event operations of the SHSV concept design alternative (i.e., T8).
- In November, ORP issued letter 17-CPM-0168 REISSUE, “Reissue Contract No. DE-AC27-01RV14136 – Request Information for a Potential Option to Place the High-Level Waste and Pretreatment Facilities in an Asset Preservation and Maintenance State.” The letter informed BNI that ORP is considering keeping the HLW and PT facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The letter listed a number of activities BNI would be expected to undertake if the HLW and PT facilities were kept in preservation mode. ORP requested BNI provide information about contractual actions, which would be required in order for BNI to implement this option.
- In December 2017, BNI issued letter CCN: 301986, “BNI Response to ORP Request for Information for a Potential Option to Place the High-Level Waste Facility and the Pretreatment Facility in an Asset Preservation and Maintenance State.” BNI responded to ORP letter 17-CPM-0168 REISSUE and provided recommendations for potential actions and contract modifications required in the event ORP directs BNI to keep the HLW and PT facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The recommendations included adding the preservation and maintenance scope to the WTP contract, revising certain contract provisions, and completing the technical decision resolution and other work required for conditional release of the PT Facility and completing active procurements for the PT and HLW Facilities.
- Final stage testing of the PJM system to verify mixing parameters applicable to PT Facility vessels with high-solids concentrations and non-Newtonian slurries is complete. Data analysis from the PJM mixing systems testing of the SHSV design prototype, along with confirmation of instrument calibration, is underway. Preliminary test results indicate the mixing system performed better than expected.

#### **Accomplishments Expected in the Next Reporting Period**

- During the second quarter of FY 2018, BNI is expected to complete data analysis and documentation for the recently completed full-scale PJM mixing systems testing of the SHSV design prototype.
- ORP has asked the U.S. Army Corps of Engineers (USACE) to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain HLW- and PT-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus on the

completion of DFLAW commissioning. DOE has tried on two previous occasions, the initial contract in 2000 at an estimated contract cost to \$4 billion and again in 2009 when the contract was increased to \$12.3 billion, to pursue the design, construction and commissioning of three nuclear process buildings which are one of a kind facilities. DOE has not been able to achieve this. Thus, in DOE's *Hanford Tank Waste Retrieval, Treatment, and Disposition Framework*, September 24, 2013, the DOE proposed to pursue DFLAW in an effort to focus on achieving commissioning of the first process building (Low Activity Waste Facility).

- ORP entered into Interagency Agreement 89304018SEM000002/P00001 with the USACE on January 16, 2018, to perform this assessment; work commenced on February 21, 2018.
- As noted above, ORP and BNI continue to work on resolving the remaining technical issues described as: T4, T5, T6, T7 and T8. Resolution of the remaining technical issues, with notification to the Defense Nuclear Facilities Safety Board, is expected in the May/June 2018 timeframe.
- BNI is expected to issue the methodology for the vessel structural integrity verification.
- BNI is expected to issue an update to the localized corrosion test basis document.
- In mid-November 2017, DOE directed BNI to create a study of the necessary elements of any continued preservation and maintenance plan for the PT and HLW Facilities. BNI issued study *Evaluation of Potential Continued Preservation and Maintenance, and Restart of Facilities*, on February 13, 2018.
- As previously reported, BNI will continue to focus on ongoing facility preservation and preventative maintenance to protect equipment and structures, and ensure that design documents are maintained.
- A workshop is being planned for March 2018 to strategize and develop options regarding the PT Facility.

#### **Issues Encountered During the Reporting Period**

- The PT Facility will continue to be maintained in preservation mode while the emphasis is placed on DFLAW/LBL activities. This has resulted in limited work on technical issue resolution related to erosion/corrosion in piping and vessels and progression of the conceptual design incorporating the SHSV test design prototype due to reduced resources. It is essential to make substantial progress to achieve operations on DFLAW/LBL (the first of the process buildings) while considering to maintain HLW and PT facilities in preservation mode for another 3 to 5 years. This will allow DOE to focus efforts on completing and commissioning the LAW Facility with a DFLAW configuration.
  - *Impact:* Delay in completing PT Facility redesign activities. ORP is analyzing the impacts of this delay and other factors on its ability to achieve Amended Consent Decree milestones for the PT Facility.

- *Actions initiated or taken to address potential project schedule slippage:* ORP is analyzing the impacts of delayed resolution of technical issues and necessary funding on the WTP Project. During the next reporting period, ORP expects to receive additional analyses from the USACE on the option of keeping the HLW and PT facilities in preservation mode. A workshop is being planned for March 2018 to strategize and develop options regarding the PT Facility.

### **Issues Expected in the Next Reporting Period**

- The PT Facility will continue to be maintained in preservation mode while the emphasis is placed on DFLAW/LBL. Congress provided funding to DOE and other federal agencies during the reporting period through several continuing resolutions. In FY 2016, Congress appropriated \$690 million for the WTP; it appropriated \$690 million for the WTP in FY 2017. In FY 2018, funding for the WTP is currently subject to a Continuing Resolution that maintains funding to the level appropriated in FY 2017. Work is continuing on technical issue resolution related to erosion/corrosion in piping and vessels and progression of the conceptual design incorporating the SHSV test design prototype at a slower pace due to the reduced resources.
  - *Impact:* The PT Facility redesign is likely to continue to be delayed. ORP is analyzing the impacts of this delay and other factors on its ability to achieve Amended Consent Decree milestones for the PT Facility.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP is analyzing the impacts of delayed resolution of technical issues and necessary funding on the WTP Project. During the next reporting period, ORP expects to receive from the USACE (noted above) an initial parametric analysis of certain options and funding scenarios evaluating the likelihood of achieving certain HLW- and PT-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning. A workshop is being planned for March 2018 to strategize and develop options regarding the PT Facility.

### **Status of Outstanding WTP Technical Issues**

ORP has determined the nuclear safety technical issues, “Preventing Potential Hydrogen Build-Up” (i.e., T1 and T3) and “Preventing Criticality” (i.e., T2) have been sufficiently resolved to allow engineering to proceed in support of design and safety basis development. Work will continue on resolving remaining technical issues, “Ensuring Control of the Pulse Jet Mixers” (i.e., T4), “Protecting against Possible Erosion and Corrosion” (i.e., T5), and “Ensuring Ventilation Balancing” (i.e., T8).

ORP worked with BNI to develop closure packages for each technical issue, defining work scope, required deliverables, and technical issue closure criteria. The status of each of the five

technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees is provided below:

- ***Preventing Potential Hydrogen Build-Up:***
  - *Issue:* This issue encompasses two separate but related hydrogen risks:
    - Risk of combustion in vessel headspace due to hydrogen accumulation (i.e., T1)
    - Risk of hydrogen in piping and ancillary vessels that could lead to a hydrogen deflagration or detonation in a piping system (i.e., T3).
  - *Status:*
    - Hydrogen in Vessels – As noted in previous quarterly reports, this technical issue has been sufficiently resolved to allow engineering to proceed in support of design and safety basis development.
    - Hydrogen in Piping and Ancillary Vessels – As noted in previous quarterly reports, this technical issue has been sufficiently resolved to allow engineering to proceed in support of design and safety basis development.
- ***Preventing Criticality:***
  - *Issue:* A total of 16 Hanford waste tanks may contain plutonium particles of the size and density that makes them prone to settling in a WTP process vessel into a configuration that could result in an inadvertent criticality event (i.e., T2).
  - *Status:* As noted in previous quarterly reports, this technical issue has been sufficiently resolved to allow engineering to proceed in support of design and safety basis development.
- ***Ensuring Control of the PJMs:***
  - *Issue:* Concern with adequacy of PJMs and PJM controls to adequately mix high-solids slurries in PT Facility process vessels (i.e., T4 [“Ensuring Control of the Pulse Jet Mixers”]).
  - *Status:*
    - As noted in previous reports, BNI is conducting a test program to demonstrate the ability of PJM vessels to adequately mix high-solids slurries in the PT Facility. Results from the first and second phase of PJM control system testing were previously provided. The final phase of PJM control system testing is complete with data analysis and instrument calibration confirmation planned for completion over the next few months.
    - ORP and BNI identified a proposed PJM mixing SHSV design to replace a number of vessel designs in the PT Facility. A prototype of the 16-foot-diameter SHSV design was commissioned for the final stage of PJM control system testing to support resolution of PJM mixing and control issues applicable to vessels with high-solids concentrations and non-Newtonian slurries. The testing demonstrated the required PJM control parameters and control approach to be used during the qualification of the design for the SHSV implementation. PJM controls testing

was completed in April 2017. Mixing testing was completed in September 2017. Data analysis, along with confirmation of instrument calibration from the PJM mixing systems testing, is ongoing. The results from the final stage testing are expected to provide the required design and operations information to perform PT Facility design.

- ***Protecting against Possible Erosion and Corrosion:***

- *Issue:* Uncertainties exist in waste feed characteristics and the ability to meet a 40-year service life; requiring confirmation of the erosion/corrosion design basis, including margin, through testing and analysis (i.e., T5).
- *Status:*
  - A testing program to provide the technical information to underpin the design basis for erosion and corrosion is being implemented.
  - A WTP basis of design change notice establishing the erosion/corrosion basis of design parameters has been issued.
  - A pipe loop test platform to evaluate wear in piping is complete and the test plan is in final development. Additional assessments are being made to determine how much of this testing is required.
  - Laboratory scale corrosion testing to assess localized corrosion material degradation mechanisms continues. This testing involves immersion of small metal samples in fluids representing anticipated WTP chemistries. Material degradation mechanisms being evaluated include pitting, crevice cracking, and stress cracking.
  - Test platform shakedown of bench scale jet impingement test equipment apparatus continues. This test platform will be used to evaluate erosion wear from the impinging PJM jets in process vessels.
  - A multi-mineral synergistic test simulant is being developed for the erosion testing. Selection and qualification of the simulant minerals is in progress.

- ***Ventilation System:***

- *Issue:* There are multiple technical challenges associated with the PT Facility ventilation system, including cascading airflows from lower to higher contaminated areas and performance of high-efficiency particulate air (HEPA) filters (i.e., T8).
- *Status:*
  - Resolution of this technical issue requires completing engineering/nuclear safety assessments to ensure the PT Facility ventilation system meets performance requirements, which will be initiated once the PJM testing and its ventilation demands are finalized.
  - Testing of HEPA filters to ensure filters can withstand environmental conditions and loading during normal and off-normal operating conditions is complete. HEPA filter design and qualification testing have been performed and reported under the HLW Facility project. Several filter designs were under consideration

for testing and qualification. One of the filter designs has successfully completed Nuclear Quality Assurance-1 qualification testing at Mississippi State University for all WTP normal and abnormal conditions. Based on the successful filter design bounding all WTP normal and abnormal conditions, it was concluded that alternative filter designs and testing were not required. The final test report was issued in September 2017.

## **High-Level Waste Facility**

***Federal Project Director:*** Bill Hamel

***Facility Federal Project Director:*** Wahed Abdul

The HLW Facility will receive the separated high-level waste concentrate from the PT Facility. This concentrate will be blended with glass formers, converted into molten glass in one of the two HLW Facility melters, and then poured into cylindrical stainless steel canisters. After cooling, the canisters will be sealed and decontaminated before shipping to interim storage.

As of September 2012, the HLW Facility was 62 percent complete overall, engineering design was 89 percent complete, procurement was 81 percent complete, construction was 43 percent complete, and startup and commissioning was 4 percent complete. The physical percent complete analysis for the HLW Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

Work on the HLW Facility is performed in accordance with the FY 2017 through FY 2021 Interim Work Plan. Through FY 2017, BNI was working under a limited construction and procurement authorization, and BNI's efforts were focused on completing activities required to resume full-production engineering, procurement, and construction of the HLW Facility (i.e., DOE Decision 2A, "Authorization to Resume HLW Procurement and Construction"). To support the DOE Decision 2A objective, BNI submitted a facility completion plan identifying the strategy for obtaining full-production authorization, which was approved by ORP.

As previously reported, BNI provided the final Design and Operability Disposition Report to ORP, summarizing the path forward to resolve design and operability issues. ORP reviewed all disposition planned actions for adequacy. Based on completion of the Design and Operability Disposition Report, BNI notified ORP it had completed the required criteria for DOE Decision 2A pending ORP approval of the updated HLW Preliminary DSA to align facility design with the nuclear safety basis. This was a primary focus of the ORP-chartered Safety Basis Review Team in FY 2017.

Upon resolution of all comments from the Safety Basis Review Team, ORP approved Rev. 7 of the updated HLW Facility Preliminary DSA and issued a letter to BNI indicating DOE Decision 2A criteria for authorization to resume HLW Facility procurement and construction activities have been met. Due to the prioritization of DFLAW/LBL activities, resources are not currently available to perform this work.

All testing at Mississippi State University of the redesigned HEPA filter for the safe-change and remote-change housings was completed successfully.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

### Accomplishments During the Reporting Period

- In November, ORP issued letter 17-CPM-0168 REISSUE. The letter informed BNI that DOE is considering keeping the HLW and PT facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The letter listed a number of activities BNI would be expected to undertake if the HLW and PT facilities were kept in preservation mode. ORP requested BNI provide information about contractual actions, which would be required in order for BNI to implement this option.
- In December 2017, BNI issued letter CCN: 301986. BNI responded to ORP letter 17-CPM-0168 REISSUE and provided recommendations for potential actions and contract modifications required in the event ORP directs BNI to keep the HLW and PT facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The recommendations included adding the preservation and maintenance scope to the WTP contract, revising certain contract provisions, and completing the technical decision resolution and other work required for conditional release of the PT Facility and completing active procurements for the PT and HLW Facilities.
- BNI is continuing to design the remaining portions of the radioactive liquid waste disposal system.
- BNI is continuing fabrication of RLD-7 and RLD-8 vessels. These vessels are located in the wet process cell and must be installed prior to concrete slab placement, which will support roof installation and building enclosure.

### Accomplishments Expected in the Next Reporting Period

- ORP has asked the USACE to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain HLW- and PT-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus efforts on the completion of DFLAW commissioning. DOE has tried on two previous occasions, the initial contract in 2000 at an estimated contract cost of \$4 billion and again in 2009 when the contract was increased to \$12.3 billion, to pursue the design, construction and commissioning of three nuclear process buildings which are one of a kind facilities. DOE has not been able to achieve this. Thus, in DOE's *Hanford Tank Waste Retrieval, Treatment, and Disposition Framework*, September 24, 2013, the DOE proposed to pursue DFLAW in an effort to focus on achieving commissioning of the first process building (Low Activity Waste Facility).
- ORP entered into Interagency Agreement 89304018SEM000002/P00001 with the USACE on January 16, 2018, to perform this assessment; work commenced on February 21, 2018.
- ORP will continue discussions with DOE Office of Environmental Management staff about the direction to provide BNI regarding engineering, procurement, and construction activities for the HLW Facility.

- BNI will continue to update its long-range planning documents to support a future rebaseline effort as resources become available.
- In mid-November 2017, DOE directed BNI to create a study of the necessary elements of any continued preservation and maintenance plan for the PT and HLW Facilities. BNI issued study *Evaluation of Potential Continued Preservation and Maintenance, and Restart of Facilities*, on February 13, 2018.
- As previously reported, BNI will continue to focus on ongoing facility preservation and preventative maintenance to protect equipment and structures, and ensure that design documents are maintained.

### Issues Encountered During the Reporting Period

- The HLW Facility will continue to be maintained in a preservation mode while the emphasis is placed on DFLAW/LBL activities. This has resulted in limited engineering assets to perform production work and has resulted in construction curtailment. Reprioritizing work activities impacted design and construction such that installation of roofing and siding on the facility is not expected in the near term. It is essential to make substantial progress to achieve operations on DFLAW/LBL (the first of the process buildings) while continuing to maintain HLW and PT facilities in preservation mode for another 3 to 5 years. This will allow DOE to focus efforts on completing and commissioning the LAW Facility with a DFLAW configuration.
  - *Impact:* Delay in completing HLW Facility redesign activities. ORP is analyzing the impacts of this delay and other factors on its ability to achieve Amended Consent Decree milestones for the HLW Facility.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP is analyzing the impacts of delayed resolution of technical issues and necessary funding on the WTP Project. During the next reporting period, ORP expects to receive additional analyses from the USACE on the option of keeping HLW and PT facilities in preservation mode. A workshop is being planned for March 2018 to strategize and develop options regarding the HLW Facility.

### Issues Expected in the Next Reporting Period

- The HLW Facility will continue to be maintained in a preservation mode while the emphasis is placed on DFLAW/LBL activities. Congress provided funding to DOE and other federal agencies during the reporting period through several continuing resolutions. In FY 2016, Congress appropriated \$690 million for the WTP; it appropriated \$690 million for the WTP in FY 2017. In FY 2018, funding for the WTP is currently subject to a Continuing Resolution that maintains the funding to the level appropriated in FY 2017.
  - *Impact:* The HLW Facility redesign is likely to continue to be delayed. ORP is analyzing the impacts of this delay and other factors on its ability to achieve Amended Consent Decree milestones for the HLW Facility.

- *Actions initiated or taken to address potential project schedule slippage:* ORP is analyzing the impacts of delayed resolution of technical issues and necessary funding on the WTP Project. During the next reporting period, ORP expects to receive from the USACE (noted above) an initial parametric analysis of certain options and funding scenarios evaluating the likelihood of achieving certain HLW- and PT-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning. A workshop is being planned for March 2018 to strategize and develop options regarding the HLW Facility.

