



OFFICE OF RIVER PROTECTION

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

AUG 12 2019

19-ECD-0064

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

Ms. Smith:

AUGUST 2019 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 – APRIL 1, 2019, THROUGH JUNE 30, 2019

This letter transmits the U.S. Department of Energy August 2019 Quarterly Report (Attachment) under Section IV-C-1 of the subject Consent Decree, for the period of April 1, 2019, through June 30, 2019. 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 Thomas W. Fletcher, Assistant Manager, Waste Treatment and Immobilization Plant Project, (509) 376-4941, or Robert G. Hastings, Assistant Manager, Tank Farms Project, (509) 376-9824.

Brian T. Vance
Manager

ECD:BRT

Attachment

cc: See page 2

Ms. Alexandra K. Smith
19-ECD-0064

-2-

AUG 12 2019

cc w/attach:

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cc w/o attach:

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R. Ferri, YN

**Attachment
19-ECD-0064
(50 Pages Excluding Cover Sheet)**

**U.S. Department of Energy, Office of River Protection
Quarterly Report, April 1, 2019, through June 30, 2019, and
Tank Farm / Waste Treatment and Immobilization Plant
Direction Letters**

Office of River Protection
Quarterly Reporting Period
April 1, 2019, through June 30, 2019¹

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)

Third Amended Consent Decree, *State of Washington v. Dept. of Energy*,
No: 2:08-CV-5085-RMP (October 12, 2018)²



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

for *Mark J. Harp*
B.J. Harp, Deputy Manager
Office of River Protection

8/8/19
Date

¹ Except where otherwise expressly stated, the narrative descriptions of progress in this report cover the period from April 1, 2019, through June 30, 2019. Earned Value Management System data and descriptions cover the period ending May 31, 2019.

² The Consent Decree, Amended Consent Decree and Second Amended Consent Decree 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

AoA	analysis of alternatives
BNI	Bechtel National, Inc.
BOF	Balance of Facilities
CAT	construction acceptance testing
CV	cost variance
DFLAW	direct-feed low-activity waste
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EMF	effluent management facility
EVMS	Earned Value Management System
FY	fiscal year
HEPA	high-efficiency particulate air
HLW	High-Level Waste (Facility)
HVAC	heating, ventilation, and air-conditioning
LAB	Analytical Laboratory
LAW	Low-Activity Waste (Facility)
LBL	Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory
OAT	operational acceptance testing
ORP	U.S. Department of Energy, Office of River Protection
PJM	pulse-jet mixer
PT	Pretreatment (Facility)
RLD	radioactive liquid waste disposal
SHSV	standard high-solids vessel
SV	schedule variance
USACE	U.S. Army Corps of Engineers
WTP	Waste Treatment and Immobilization Plant

Introduction

The U.S. Department of Energy’s (DOE), Office of River Protection (ORP) 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 Second Amended Consent Decree in *State of Washington v. United States Department of Energy*, No: 2:08-CV-5085-RMP (April 12, 2016).

Except where otherwise stated, the narrative descriptions of progress in this report cover the period from April 1, 2019, through June 30, 2019. Earned Value Management System (EVMS) data and descriptions cover the period ending May 31, 2019; this includes the facility completion percentage estimates included at various locations in the Waste Treatment and Immobilization Plant (WTP) section.

As the Washington State Department of Ecology (Ecology) has requested, written directives, not previously submitted for the period addressed by this report for work required by the Amended Consent Decree, are included with this report.

Tank Farm Actions and Milestones

Numbers	Titles	Due Date	Status
<i>Actions</i>			
D-16E-01	DOE must purchase by December 31, 2016, a spare E-A-1 ¹ reboiler for the 242-A Evaporator.	12/31/2016	Complete
D-16E-02	Have a spare E-A-1 ¹ reboiler available by December 31, 2018.	12/31/2018	Complete
<i>Milestones</i>			
D-16B-03	“Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5.”	06/30/2021 ²	On Schedule
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	Complete
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.”	09/30/2026 ²	Under Analysis ³

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

² Third Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (October 12, 2018).

³ As discussed in the joint motion to amend the Consent Decree filed on October 1, 2018, DOE is engaged in ongoing analysis of non-vapors-related retrieval challenges and tank condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under the B-2 Milestone). These issues are under analysis and could require issuance of a “serious risk” notice or another request for amendment of the Consent Decree (including the B-2 Milestone). DOE met with the Washington State Department of Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of Tanks A-104 and A-105. Since August 2018, DOE has had several discussions with Ecology on this topic.

DOE = U.S. Department of Energy.
 Ecology = Washington State Department of Ecology.
 SST = single-shell tank.
 WMA-C = C Tank 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.

On October 1, 2018, the United States and the state of Washington filed a joint motion to amend the Consent Decree, along with a proposed stipulation and order modifying of the Amended Consent Decree between DOE and the state of Washington in *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP. The parties requested that the court amend the Amended Consent Decree by extending the completion dates for the B-2 and B-3 milestones. On October 12, 2018, the court granted the joint motion and entered the Third Amended Consent Decree, which extended the B-3 Milestone due date to June 30, 2021, and the B-2 Milestone to September 30, 2026.