## **Low-Activity Waste Facility<sup>5</sup>**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Wahed Abdul

The LAW Facility will process concentrated low-activity waste, which will be mixed with silica and other glass-forming materials. The mixture will be fed into the LAW Facility's two melters at a design capacity of 30 metric tons per day, heated to 2,100°F, and vitrified into glass. The 300-ton melters are approximately 20 feet by 30 feet and 16-feet high. The glass mixture will then be poured into stainless steel containers, which are 4-feet in diameter, 7-feet tall, and weigh more than 7 tons. These containers are anticipated to be disposed of on the Hanford Site in the Integrated Disposal Facility.

As of November 2017, the LAW Facility was 66 percent complete overall, engineering design was 87 percent complete, procurement was 79 percent complete, construction was 89 percent complete, and startup and commissioning was 14 percent complete.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

### **Accomplishments During the Reporting Period**

- The concern with BNI's commercial grade dedication program noted in previous reports is still in progress.
- In late October, BNI submitted corrective documentation for completion of contractual interim Milestone A-4, "LBL Construction Complete Performance Based Incentive Fee, Complete LAW Bulk Cable, El +48," which was approved by ORP in mid-December, ahead of the mid-February 2018 contract date.
  - (Note: El +48 equals greater than the 48-foot elevation.)
- BNI completed the draft of all the chapters, as well as the technical safety requirements, for the LAW Facility DSA.
- BNI issued the material requisition request for quotes for LAW Facility programmable protection system hardware and software procurements.
- BNI Construction turned the following LAW Facility systems over to the Startup organization:
  - Plant service air system.
  - Process service water system.
  - Direct current electrical system.

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<sup>5</sup> Information about the related Low-Activity Waste Pretreatment System is included in the monthly reports submitted under the *Hanford Federal Facility Agreement and Consent Order* (also known as the Tri-Party Agreement or TPA).

- BNI completed 90 percent design reviews of the primary and secondary off-gas systems.
- BNI completed the requirements verification matrix for the following systems:
  - Programmable protection system.
  - Demineralized water system.
  - Domestic potable water system.
  - Glass formers reagent system.
- BNI installed direct current electrical system batteries on El +03.
  - (Note: El +3 equals greater than the 3-foot elevation.)
- BNI installed the LAW Facility melter feed process cooling jackets on El +03.
- BNI completed ventilation system for potential contamination zone 3 (C3V) hydro testing.
- BNI completed discharge chamber vent piping on melter No. 1 and melter No. 2.
- BNI completed initial, 8-week system walkdown for plant service water system.
- BNI completed final, 3-week system walkdowns for the following:
  - Nonradioactive liquid waste disposal system.
  - Low-voltage electrical system.
  - C1V-L-01 and C1V-L-02 ventilation system.
- BNI completed installation of flexible hoses for the cooling jackets for LAW Facility melter feed and feed preparation process vessels.
- BNI started assembly of the truck bay canopy steel.
- BNI completed installation of the LAW Facility secondary off-gas/vessel vent process system preheaters, El +48.

#### **Accomplishments Expected in the Next Reporting Period**

- BNI is expected to complete the LAW Facility DSA and submit it to ORP for approval.
- BNI is expected to complete and freeze design of the LAW Facility.
- BNI is expected to award the LAW Facility programmable protection system hardware and software procurements.
- BNI is expected to develop a strategy to complete an operational readiness review prior to the start of cold commissioning.
- BNI is expected to complete installation of remaining melter system support equipment for melter No. 1 and melter No. 2.
- BNI is expected to continue work on installation of seismic restraint assemblies for melter No. 1 and melter No. 2.
- BNI is expected to complete installation of the seismic conduit supports on additional equipment.

- BNI is expected to continue work on glass pour seal head assembly for melter No. 1.
- BNI is expected to perform initial system walkdowns for the following:
  - Demineralized water system.
  - Uninterruptible power electrical system.
  - Chilled water system.
  - Plant service air system.
  - Instrument air system.
- BNI is expected to install primary off-gas spool fittings (Hiltap fittings).

#### **Issues Encountered During the Reporting Period**

- As noted previously in this report, performance issues discussed during the PPR resulted in a number of actions identified to improve project performance.
- *Actions initiated or taken to address potential project schedule slippage:* BNI is to reevaluate/optimize the LBL/DFLAW completion schedule to build a high confidence schedule that accelerates DSA approval, construction, startup, and commissioning to achieve glass by December 2021 (see ORP letter 17-WTP-0208 REISSUE), with a contractual deadline of January 2022. The Amended Consent Decree milestone date for LAW Facility Hot Commissioning Complete is December 31, 2023.

#### **Issues Expected in the Next Reporting Period**

As noted above, BNI will be providing the optimized LBL/DFLAW completion schedule. BNI's initial review shows its completion schedule is beyond the contract date, which BNI is working to improve. The effect of this action is not anticipated at this time to affect DOE's ability to achieve Amended Consent Decree milestones.

## **Balance of Facilities**

***Federal Project Director:*** Bill Hamel

***Facility Federal Project Director:*** Jason Young

BOF will provide services and utilities to support operation of the main production facilities: PT, HLW, LAW, and LAB. As of November 2017, BOF was 71 percent complete overall, engineering design was 91 percent complete, procurement was 84 percent complete, construction was 91 percent complete, and startup and commissioning was 34 percent complete. Design of the EMF was 75 percent complete.

BNI Engineering has completed the requirements verification matrix and developed the draft test matrix for each BOF system. This completes and freezes the design for BOF. Upcoming engineering efforts will continue to focus on completing the design of EMF, supporting the EMF dangerous waste permit, supporting EMF procurement activities, and providing field support for BOF startup activities. Construction efforts are focused on formwork and rebar installation to support placement of the EMF second lift walls, and installation of secondary steel to support continued topping slab placement. Startup testing continues for systems in the cooling tower facility, water treatment facility, and chiller compressor plant.

The BOF are designed to support operation of the entire WTP, and construction is complete for the majority of BOF systems. To improve operational flexibility and support WTP operations in a DFLAW configuration, additional construction and facility modifications are required. Operational flexibility improvements to the BOF include:

- Design and construction of an EMF to concentrate effluents from the LAW Facility, allow transfer of secondary effluent stream to the Liquid Effluent Retention Facility/Effluent Treatment Facility, and provide a low point drain for potential contaminated systems during DFLAW operations.
- Addition of a fourth rotary screw air compressor to the chiller compressor plant and piping reconfigurations to optimize operations at a reduced facility output level.
- Modifications to steam plant piping and equipment to optimize operations at a reduced facility output level.
- Construction of a fenced area to separate the portion of WTP actively operating in a DFLAW configuration from construction activities for the HLW and PT facilities.
- Improved isolation capabilities for BOF systems to maintain safe control and isolation within the DFLAW operations area.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

### **Accomplishments During the Reporting Period**

- BNI completed the requirements verification matrices and development of all BOF system draft test matrices. This completes and freezes the design for BOF.
- BNI completed placement of the EMF first-lift walls.
- BNI completed placement of the rebar curtains for the EMF second-lift walls.
- BNI initiated placement of the EMF topping slab.
- Fabrication of the low-point drain tank is in progress at Greenberry Industrial in Vancouver, Washington.
- BNI continued functional testing of the water treatment facility potable water, process service water, and deionized water systems.
- BNI successfully completed high-speed and low-speed testing for all cooling tower fans.
- BNI completed installation of medium-voltage motor-starter kits for the cooling towers.
- BNI submitted the EMF equipment package No. 2 permit modification to Ecology for informal review.
- BNI initiated placement of EMF low-point drain walls.
- ORP has submitted the formal EMF equipment package No. 1 permit modification to Ecology.
- BNI continued installation of ring beams and secondary steel to support topping slab placement in EMF.

### **Accomplishments Expected in the Next Reporting Period**

- BNI is expected to complete placement of the EMF topping slab.
- BNI is expected to place the second level of walls at EMF.
- BNI is expected to complete balancing of the cathodic protection system.

### **Issues Encountered During the Reporting Period**

- As previously reported, BNI is experiencing delays in the system startup and testing program due to equipment installation issues, equipment aging and obsolescence, and because it has taken more time than anticipated to establish support contracts to assist with equipment evaluation and refurbishment activities.
  - *Impact:* Delayed equipment repair and testing of interdependent BOF systems create a cascading effect impacting testing in other facilities in BOF. However, the effect of the delays in the project schedule are not anticipated to affect DOE's ability to achieve Amended Consent Decree milestones for the LAW Facility at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - Additional system walkdowns are being performed to facilitate early identification of issues.

- Test procedure preparation is being prioritized by BNI Engineering to support reviews and approval in advance of system testing.
- BNI is working proactively with vendors to establish support contracts to inspect and refurbish equipment as needed.
- Continued delays during BOF system completion and turnover to startup, as described below, are impacting the project schedule.
  - *Impact:* Delayed BOF system completion and turnover to startup are extending the construction schedule and narrowing the available periods for startup testing. However, the effect of the delays in the project schedule are not anticipated to affect DOE's ability to achieve Amended Consent Decree milestones for the LAW Facility at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - BNI is conducting weekly management meetings to evaluate system completion against the schedule and emphasize the need for system punch list completion.
    - Production meetings are focused on completion of outstanding work items.
    - The startup testing organization introduced additional rigor into system reviews prior to turnover.

#### **Issues Expected in the Next Reporting Period**

- As previously reported, BNI is expecting delays in the system startup program due to aging and obsolescence of existing equipment and to resource availability. In general, startup activities are linked: when one activity is delayed, it creates a waterfall effect. Delays in system turnovers and the startup testing process will continue to challenge the project schedule.
  - *Impact:* Delayed testing of interdependent BOF systems creates a cascading effect impacting testing in other facilities in BOF. However, the effect of the delays in the project schedule are not anticipated to affect DOE's ability to achieve Amended Consent Decree milestones for the LAW Facility at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - Production meetings will continue to focus on completion of outstanding work items.
    - The startup testing organization will continue to provide additional rigor into system reviews prior to turnover.
    - Additional system walkdowns will continue to be performed to facilitate early identification of issues.
    - Test procedure preparation will continue to be prioritized by BNI Engineering to support reviews and approval in advance of system testing.
    - BNI will continue to work proactively with vendors to establish support contracts to inspect and refurbish equipment as needed.

## **Analytical Laboratory**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Jason Young

The LAB will support WTP operations by analyzing feed, vitrified waste, and effluent streams. As of November 2017, the LAB was 69 percent complete overall, engineering design was 88 percent complete, procurement was 88 percent complete, construction was 97 percent complete, and startup and commissioning was 23 percent complete.

During this reporting period, engineering efforts were focused on the completion of all requirements verification matrices and the development of system test matrices. These two activities are the key requirements for completing the design freeze for LAB systems. Startup efforts were focused on completion of the initial walkdowns for all LAB systems to support a turnover to startup testing. Contracting activities to support the lease of an offsite laboratory facility to be used for development of laboratory methods and training have been completed, and personnel and equipment will begin moving into the facility.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

### **Accomplishments During the Reporting Period**

- BNI completed the requirements verification matrices and development of all LAB system test matrices. This completes and freezes the design for LAB.
- BNI has completed the initial walkdowns for all LAB systems to support punch list development and scheduling for system turnover to startup.
- BNI completed contracting activities for the temporary offsite laboratory lease in support of the development of laboratory methods and training activities.
- BNI completed turnover of the low-voltage electrical system to the Startup organization.
- BNI continued monitoring systems from the test engineer's workstation in support of turnover and testing activities by the Startup organization.
- BNI continued work in progress to install a replacement air-conditioning condenser to support the test engineer's work station.
- BNI completed final wall and floor coatings.

### **Accomplishments Expected in the Next Reporting Period**

- As a result of completing contracting activities noted above, BNI is expected to occupy temporary laboratory space so that development of laboratory methods and training can occur earlier than initially planned to ensure laboratory staff are ready at the start of commissioning.
- BNI is expected to install a toxicity refrigerant monitor needed for beneficial occupancy.

- BNI is expected to complete 90 percent design review of ventilation systems (C1V, C2V, C3V, and C5V).

**Issues Encountered During the Reporting Period**

- None encountered.

**Issues Expected in the Next Reporting Period**

- None expected.

## Written Directives for WTP

Written directives given by DOE to the WTP contractor from October 1, 2017, through February 16, 2018, for work required by the Consent Decrees.

Eighteen letters of direction were issued to BNI during the reporting period in reference to Contract No. DE-AC27-01RV14136. The letters are listed below and copies are attached:

- 17-CPM-0154, “Modification No. 407, Incremental Funding,” dated October 10, 2017
- 17-NSD-0037, “Bechtel National, Inc. Early Limited Procurement and Upgrading of Existing Structures, Systems, and Components in Support of Direct Feed Low-Activity Waste,” dated October 18, 2017
- 17-WTP-0195, “Direct Feed Low-Activity Waste Project Schedule Impacts Due to Effluent Management Facility Permitting Delays,” dated October 18, 2017
- 17-CPM-0163, “Request for Signature – Contract Modification No. 408,” dated October 26, 2017
- 17-WTP-0208 REISSUE, “Programmatic Actions Needed to Ensure Certainty of Completion of Waste Treatment and Immobilization Plant Facilities Needed for Direct-Feed Low-Activity Waste,” dated October 31, 2017
- 17-CPM-0168 REISSUE, “Request Information for a Potential Option to Place the High-Level Waste and Pretreatment Facilities in an Asset Preservation and Maintenance State,” dated November 1, 2017
- 17-NSD-0040, “Approval of the Bechtel National, Inc. Request to Revise the Hazard Categorization of the Low-Activity Waste Facility,” dated November 2, 2017
- 17-NSD-0044, “Bechtel National, Inc. Authorization for Design Changes Impacting the Low-Activity Waste Facility Preliminary Documented Safety Analysis,” dated November 20, 2017
- 17-WTP-0224, “Approval of Completion of Activity Milestone Low-Activity Waste A-4, Complete LAW Bulk Cable EL +48,” dated December 13, 2017
- 17-WTP-0226, “Update to Direction and Schedule for Completing the Low Activity Waste Facility Documented Safety Analysis,” dated December 14, 2017
- 17-WTP-0234, “Contract Deliverable 1.13 – Low-Activity Waste Construction Complete Inclusion/Exclusion List of Activities for Determination of Milestone,” dated January 5, 2018
- 18-CPM-0002, “Modification No. 414, Incremental Funding,” dated January 8, 2018
- 18-CPM-0003, “Response to Bechtel National, Inc.’s Letter to the U.S. Department of Energy, Office of River Protection Regarding Performing Subcontractor Incurred Cost Audits, and Direction to Perform,” dated January 11, 2018
- 18-CPM-0004, “Transmittal of Contract Modification No. 415, Parking Lot Items and Notice to Proceed,” dated January 16, 2018

- 18-WTP-0002, “The U.S. Department of Energy, Office of River Protection Concurrence on the Engineering Re-draft Study for the Low-Activity Waste Carbon Dioxide Gas System Sloped Pad,” dated January 22, 2018
- 18-WTP-0013, “Bechtel National, Inc. Submittal of Update to Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory Physical Plant Complete Milestone Definition Clarification Document,” dated January 31, 2018
- 18-CPM-0006, “Modification No. 416, Incremental Funding,” dated January 31, 2018
- 18-CPM-0017, “Modification No. 418, Incremental Funding,” dated February 16, 2018.

#### **Other Enclosures Relating to WTP**

- Interagency Agreement 89304018SEM000002/P00001 between the U.S. Army Corps of Engineers and U.S. Department of Energy, Office of River Protection, and Statement of Work (Attachment 2), effective January 16, 2018.
- Evaluation of Potential Continued Preservation and Maintenance, and Restart of Facilities, on February 13, 2018.

Enclosure

(73 Pages Excluding Cover Sheet)

Written Directives from October 1, 2017, through December 31, 2017,  
and Other Enclosures Relating to WTP



OFFICE OF RIVER PROTECTION  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

OCT 04 2017

17-TF-0085

Ms. Katie A. Downing, Contracts Manager  
Washington River Protection Solutions, LLC  
2425 Stevens Center Place  
Richland, Washington 99354

Ms. Downing:

CONTRACT NUMBER DE-AC27-08RV14800 – U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION REQUEST FOR DESIGN DESCRIPTION AND TOTAL PROJECT COST ESTIMATE TO IMPLEMENT AN OPTIMIZED LOW-ACTIVITY WASTE PRETREATMENT SYSTEM DESIGN STRATEGY

Reference: ORP letter from W. E. Hader to K. A. Downing, WRPS, "Washington River Protection Solutions LLC – Conduct External Review on Low-Activity Waste Pretreatment System, September 25-28, 2017," 17-CPM-0145, dated September 18, 2017.

The purpose of this letter is to request an updated Low-Activity Waste Pretreatment System (LAWPS) design description and total project cost estimate to implement an optimized design strategy identified during the LAWPS Expert Review Team meetings, conducted from September 25-28, 2017.

During the LAWPS Expert Review Team meetings, Washington River Protection Solutions LLC (WRPS) assisted the team in meeting the objectives in the referenced letter to evaluate LAWPS requirements, capabilities, cost and schedule risks, and alternative strategies – with the intent to provide timely, cost-effective low-activity waste (LAW) feed to the Waste Treatment and Immobilization Plant LAW vitrification facility. WRPS developed an optimized LAWPS design strategy that could result in significant cost savings while preserving LAWPS feed delivery capabilities.

WRPS is directed to develop a system specification for an optimized LAWPS design strategy – for both elutable and non-elutable ion exchange options – with corresponding detail to the current LAWPS System Specification, RPP-SPEC-56967, to enable direction to a design agent. WRPS is also directed to develop a new Class 4 total project cost and schedule estimate for the optimized LAWPS design strategy, in accordance with Cost Estimating Guide, DOE G 413.3-21, using an expected accuracy range of -30% to +50%. The updated LAWPS system specification and corresponding total project cost and schedule estimate shall be delivered to the U.S. Department of Energy, Office of River Protection no later than November 15, 2017.

OCT 04 2017

Ms. Katie A. Downing  
17-TF-0085

-2-

This letter is not considered to constitute a change to the contract. In the event the Contractor disagrees with this interpretation, it must immediately notify the Contracting Officer orally, and otherwise comply with the requirements of the Contract Clause entitled 52.243-7, "Notification of Changes."

If you have any questions, please contact me at (509) 376-2760, or your staff may contact Stephen H. Pfaff, LAWPS Federal Project Director, (509) 376-2188.



Marc T. McCusker  
Contracting Officer

TF:SHP

cc: C.A. Burke, WRPS  
S.M. Sax, WRPS  
C.A. Simpson, WRPS  
WRPS Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**OCT 04 2017**

17-TF-0088

Ms. Katie A. Downing, Contracts Manager  
Washington River Protection Solutions, LLC  
2425 Stevens Center Place  
Richland, Washington 99354

Ms. Downing:

**CONTRACT NUMBER DE-AC27-08RV14800 – U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION REQUEST FOR PROPOSAL FOR A TECHNOLOGY DEMONSTRATION OF A TANK-SIDE CESIUM REMOVAL CAPABILITY**

Reference: ORP letter from W.E. Hader to K.A. Downing, WRPS, "Washington River Protection Solutions LLC – Conduct External Review on Low-Activity Waste Pretreatment System, September 25-28, 2017," 17-CPM-0145, dated September 18, 2017.

The purpose of this letter is to request a contract change proposal for development of a technology demonstration of a tank-side cesium removal capability to provide low-activity waste (LAW) feed that meets the waste acceptance criteria for the Waste Treatment and Immobilization Plant (WTP) LAW vitrification facility, and of sufficient quantity to enable the WTP LAW vitrification facility to complete hot commissioning by December 2021, and to enable initial plant operations until the Low-Activity Waste Pretreatment System (LAWPS) becomes operational.

During the LAWPS Expert Review Team meetings, conducted September 25-28, 2017, Washington River Protection Solutions LLC (WRPS) assisted the team in meeting the objectives in the referenced letter to evaluate LAWPS requirements, capabilities, cost and schedule risks, and alternative strategies—with the intent to provide timely, cost-effective LAW feed to the WTP LAW vitrification facility. The LAWPS Expert Review Team considered information from the ongoing design and fabrication of a technology demonstration for the Savannah River Site—called the Tank Closure Cesium Removal capability. This technology demonstration provides relevant information to WRPS to fulfill this request for a contract change proposal.

WRPS is directed to transmit more detailed scope descriptions for all the activities to be described in the contract change proposal as soon as practicable to facilitate improved delivery timing for the independent government cost estimates.

WRPS shall submit the contract change proposal in accordance with Federal Acquisition Regulation (FAR) 15.408, Table 15-2, "Instructions for Submitting Cost/Price Proposals When

OCT 04 2017

Ms. Katie A. Downing  
17-TF-0088

-2-

Certified Cost or Pricing Data are Required." WRPS shall ensure that certified cost and pricing data submitted meets the definition in FAR 2.101, "Definitions." The proposal shall provide adequate information to show clear entitlement to any adjustment in contract price.

The contract change proposal shall be delivered to the U.S. Department of Energy, Office of River Protection no later than ninety (90) calendar days following receipt of this letter.

A Not-To-Exceed amount of \$6M will be issued under a separate contract modification.

If you have any questions, please contact me (509) 376-2760; or your staff may contact Stephen H. Pfaff, LAWPS Federal Project Director, (509) 376-2188.

  
Marc T. McCusker  
Contracting Officer

TF:SHP

cc: C.A. Burke, WRPS  
S.M. Sax, WRPS  
C.A. Simpson, WRPS  
WRPS Correspondence



**OFFICE OF RIVER PROTECTION**  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**NOV 02 2017**

17-TF-0101

Ms. Katie A. Downing, Contracts Manager  
Washington River Protection Solutions LLC  
2425 Stevens Center Place  
Richland, Washington 99354

Ms. Downing:

**CONTRACT NO. DE-AC27-08RV14800 – THE U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION REQUEST FOR PROPOSAL FOR THE BALANCE OF PLANT WORKSCOPE TO OPERATE THE TANK-SIDE CESIUM REMOVAL TECHNICAL DEMONSTRATION**

The purpose of this letter is to request Washington River Protection Solutions LLC (WRPS) to submit a contract change proposal for activities to support the tank-side Cesium removal (TSCR) capability technology demonstration. The activities to support the operations of the TSCR capability technology demonstration include:

- Procurement and installation of balance of plant equipment/materials at Tank AP-107 (e.g., pump, power upgrades, concrete pads, hose-in-hose transfer lines, jumpers, valves, support systems and infrastructure, etc.);
- Procurement and installation of hose-in-hose transfer line from TSCR to Tank AP-106;
- Repurposing Tank AP-106 to receive treated waste (e.g., transfers, sampling, caustic additions, evaporator campaigns and filtration, etc.);
- Installation, construction acceptance testing, start-up testing, and commissioning of TSCR; and
- Development of operations and maintenance procedures and training; and possible expansion of AP Farm.

Certified cost or pricing data shall be provided through Fiscal Year 2021.

WRPS is directed to transmit more detailed scope descriptions for all of the activities to be described in the contract change proposal as soon as practicable to facilitate improved delivery timing for the independent government cost estimates.

WRPS shall submit the contract change proposal in accordance with Federal Acquisition Regulation (FAR) 15.408, Table 15-2, "Instructions for Submitting Cost/Price Proposals When Certified Cost or Pricing Data are Required." WRPS shall ensure that certified cost and pricing data submitted meets the definition in FAR 2.101, "Definitions." The proposal shall provide adequate information to show clear entitlement to any adjustment in contract price.

NOV 02 2017

Ms. Katie A. Downing  
17-TF-0101

-2-

The contract change proposal shall be delivered to the U.S. Department of Energy, Office of River Protection no later than 120 calendar days following receipt of this letter. A not-to-exceed amount (NTE) of \$5M is authorized upon receipt of this letter of direction. A contract modification for the \$5M NTE will be prepared and submitted to WRPS at a later date.

If you have any questions please contact me at (509) 376-3388; or your staff may contact Jeremy Johnson at (509) 376-1866.



Wade E. Hader  
Contracting Officer

TF:DMS

Attachment

cc w/attach:  
J.E. Geary, WRPS  
D. Scott, WRPS  
G.T. Wright, WRPS  
WRPS Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**NOV 02 2017**

17-TF-0102

Ms. Katie A. Downing, Contracts Manager  
Washington River Protection Solutions LLC  
2425 Stevens Center Place  
Richland, Washington 99354

Ms. Downing:

**CONTRACT NUMBER DE-AC27-08RV14800 – U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION CONCURRENCE WITH DEFERRAL OF SY EXHAUSTER UPGRADES SCOPE**

Reference: WRPS letter from K.A. Downing to W.E. Hader, ORP, "Washington River Protection Solutions LLC Response to Letter of Direction for a Request for Proposal for a Technology Demonstration of a Tank-Side Cesium Removal Capability," WRPS-1704227 R1, October 26, 2017.

The purpose of this letter is to concur with the Washington River Protection Solutions LLC recommendation to defer all of the scope currently residing in Fiscal Year 2018 for Control Account, "5.1.4.1.60 – SY Exhauster Upgrades," to provide the initial funds necessary to complete the Technology Demonstration of a Tank-Side Cesium Removal Capability.

If you have any questions, please contact me at (509) 376-3388; or your staff may contact Sahid C. Smith, at (509) 376-5512.

A handwritten signature in blue ink that reads "Wade E. Hader".

Wade E. Hader  
Contracting Officer

TF:SCS

cc: See page 2

NOV 02 2017

Ms. Katie A. Downing  
17-TF-0102

-2-

cc: A.D. Basche, WRPS  
P.K. Brockman, WRPS  
D. Chandler, WRPS  
J.F. Corrado, WRPS  
T.L. Farber, WRPS  
R.E. Gregory, WRPS  
M.A. Lindholm, WRPS  
J.A. Reno, WRPS  
R.J. Sams, WRPS  
J.M. Shelt, WRPS  
C.A. Simpson, WRPS  
K.E. Smith, WRPS  
B.R. Thomas, WRPS  
J.S. Van Meighem, WRPS  
WRPS Correspondance



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**NOV 16 2017**

17-TF-0096

Ms. Katie A. Downing, Contracts Manager  
Washington River Protection Solutions LLC  
2425 Stevens Center Place  
Richland, Washington 99354

Ms. Downing:

**CONTRACT NUMBER DE-AC27-08RV14800 – U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION, DIRECTION TO SUSPEND SELECTED LOW-ACTIVITY WASTE PRETREATMENT SYSTEM DESIGN AND TESTING ACTIVITIES**

- References:
1. DOE memorandum from J.M. Owendoff to M.D. Bellon, Washington State Department of Ecology, dated September 20, 2017.
  2. WRPS letter from K.A. Downing, to W.E. Hader, ORP, "Washington River Protection Solutions LLC Submits Recommendations from External Expert Review on Low-Activity Waste Pretreatment System," WRPS-1704216 R1, dated October 23, 2017.

The purpose of this letter is to direct Washington River Protection Solutions LLC (WRPS) to take appropriate actions on selected Low-Activity Waste Pretreatment System (LAWPS) design and testing activities during re-planning of the LAWPS specifications and design path forward. This letter requests a contract change proposal for a simplified LAWPS facility in accordance with options discussed during planning sessions between WRPS and the U.S. Department of Energy. This direction will increase confidence to provide timely feed as part of Direct Feed of Low Activity Waste implementing recommendations from the LAWPS External Expert Review, conducted from September 25 to 28, 2017.

In a meeting on November 8, 2017, as well as in Reference 1, the Department of Energy has discussed these recommendations with the Washington State Department of Ecology.

In Reference 2, WRPS provided the final report from the LAWPS External Expert Review where the team endorsed an alternative approach using a two-phased pretreatment strategy involving a complementary "first feed" pretreatment technique to achieve the December 2021 contractual date, and a simplified LAWPS facility as a necessary long-term pretreatment capital asset for production of low-activity waste vitrification feed. That "first feed" technique would be a tank-side cesium removal capability that could be deployed quickly, similar to the Tank Closure Cesium Removal System that has been fabricated and will be deployed at the Savannah River Site in the near future.

Ms. Katie A. Downing  
17-TF-0096

-2-

Based on several project-level planning sessions at the U.S. Department of Energy, Office of River Protection (ORP) and WRPS, ORP understands that WRPS will de-scope the following items from its contract with the LAWPS Project design agent:

- Primary Pretreatment System design.
  - Ion Exchange Column design.
  - Crossflow Filtration design.
- Reagent System design.
- Ventilation System design.
- Solid Waste System design.
- Balance of Facilities design.
- Engineering-Scale testing of crossflow filtration.
- Design team project management and support.

WRPS will de-scope or terminate the following additional subcontracts:

- Seismic testing of LAWPS jumpers and valves.
- Independent Qualified Registered Professional Engineer design assessment.
- Flammable gas hazard analysis for LAWPS vessels.
- Specialty process valves design.
- LAWPS tanks design.

WRPS will cancel the following procurement actions that have not yet resulted in contract award or notice to proceed:

- Filter feed tank submersible pump fabrication (part of crossflow filtration system).
- Site preparation (was timed for award following Critical Decision – 3A approval).

The above list of impacts is not intended to be mandatory or limiting. ORP understands WRPS will evaluate each contract action to promote most efficient use of design resources with the swiftest return to full-design activities following re-planning of the LAWPS Project.

In addition to the above listed items, discussions with your staff have revealed further opportunities. The concepts presented may result in:

- Lower cost and reduced schedule estimates with increased confidence of timely delivery.
- Opportunity to build storage pad at new LAWPS site location which significantly simplifies transportation of spent IX columns.

WRPS is directed to transmit more detailed scope descriptions for all activities to be described in the contract change proposal and a Class 4 total project cost and schedule as soon as practicable to facilitate improved delivery timing for the independent government cost estimates.

NOV 16 2017

Ms. Katie A. Downing  
17-TF-0096

-3-

WRPS shall submit the contract change proposal in accordance with federal Acquisition Regulation (FAR) 15.408, Table 15-2, "Instructions for Submitting Cost/Price Proposals When Certified Cost or Pricing Data are Required." WRPS shall ensure that certified cost and pricing data submitted meets the definition in FAR 2.101, "Definitions." The proposal shall provide adequate information to show clear entitlement to any adjustments in contract price.

The contract change proposal shall be delivered to the U.S. Department of Energy, Office of River Protection no later than ninety (90) calendar days following receipt of this letter.

A Not-To-Exceed amount of \$9M will be issued under a separate contract modification.

Additionally, WRPS is directed to provide recommendations to ORP for appropriate ramp-down and transition from the existing LAWPS Project scope of work to the further optimized concepts as soon as practicable.

If you have any questions, please contact me at (509) 376-3388; or your staff may contact Stephen H. Pfaff, LAWPS Federal Project Director, at (509) 376-2188.

  
Wade E. Hader  
Contracting Officer

TF:JAD

cc: C.A. Burke, WRPS  
M.A. Lindholm, WRPS  
S.M. Sax, WRPS  
C.A. Simpson, WRPS  
WRPS Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**DEC 21 2017**

17-TF-0121

Ms. Katie A. Downing, Contracts Manager  
Washington River Protection Solutions LLC  
2425 Stevens Center Place  
Richland, Washington 99354

Ms. Downing:

**CONTRACT NUMBER DE-AC27-08RV14800 – U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION CONCURRENCE ON RECOMMENDATION FOR SIMPLIFIED LOW-ACTIVITY WASTE PRETREATMENT SYSTEM DESIGN PATH FORWARD**

Reference: WRPS letter from K.A. Downing to W.E. Hader, ORP, "Washington River Protection Solutions LLC – Recommendation for Optimized Low-Activity Waste Pretreatment System and Detailed Scope Descriptions," WRPS-1705256 R1, dated December 5, 2017.

The purpose of this letter is to provide the U.S. Department of Energy, Office of River Protection concurrence on the Washington River Protection Solution LLC's (WRPS) recommendation to proceed with option 4 for the simplified Low-Activity Waste Pretreatment System (LAWPS) design path forward. This will facilitate the WRPS delivery of the forthcoming contract change proposal for the simplified LAWPS, by March 2, 2018.

If you have any questions, please contact me at (509) 376-3388, or your staff may contact Stephen H. Pfaff, LAWPS Federal Project Director at (509) 376-2188.

A handwritten signature in blue ink that reads "Wade E. Hader".

Wade E. Hader  
Contracting Officer

TF:SHP

cc: C.A. Burke, WRPS  
S.M. Sax, WRPS  
C.A. Simpson, WRPS  
WRPS Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**OCT 10 2017**

17-CPM-0154

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – MODIFICATION NO. 407, INCREMENTAL FUNDING

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$121,000,000.00. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in cursive script that reads "Katie Mair".

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**OCT 18 2017**

17-NSD-0037

Ms. K.D. Irwin  
Project Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Ms. Irwin:

**CONTRACT NO. DE-AC27-01RV14136 – BECHTEL NATIONAL, INC. EARLY LIMITED PROCUREMENT AND UPGRADING OF EXISTING STRUCTURES, SYSTEMS, AND COMPONENTS IN SUPPORT OF DIRECT FEED LOW-ACTIVITY WASTE**

Reference: ORP letter from R.L. Dawson and W.F. Hamel to K.D. Irwin, BNI, "Bechtel National, Inc. Authorization for Early Limited Procurements and Upgrading of Existing Structures, Systems, and Components in Support of Direct Feed Low-Activity Waste," 17-NSD-0030, dated September 11, 2017.

The U.S. Department of Energy, Office of River Protection (ORP) hereby authorizes Bechtel National, Inc. (BNI) to perform design, procurement, construction of new safety structures, systems, and components (SSC), and upgrading of the functional classification of existing SSCs as specified in the Attachments to this letter. Attachment 1 identifies items for which design, early procurement, and construction activities are authorized. Attachment 2 identifies existing SSC items for which upgrading to safety significant using the BNI "redraft" process is authorized. Similar authorization was provided for an initial set of Safety SSCs in the Reference. Other safety SSCs which may require procurement or redraft are undergoing final review by the Safety Basis Review Team and will be addressed in future correspondence, if necessary.