Tank Farms Assistant Manager: Rob Hastings

Federal Program Manager: Jeff Rambo

Accomplishments in the Reporting Period

Completed Accomplishments:

- Completed placement and installation of the A Tank Farm ventilation system exhaust manifold and supports
- Completed assembly of the A Tank Farm ventilation system manifold
- Removed the Tank AX-103 R7C thermocouple
- Removed the Tank AX-103 riser 7D thermocouple
- Removed the Tank A-103 riser 2 thermocouple
- Completed excavation and conduit installation for the AX Tank Farm lighting upgrade
- Completed installation of AX-102 electrical backbone
- Completed installation of AX-102 and AX-104 on dome electrical work
- Completed installation of the common AX Tank Farm and electrical infrastructure (power and control systems) and AX-102 on dome and AX-104 on dome electrical infrastructure
- Completed power up of Tank AX-102 electrical infrastructure and control systems
- Completed Phase II of the AX-102/AX-104 tanks control trailer installation (POR471 and POR498)
- Completed power up of the AX-102/AX-104 tanks control trailers (POR471 and POR498)
- Completed installation of AX-102 in-tank high definition cameras and began installation of video recording system in control trailer

- Installed integrated Tank AX-102 infrastructure and control systems
- Completed building A-285 construction acceptance testing (CAT), Phase I
- Completed A-285 operational acceptance testing (OAT) and identified several issues requiring adjustments or repairs prior to starting AX-102 OATs
- Completed installation of retrieval equipment at Tank AX-102
- Initiated AX-102 retrieval operation system CAT.

Ongoing Activities:

- Installation of the electrical infrastructure (power and control systems) in the A Tank Farm
- Field activities for long-length equipment removals at Tank AX-103
- Direct-push sampling of soil near Tanks A-104 and A-105 (installation of remaining additional borehole)
- Installation of A Tank Farm ventilation system:
 - Install power and control systems for the exhauster
 - Remove cover blocks, clean pits, and remove thermocouple trees from risers (to connect the ventilation system)
 - Removal of Tank A-101 riser 2 thermocouple (the crane blocking access has been removed, which will allow work to resume)
- High-resolution resistance leak detection monitoring fabrication and installation in the AX Tank Farm (AX-102 and AX-104)
- Waste retrieval design for A Tank Farm (Tanks 101, 102, 103, and 106)
- Continue AX-102 CATs and resolving A-285 CAT and OAT punch list items in preparation for AX-102 OAT
- Continue installation of AX Tank Farm lighting upgrade.

Accomplishments Expected in the Next Reporting Period

- Complete AX-102 CAT
- Initiate AX-102 OAT
- Complete AX-102 high-resolution resistance leak detection monitoring fabrication and installation
- Complete installation of AX-102 in-tank video recording system
- Complete A-285 punch list adjustments and repairs identified during A-285 CATs and OATs
- Complete installation of AX Tank Farm lighting upgrade
- Start A-101 riser 2 thermocouple removal

- Complete A Tank Farm exhauster ducting installation
- Complete remove of Tank AX-103 R14 sluicer
- Initiate AX-102 retrieval operations.

Issues Encountered in the Reporting Period

- Reduced worker efficiencies associated with mandatory use of supplied air continued to impact work in the tank farms. The use of full-face air purifying respirators has been approved for use in the AX Tank Farm during operation of the AX Tank Farm exhausters (POR126/POR127). Mandatory use of supplied air respirators is required when the AX Tank Farm exhausters are not operating or during retrieval operations.
- DOE is engaged in ongoing analysis of non-vapors-related retrieval challenges and condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under the B-2 Milestone)³. These issues are under analysis and could require issuance of a “serious risk” notice or another request for amendment of the Consent Decree (including the B-2 Milestone).
- The as-found condition of existing abandoned equipment in AX and A Tank Farms has affected DOE’s ability to remove the equipment efficiently and is affecting the cost and schedule.
- On December 3, 2018, Ecology sent ORP and the DOE Richland Operations Office a letter (18-NWP-177, “Hanford Site Ambient Air Boundary Concerns”) regarding the Hanford Site ambient air boundary. Ecology expressed its concern that the ambient air boundary appears to have changed because of increased public access to parts of the Hanford Site. DOE, Ecology, and the Washington State Department of Health have met several times to attempt to develop a shared understanding of existing conditions and a path forward.
- On January 28, 2019, ORP received a Washington River Protection Solutions LLC letter (WRPS-1900243, “Contract Number DE-AC27-08RV14800 – Washington River Protection Solutions LLC Anticipated Consent Decree Milestone Impacts due to Lack of State of Washington, Department of Ecology Approval Order”), which outlines potential impacts to tank retrievals at A and AX Tank Farms, due to a lack of Ecology regulatory approval associated with exhausters in the 241-A and 241-AX Tank Farms. On March 4, 2019, DOE transmitted WRPS-1900243 to ensure Ecology was aware of potential impacts to A and AX Tank Farm retrievals, and possibly associated Consent Decree milestones, if Ecology does not approve a pending notice of construction application in the near future. DOE is continuing to evaluate the information in the letter, as well as whether amendment of the Consent Decree (including potential invocation of force majeure provisions) or other actions may be necessary.

³ The U.S. Department of Energy met with the Washington State Department of Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of Tanks A-104 and A-105. The U.S. Department of Energy has had several discussions with Ecology on this topic since August 2018.

Issues Expected in the Next Reporting Period

- Reduced worker efficiencies associated with the use of supplied air are expected to continue to impact work in the tank farms.
- DOE expects the retrieval challenges and tank conditions issues associated with Tanks A-104 and A-105 to continue.
- DOE expects the ambient air boundary issue to continue.
- On April 19, 2019, Ecology transmitted two letters to DOE pertaining the A and AX Tank Farm exhausters (19-NWP-063, “Notice of Incompleteness Determination for the *Criteria and Toxics Air Emissions Notice of Construction for the Operation of Portable Exhausters Supporting Single-Shell Tank Waste Retrieval at the 241-A and 241-AX Tank Farms,*” and 19-NWP-062, “Need for Department of Ecology’s Approval of Pending Notice of Construction Application for the 241-A and 241-AX Tank Farm Exhausters”). DOE is evaluating Ecology’s letters. As previously noted, DOE anticipates that if Ecology does not approve the pending A and AX Tank Farm notice of construction application in the near future amendment of the Consent Decree (including potential invocation of force majeure provisions) or other actions may be necessary.
- The as-found condition of existing abandoned equipment in AX Tank Farm is expected to affect the efficient removal of the equipment negatively and is expected to continue to impact cost and schedule.

Actions Initiated or Taken to Address Potential Schedule Slippage

- As reported above, on October 1, 2018, the United States and the state of Washington filed a joint motion to amend the Consent Decree. On October 12, 2018, the court granted the joint motion and entered the Third Amended Consent Decree extending the B-3 Milestone due date to June 30, 2021, and the B-2 Milestone to September 30, 2026.
- Washington River Protection Solutions LLC is continuing to address reduced worker efficiencies by hiring additional personnel such as health physics technicians, industrial hygiene technicians, and skilled construction workforce to support tank waste retrieval efforts in the A and AX Tank Farms. These increases may take place through additional hiring or transfers from other onsite contractors; however, there are challenges with availability of certain craft and excess personnel.
- DOE expects to continue analysis of, and discussions with, Ecology about the retrieval challenges and tank conditions associated with Tanks A-104 and A-105.
- DOE expects to continue analysis of, and discussions with, Ecology and the Washington State Department of Health about the ambient air boundary issue.
- On March 4, 2019, DOE transmitted WRPS-1900243 to ensure Ecology is aware of potential impacts to A and AX Tank Farm retrievals, and possibly associated Consent Decree milestones, if Ecology does not approve a pending notice of construction application in the near future for 241-A and 241-AX Tank Farms exhausters. DOE is continuing to evaluate the information in the letter, as well as whether amendment of the

Consent Decree (including potential invocation of force majeure provisions) or other actions may be necessary.

Tank Waste Retrieval Work Plan Status

Tank	TWRWP	Expected Revisions	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	–

ERSS = extended reach sluicer system.

TWRWP = tank waste retrieval work plan.

Accomplishments in the Reporting Period

- None.

Accomplishments Expected in the Next Reporting Period

- Report RPP-RPT-58933, *241-AX-102 Tank Waste Retrieval Work Plan*, modification to update schedule and vapor monitoring sections is in the approval process.

Issues Encountered in the Reporting Period

- None.

Issues Expected in the Next Reporting Period

- None.

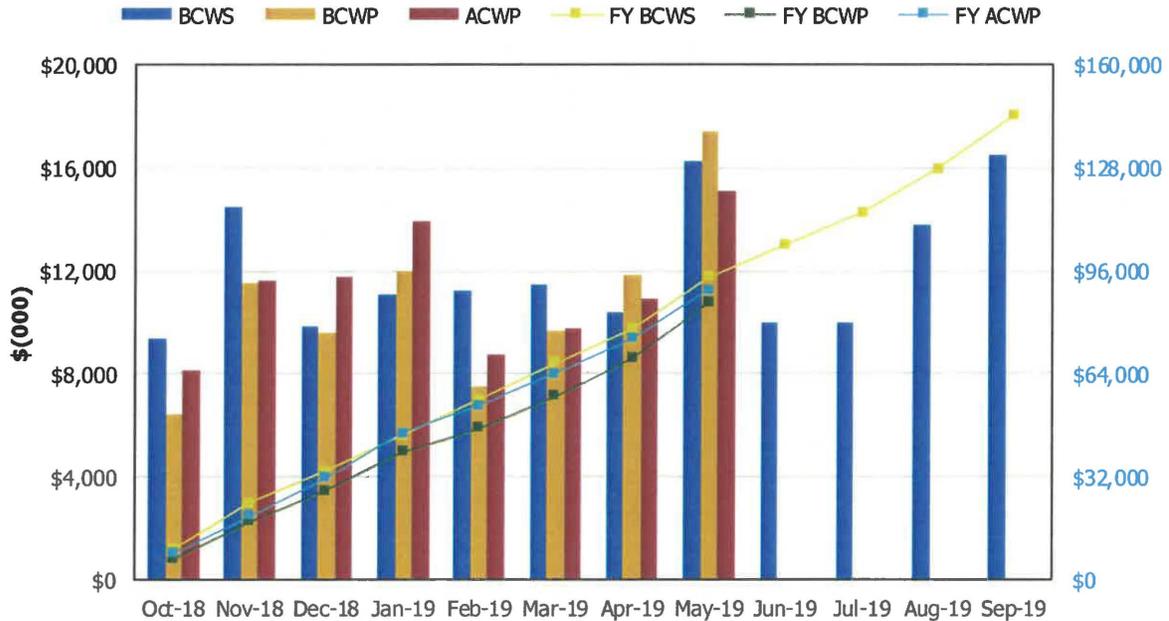
Tank Farm Earned Value Management System Quarterly Analysis