The schedule for direct feed low-activity waste operations would be adversely impacted if procurement of new SSCs is delayed until the current revision to the Low-Activity Waste Preliminary Documented Safety Analysis under preparation is approved. In order to mitigate this schedule risk, ORP is authorizing these early procurements and functional classification upgrades.

The safety functions, functional requirements, and performance criteria, as currently understood, are provided for each of the components in the Attachments. The safety functions, functional requirements, and performance criteria specified in this letter are those that have been developed and provided by BNI. The draft hazard analysis basis supporting these Attachments have been reviewed by the ORP Safety Basis Review Team, which concurred with the control strategies. ORP understands these SSCs and the associated safety functions and functional requirements will be included in the forthcoming revision to the Low-Activity Waste Preliminary Documented Safety Analysis that will be reviewed for approval by ORP.

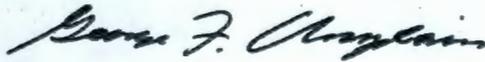
Ms. K.D. Irwin  
17-NSD-0037

-2-

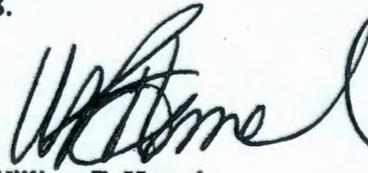
OCT 18 2017

BNI is requested to notify the ORP Nuclear Safety Division Director by letter of any proposed changes to the safety parameters documented in Attachment 1, and obtain ORP's concurrence for the proposed change prior to awarding the procurement for those components. If implementation of the new or reclassified SSCs results in a request for equitable adjustment, entitlement, and quantum will be determined at a later date.

If you have any questions, please contact either of us, or your staff may contact John P. Harris, Director, Nuclear Safety Division, (509) 376-8128.



George F. Champlain  
Contracting Officer



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

NSD:KRS

Attachments: (2)

cc w/attachs:  
R.T. Brock, BNI  
M.G. McCullough, BNI  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**OCT 18 2017**

17-WTP-0195

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – DIRECT FEED LOW-ACTIVITY WASTE  
PROJECT SCHEDULE IMPACTS DUE TO EFFLUENT MANAGEMENT FACILITY  
PERMITTING DELAYS**

- References:
1. BNI letter from L.W. Baker to R.L. Dawson, ORP, "Notification of Impacts to Effluent Management Facility Due to Ecology Permitting Schedules in Accordance with Contract Clause I.84, FAR 52.243-7, Notification of Changes," CCN: 295181, dated January 25, 2017.
  2. ORP letter from G.F. Champlain and W. F. Hamel to C.K. Binns, BNI, "Direct Feed Low-Activity Waste Project Impacts Due to Effluent Management Facility Permitting Delays," 17-WTP-0025, dated March 15, 2017.
  3. BNI letter from C.K. Binns to R.L. Dawson, ORP, "Request for Equitable Adjustment No. 2017-001, EMF Permitting Delays," CCN: 296501, dated August 22, 2017.

The U.S. Department of Energy, Office of River Protection (ORP), Waste Treatment and Immobilization Plant (WTP) Project recognizes the Direct Feed Low-Activity Waste project schedule challenges associated with the Effluent Management Facility (EMF) permitting process. ORP has consistently worked with Bechtel National, Inc. (BNI) to engage the Washington State Department of Ecology (WDOE) and help identify opportunities for potential schedule improvements. These cooperative efforts supported an accelerated approval of the EMF Secondary Containment Permit modification on September 5, 2017, ahead of the 12 month completion target of November 21, 2017.

The WDOE is an independent oversight organization representing the State of Washington. As such, they are not obligated to authorize construction activities in advance of permit authorization, or complete permit reviews within the durations specified by the WTP Contract. BNI is responsible for the permitting process as listed in the Statement of Work in Section C.3 *Interactions With the Waste Treatment and Immobilization Plant Contractor*, (f) *The Contractor shall:*, (2) (iii), and in Section C.4 *Environment, Safety, Quality, Health*, (4) *Environmental Protection*. The EMF Secondary Containment Permit package submitted by BNI for informal review to WDOE was incomplete and a significant effort was required by ORP and

WDOE to engage with BNI, and obtain the required permit information. The lack of a complete BNI permit package contributed to an extended informal review process and did not provide WDOE with the confidence needed to issue a temporary construction authorization immediately upon formal permit submittal.

On January 25, 2017, BNI notified ORP that EMF permitting delays could impact the project critical path (Reference 1). On March 15, 2017, ORP requested that BNI provide a detailed schedule analysis quantifying the impacts and accounting for any concurrent delays or delays in BNI readiness not directly attributable the permitting process (Reference 2). On August 22, 2017, Request for Equitable Adjustment (REA) No. 2017-001, "EMF Permitting Delays" was transmitted to ORP (Reference 3). However, no schedule analysis or consideration of concurrent delays were provided. ORP has reviewed the REA for EMF permitting delays and the justification provided does not support the schedule consideration requested. The REA technical justification provided bases the claim for schedule consideration on an analysis of the August 2016 WTP Schedule, but does not provide any schedule analysis to support the claim or DOE responsibility. ORP is aware of concurrent delays; however, no consideration or discussion of concurrent delays was provided. Some examples of concurrent delays include but are not limited to:

- BNI claimed construction delays due to weather impacts.
- BNI requested a Temporary Authorization effective date of March 9, 2017, when the Temporary Authorization was available on February 27, 2017.
- EMF basemat placement delayed until March 27, 2017, allowing BNI concrete crews to gain experience by placing the EMF HVAC building basemat first.

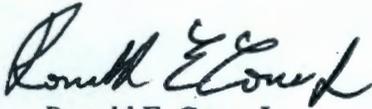
ORP is rejecting REA No. 2017-001 EMF Permitting Delays due to insufficient justification. ORP has taken a proactive approach to facilitate reduced permit activity durations and make a "best effort" in accordance with section *H.53 Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory/Direct-Feed Low-Activity Waste Completions (CLINs 1.0 AND 2.0)*, (b)(2) of the WTP Contract. BNI is responsible for the permitting process as listed in the Statement of Work and DOE cannot assume responsibility for the duration of the time period needed for BNI to receive approval from WDOE. Continued success with the EMF permitting process will be dependent on frequent communications and quality document submittals that provide WDOE with the confidence needed to authorize construction activities in advance of permit authorization. ORP will continue to make every possible effort to facilitate timely permit reviews for EMF construction authorization of discrete activities.

OCT 18 2017

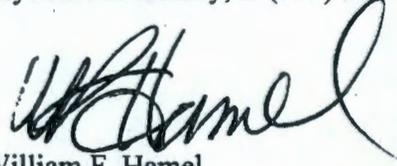
Mr. C.K. Binns  
17-WTP-0195

-3-

If you have any questions, please contact me, or your staff may contact Jason Young, Federal Project Director, Balance of Facilities and Analytical Laboratory, at (509) 376-0375.



Ronald E. Cone, Jr.  
Contracting Officer



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JDY

cc:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**OCT 26 2017**

17-CPM-0163

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – REQUEST FOR SIGNATURE - CONTRACT  
MODIFICATION NO. 408**

The purpose of this letter is to transmit the subject modification for signature. This modification revises Contract Section B, Supplies or Services and Prices/Costs, Section C, Statement of Work, Section G, Contract Administration Data, and Section J, List of Attachments. Please sign and return two (2) originals of the attached contract modification to the Contracting Officer. An executed original of the contract modification will be returned for your records once the signed originals are received.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in cursive script that reads "Katie Mair".

Katie A. Mair  
Contracting Officer

CPM: KAM

Attachment

cc w/attach:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

OCT 31 2017

17-WTP-0208  
REISSUE

Mrs. M.G. McCullough, Project Director  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mrs. McCullough:

**REISSUE – CONTRACT NO. DE-AC27-01RV14136 – PROGRAMMATIC ACTIONS  
NEEDED TO ENSURE CERTAINTY OF COMPLETION OF WASTE TREATMENT AND  
IMMOBILIZATION PLANT FACILITIES NEEDED FOR DIRECT-FEED LOW-ACTIVITY  
WASTE**

This letter is being reissued to remove the “official use only” designation and markings on this letter and its attachment.

The U.S. Department of Energy (DOE) performed a Project Performance Review (PPR) on the Waste Treatment and Immobilization Plant (WTP) Project from October 23 to 27, 2017. Subsequently, a completion optimization workshop was held from October 27 to 29, 2017, by the PPR Team along with the DOE Office of River Protection (ORP) and Bechtel National Inc. (BNI) management and corporate members to jointly identify strategies and actions to build high confidence and drive certainty to the delivery of the direct-feed low-activity waste (DFLAW) completion of hot commissioning by December 2021. The WTP Project has made sustained progress in many areas over the past year, including significant physical progress toward completing construction of the Low-Activity Waste (LAW) Facility. ORP commends BNI for their efforts in achieving the current level of DFLAW completion and looks forward to a collaborative process to meet critical mission commitments to start processing Hanford tank waste.

The PPR Team and participants in the optimization workshop identified some significant opportunities to improve our processes and more effectively advance the mission. This letter identifies the jointly agreed near-term actions BNI will complete to effect a step-change in the execution of the WTP Project elements needed for DFLAW. Completion of these actions will immediately improve confidence in the timely completion of design, procurement, construction, startup, and commissioning of the WTP facilities needed for DFLAW. These actions are considered within the scope of the contract and need to be taken to increase the certainty of completion of delivery.

DOES NOT CONTAIN  
OFFICIAL USE ONLY INFORMATION

Name/Org.: Michael O'Hagan, RL-OCC Date: 2/8/18

OCT 31 2017

Mrs. M.G. McCullough  
17-WTP-0208

-2-

BNI is to aggressively pursue and complete the following actions by the due dates indicated below:

1. Prepare and deliver a LAW documented safety analysis (DSA) on a schedule achieving ORP approval of the DSA by February 28, 2018.
2. Complete design of the LAW Facility, Balance of Facilities (BOF) and Analytical Laboratory (LAB).
  - a. Complete and freeze the LAW Facility design by November 30, 2017. BNI will work jointly with ORP to establish the criteria and required actions to declare the LAW Facility design complete.
  - b. Complete and freeze the BOF and LAB design by December 31, 2017.
3. Award the LAW Facility programmable protection system (PPJ) hardware and software procurements by November 30, 2017. Concurrently implement a plan and schedule to mitigate PPJ procurement impacts on the project critical path schedule by December 31, 2017.
4. Streamline WTP baseline change management processes to achieve the baseline execution objectives outlined in the completion optimization workshop. BNI is encouraged to examine the application of the Bechtel Corporate Earned Value Management System (EVMS) while meeting DOE EVMS requirements. BNI should develop the revised approach and deliver a recommendation to the WTP Federal Project Director (FPD) by November 17, 2017.
5. By January 31, 2018, develop a strategy to complete an operational readiness review (ORR) prior to the start of cold commissioning.
6. Reduce the project services and facility services infrastructure to achieve a more efficient project execution posture and skill mix needed for successful project delivery. BNI is requested to brief the FPD by November 20, 2017, with target efficiency (i.e., percentage reduction) goals and obtain concurrence by January 31, 2018.
7. Restructure BNI's procurement processes by January 19, 2018, to provide flexibility needed to support transition to startup and commissioning.
8. Provide an implementation plan to transition engineering resources to field organizations by November 30, 2017.
9. Develop a white paper outlining proposed process changes to optimize Effluent Management Facility permitting. Provide the whitepaper to ORP by November 2, 2017.
10. Resolve and close all "low-significance" and "find and fix" level C condition reports by January 31, 2018. The streamlined process for closure of the low-significance issues shall ensure project quality and safety requirements are met using a defensible risk-based approach.

OCT 31 2017

11. Evaluate the efficacy of the One System organization with WRPS and BNI, and achieve significant efficiencies in One System management and interface control processes by November 20, 2017. BNI should benchmark against similar processes used at the Savannah River Site to determine efficiencies.
12. Accelerate identification of equipment affected by aging and obsolescence and the associated plan to mitigate impacts to the DFLAW cost and schedule baseline by November 30, 2017.

ORP will suspend scheduled ORP surveillances, assessments, and audits for 90 days to allow accomplishment of the above programmatic changes. However, day-to-day ORP oversight will continue.

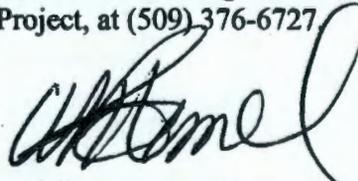
BNI shall evaluate the impact of the above actions on the fiscal year 2018 spend plan and brief ORP by December 15, 2017.

A detailed list of the actions and commitments agreed upon at the joint workshop of the PPR Team, ORP, and BNI is attached for reference.

Please direct any questions to William Hamel, Assistant Manager and Federal Project Director, Waste Treatment and Immobilization Plant Project, at (509) 376-6727.



George F. Champlain  
Contracting Officer



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:WA

Attachment

cc w/attach:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

NOV 01 2017

17-CPM-0168  
REISSUE

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**REISSUE CONTRACT NO. DE-AC27-01RV14136 – REQUEST INFORMATION FOR A POTENTIAL OPTION TO PLACE THE HIGH-LEVEL WASTE AND PRETREATMENT FACILITIES IN AN ASSET PRESERVATION AND MAINTENANCE STATE**

This letter is being reissued to remove the “official use only” markings and replace with “does not contain official use only information” marking on the front page.

The purpose of this letter is to inform Bechtel National Inc. (BNI) that the U.S. Department of Energy (DOE) Office of Environmental Management is considering potential options for the Waste Treatment and Immobilization Plant (WTP) project. Note at this time communications between the Office of River Protection (ORP) and Bechtel National, Inc. (BNI) on this subject are to be handled and labeled as Official Use Only (Deliberative Process Privilege/Pre-decisional).

A potential option is to place the High-Level Waste (HLW) and Pretreatment (PT) facilities in an asset preservation and maintenance state for a period of three to five years to allow BNI to focus its attention on completing and commissioning the Low-Activity Waste (LAW) with direct-feed LAW configuration.

If the HLW and PT facilities are placed in an asset preservation and maintenance state, BNI would be directed to suspend performance of design and construction of these facilities, and perform limited actions required for asset preservation and maintenance that includes:

- a) Maintain completed and in-process design, procurement and construction records and documentation for recoverability to re-start of design, procurement, construction and commissioning.

DOES NOT CONTAIN  
OFFICIAL USE ONLY INFORMATION

Name/Org.: Marc McCusker, ORP-CPM Date: 1/29/18

Mr. C.K. Binns  
17-CPM-0168  
REISSUE

-2-

NOV 01 2017

- b) Monitor and take actions to care, protect and maintain constructed facility structures and installed equipment from degradation.
- c) Maintain adequate storage of procured equipment and components.
- d) Evaluate ongoing procurements and take cost-effective actions for completion, suspension, or termination.

In order to fully understand what contractual actions (including specific changes to the current contract) would be required by BNI to fully implement this option, it is requested that BNI submit a description of those actions to the Contracting Officer within 15 days of receipt of this letter. It is also requested that if BNI has any proposed changes to the activities listed above regarding asset preservation and maintenance that they also be included in its response to the Contracting Officer.

If you have any questions regarding this matter, please contact myself at (509) 376-6678; or Mr. Wahed Abdul, Federal Project Director for PT and HLW Facilities, at (509) 438-0455.



George F. Champlain  
Contracting Officer

CPM:MTM

cc:  
R.P. Detwiler, RL-OCC  
M.D. O'Hagan, RL-OCC  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**NOV 02 2017**

17-NSD-0040

Mrs. M.G. McCullough, Project Director  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mrs. McCullough:

**CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF THE BECHTEL NATIONAL, INC. REQUEST TO REVISE THE HAZARD CATEGORIZATION OF THE LOW-ACTIVITY WASTE FACILITY**

Reference: BNI letter from M.G. McCullough to B.J. Harp, ORP, "Submittal for Approval - Hazard Categorization of the Low-Activity Waste (LAW) Facility,"  
CCN: 298896, dated November 1, 2017.

The U.S. Department of Energy, Office of River Protection (ORP) approves the hazard categorization of the Low-Activity Waste Facility as a Hazard Category 3 facility as requested by the Reference. The ORP basis for approval is documented in the attached safety evaluation report.

ORP's review and approval of the revised categorization includes a directed change:

Bechtel National, Inc., shall execute page changes to the affected portions of the existing LAW Preliminary Documented Safety Analysis to identify the LAW Facility as a Hazard Category 3 facility and reference the revised calculation (24590-LAW-ZOC-U10T-00001, *Final Hazard Categorization for LAW, Rev.0C*) as the technical basis.

The directed change to the safety basis shall be incorporated within 60 days of the date on this ORP approval letter.

The action taken herein is considered to be within the scope of work of the existing contract and does not authorize the Contractor to incur any additional costs (either direct or indirect) or delay delivery to the Government. If the Contractor considers that carrying out this action will increase contract/project costs or delay of delivery, the Contractor shall promptly notify the Contracting Officer orally, confirming and explaining the notification in writing within ten (10) calendar days, and otherwise comply with the requirements of the Contract clause 1.84 FAR 52.243-7, -- "Notification of Changes (APR 1984)." Following submission of the written notice of impacts, the Contractor shall await further direction from the Contracting Officer.

Mrs. M.G. McCullough  
17-NSD-0040

-2-

NOV 02 2017

If you have any questions, please contact John P. Harris, Director, Nuclear Safety Division,  
(509) 376-8128.