Earned Value Data: Fiscal Year 2019

May-19

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

EVMS Monthly and Fiscal Year Values



Earned Value Month

Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	\$9,402	\$6,448	\$8,124	0.69	0.79	\$9,402	\$6,448	\$8,124	0.69	0.79
Nov 2018	\$14,501	\$11,516	\$11,634	0.79	0.99	\$23,902	\$17,964	\$19,757	0.75	0.91
Dec 2018	\$9,824	\$9,620	\$11,762	0.98	0.82	\$33,726	\$27,585	\$31,519	0.82	0.88
Jan 2019	\$11,060	\$12,034	\$13,959	1.09	0.86	\$44,786	\$39,618	\$45,479	0.88	0.87
Feb 2019	\$11,259	\$7,545	\$8,742	0.67	0.86	\$56,046	\$47,163	\$54,221	0.84	0.87
Mar 2019	\$11,437	\$9,672	\$9,801	0.85	0.99	\$67,483	\$56,836	\$64,022	0.84	0.89
Apr 2019	\$10,391	\$11,841	\$10,948	1.14	1.08	\$77,874	\$68,677	\$74,969	0.88	0.92
May 2019	\$16,243	\$17,411	\$15,108	1.07	1.15	\$94,117	\$86,088	\$90,077	0.91	0.96
Jun 2019	\$9,975					\$104,092				
Jul 2019	\$9,988					\$114,080				
Aug 2019	\$13,749					\$127,829				
Sep 2019	\$16,481					\$144,310				

CTD	\$1,034,856	\$1,016,818	\$1,068,575	0.98	0.95
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- 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 Management System Quarterly Analysis

Retrieve and Close Single-Shell Tanks (5.02)⁴

Project EVMS reflects data for March 2019, April 2019, and May 2019.

Schedule Variance Summary:

Work completed ahead of the planned schedule is reported as a favorable schedule variance (SV) for the month in which it is completed, but results in an unfavorable SV in the month the work was planned.

The March 2019 unfavorable SV of (\$1,765,100) was due to:

- Adverse weather conditions resulting in four lost workdays.
- Removal efforts at the stuck shield plug in AX-102 02B pit were unsuccessful and the work has been terminated. The four attempts negatively affected the SV.
- Installation of the A Tank Farm exhaust manifold experienced schedule delays due to alignment issues. The lack of resources limited personnel available for this work.

The April 2019 favorable SV of \$1,450,800 was primarily due to:

- Field crews working, in parallel and by the use of overtime, on the AX Tank Farm electrical upgrades (e.g., backbone installation, wire pulls, labeling, terminations, testing, and AX Tank Farm lighting).

The May 2019 favorable SV of \$1,167,700 was primarily due to:

- Field crews continue to recover schedule by working AX Tank Farm electrical upgrades in parallel (e.g., electrical backbone, AX Tank Farm lighting, High Resolution Resistivity Leak Detection Monitor installation, and AX-102 pit equipment).

Cost Variance Summary:

The March 2019 unfavorable cost variance (CV) of (\$128,600) was due to:

- Adverse weather conditions resulting in four lost workdays.
- The work force increase and the use of overtime to recover schedule for the AX Tank Farm installation of infrastructure equipment.
- Impacts on tank farm work associated with the use of self-contained breathing apparatus were significant.

⁴ “Closure” activities are expressly excluded from the Consent Decree. See 2010 Consent Decree, Appendix C, first paragraph: “Processes not covered by a TWRWP (e.g., tank closure) are not established under this Consent Decree.”

The April 2019 favorable CV of \$893,600 was primarily due to:

- Field crews working, in parallel, on the AX Tank Farm electrical upgrades (e.g., wire pulls, labeling, terminations, testing, and AX Tank Farm lighting).

The May 2019 favorable CV of \$2,302,800 was primarily due to:

- Field crews working on the SX Tank Farm barrier expansion completed the asphalt-paving phase in less time than originally scheduled.
- Field crews continued to work efficiently, performing many of the AX Tank Farm electrical upgrades in parallel.

Retrieval Labor Hours on Self-Contained Breathing Apparatus

Tank Farms Assistant Manager: Rob Hastings

Federal Program Manager: Jeff Rambo

Labor Hours Expended on Single-Shell Tank Retrieval Self-Contained Breathing Apparatus
 April 1, 2019, through June 30, 2019.

	SCBA Direct Labor Hours	SCBA Subcontractor Hours¹	Total SST Operation Hours	Total Hours²	Total Percent on SCBA	Detrimental Impacts Days³
C Tank Farm	533	0	533	4,106	13%	56
A/AX Tank Farms	10,140	26,296	36,436	198,498	18%	59
Total	10,672	26,296	36,968	202,604	18%	

¹ 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. Improvements were made in the process for collecting subcontractor hours, resulting in more accurate accounting.

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

³ Detrimental impacts are presented as the total 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).

Note: During an internal audit, it was discovered that the SCBA data reported for the period July 2018 to September 2018 was incorrect. The total hours worked with SCBA should be 75,536 (a 77 percent increase over what was reported). The total SST retrieval hours should have been 195,677 (a 19 percent increase over what was reported). The total percentage of hours on SCBA was 39 percent, rather than 11 percent previously reported.

SCBA = self-contained breathing apparatus.

SST = single-shell tank.

Written Directives for Tank Farms Project

DOE issued no written directives to the Tank Operations Contractor from April 1, 2019, through June 30, 2019, for work required by the Consent Decrees.

Waste Treatment and Immobilization Plant Project

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

As of May 2019, DFLAW modifications for the WTP Project were 70 percent complete, engineering design was 90 percent complete, procurement was 89 percent complete, and construction was 56 percent complete. As of May 2019, total LBL facilities were 75 percent complete, engineering design was 94 percent complete, procurement was 91 percent complete, construction was 90 percent complete, and startup and commissioning was 39 percent complete.

At the request of DOE, the U.S. Army Corps of Engineers (USACE) conducted a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain milestones established by the Amended Consent Decree for the High-Level Waste (HLW) and Pretreatment (PT) facilities. The analysis indicated there is a low probability that DOE can meet the milestones for constructing and commissioning these facilities established by the Amended Consent Decree under the current funding profile.

The DOE Office of Project Management conducted an independent assessment of the USACE report. The Office of Project Management's assessment concluded the USACE analyses were generally accurate, although not sufficiently detailed for budget purposes, and they potentially understate the funding needed to complete the HLW and PT facilities on the schedule established by the Amended Consent Decree.

As previously noted, Ecology sent ORP and Richland Operations Office a letter (18-NWP-177) on December 3, 2018, regarding the Hanford Site ambient air boundary. Ecology expressed its concern that the ambient air boundary appears to have changed because of increased public access to parts of the Hanford Site. DOE, Ecology, and the Washington State Department of Health have met several times to attempt to develop a shared understanding of existing conditions and a path forward.

ORP held initial meetings with the WTP HLW Treatment Analysis of Alternatives (AoA) contractor team in June 2019. Ecology participated in these meetings. The purpose of the AoA is to identify and evaluate a broad set of alternatives to meet the mission need; analyze the life-cycle cost, schedule, and risks associated with each alternative; and present the evaluation results to DOE leadership, pursuant to the requirements of DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*.

Federal Project Director: Tom Fletcher

Deputy Federal Project Director: Mat Irwin

Accomplishments during the Reporting Period:

- ORP approved the DOE AoA Steering Committee Charter describing the functions, responsibilities, and authorities of the Steering Committee responsible for providing oversight of the performance of the AoA team.
- The AoA team developed a draft study plan, which describes the method, approach, and schedule to be used in conducting an independent AoA for the identified mission need, and provided the draft study plan to the Steering Committee and an Ecology observer for review and comment on June 21, 2019.
- ORP briefed additional members of Ecology’s leadership team on the elements of the draft study plan during the ORP/Ecology Leadership Forum meeting on June 28, 2019.
- ORP participated in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.
- Other significant accomplishments during the prior month are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

Accomplishments Expected Next Reporting Period:

- The DOE AoA Steering Committee is expected to complete its review of the final study plan.
- The AoA team is expected to hold an onsite working session at ORP in mid-July to develop detailed alternative definitions. Ecology will be invited to participate.
- ORP expects to meet with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste treatment approaches.
- Other significant planned activities in the next reporting period are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

Issues Encountered during the Reporting Period:

- Significant 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:

- Significant 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

Milestone	Title	Due Date	Status
Waste Treatment and Immobilization Plant Project			
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 ¹
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	Under Analysis ¹
Pretreatment Facility			
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	Under Analysis ¹
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-OOOO1A/1B	12/31/2031	Under Analysis ¹
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	Under Analysis ¹
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	Under Analysis ¹
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	Under Analysis ¹
High-Level Waste Facility			
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 ¹
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	Under Analysis ¹
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	Under Analysis ¹
Low-Activity Waste Facility			
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
Balance of Facilities			
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete
Analytical Laboratory			
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

1 The U.S. Army Corps of Engineers’ final report on its parametric analysis of certain options and funding scenarios indicated there is a low probability that DOE can meet the milestones for constructing and commissioning the HLW and PT facilities in the Amended Consent Decree under the current funding profile. Based on the results of this analysis, DOE considers the milestones for the HLW and PT facilities as “Under Analysis.” DOE also considers milestones A-1 and A-17 as being “Under Analysis” because the definition of Hot Start in Section IV-A-2 states: “‘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.”

DOE	=	U.S. Department of Energy.	LAW	=	low-activity waste.
HLW	=	high-level waste.	PT	=	pretreatment.
LAB	=	analytical laboratory.	WTP	=	Waste Treatment and Immobilization Plant.

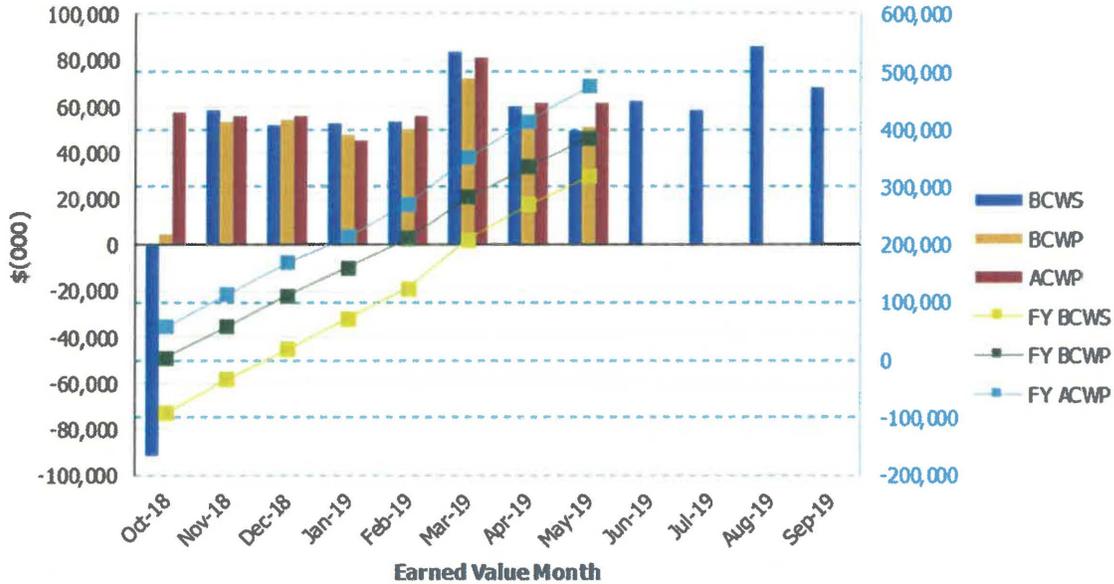
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: May 2019