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant



Ben J. Harp  
Acting Manager

NSD:KRS

Attachment

cc w/attach:

P.K. Fox, DNFSB  
D.M. Gutowski, DNFSB  
C.K. Binns, BNI  
A.J. Dobson, BNI  
J.H. Dunkirk, BNI  
M.W. Frei, BNI  
L.L. Fritz, BNI  
R.S. Hajner, BNI  
K.D. Irwin, BNI  
J.D. Norwood, BNI  
B.D. Ponte, BNI  
L.M. Weir, BNI  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**NOV 20 2017**

17-NSD-0044

Ms. K.D, Irwin  
Project Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Ms. Irwin:

**CONTRACT NO. DE-AC27-01RV14136 – BECHTEL NATIONAL, INC. AUTHORIZATION  
FOR DESIGN CHANGES IMPACTING THE LOW-ACTIVITY WASTE FACILITY  
PRELIMINARY DOCUMENTED SAFETY ANALYSIS**

The U.S. Department of Energy, Office of River Protection (ORP) hereby authorizes Bechtel National, Inc. (BNI) to modify Low-Activity Waste (LAW) Facility design as specified in the Attachment to this letter.

BNI is in the process of both finalizing the design and developing the safety basis for the LAW Facility. As part of this effort, ORP and BNI working jointly have identified three changes to the current design (attached) that impact the LAW Facility Preliminary Documented Safety Analysis that must be made in order to finalize the LAW Facility design and enable procurement and construction to occur in a timely manner.

The draft LAW process hazard analysis PrHA engineering study (24590-LAW-ES-NS-17-004) supporting the Attachment has been reviewed by the ORP Safety Basis Review Team, which concurred with the control strategies. ORP understands these structures, systems, and components and the associated safety functions and functional requirements will be included in the forthcoming LAW Facility safety basis that will be reviewed for approval by ORP, and these changes represent an authorized deviation from the LAW Preliminary Documented Safety Analysis. The schedule for direct feed low-activity waste operations would be adversely impacted if these design changes are delayed until this LAW Facility safety basis is approved. In order to mitigate this schedule risk, ORP is authorizing the design changes identified in the Attachment.

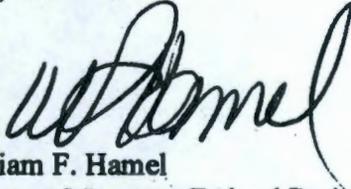
BNI is requested to notify the ORP Nuclear Safety Division Director by letter of any further additional changes to the design changes documented in the Attachment and obtain ORP's concurrence for the proposed change prior to implementing these design changes. If implementation of the new or reclassified structures, systems, and components results in a request for equitable adjustment, entitlement and quantum will be determined at a later date.

Ms. K.D. Irwin  
17-NSD-0044

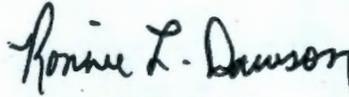
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NOV 20 2017

If you have any questions, please contact John P. Harris, Director, Nuclear Safety Division,  
(509) 376-8128



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant



Ronnie L. Dawson  
Contracting Officer

NSD KRS

Attachment

cc w/attach:

R.T. Brock, BNI

D.E. Kammenzind, BNI

M.G. McCullough, BNI

BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**DEC 13 2017**

17-WTP-0224

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF COMPLETION OF ACTIVITY MILESTONE LOW-ACTIVITY WASTE A-4, COMPLETE LAW BULK CABLE EL +48**

Reference: BNI letter from C.K. Binns to R.L. Dawson, ORP, "Notification of Completion of Activity Milestone LAW A-4, *Complete LAW Bulk Cable El +48*,"  
CCN: 295773, dated October 25, 2017.

On October 25, 2017, Bechtel National, Inc. (BNI) notified the U.S. Department of Energy, Office of River Protection (ORP), via the Reference, that Activity Milestone A-4, *Complete LAW Bulk Cable El +48*, had been completed. ORP has reviewed the information provided and concurs that BNI has completed Activity Milestone A-4.

ORP approves completion of the milestone and authorizes BNI to invoice for the milestone completion value of \$4,275,000 minus provisional fee payments made to date. For tracking purposes, it is requested that a separate invoice be submitted for this milestone.

If you have any questions, please contact George F. Champlain, Contracting Officer, (509) 376-6678 or William F. Hamel, Federal Project Director (509) 376-6727.

Handwritten signature of George F. Champlain in black ink.

George F. Champlain  
Contracting Officer

Handwritten signature of William F. Hamel in black ink.

William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JMB

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**DEC 14 2017**

17-WTP-0226

Mrs. M.G. McCullough, Project Director  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mrs. McCullough:

**CONTRACT NO. DE-AC27-01RV14136 – UPDATE TO DIRECTION AND SCHEDULE FOR COMPLETING THE LOW ACTIVITY WASTE FACILITY DOCUMENTED SAFETY ANALYSIS**

Reference: ORP letter from G.F. Champlain and W.F. Hamel to M.G. McCullough, BNI, "Programmatic Actions Needed to Ensure Certainty of Completion of Waste Treatment and Immobilization Plant Facilities Needed for Direct-Feed Low Activity Waste," 17-WTP-0208, dated October 31, 2017.

In the Reference, the U.S. Department of Energy, Office of River Protection (ORP) provided direction on a number of programmatic actions aimed at increasing confidence in the delivery of the direct-feed low activity waste (DFLAW) operational capability by December 31, 2021. The programmatic actions, resulting from a joint ORP/Bechtel National, Inc. (BNI) completion optimization workshop held from October 27-29, 2017, included attaining ORP approval of the Low-Activity Waste (LAW) Facility documented safety analysis (DSA) by February 28, 2018.

During the Week of December 4, 2017, ORP and BNI held a workshop to assess opportunities for optimizing the technical safety requirements (TSR) associated with the LAW DSA. Initiatives to optimize the TSRs were prioritized based on benefit of implementing the initiatives in the current DSA development effort. In order to accomplish the optimization initiatives that were agreed to have tangible benefit to the current DSA development, the schedule for ORP approval of the DSA is extended from February 28, 2018, to March 30, 2018.

If you have any questions, please contact John P. Harris, Director, Nuclear Safety Division at (509) 376-8128; or Jeff Bruggeman, LAW Federal Project Director, at (509) 438-0444.

George F. Champlain  
Contracting Officer

William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JST

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JAN - 5 2018**

17-WTP-0234

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – CONTRACT DELIVERABLE 1.13 – LOW-  
ACTIVITY WASTE CONSTRUCTION COMPLETE INCLUSION/EXCLUSION LIST OF  
ACTIVITIES FOR DETERMINATION OF MILESTONE**

Reference: BNI letter from C.K. Binns to W.F. Hamel, ORP, "Contract Deliverable 1.13 –  
LAW Construction Complete Inclusion/Exclusion List of Activities for  
Determination of Milestone," CCN: 302998, dated December 14, 2017.

The purpose of this letter is to respond to the Reference. In accordance with the Waste Treatment Immobilization Plant Contract Section C, Standard 1 (a) (2) (iii), and Table C.5-1.1, Deliverable 1.13, on December 14, 2017, Bechtel National, Inc. (BNI) made their quarterly submittal, to the U.S. Department of Energy, Office of River Protection (ORP), of the Low-Activity Waste (LAW) construction completion inclusion/exclusion list.

ORP approves the BNI quarterly submittal of Deliverable 1.13, the LAW construction completion inclusion/exclusion list. The list identifies: (1) all of the scheduled activities that have been completed/actualized and (2) any changes to the schedule activities that have been implemented through change control. This list remains under change control and no changes to it shall be made without ORP approval. In addition to this quarterly update, BNI provided clarifications with respect to the specific activities which are included and excluded in the definition of Milestone A-5, and information presented to ORP management on April 5, 2017. ORP concurs with the clarifications and information provided.

Mr. C.K. Binns  
17-WTP-0234

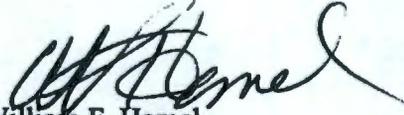
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JAN - 5 2018

If you have any questions, please contact George F. Champlain, Contracting Officer, (509) 376-6678, William F. Hamel, Federal Project Director (509) 376-6727, or your staff may contact Jeffrey M. Bruggeman, LAW Federal Project Director, (509) 438-0444.



George F. Champlain  
Contracting Officer



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JMB

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JAN 08 2018**

18-CPM-0002

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – MODIFICATION NO. 414, INCREMENTAL FUNDING

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$50,500,000.00. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in blue ink that reads "Katie Mair".

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JAN 11 2018**

18-CPM-0003

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – RESPONSE TO BECHTEL NATIONAL, INC.'S LETTER TO THE U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION REGARDING PERFORMING SUBCONTRACTOR INCURRED COST AUDITS, AND DIRECTION TO PERFORM**

- References:
1. BNI letter from C.K. Binns to R.L. Dawson, ORP, "Transmittal of Bechtel National's Subcontract Audit Plan and Reservation of Rights," CCN: 302569, dated December 5, 2017.
  2. ORP letter from G.F. Champlain to C.K. Binns, BNI, "Response to Bechtel National, Inc.'s Letter to the U.S. Department of Energy, Office of River Protection Regarding Performing Subcontractor Incurred Cost Audits, and Direction to Perform," 17-CPM-0164, dated October 31, 2017.
  3. ORP letter from M.T. McCusker to C.K. Binns, BNI, "The U.S. Department of Energy, Office of River Protection's Direction to Bechtel National Inc. on Contract Requirement to Perform Subcontractor Incurred Cost Audits," 17-CPM-0035, dated July 7, 2017.

The purpose of this letter is to notify Bechtel National, Inc. (BNI) that the U.S. Department of Energy (DOE), Office of River Protection (ORP) has reviewed BNI's Subcontract Audit Plan in Reference 1 and determined it to be unacceptable. In order for it to be determined acceptable, the following changes need to be incorporated into the Subcontract Audit Plan.

1. **Direction #1** – BNI will include a statement that specifically identifies that the Contracting Officer has ultimate disposition authority for those audits that the cognizant audit agency refuses to perform and that the disposition paths available to the Contracting Officer include: having the BNI third-party auditors perform the audit, having a DOE contracted auditing firm perform the audits, or having BNI putting them in the unaudited pool and project the error rate against the costs in the pool.

JAN 11 2018

2. **Direction #2** – In order to demonstrate independence (as identified in the Institute for Internal Auditors [IIA] Standards) for those audits being conducted by BNI, the BNI Waste Treatment and Immobilization Plant (WTP) Project Subcontract Audit Manager (i.e., WTP Project Chief Audit Executive [CAE]) must functionally report directly to the Bechtel Nuclear Security and Environmental (NS&E) Audit Committee.
3. **Direction #4** – Each audit shall explicitly identify in the audit report the standard that was used to perform the audit. Any deviation, modification, exception, or qualifier of the standard must specifically be approved by the DOE Contracting Officer. In addition, the cost for audits that do not meet IIA or Generally Accepted Government Auditing Standards (GAGAS) may be questioned and disallowed by DOE.
4. **Direction #6** – Consistent with BNI's previous proposal, perform additional testing procedures on all the subcontract reviews performed under BNI Subcontract Procurement to verify compliance with unmodified IIA or unmodified GAGAS. BNI substantially agreed to this direction. If BNI decides to perform additional testing procedures, a revised report must be issued meeting the requirements under Direction #4 above.
5. **Direction #9** – Verify and provide a statement that all subcontract audits include testing procedures to identify any instances of costs violating the Federal Acquisition Regulation and DOE cost principles to include Training on Overtime.
6. **Statute of Limitations** – In regards to when the Statute of Limitations applies to those incurred subcontractor cost submissions for which BNI failed to perform an audit, it is agreed that this will most likely have to be resolved in court. However, it is vital that BNI not allow any incurred subcontractor cost submissions exceed the Statute of Limitations. As such, within 15 business days from the date of this letter, BNI will submit to the Contracting Officer their proposed auditing schedule for those audits to be performed by BNI or its third party auditors. This auditing schedule must mitigate any incurred subcontractor cost submission to exceed the Statute of Limitations and reduce the number of outstanding audits to be performed by at least 25 percent per year.

In regards to BNI's Attachment 1, WTP Project Subcontract Audit Program – (Revised 11/29/2017) ORP does not agree with or accept as follows:

- a. Introduction reference to "new audit responsibilities" – ORP does not agree that any of BNI's audit responsibilities are new. BNI's contract from inception included subcontractor incurred cost audit requirements.
- b. Introduction "Self-performed audits conducted under the WTP Project Subcontract Audit Manager's purview maintain independence from the Procurement Organization" – it is not enough that the WTP Project Subcontract Audit Manager's purview maintain independence from the Procurement Organization. The WTP Project Subcontract Audit Manager must maintain independence from all WTP activities and departments.

JAN 11 2018

Mr. C.K. Binns  
18-CPM-0003

-3-

- c. Audit Practices, last paragraph on page 1 – the word “applicable” must be removed before IIA and GAGAS as previously discussed in ORP Direction #4 (see above).
- d. Audit Standards and Implementation, first paragraph, “in compliance with the BNI-approved purchasing system” – please clarify BNI’s intent with these words. If BNI intended to mean the third party CPA firms will be paid via invoices through BNI’s Accounts Payable process, then ORP would accept such meaning. If any other meaning, further discussion is needed.
- e. Audit Standards and Implementation, first paragraph, “applicable” – please remove.
- f. Personnel, “The WTP Subcontract Audit Manager is responsible for the direct oversight of the WTP Subcontract Audit Program, including responsibility for the technical oversight of third-party subcontractors performing subcontractor audits” – is the WTP Subcontract Audit Manager the CAE for subcontract audits? Does the CAE report to the board? See discussion in ORP Direction #2.
- g. Independence, “Self-performed audits conducted under the WTP Project Subcontract Audit Manager’s purview maintain independence from the Procurement Organization” – see comment to b. above.
- h. Quality Control and Assurance, “The WTP Project Subcontract Audit Program is subject to review by the Bechtel NS&E Internal Audit function, ...” and “WTP Project Subcontract Audit Manager will request Bechtel NS&E Internal Audit to conduct a review of the WTP Project Subcontract Audit Program at least once every three years” – the CAE is required to supervise audits for quality. The Bechtel NS&E Internal Audit Function is not fully independent or objective pursuant to IIA. IIA requires a peer review by independent auditors and one element of Bechtel reviewing another fails independent review.
- i. Audit Prioritization Considerations: Given BNI’s 16 years without subcontractor incurred cost audits, and statute of limitations issues, BNI needs to submit to the Contracting Officer an aggressive BNI audit schedule. See ORP Direction #6 regarding Statute of Limitations.
- j. Objective 1: “Establish audit organization and define the WTP Project Subcontract Audit Program, organized under the Bechtel NS&E Internal Audit Manager” – this approach is not IIA compliant see ORP Directions #2 above.
- k. Objective 3: “Low risk based subcontracts will be prioritized for audit, reviewed for eligibility for Quick Closeout (in accordance with FAR 42.708) and dispositioned in an appropriate manner.” – None of BNI’s subcontracts are deemed low risk – see ORP Direction #8 (in Reference Letter #2) regarding how to disposition subcontracts that are not audited.

Mr. C.K. Binns  
18-CPM-0003

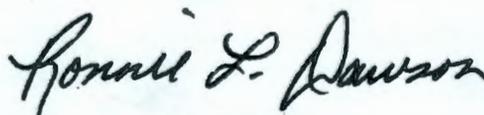
-4-

JAN 19 2018

1. Objective 3: "Report audit results to the S&P organization and coordinate any necessary adjustments" – ORP expects BNI management to provide the management response to audit reports perhaps with the help of the S&P organization. The contracting organization may not be open to reasonable disposition of audit findings based on ORP's past experience with other Hanford contractors. Should ORP not agree with the disposition of audit findings, it will look for restitution.

It is requested that BNI submit their revised Subcontract Audit Plan and WTP Project Subcontract Audit Program, which incorporate the changes identified above in this letter, by no later than January 29, 2018. Once ORP receives the revised Subcontract Audit Plan and WTP Project Subcontract Audit Program, which incorporates the changes, the Contracting Officer will allow BNI to submit an invoice for a portion of the provisional fee being withheld by DOE and stop withholding future provisional fee payments. However, DOE will still withhold some provisional fee (already withheld) until BNI successfully demonstrates that it is meeting its auditing requirements as identified in its subcontract audit schedule.

If you have questions, please contact me at (509) 372-0098.



Ronnie L. Dawson  
Contracting Officer

CPM:MTM

cc:

G.A. Jones, RL-AMB  
D.C. Kemp, RL-FIN  
L. Parker, RL-FIN  
T.L. Toon, RL-FIN  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JAN 16 2018**

18-CPM-0004

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT MODIFICATION  
NO. 415, PARKING LOT ITEMS AND NOTICE TO PROCEED**

- References:
1. BNI letter from C.K. Binns to R.L. Dawson, ORP, "ORP direction and Completion of U-14-QAD-RPPWTP-003, Commercial Grade Dedication Program, Finding F01, Immediate and Corrective Actions," CCN: 292983, dated March 15, 2017.
  2. 24590-WTP-PL-ENG-17-0005, December 13, 2017, *CGD PLI Implementation Plan*, Rev. 0, Bechtel National, Inc., Richland, Washington.