**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 2018	(\$91,134)	\$4,875	\$57,739	-0.05	0.08	(\$91,134)	\$4,875	\$57,739	-0.05	0.08
Nov 2018	\$58,216	\$53,397	\$55,568	0.92	0.96	(\$32,918)	\$58,273	\$113,307	-1.77	0.51
Dec 2018	\$52,253	\$53,988	\$56,033	1.03	0.96	\$19,336	\$112,261	\$169,340	5.81	0.66
Jan 2019	\$52,627	\$47,946	\$45,129	0.91	1.06	\$71,963	\$160,207	\$214,469	2.23	0.75
Feb 2019	\$53,452	\$50,130	\$56,314	0.94	0.89	\$125,415	\$210,337	\$270,782	1.68	0.78
Mar 2019	\$84,017	\$72,378	\$81,190	0.86	0.89	\$209,432	\$282,715	\$351,972	1.35	0.80
Apr 2019	\$60,138	\$51,791	\$62,009	0.86	0.84	\$269,570	\$334,506	\$413,981	1.24	0.81
May 2019	\$49,760	\$51,378	\$61,299	1.03	0.84	\$319,329	\$385,884	\$475,280	1.21	0.81
Jun 2019	\$62,572									
Jul 2019	\$58,625									
Aug 2019	\$85,680									
Sep 2019	\$67,899									

PTD	\$11,616,123	\$11,541,589	\$11,497,314	0.99	1.00
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- | | | | | | |
|------|---|----------------------------------|------|---|---------------------------------|
| ACWP | = | actual cost of work performed. | PTD | = | project to date. |
| BCWP | = | budgeted cost of work performed. | EVMS | = | earned value management system. |
| BCWS | = | budgeted cost of work scheduled. | FY | = | fiscal year. |
| CPI | = | cost performance index. | SPI | = | schedule performance index. |

Performance Tracking	SV (\$x1,000)	CV (\$x1,000)
Cumulative (through May 2019)	(\$74,534)	\$44,275
Fiscal Year 2019 to-date	\$66,555	(\$89,396)
March 2019	(\$11,638)	(\$8,812)
April 2019	(\$8,347)	(\$10,218)
May 2019	\$1,619	(\$9,921)

SV = schedule variance.

CV = cost variance.

Earned Value Management System Analysis

Schedule Variance Summary:

For the March 2019 EVMS reporting period, a net unfavorable SV of approximately (\$11.6 million) was reported, primarily due to the following:

- DFLAW/Effluent Management Facility (EMF) Construction reported an unfavorable SV due to continued construction delays related to underground radiological waste transfer line coating issues, material delays pushing out EMF steel/vessel platform installation, and weather-related site closures.
- LAW Facility Plant Management and Startup reported an unfavorable SV due to delays in maintenance training, fewer procedures being worked due to a change in system handover priorities, weather-related site closures, delays in the implementation of the Documented Safety Analysis for the LAW Facility, and delayed in the development of operations procedures resulting in training and productivity inefficiencies.
- BOF Construction reported an unfavorable SV due to concrete work and final grading continuing to be impacted by design completion, along with weather-related site closures. BOF Startup reported an unfavorable SV due to the steam plant testing subcontract continuing to take longer to finalize than planned.
- LAB Startup reported an unfavorable SV due to delays in testing of heating, ventilation, and air-conditioning (HVAC) systems, which cannot be performed until after the airflow distribution testing is complete.

For the April 2019 EVMS reporting period, a net unfavorable SV of approximately (\$8.3 million) was reported, primarily due to the following:

- LAW Facility Construction reported an unfavorable SV due to National Electrical Code raceway bonding integrity stop work order requiring demobilization and then remobilization of work areas.
- LAW Facility Startup reported an unfavorable SV primarily due to continued system turnover delays affecting component and flush testing. Most notable for this reporting period were the HVAC systems, melter equipment support handling system, and radioactive liquid waste disposal (RLD) system.

- DFLAW/EMF Construction reported an unfavorable SV due to delays related to underground radioactive waste transfer line coating issues and procurement challenges in the EMF, which have delayed pipe installation.
- LAB Plant Management reported an unfavorable SV due to a delay in delivery of onsite analytical radioactive laboratory equipment and a subcontract award being delayed due to higher-than-anticipated bids.
- BOF Construction reported an unfavorable SV due to concrete work and final grading continuing to be impacted by design completion, along with the National Electrical Code raceway bonding integrity stop work order.

For the May 2019 EVMS reporting period, a net favorable SV of approximately \$1.6 million was reported, primarily due to the following:

- LAW Facility Equipment, BOF Plant Equipment, and DFLAW/EMF Plant Material each reported point adjustments, which resulted in a collective favorable SV of approximately \$9.0 million. In addition, DFLAW/EMF Plant Equipment reported a favorable SV of \$1.2 million due to partial or full schedule recovery.
- LAW Facility Startup reported an unfavorable SV primarily due to system turnover delays affecting component testing. Most notable for this reporting period were the HVAC systems, melter equipment support handling system, and glass formers reagent system.
- LAW Facility Plant Management reported an unfavorable SV primarily due to plant engineering documented safety analysis work scope being performed earlier than scheduled.
- LAW Facility Construction reported an unfavorable SV due to delays in procurement of gas analyzer equipment and bulk piping associated with vacuum breakers and pilot-actuated valves.
- LAB Plant Management reported an unfavorable SV due to delays in completing the calibrations and refurbishments of the bottled gas systems and a delay in delivery of onsite analytical radioactive laboratory equipment because the subcontract is being rebid.
- DFLAW/EMF Construction reported an unfavorable SV due to procurement challenges in the EMF, which have delayed pipe installation and issues attributed to underground radioactive waste transfer line coating repairs delaying pipe installation and backfill.