Based upon review and submittal of Reference 2, Bechtel National, Inc. (BNI) is directed to implement Parking Lot Items (PLIs) #1, 2, 7, 9, 12 and 17 of the contract located in Section J - List of Attachments, Attachment J - Advance Understandings on Costs, Subattachment C, Table 2. This change order is in response to Reference 1, and based upon joint discussions with the U.S. Department of Energy, Office of River Protection and BNI, the implementation of the selected PLIs will utilize Reference 2, 24590-WTP-PL-ENG-17-0005, *CGD Implementation Plan* (Attachment 2).

BNI is authorized to commence this work with a not-to-exceed value of \$200,000 for this change order. If you have any project-related questions, please contact William F. Hamel at (509) 438-1176. For contract-related questions, please contact me at (509) 376-5583.

Ronald E. Cone Jr.  
Contracting Officer

CPM:REC

Attachments (2)

1. Contract Modification 415
2. 24590-WTP-PL-ENG-17-0005

cc w/attachs: BNI Correspondence



**OFFICE OF RIVER PROTECTION**  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JAN 22 2018**

18-WTP-0002

Ms. K.D. Irwin  
Project Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Ms. Irwin:

CONTRACT NO. DE-AC27-01RV14136 – THE U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION CONCURRENCE ON THE ENGINEERING RE-DRAFT STUDY FOR THE LOW-ACTIVITY WASTE CARBON DIOXIDE GAS SYSTEM SLOPED PAD

Reference: BNI letter from K.D. Irwin to W.F. Hamel, ORP, "Contract No. DE-AC27-01RV14136-Transmittal of 24590-LAW-ES-ENG-17-011, Rev B, Engineering Re-Draft Study-CDG Sloped Pad," CCN: 298237, dated January 3, 2018.

This letter provides U.S. Department of Energy, Office of River Protection concurrence with the Bechtel National, Inc., study 24590-LAW-ES-ENG-17-011, Rev. B *Engineering Re-Draft Study – CDG Sloped Pad*, transmitted via the Reference.

If you have any questions, please contact George F. Champlain, Contracting Officer, (509) 376-6678, William F. Hamel, Federal Project Director (509) 376-6727, or your staff may contact Paul Hirschman, Director Waste Treatment and Immobilization Plant, Engineering Division, (509) 376-2477.

George F. Champlain  
Contracting Officer

William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JMB

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JAN 31 2018**

18-WTP-0013

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – BECHTEL NATIONAL, INC. SUBMITTAL OF  
UPDATE TO LOW-ACTIVITY WASTE FACILITY, BALANCE OF FACILITIES, AND  
ANALYTICAL LABORATORY PHYSICAL PLANT COMPLETE MILESTONE  
DEFINITION CLARIFICATION DOCUMENT

Reference: BNI letter from C.K. Binns to W.F. Hamel, ORP, "BNI Submittal to ORP of  
Update to LBL Physical Plant Complete Milestone Definition Clarification  
Document," CCN: 302821, dated January 25, 2018.

The U.S. Department of Energy, Office of River Protection concurs with the updates to the  
activities included in the definition of the milestone, as identified by revision bars in the vertical  
margin of the document transmitted via the Reference.

If you have any questions, please contact Ronald E. Cone, Contracting Officer, (509) 376-5583,  
or Bill Hamel, Federal Project Director, (509) 376-6727.

  
Ronald E. Cone  
Contracting Officer

  
Joanne F. Grindstaff  
Deputy Assistant Manager  
Deputy Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JMB

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JAN 31 2018**

18-CPM-0006

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 -MODIFICATION NO. 416, INCREMENTAL FUNDING

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$30,000,000.00. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in blue ink that reads "Katie Mair".

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**FEB 16 2018**

18-CPM-0017

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 –MODIFICATION NO. 418, INCREMENTAL FUNDING

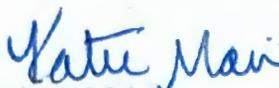
The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$67,000,000.00. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence

  
Katie A. Mair  
Contracting Officer

<b>INTERAGENCY AGREEMENT</b>		1. IAA NO. 89304018SEM000002/P00001		PAGE OF 1 8	
2. ORDER NO.		3. REQUISITION NO.		4. SOLICITATION NO.	
5. EFFECTIVE DATE See Block 26c		6. AWARD DATE 01/16/2018		7. PERIOD OF PERFORMANCE 11/29/2017 TO 11/30/2018	
8. SERVICING AGENCY ENGINEERS, U S ARMY CORPS OF ALC: DUNS: 783724743 +4: 201 North 3rd St Walla Walla WA 99362  POC MARY VAN SICKLE TELEPHONE NO. 5095277204			9. DELIVER TO		
10. REQUESTING AGENCY Office of River Protection ALC: DUNS: +4: 1000 Independence Ave., S.W. Washington DC 20585  POC TELEPHONE NO.			11. INVOICE OFFICE OR for ORP U.S. Department of Energy Oak Ridge Financial Service Center P.O. Box 6017 Oak Ridge TN 37831		
12. ISSUING OFFICE Office of River Protection U.S. Department of Energy Office of River Protection P.O. Box 450 Richland WA 99352			13. LEGISLATIVE AUTHORITY 31 U.S.C. 1535 - The Economy Act		
			14. PROJECT ID		
			15. PROJECT TITLE		
16. ACCOUNTING DATA See Schedule					
17. ITEM NO.	18. SUPPLIES/SERVICES	19. QUANTITY	20. UNIT	21. UNIT PRICE	22. AMOUNT
	The purpose of this modification is to revise Part A and the SOW per USACE and DOE.				
23. PAYMENT PROVISIONS Intra-Governmental Payment and Collection			24. TOTAL AMOUNT \$275,000.00		
25a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (SERVICING)			25a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (REQUESTING) Signature on File		
25b. NAME AND TITLE		25c. DATE	25b. CONTRACTING OFFICER Robert L. Burrier		25c. DATE 01/16/2018

<b>INTERAGENCY AGREEMENT</b>		1. IAA NO. 89304018SEM000002/P00001		PAGE OF 1 8	
2. ORDER NO.		3. REQUISITION NO.		4. SOLICITATION NO.	
5. EFFECTIVE DATE See Block 26c		6. AWARD DATE 01/11/2018		7. PERIOD OF PERFORMANCE 11/29/2017 TO 11/30/2018	
8. SERVICES AGENCY ENGINEERS, U.S. ARMY CORPS OF ALC: DUNS: 783724743 +4: 201 North 3rd St Walla Walla WA 99362  POC: MARY VAN SICKLE TELEPHONE NO. 5095277204				9. DELIVER TO	
10. REQUESTING AGENCY Office of River Protection ALC: DUNS: +4: 1000 Independence Ave., S.W. Washington DC 20585  POC TELEPHONE NO.				11. INVOICE OFFICE OR for ORP U.S. Department of Energy Oak Ridge Financial Service Center P.O. Box 6017 Oak Ridge TN 37831	
12. ISSUING OFFICE Office of River Protection U.S. Department of Energy Office of River Protection P.O. Box 450 Richland WA 99352				13. LEGISLATIVE AUTHORITY 31 U.S.C. 1535 - The Economy Act	
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				15. PROJECT TITLE	
16. ACCOUNTING DATA See Schedule					
17. ITEM NO.	18. SUPPLIES/SERVICES	19. QUANTITY	20. UNIT	21. UNIT PRICE	22. AMOUNT
	The purpose of this modification is to revise Part A and the SOW per USACE and DOE.				
23. PAYMENT PROVISIONS Intra-Governmental Payment and Collection				24. TOTAL AMOUNT \$275,000.00	
25a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (SERVICING) 				25b. SIGNATURE OF GOVERNMENT REPRESENTATIVE (REQUESTING) 	
26a. NAME AND TITLE Alan Feistner, Dep Dist Engineer for PM		26c. DATE 1/11/2018	26b. CONTRACTING OFFICER Robert L. Burrier		26d. DATE 1-16-18

Section A - General Terms and Conditions

**A.1. Purpose**

This Part of the IA (hereinafter "Part A") describes the terms and conditions that govern the provision of this interagency transaction between Department of Energy, hereinafter "the Requesting Agency" and Walla Walla - U.S. Army Corps of Engineers, hereinafter "the Servicing Agency."

No fiscal obligations are created through the execution of Part A. A fiscal obligation arises when the Requesting Agency demonstrates a bona fide need, provides the necessary requirements and funding information to the Servicing Agency and both parties execute a funding document using Part B of this IA or an alternate funding document.

**A.2. Authority**

The parties' authority to enter into this interagency agreement is:

The Economy Act (31 U.S.C. 1535)

Franchise Fund (e.g., 31 U.S.C. 501 note) or Revolving Fund (e.g., 40 U.S.C. 321)  
[Insert specific statutory authority]

Other [Insert specific statutory authority or authorities]

**A.3. Part A Identifier**

DOE-WTP COST ENGINEERING / ESTIMATING SUPPORT SERVICES

**A.4. Scope**

a. The following organizations in the Department of Energy are authorized to obtain assistance from the Servicing Agency.

DOE, ORP

b. The organizations in the Servicing Agency are authorized to provide assistance to the Department of Energy.

Walla Walla - U.S. Army Corps of Engineers

c. The following types of services or products may be acquired through this interagency transaction pursuant to this IA.

SEE ATTACHED STATEMENT OF WORK (SOW)

d. The following DOE terms, conditions, requirements or restrictions apply:

The Servicing Agency shall not incur any costs in excess of the amount of funds obligated to this IA. If the Servicing Agency is required to adjust original forecasts because actual costs exceed the amount of funds available under the MIPRs, it shall promptly notify the Requesting Agency of the amount of additional funds. The Servicing Agency shall either provide funds to the Requesting Agency or require the Scope of Work to be modified to that which can be paid for by the then-available funds, or direct termination of services.

**A.5. Period of Agreement**

The terms and conditions described in Part A of the IA become effective when signed by authorized officials of both agencies and remain effective until November 30, 2018, unless amended in accordance with Section A.11 or terminated in accordance with Section A.12.

#### **A.6. Roles & Responsibilities of Servicing Agency & Department of Energy**

The effective management and use of this interagency agreement and related actions is a shared responsibility of the Requesting Agency and the Servicing Agency. The parties hereby agree to Roles and Responsibilities provided in the attached SOW.

#### **A.7. Billing & Payment**

The Department of Energy (DOE) will pay the Servicing Agency for costs of each interagency transaction. Billings may include the amounts due under the interagency transaction identified in Part B of this IA. The DOE obligating document number should be included on all documentation related to the agreement. The DOE obligating number will serve as the common agreement number (interagency agreement (IA)).

The Department of Energy's preferred method for reimbursing the Servicing Agency is via the Intra-Governmental Payment and Collection (IPAC) System. When the reimbursement for products and/or services furnished under this agreement will be effected by means of IPAC, the Servicing Agency shall provide the Department of Energy with the appropriate instructions for transmitting the Agency Location Code (ALC), Treasury Account Symbol (TAS), Business Event Type Code (BETC), Business Partner Network (BPN) number (usually the Data Universal Numbering System (DUNS) number), Line of Accounting (LOA), points of contact, and other information identified in Part B of this IA.

If IPAC is not a satisfactory billing method, a mutually agreeable alternative should be negotiated before acceptance of this agreement and documented in Part B whether IPAC or alternative will be used.

Questions regarding payment should be directed to:

U.S. Department of Energy  
PO Box 500  
Germantown, MD 20875  
Attn: Charles Steve Trischman

Phone: 301-903-7478  
Email: [steve.trischman@em.doe.gov](mailto:steve.trischman@em.doe.gov)

Reimbursable billings are delinquent when they are 30 or more calendar days old (from date of the billing). When billings remain delinquent over 30 calendar days and the Department of Energy has not indicated a problem regarding services, the Servicing Agency may choose not to award any new contract/orders or modifications to existing contract/orders for the Requesting Agency (or the client within) and termination of existing services will be considered and negotiated with the Requesting Agency.

#### **A.8. Small Business Credit**

Any contract actions executed by the Servicing Agency on behalf of the Department of Energy will allocate the socio-economic credit to the Requesting Agency at the lowest FIPS 95-2 Agency/Bureau component as identified by the Requesting Agency. If the code is not provided, the Servicing Agency will allocate the credit to the highest Requesting Agency FIPS 95-2 Code.

#### **A.9. Contract Termination, Disputes and Protests**

If a contract or order awarded pursuant to this IA is terminated or cancelled or a dispute or protest arises from specifications, solicitation, award, performance or termination of a contract, appropriate action will be taken in accordance with the terms of the contract and applicable laws and regulations. The Department of Energy shall be responsible for all costs associated with termination, disputes, and protests, including settlement costs, except that the Department of Energy shall not be responsible to the Servicing Agency for costs associated with actions that stem from errors in performing the responsibilities assigned to the Servicing Agency. The Servicing Agency shall consult with the Department of Energy before agreeing to a settlement or payments to ensure that the Servicing Agency has adequate time in which to raise or address any fiscal or budgetary concerns arising from the proposed payment or settlement.

#### **A.10. Review of Part A**

The parties agree to review jointly the terms and conditions in Part A at least annually if the period of this agreement, as identified in Section 5, exceeds one year. Appropriate changes will be made by amendment to this agreement executed in accordance with Section A.11. The parties further agree to review performance under this IA to determine if expectations are being met and document a summary of their assessment. The responsible reviewing official at each agency shall sign and date the assessment.

**A.11. Amendments**

Any amendments to the terms and conditions in Part A shall be made in writing and signed by both the Servicing Agency and the Department of Energy.

**A.12. IA Termination**

This IA may be terminated upon thirty (30) calendar days written notice by either party. If this agreement is cancelled, any implementing contract/order may also be cancelled. If the IA is terminated, the agencies shall specify the terms of the termination, including costs attributable to each party and the disposition of awarded and pending actions.

If the Servicing Agency incurs costs due to the Department of Energy failure to give the requisite notice of its intent to terminate the IA, the Department of Energy shall pay any actual costs incurred by the Servicing Agency as a result of the delay in notification, provided such costs are directly attributable to the failure to give notice.

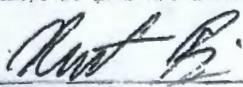
**A.13. Interpretation of IA**

If the Servicing Agency and Department of Energy are unable to agree about a material aspect of either Part A or Part B of the IA, the parties agree to engage in an effort to reach mutual agreement in the proper interpretation of this IA, including amendment of this IA, as necessary, by escalating the dispute within their respective organizations.

If a dispute related to funding remains unresolved for more than thirty (30) calendar days after the parties have engaged in an escalation of the dispute, the parties agree to refer the matter to their respective Agency Chief Financial Officers with a recommendation that the parties submit the dispute to the CPO Council Intragovernmental Dispute Resolution Committee for review in accordance with Treasury Financial Manual (TFM) Volume 1, Part 2, Chapter 4700, "Agency Reporting Requirements for the Financial Report of the United States Government;" Appendix 10 - Intragovernmental Business Rules, or subsequent guidance.

**A.14. Signatures**

**DEPARTMENT OF ENERGY OFFICIAL:**

Signature:  Date: 1-16-18  
Robert Burrier  
Contracting Officer

Agency: Department of Energy, Office of River Protection

Address: 2440 Stevens Center Drive  
Richland, WA 99352

Phone: 509-376-6987

E-mail & fax: robert.burrier@eop.doe.gov

**SERVICING AGENCY OFFICIAL:**

Signature:  Date: 1/11/2018  
Alan Feistner  
Deputy District Engineer for Project Management

Agency: Walla Walla District, U.S. Army Corps of Engineers

Address: 201 N. third Ave.  
Walla Walla, WA 99362

Phone: 509-527-7301

E-mail & fax: Alan.W.Feistner@corps.army.mil

## STATEMENT OF WORK

### COST ENGINEERING / ESTIMATING SUPPORT FOR THE US DEPARTMENT OF ENERGY HANFORD WASTE TREATMENT AND IMMOBILIZATION PLANT PROJECT (WTP)

#### 1.0 GENERAL PURPOSE AND SCOPE

Because of funding limitations, the U.S. Department of Energy, Office of River Protection (DOE-ORP), is exploring options to preserve the capabilities of the Waste Treatment and Immobilization Plant (WTP) High-Level Waste (HLW) Facility and Pretreatment Facility (PT) in order to focus the efforts of DOE-ORP in bringing the Direct Feed Low-Activity Waste (DFLAW) capability on-line by the end of 2021, while maintaining DOE-ORP's ability to achieve the existing Amended Consent Decree<sup>1</sup> milestones. The purpose of the support requested in this Statement of Work is to provide an analysis of options examining how best to preserve DOE-ORP's capabilities to meet the following milestones:

A-2	HLW Facility Construction Substantially Complete	12/31/2030
A-14	PT Facility Construction Substantially Complete	12/31/2031

Because construction of these facilities must be complete before cold commissioning and hot commissioning can occur, it is not necessary for this analysis to address the cold or hot commissioning milestones for these facilities at this time.

The US Army Corps of Engineers (USACE) shall perform a parametric evaluation of the options and funding scenarios set forth in Section 3.1 below for the HLW and PT Facilities to evaluate the likelihood of achieving Amended Consent Decree milestones A-2 and A-14, as set forth above.

#### 2.0 BACKGROUND

Based on annual funding limitations and the priority to start treating LAW by the end of 2021, DOE-ORP is considering several options to allow the WTP contractor to focus its attention on completing and commissioning the Low-Activity Waste (LAW) Facility with DFLAW configuration.

<b>OFFICIAL USE ONLY</b>	
May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552). Exemption number: <u>5</u> Category: <u>5, Privileged Information</u>	
Department of Energy, to be reviewed before public release.	
Name/Org: <u>Wahed Abdul. Q. - WTP</u>	Date: <u>12/1/2017</u>
Guidance (if applicable): <u>N/A</u>	

~~Official Use Only~~

<sup>1</sup> State of Washington v. Dept. of Energy, No. 2:08-CV-05085-RMP (March 11, 2016) (E.D. Wa.).

Due to funding limitations, the Primary Option under consideration involves putting the HLW and PT Facilities into a preservation mode while the WTP Project focuses on bringing DFLAW into operation to produce glass by the end of 2021. The other options being considered are variations of the Primary Option.

### 3.0 TASK DESCRIPTION

The USACE will perform parametric evaluations on the options described in Paragraph 3.1 below based on different funding and operational scenarios for the HLW and PT Facilities to evaluate the probability of achieving Amended Consent Decree (CD) milestones A-2 and A-14, as set forth above. Each of these options incorporates the Primary Option. The USACE will determine the adequacy of DOE-ORP provided data, advise DOE-ORP of any necessary additional data, and will perform the evaluations based on its independent analysis.

The evaluation shall be performed at a rough order of magnitude cost estimate using a parametric evaluation of existing information. The USACE effort shall be performed on-site to ensure DOE-ORP oversight and timely transfer of data and any necessary interactions.

#### 3.1 Provide support for the following activities:

Perform a parametric evaluation for each of the following scenarios to determine the annual funding need (or utilize the funding scenario given) for completion of HLW and PT Facilities, and the probability of the facilities being completed in accordance with the Amended Consent Decree milestones set forth above. Work directly with the DOE-ORP staff to obtain information necessary to perform this evaluation.

#### Scenarios for the options

- **Case 1- Amended Consent Decree (CD) compliant - Facility Lay-up: Primary Option with funding levels for the HLW and PT Facilities minimized (to maximize DFLAW funding) to cover only preservation and maintenance, material storage, and procurement liabilities, during the years of high DFLAW funding demand (3 – 5 years).**
  - **Case 1a: Primary Option with PT and HLW Facility completion.**
    - Can DOE achieve compliance with the Amended Consent Decree milestones set forth above for both the PT and HLW Facilities with the current \$690M annual funding level?
    - If DOE cannot achieve compliance with the Amended Consent Decree milestones set forth above with the current \$690M annual funding level, what funding level would be required to meet those milestones?
  - **Case 1b: Primary Option with only HLW Facility completion with the Direct-Feed HLW Facility (DFHLW) configuration concept, and PT Facility in lay-up.**

- Can DOE achieve compliance with the Amended Consent Decree milestone set forth above for the HLW Facility with the current \$690M annual funding level?
  - If DOE cannot achieve compliance with the Amended Consent Decree milestones set forth above for the HLW Facility, what funding level would be required to meet this milestone?
- **Case 2 - Primary Option with optimum funding to maintain continuity and recoverability of HLW Facility with the DFHLW configuration concept, and PT Facility in lay-up:**
- In addition to case 1b, maintain key engineering and nuclear safety expertise, advance critical designs and complete rebaseline during the lay-up period, which allows higher confidence for effective completion of the HLW Facility. Can DOE achieve compliance with the Amended Consent Decree milestone set forth above for the HLW Facility with the DFHLW configuration concept?

#### 4.0 DELIVERABLES:

USACE shall provide the Evaluation Report to the HLW-PT Federal Project Director (FPD) (or designee), DOE-ORP FPD, and Contracting Officer within six weeks of the award of the task order. The Evaluation Report shall include:

- The basis, cost estimates, and funding profiles, and
- USACE analysis of DOE-ORP's ability to achieve the applicable Amended Consent Decree milestones set forth above.
- The Evaluation Report shall be marked as "Official Use Only (OUO)".

#### 5.0 RESPONSIBILITIES

##### 5.1 USACE (Servicing Agency)

**Team Leader:** The designated USACE Team Leader will serve as the primary point of contact for USACE execution of the product development, format, quality assurance, and deliverables. The Team Leader is responsible for maintaining OUO protections for this document and any documents or other communications prepared regarding this Statement of Work or any work done by the USACE or any of its subcontractors throughout the performance of this Statement of Work.

##### 5.2 DOE ORP (Requesting Agency)

**Point of Contact (POC):** The DOE-ORP FPD for the HLW and PT Facilities will serve as the POC for this task.

**Office & Supplies:** DOE will provide all necessary office space, office equipment such as computers, software, phones, and office supplies for the

on-site work.

### 5.3 Qualification of USACE Personnel:

USACE shall provide the following qualified personnel for the support functions identified in this statement of work:

- **Team Leader:** The designated USACE Team Leader will serve as the primary point of contact for USACE execution of the product development, format, quality assurance, deliverables, and personnel security concerns. The USACE lead will coordinate all project scope changes that will require a contract mod with the DOE HLW-PT FPD and CO.
- **Cost Engineers / Estimators:** USACE shall be responsible for estimating all scope of work as defined in Paragraph 3. The scope, as explained in Paragraph 3 of this Statement of Work, is discrete and limited.
- **Security and Site Access:** USACE shall treat all products as OOU and provide the necessary security and protection of all data, existing and under development, related to this Interagency Agreement (IAA), whether in hard copy or electronic formats. The security handling shall comply with USACE and DOE-ORP security requirements and processes. ORP will coordinate site access, security clarifications, and instructions with the designated USACE Lead. This task order work will be performed in DOE-ORP offices.
- **Safety and Security:** USACE personnel shall complete site-specific safety and security training requirements prior to beginning onsite work, including Hanford general employee training (HGET). DOE will provide a cost code for the training.

### 6.0 TECHNICAL POINT OF CONTACT

Walla Walla District Address:  
U.S. Army Corps of Engineers Walla Walla District  
201 N. 3rd Ave.  
Walla Walla, WA 99362  
FAX: 509-527-7809  
Nickolas McHenry  
(Supervisor NWW's DOE-Hanford Office)  
Phone: 509-373-9333  
Email: [Nickolas.L.McHenry2@usace.army.mil](mailto:Nickolas.L.McHenry2@usace.army.mil)

### 7.0 COSTS

\$275,000.00 is the amount of funds obligated under this IA. Please see paragraph A.4.d. in Part A of this IA if costs need to be increased.

# Hanford Tank Waste Treatment and Immobilization Plant (WTP)



## High-Level Waste (HLW) Facility and Pretreatment (PT) Facility: Evaluation of Potential Continued Preservation and Maintenance, and Restart of Facilities

High-Level Waste (HLW) Facility



Pretreatment (PT) Facility



## Executive Summary

In 2012, the US Department of Energy (DOE) identified certain technical decisions largely associated with the Pretreatment (PT) Facility, and to a lesser extent with the High-Level Waste (HLW) Facility. DOE had effectively suspended work on the PT Facility and certain portions of the HLW Facility in November 2011 due to funding limitations and priorities, and pending completion of technical decisions. Work continued on the Low-Activity Waste (LAW) Facility, and Bechtel National, Inc. (BNI) and DOE commenced efforts to enable the direct feed (DF) of waste to that facility consistent with meeting construction and operational milestones established by the court in the case of *State of Washington v. U.S. Department of Energy*, [2:08-CV-05085-RMP] (Amended Consent Decree). In December 2016, DOE approved the WTP Project Performance Baseline Change Proposal for direct feed of low-activity waste (DFLAW) to establish a formal baseline to complete the DFLAW mission.

As part of its evaluation process, DOE requested that BNI assess whether proposed continued preservation and maintenance (CPM), for a period of an additional 3 to 5 years, could be implemented without adversely impacting the Department's ability to complete the HLW and PT Facilities by the milestones set forth in the Amended Consent Decree.

Equipment, components, and material for the HLW and PT Facilities are currently maintained through a suite of maintenance programs and processes covering various elements of facility completion (e.g., control of government property, periodic maintenance and surveillance, asset preservation maintenance, and construction equipment maintenance). The suite of maintenance programs and processes were designed for active construction activity, and implemented under the assumption that the facilities would resume construction in the near term.

DOE is evaluating whether the implementation of a CPM program for the HLW and PT Facilities would best ensure that the limited available funding and resources are efficiently and effectively used to increase confidence in the successful completion of the DFLAW approach. To understand the potential impact of implementing the proposed CPM on the HLW and PT Facilities, BNI consulted subject matter experts (SME) of several nuclear facilities that experienced a period of relative inactivity followed by successful restart and completion. Based on recommendations and lessons learned from the SMEs, BNI has developed a CPM Program. The objective of the CPM Program is to ensure the preservation and maintenance of the facilities, and associated equipment, components, and material to facilitate successful restart of construction and eventual operational activities of the HLW and PT Facilities.

The SMEs also identified programmatic lessons learned from the restart of the other facilities including the value of 1) robust property management; 2) freezing design requirements; 3) document management; 4) configuration management; and 5) the importance of sub-tier suppliers in refurbishing and recertifying equipment and components.

The CPM Program and implementation of lessons learned would facilitate the restart of the HLW and PT Facilities by minimizing the need for rework or refurbishment when construction resumes. In addition to CPM, WTP core competencies in knowledge and facility familiarity could be maintained to enable an efficient and effective restart. To support this objective, a core team will be identified that could support execution of CPM activities and limited engineering, procurement, and construction activities, as resources permit.

Once the decision is made to restart, and adequate funding is made available, additional personnel would be mobilized to become familiar with the state of the facilities and complete work that may have progressed prior to restart. Efforts would begin to complete the design of the facilities, followed by the award of remaining procurements and refurbishment or replacement of previously procured equipment and components. As design matures and equipment, components, and bulk material become available, physical construction of the

facilities would resume. As process and utility system installations are completed, the facilities would transition from construction to startup, and then to commissioning to initiate waste treatment operations.

If DOE were to proceed with implementing the proposed CPM, several elements would be critical to enhancing restart activities, and support meeting the Amended Consent Decree milestones for the HLW and PT Facilities. The HLW Facility has a matured design and a recently updated preliminary documented safety analysis (PDSA) has been approved. The technical decisions associated with the PT Facility are in the process of being completed in calendar year 2018. Mature design, completion of remaining technical decisions, and an approved PDSA for the facilities supports freezing design requirements to enhance restart and completion of the HLW and PT Facilities. The overall execution strategy of the facilities will be evaluated and optimized based primarily on resource availability (i.e., adequate funding), as well as design decisions and operating interfaces to achieve success.

This report summarizes the state of the HLW and PT Facilities, lessons learned from other nuclear facilities, the program to optimize preservation and maintenance of the facilities, and the strategy and elements necessary to increase the probability of a successful restart.

## Background

The WTP includes three primary processing facilities:

- The Pretreatment (PT) Facility, which would separate the waste into its low-activity waste (LAW) and high-level waste (HLW) fractions
- The HLW Facility, which would vitrify the high-level waste
- The LAW Facility, which would vitrify the low-activity waste

The WTP also includes the Analytical Laboratory (Lab), and supporting facilities referred to as the Balance of Facilities (BOF).

In December 2016, the WTP Project schedule and sequence of activities was modified to focus on completion of the LAW Facility with direct feed from the Hanford Tank Farms to the LAW Facility, referred to as the direct feed of low-activity waste (DFLAW) facility configuration. In addition, the subsequent completion of the HLW and PT Facilities at a later date is consistent with the milestones in the Amended Consent Decree. The modified strategy projected initiation of the DFLAW approach in December 2021 and included prioritizing the work scope of the LAW Facility and supporting BOF and Lab capability to complete hot commissioning of DFLAW, and continuing limited engineering and construction in support of the HLW and PT Facilities. However, because of the prioritization of resources to support the DFLAW, the HLW and PT Facilities may be placed in a CPM state for a period of 3 to 5 years.

Because of the proposed CPM period, BNI reached out to SMEs from other nuclear facilities that have experienced similar or longer extended periods of subdued activity followed by resumption and then completion. The SMEs were contacted to understand lessons learned and what could be done proactively for the HLW and PT Facilities to implement effective preservation and maintenance during the CPM period.

## Comparable Projects and Lessons Learned

The following projects were completed over the past three decades, and achieved successful operations after a period of inactivity:

- **Tennessee Valley Authority - Watts Bar Nuclear Units 1 and 2:** Construction on both Unit 1 and Unit 2 stopped in 1985. At that time, Unit 2 was considered 80% complete. Construction on Unit 1 resumed shortly after in 1987 and it went operational in 1996. Approval to complete Unit 2 was provided in 2007 and it went operational in 2016.

Although a scope-specific maintenance program was initially established for Unit 2, it was abandoned several years before construction resumed, which contributed to degradation, obsolescence, and loss of configuration management.

- **Tennessee Valley Authority - Browns Ferry Nuclear Units 1, 2, and 3:** The three Browns Ferry Units had completed design, construction, startup, and began commercial operation in 1974 (Unit 1), 1975 (Unit 2), and 1977 (Unit 3). In 1985, all three units were taken offline for operational and management issues. Unit 2 was restarted in 1991, Unit 3 restarted in 1995, and Unit 1 restarted in 2007. Unlike Watts Bar Nuclear Unit 2, the facilities established and maintained a long-term preservation and maintenance program, providing for a more positive and efficient restart process.
- **Device Assembly Facility - Nevada Test Site:** Bechtel assumed management and operations of the Nevada Test Site (now known as the Nevada National Security Site) in 1995, the scope of which included completion of the Device Assembly Facility (DAF). At the time, the DAF had been in a state of construction for a period longer than 12 years. When Bechtel assumed control, complete documentation of work performed and to-go scope were not available and configuration control had to be established. The DAF was successfully completed and turned over to operations in 1999.

Bechtel National, Inc. (BNI) collaborated with SMEs from the abovementioned projects, which included the former Project Director of the Watts Bar Completion Project (2011 - 2016), who was previously a manager at the Browns Ferry Unit 1 Restart Project (2001 - 2004) and at the Nevada Test Site (1995 - 1999). BNI also collaborated with the Bechtel Global Discipline Chief for Materials Engineering Technology who had experience from Browns Ferry, Watts Bar, and several nuclear power plant projects. Based on walk downs of the HLW and PT Facilities by some SMEs and virtual conferences with the SMEs, valuable insights were identified that are applicable to a proposed CPM Program, and restart of the HLW and PT Facilities. The SMEs were paired with representatives of WTP Field Engineering and Plant Maintenance, the Program Manager of the CPM Program, and Project Managers of the HLW and PT Facilities to identify lessons learned and key characteristics that compare or differentiate the HLW and PT Facilities from other facilities and projects. Lessons learned identified through the effort are summarized below.

**Lessons Learned for Success of CPM and Restart of HLW and PT Facilities**

Success of CPM

- **Sustained Preservation:** Because the preservation maintenance program at Watts Bar Unit 2 was suspended, equipment and components degraded and had to be refurbished or replaced, and large sections of completed work had to be removed and reworked. In contrast, the restart efforts at Browns Ferry Units 1, 2, and 3 were much more successful because the preservation maintenance program was sustained, and therefore the units required less refurbishment and rework at the time they were restarted.
- **Identify and Mitigate Conditions:** The comparable projects were mostly enclosed, which provided protection from weather conditions. Despite the physical protection, and efforts to identify and replace or refurbish degraded items, startup activities at Watts Bar still determined approximately 15% of items required refurbishment or replacement after construction testing (identified as "hidden" defects). A robust CPM program is necessary to mitigate the risk of such degradation. The SMEs identified the HLW and PT Facilities are substantially more exposed, which necessitates improvements to protection from environmental elements for the period.

Successful Restart

- **Property Management:** During the period of inactivity, components and material intended for Watts Bar Unit 2 were used for the benefit of the adjacent Watts Bar Unit 1 and a sister nuclear plant. The utilization was not controlled or tracked, and led to equipment and component deficiencies when activity restarted. Such utilization activities contributed to a "reduction" of approximately 20% complete (Unit 2 was estimated to be 80% complete when activities stopped, but estimated to be 60% complete when activities restarted).
- **Freezing Design Requirements:** For Watts Bar, the US Nuclear Regulatory Commission agreed to license Unit 2 based on the same code of record under which the project started (as opposed to being licensed under new or revised requirements). This mitigated significant design and construction rework.
- **Document Management:** Both Watts Bar Unit 2 and the Device Assembly Facility experienced conditions wherein inspection documents were either not properly maintained or could not be located. Because such documentation is required for commodities such as concrete, steel, pipe, and vessels, a substantial effort, resulting in increased cost and schedule delays, was experienced from having to inspect and requalify completed work.
- **Configuration Management:** When the period of inactivity started at Watts Bar, efforts were not made to close or organize design documents and procurements. As-built physical conditions were not well documented either. Because of these conditions, approximately 700 engineers had to review and organize in-process design documents; walk down the partially-completed plant to determine the level of completion; and identify as-built conditions and changes that were not identified in the design.
- **Supplier Input:** At Watts Bar Unit 2, an unexpected volume of equipment and components were sent to suppliers for refurbishment and recertification because of degradation and age, when activities resumed to meet design and operability requirements. Such activities contributed to overall cost and schedule delays.
- **Interfaces:** The SMEs identified that the HLW and PT Facilities will likely encounter challenges when they restart adjacent to a partially operating WTP Plant (due to DFLAW being operational by that time). It is imperative to prioritize the identification of potential interface deficiencies to incorporate modifications into design, and account for construction rework to incorporate necessary changes.