For the March 2019 EVMS reporting period, a net unfavorable CV of approximately (\$8.8 million) was reported, primarily due to the following:

- Project Services General/Other Services reported an unfavorable CV primarily due to weather-related site closures.
- LAW Facility Startup and Plant Management each reported an unfavorable CV due to equipment and component failures requiring additional testing and troubleshooting.

- LAB Startup reported an unfavorable CV due to delays in component and system testing. Equipment or component failures required additional testing and troubleshooting.
- BOF Plant Management reported an unfavorable CV due to corrective maintenance needed to support startup testing. Additional technical issue resolution was higher than planned for the water treatment building, chiller compressor plant, and resolving the water chemistry issues in the BOF water system.
- DFLAW/EMF Construction reported an unfavorable CV due to weather-related site closures that attributed to unplanned overtime labor charges for the extended workweek, delayed delivery of materials, back-charged work related to radioactive waste transfer line coating repairs, and support for snow and ice removal.

For the April 2019 EVMS reporting period, a net unfavorable CV of approximately (\$10.2 million) was reported, primarily due to the following:

- LAW Facility Construction reported an unfavorable CV primarily attributing to the National Electrical Code raceway bonding integrity stop work order requiring demobilization/remobilization of work areas and walkdowns.
- LAW Facility Startup reported an unfavorable CV primarily due to delays in component and system testing. Equipment or component failures required additional testing and troubleshooting, which resulted in additional scaffold needs, valve alignments, and damper work.
- BOF Construction reported an unfavorable CV due to required changes for the heat trace, special protective coatings, insulation subcontracts, and impacts on field nonmanual wage rates due to overtime work.
- DFLAW/EMF Construction reported an unfavorable CV due to delayed pipe procurements interrupting continuous flow of work and building congestion, impacts on field nonmanual wage rates due to overtime work, and back-charge work related to radioactive waste transfer line coating repairs.
- DFLAW General/Other Services reported an unfavorable CV due to a budget assumption that EMF vessels 5A/5B would ship in March 2019. The shipment slipped to April 2019, which resulted in an unfavorable CV in this reporting period.
- LBL Facility Services Plant Management reported an unfavorable CV due to continued support for extended weekend shifts.

For the May 2019 EVMS reporting period, a net unfavorable CV of approximately (\$9.9 million) was reported, primarily due to the following:

- LAW Facility Startup reported an unfavorable CV primarily due to delays related to equipment or component failures, which required additional testing and troubleshooting, as well as additional scaffold work, valve alignments, and damper work.
- LAW Facility Construction reported an unfavorable CV primarily due to the delayed completion of the National Electrical Code raceway bonding integrity work and direct-hire craft wage rates being higher than expected due to overtime work.

- BOF Construction reported an unfavorable CV due to required changes for the heat trace, special protective coatings, and insulation subcontracts.
- BOF Plant Management reported an unfavorable CV due to higher-than-planned startup support for emergent work associated with chiller repairs and nonlabor costs related to the standby diesel generator system refurbishment and the sanitary disposal system.
- DFLAW/EMF Construction reported an unfavorable CV due to back-charge work related to radioactive waste transfer line coating repairs, procurement challenges and delays, and premium overtime directed for schedule recovery.
- LBL Facility Services Plant Management reported an unfavorable CV due to increased hours in support of direct work scope and additional training hours needed for new craft hires.

WTP Project Cumulative through May 2019

The WTP Project is behind the planned work scheduled by approximately (\$74.5 million) through May 2019, but it has cost approximately \$44.2 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.

Note: Because the HLW Facility, PT Facility, and Project Services baselines have not been updated since 2012, the variances for the PT Facility and Project Services are reported against interim 2-year Bechtel National, Inc. (BNI) work plans, while the HLW Facility is reported against a 5-year work plan (also referred to as the Internal Forecast).

Pretreatment Facility

Federal Project Director: Tom Fletcher

Facility Federal Project Director: Wahed Abdul

The PT Facility will separate radioactive tank waste into high-level waste and low-activity waste 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, engineering design was 85 percent complete, procurement was 56 percent complete, construction was 43 percent complete, and startup and commissioning was 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,”⁵ which includes “Ensuring Control of the Pulse Jet Mixers” (i.e., T4 in relation to pulse-jet mixer [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 offgas treatment).⁶

Preliminary engineering work, documented previously in a BNI and ORP study, was completed and demonstrates how the standard high-solids vessel (SHSV) design can be implemented in the PT Facility (i.e., T6 in relation to design redundancy and in-service inspection). The engineering study showed that 16 SHSVs could be incorporated into the PT Facility, while meeting the PT Facility throughput contract requirements.

A previously documented engineering study provided technical support for a determination that the PT Facility vessel vent process system could support normal and post-design basis event operations of the SHSV concept design alternative (i.e., T8).

Testing and assessments for the resolution of remaining PT Facility technical issues are now complete. The erosion/corrosion technical issue (T5) was updated to correct a calculation error.