Lessons learned were considered as part of the preparation of a WTP CPM Program.

## Continued Preservation and Maintenance Program

The WTP Project has a suite of maintenance programs and processes (e.g., control of government property, periodic maintenance and surveillance, asset preservation maintenance, and construction equipment maintenance) that are based on execution of the original construction completion strategy, as well as a supplemental PT Facility layup plan to guide construction activities. The actions required by the programs and processes generally provide short-term protection for equipment, components, and material during active construction, but that protection would normally be curtailed as the HLW and PT Facilities near construction completion and transfer to start-up and commissioning phases. For example, temporary structures designed to mitigate water intrusion from rain and snow are sufficient during active construction activities, but are not well suited for long-term exposure to inclement weather.

Therefore, a CPM program has been developed and proposed by BNI, and is ready to be implemented subject to the availability of adequate resources.

## Key Program Features

The CPM Program addresses the following:

- **Sustained Preservation:** Equipment, components, and material will be evaluated, and a determination made if they will be useable or operable after extended storage, with

consideration given to potential deterioration or obsolescence. The evaluation will consider if alternative strategies such as repurposing or dispositioning as excess government property would provide better value than ongoing preservation and maintenance. To support the CPM Program, a layup plan would be expanded from the PT Facility to address the HLW Facility.

- **Changes to Storage Facilities and Laydown Areas:** Warehouses, laydown areas, and staging areas will require evaluations with respect to lease durations, weather and environmental exposure, storage enhancements, and material reconfiguration. Through such evaluations, options may be identified to relocate uninstalled equipment, components, and material because of expiring leases or better value storage options.
- **Temporary Facility Modifications:** Additional physical barriers may be required to protect installed equipment, components, and material from environmental elements (e.g., wind, dust, rain, and snow intrusion). For example, the PT Facility curtailed construction activities before the HLW Facility, and is expected to resume such activities after the HLW Facility. Without a fully completed roof, the PT Facility is subject to a greater risk of degradation because of the size of the exposed area and duration of exposure. The HLW Facility also has a partially completed roof. Completion of temporary roof covers for the facilities will improve protection to installed equipment, components, and material, and the effectiveness of CPM Program actions.
- **Identify and Mitigate Conditions:** Due to the duration of the CPM period, physical items that are not typically protected during construction will be evaluated for additional protective measures. For example, components embedded in concrete, structural steel, piping, heating ventilation and air-conditioning (HVAC) and ductwork, electrical components, and wall and floor coatings will be exposed to inclement weather due to continued curtailment of construction activities. Actions would be taken in accordance with the detailed facility layup plan (e.g., covering anchor bolts and embeds, applying caps to piping, applying preservative to mechanical rebar fasteners). A broad variety of actions would be implemented to reduce the impact of degradation because equipment, components, and material are in various stages of completion across the HLW and PT Facilities (e.g., in inventory, staged at the construction site, installed). Implementation of CPM Program activities would mitigate the potential risk of "hidden" defects during restart and completion of the facilities.
- **Property Management:** Equipment, components, and material removed from the facilities through the CPM Program would be systematically identified, accounted for, and tracked to form the basis of what needs to be reprocured or replaced as part of the restart and completion effort.

If implemented, the CPM Program would require walk downs using enhanced technical evaluation criteria, aimed at providing real-time direction on corrective actions to perform when potential degradation due to long-term storage is discovered. The steps to implementing the CPM Program are outlined as follows:

- 1) Project resources are allocated, and direction provided to implement the CPM Program with defined scope commensurate with resources;
- 2) Assign division of responsibility for the CPM Program among accountable groups;
- 3) Establish technical evaluation criteria to evaluate and monitor the degradation of equipment, components, and materials in staging/storage areas and in partially constructed facilities;
- 4) Perform a walk down and evaluate equipment, component, and materials to determine the baseline conditions;
- 5) Evaluate the population of equipment, components, and material related to the HLW and PT Facilities through a structured and consistent decision model to determine whether to repurpose, disposition, or maintain items;

- 6) Implement improvements to laydown and storage areas and the HLW and PT Facilities to enhance the ability to effectively manage the facilities and areas over the period; and
- 7) Establish a strategy to address suppliers with custody of government assets

### **Potential Preservation Maintenance Enhancements**

To support a successful restart, the proposed CPM Program should be updated, and resources allocated, to address adverse conditions if they are recognized. For example, the SMEs from Watts Bar and Browns Ferry identified the success of a Microbial Induced Corrosion program that was instrumental in mitigating risk of damage to stainless-steel piping and plates for those projects. Enhancements, as they are identified, would be evaluated on a case-by-case basis. Implementation of enhancements may require additional resources and concurrence from DOE.

### **Retention of WTP Core Competencies**

Beyond the preservation of the physical elements, and the maintenance of the existing configuration, an important component to successfully restarting the HLW and PT Facilities is to ensure that WTP core competencies in technical knowledge and familiarity of the HLW and PT Facilities are maintained to support an efficient restart. Such competencies enhance the process of organizing and sustaining in-process design and construction documents, and resuming engineering, procurement, and construction activities.

To support retention of core competencies, BNI could identify and retain a core team within the WTP Project workforce to support execution of CPM activities, and perform limited engineering, procurement, and construction activities that are outlined later in the report. The core team could include engineering SMEs in material engineering, nuclear safety, process engineering, pulse jet mixing, software, system design, and vessels, and support from procurement and construction.

As the engineering, construction, and startup phases of the DFLAW are completed over the following year, the WTP Project will be in an ideal position to leverage demobilizing employees with knowledge and familiarity of the HLW and PT Facilities. Additional resources, from outside of the WTP Project, may also be ramped up for the benefit of the HLW and PT Facilities to draw on the experience and knowledge of existing employees who transition from DFLAW. This supports knowledge transfer and retention, despite attrition that may be experienced during the CPM period, and develops the workforce in preparation for restart.

### **Program Cost**

Since 2012, there has been a pause in certain engineering, procurement, and construction activities for the HLW and PT Facilities due to funding limitations and priorities, and pending completion of technical decisions. Preservation, maintenance, and storage expenses incurred by suspended procurements and current maintenance activities (under the suite of maintenance programs and processes) cost approximately \$11 million annually. The WTP Project is preparing a cost estimate for CPM Program implementation, using standard WTP Project change control processes. This estimate will include costs in the following categories:

- Asset management
- Capital and physical protection
- Storage and configuration management
- Programmatic support including quality assurance and document management

The cost estimate will also cover the labor, materials, extension of leases for storage facilities, installation of proposed roof covers, and replacement of aging preservation support and handling equipment.

The CPM Program would be designed to evaluate and disposition equipment, components, and material (including obsolescence issues), which may support repurposing such items. The process of supporting and implementing these decisions will be included in the estimated cost of the CPM Program, but the cost of replacing items upon resumption of the HLW and PT Facilities will be accounted for in future cost estimates when contemporary technologies and necessary interfaces can be evaluated in detail.

The cost estimate will have the necessary capital and workforce costs to achieve this adequate condition for continued preservation and maintenance, as well as the increased annual costs to sustain this status until the restart and completion of HLW and PT Facilities.

## **Restart and Completion of HLW and PT Facilities**

The HLW and PT Facilities are in different stages of design, procurement, and construction, with the HLW Facility progressed further than the PT Facility. However, the general process of restarting the facilities is similar because both facilities will require an initial assessment and ramp-up of resources, followed by coordinated completion of design, procurement, construction, and commissioning activities.

Preservation and maintenance activities implemented prior to the CPM period, under the current suite of maintenance programs and processes, will continue through completion of each facility, until equipment and systems are turned over to Operations for continued care, custody, and control (at that point the plant operations maintenance program becomes effective). The ongoing preservation and maintenance of equipment, components, and materials, using a CPM Program, increases the probability of successfully restarting and completing the facilities.

A description of the completion strategy, including the engineering, procurement, construction, startup, and commissioning phases, is provided as follows:

- **Decision to Restart Construction of HLW and PT Facilities:** Direction from DOE to resume the HLW and PT Facilities, at least 6 to 12 months prior to the anticipated restart date, will ensure BNI is provided sufficient opportunity to plan and coordinate resources in preparation for the initial ramp-up of staff and resumption activity.
- **Initial Ramp-Up:** A ramp-up of resources will be necessary to complete an initial assessment of design, procurement, and construction that may have progressed prior to restart, and comparison to new or revised design, permitting, and operating plant interface requirements. The assessment will also support detailed planning and coordination of work necessary to support design completion, and prepare for resumption of procurement, construction, startup, and commissioning activities. The assessment will serve to familiarize staff responsible for completing the facilities.
- **Engineering:** Remobilized engineering activities will complete design and incorporate changes (as necessary) to meet any new or revised requirements and address operating plant interfaces. Design completion will be sequenced based on construction work planning areas, which will be prioritized based on completion of system turnover to commissioning. As the HLW Facility design has progressed further than the PT Facility design, it will be completed earlier.

As procurement and construction complete their respective scope, Engineering will support execution of functional testing (conducted by suppliers and construction) to complete design verification documents. These documents support a determination that systems are designed and procured to perform required functions and that design is complete.

- **Baseline Development:** The initial ramp-up and staff familiarization will support updating the cost and schedule baseline of the HLW and PT Facilities through completion. The baseline effort will result in a detailed execution plan to complete the

- facilities, and support updates to the WTP Project performance baseline in alignment with resources provided by DOE.
- **Preliminary Documented Safety Analysis (PDSA):** Based on completion of outstanding technical decisions (expected in calendar year 2018), and progression of design, the PT Facility will have sufficient information to prepare and submit an updated PDSA for review and approval by DOE. Approval of the updated PDSA validates the adequacy of the nuclear safety analysis for the PT Facility, mitigating the risk of design change to ongoing procurement and construction. The updated PDSA for the HLW Facility was recently approved.
  - **Permit Modifications:** With progression of design, and completion of technical decisions in the PT Facility, DOE will submit updated permit modifications for both the HLW and PT Facilities to the Washington State Department of Ecology. In addition to design completion, the permit modifications will be essential in sustaining construction activity without delay or resequencing.
  - **Procurement:** Remobilized procurement (with the support of engineering and construction) will procure equipment and materials, and will engage suppliers to refurbish or recertify equipment and components.
  - **Construction Ramp-Up:** In association with the procurement effort, construction resources (nonmanual and craft labor) will be mobilized to identify field procurements and items that need to be returned to suppliers for refurbishment or recertification. Craft resources will remobilize to complete site safety orientation and training, and to prepare construction facilities, equipment, and tools for regular use. Construction ramp-up activities would support a safe and effective transition to full construction activity.
  - **Construction Completion:** As design matures, and physical and safety considerations allow, construction of mechanical systems and commodity installation which includes items such as vessels, fire sprinkler systems, HVAC, cable tray, and piping will resume. Construction will also use preserved, new, and refurbished or recertified equipment and components as needed to complete the facilities.
  - **Startup and Commissioning:** Throughout completion of construction, individual systems will be completed and will transition to the commissioning phase. The commissioning phase includes startup testing (component level and system level tests) and proceeds to cold commissioning testing using nonradioactive waste simulant. Each phase of startup and commissioning progressively verifies the functions of components and systems.
  - **Documented Safety Analysis (DSA):** Based on successful completion of design (as supported by functional testing and completion of design verification documents), the approved PDSA for each facility will serve to inform the development of the respective facility DSA. Approval of the DSA supports the transition from startup to commissioning.
  - **Operational Readiness Review (ORR):** The ORR is a readiness demonstration activity designed to independently verify capability of facilities to start hot commissioning in a safe and effective manner. Following successful completion of the ORR, hot commissioning will introduce radioactive waste.

Activities within the abovementioned phases may be completed prior to restart, as part of completion of limited engineering, procurement, and construction, as resources are made available. The phases, along with the achievement of critical elements later in this report, provide a framework to support the alignment of expectations and provision of resources to successfully restart and complete the HLW and PT Facilities.

### **Application of Lessons Learned for Restart**

During the application of the CPM Program for the HLW and PT Facilities, enhanced maintenance activities will reduce the impact of degradation of procured and installed equipment, components, and material. The SMEs from other successful projects identified

additional lessons learned applicable to a successful restart, which will be implemented as summarized below:

- **Freezing Design Requirements:** The SMEs indicated freezing design requirements was critical to the success of Watts Bar Unit 2. The implementation of freezing requirements for the HLW and PT Facilities is described later in the report.
- **Document Management:** As the HLW and PT Facilities stopped construction with no knowledge of the potential CPM period, documents were stored in a manner appropriate for active construction activity (i.e., in-process and organized by responsible individuals). The SMEs identified the effort to evaluate and organize such documents is more difficult after time has lapsed and "tribal knowledge" is lost. To support a more effective restart, resources should be made available immediately to organize and package documentation.
- **Configuration Management:** Because the HLW and PT Facilities have been under limited design and procurement activity over the past several years, design is still in-process and procurements are still open. Furthermore, as-built documents have not been prepared because the facilities are not fully constructed. Resources will be needed to organize and prepare design documents for storage, and to close open procurements to facilitate retrieval of supplier-provided design and the status of equipment and components while facility familiarity and knowledge is still available on the Project. Such resources will also support walk-downs and prepare as-built drawings.
- **Supplier Input:** Early involvement of suppliers in the HLW and PT Facilities to effectively manage procurements and storage options would facilitate implementation of efficient strategies to maintain operability and warranties over the CPM period, and would support identification of equipment and components likely to become obsolete.
- **Interfaces:** Execution plans are written to ensure success of DFLAW, and serve to inform restart decisions for the HLW and PT Facilities. For example, several cross-facility systems are "divided," and the operating portion of the system is isolated to ensure safe operability. The isolations serve as a focal point for future interface evaluations when restarting the facilities. Efforts would be made to expand on the plans to determine compatibility between current design and future operating plant interfaces including the plant control room, critical HVAC systems, and radiological hot cells.

### Critical Elements for Success of Completion

Several elements are critical to restarting and completing the HLW and PT Facilities:

- **Resources for CPM Program and Decisions:** Resources must be made available to implement the CPM Program for successful restart. Such resources will be used to implement CPM Program actions and perform essential CPM activities.
- **Resources for Limited Engineering, Procurement, and Construction:** Completion of key activities would enhance the efficiency and overall resumption of the HLW and PT Facilities. The core competencies described earlier in the report, and resources demobilizing from the DFLAW over the next year, may be leveraged to support efficient completion of such activities, which includes the following by function:
  - **Engineering:** A selection of core team engineering resources are necessary to support updates to system design descriptions (SDD) and design documents based on approved revisions to the facility PDSAs and recent technical decisions, package in-process designs, and incorporate design deliverables into engineering automation tools, and complete select mechanical design in the HLW Facility to build on completion of updates to SDDs. Engineering will also support completion of procurement and construction activities.
  - **Procurement:** Suppliers must be informed of the CPM period, and procurements will be modified, terminated, or completed to extend applicable warranties, or facilitate the transfer of property and supplier-completed design.

Such actions will ensure procurements are managed to an adequate condition for the CPM period and restart.

- **Construction:** Support essential construction to achieve an adequate condition for CPM and support organization and packaging of in-process documents and work packages for restart. For the HLW Facility, this includes civil buildout to achieve facility enclosure (e.g., completion of roof and siding).
- **Alignment on Resources Needed to Complete the Facilities:** Similar to commercial engineering, procurement, and construction projects, resources must be made available to support the ramp-up and completion of the design, procurement, construction, startup, and commissioning of the HLW and PT Facilities. DOE must provide the funding support needed for the restart and completion of the facilities.
- **Freezing Design Requirements:** The restart of the facilities would be enhanced if the same technical requirements and objectives are maintained through completion (i.e., customer and stakeholders agree that requirements are frozen).
- **Alignment and Approval of Design:** DOE agreement on facility design based on current technical decisions is critical to avoiding design and construction rework. The HLW Facility has a matured design and a recently updated customer-approved PDSA. The PT Facility is in the process of resolving outstanding technical decisions, and customer agreement is expected in calendar year 2018. Mature design, completion of outstanding technical decisions, and an approved PDSA update for the facilities supports freezing design requirements to enhance restart and completion of the HLW and PT Facilities.
- **Overall Strategy:** The completion strategy of the HLW and PT Facilities will be evaluated and optimized in consideration of resource availability, design decisions, and operating interfaces to achieve success. Long-range planning efforts also will support identification of needed resources to complete the facilities considering the outcomes of the CPM Program and completion of the DFLAW.

## Conclusion

The provision of appropriate resources and implementation of a CPM Program is instrumental in enhancing the preservation and maintenance of the HLW and PT Facilities, and associated equipment, components, and material. This strategy supports the effective restart and completion of the facilities. However, a CPM Program is only one of several elements necessary to achieve success. The provision of necessary resources, freezing design requirements, completion of technical decisions, agreement to design of the facilities, and optimization of the execution strategy based on existing conditions are also required to successfully restart and complete the HLW and PT Facilities.