A final peer review in December 2018 – addressing vessel mixing concerns associated with PJMs (T4) – resulted in the need to develop additional documentation. This documentation was completed in the third quarter of fiscal year (FY) 2019.

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

⁵ *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) (ECF-221).

⁶ At the outset of the 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 creating five groups of issues. Consequently, the descriptions of the issues listed above may be both different by number and somewhat different by description.

Accomplishments during the Reporting Period:

- BNI completed work on the calculation to validate the analytical method for requirements verification of installed low solids PJM vessels (i.e., T4 in relation to PJM vessel mixing and control).
- BNI completed work on updating the calculation to support resolution of the erosion/corrosion technical issue (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels).
- ORP worked with BNI to complete the final resolution documentation for the remaining open technical issues related to PJM vessel mixing and control (T4) and erosion/corrosion in piping and vessels (T5).
- ORP submitted a letter to the Defense Nuclear Facilities Safety Board (DNFSB) in May 2019, documenting resolution of technical issue T4. The resolution signifies this technical issue has a path forward, which is considered adequate for updating the PT Facility safety basis and moves the issue to the next phase of design and engineering. The resolution of this technical issue is likely to require significant design changes to the PT Facility.
- BNI continued to manage plant equipment purchase orders to reduce storage and suspension cost and evaluate ways to reduce project procurement liability.
- BNI continued to implement ongoing asset maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained.

Accomplishments Expected in the Next Reporting Period:

- BNI will continue to manage plant equipment purchase orders to reduce storage and suspension cost and evaluate ways to reduce project procurement liability.
- BNI will continue to implement ongoing asset maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained.

Issues Encountered during the Reporting Period:

- The PT Facility planned work was reprioritized because of the need for additional resources to support DFLAW/LBL activities. Reduced resources resulted in a slower pace on technical issue resolution related to erosion/corrosion in piping and vessels and progression of the conceptual design incorporating the SHSV test design prototype.
 - *Impact:* Delay in completing PT Facility technical issue resolution and redesign activities.
 - *Actions initiated or taken to address potential project schedule slippage:* ORP is analyzing the potential impacts of continued funding limitations on the WTP Project by considering the USACE's parametric analysis, the Office of Project Management's independent assessment of the USACE's parametric analysis, the BNI parametric analysis, the PT Facility workshop discussions, and other inputs as appropriate.

Issues Expected in the Next Reporting Period:

- The PT Facility planned work will continue to be reprioritized due to increased focus on higher priority DFLAW/LBL activities.
 - *Impact:* The PT Facility redesign is likely to continue to be delayed.

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. Additionally, ORP has determined that 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) are sufficiently resolved. Resolution of all remaining technical issues, with notification to the DNFSB, is expected in the fourth quarter of FY 2019.

ORP worked with BNI to develop closure packages for each technical issue, defining workscope, 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 PJM:***

- *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 conducted a test program to demonstrate the ability of PJM vessels to mix high-solids slurries in the PT Facility adequately. 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.
- 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. 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. BNI completed data analysis and documentation for the completed full-scale PJM mixing system testing and the results from the final stage testing are expected to provide the required design and operations information to perform PT Facility design.
- A final peer review in December 2018 – addressing vessel mixing concerns associated with PJMs (T4) – resulted in the need to develop additional documentation. This documentation was completed in the third quarter of FY 2019.
- ORP submitted a letter to the DNFSB in May 2019, documenting resolution of technical issue T4. The resolution signifies this technical issue has a path forward, which is considered adequate for updating the PT Facility safety basis and moves the issue to the next phase of design and engineering. The resolution of this technical issue is likely to require significant design changes to the PT Facility.

- ***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:*

- BNI developed an engineering study for jet impingement erosion in PJM vessels.
- BNI developed an engineering calculation to address localized erosion wear allowance for PJM vessels.
- Laboratory scale corrosion testing to assess localized corrosion material degradation mechanisms is complete. This testing involved immersion of small metal samples in fluids representing anticipated WTP chemistries. Material

degradation mechanisms evaluated included pitting, crevice cracking, and stress cracking.

- A testing program to provide the technical information to underpin the design basis for erosion and corrosion was implemented.
 - A WTP basis of design change notice establishing the erosion/corrosion basis of design parameters was 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.
 - BNI completed work on updating the calculation to support resolution of the erosion/corrosion technical issue. ORP worked with BNI to complete the final resolution documentation for technical issue T5. ORP intends to submit a letter to the DNFSB in the fourth quarter of FY 2019, documenting resolution of T5.
- ***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 required completing engineering/nuclear safety assessments to ensure the PT Facility ventilation system meets performance requirements, which was completed following completion of PJM testing and its ventilation demands.
 - HEPA filter design and qualification testing have been performed and reported under the HLW Facility section. 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 off-normal conditions. Based on the successful filter design bounding all WTP normal and off-normal conditions, it was concluded that alternative filter designs and testing were not required. Testing of HEPA filters to ensure they can withstand environmental conditions and loading during normal and off-normal operating conditions is complete.
 - A previously documented engineering study provided technical support for a determination that the PT Facility's vessel vent process system could support normal and post-design basis event operations of the SHSV concept design alternative (i.e., T8). BNI's completion of the end-point documentation to resolve this technical issue was delivered to ORP in December 2017.

High-Level Waste Facility

Federal Project Director: Tom Fletcher

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 being performed in accordance with the FY 2017 through FY 2021 Interim Work Plan, which initially was for work primarily associated with asset maintenance and key ongoing procurement activities. With the receipt of increased funding in FY 2018, additional engineering workscope was performed and is planned for FY 2019 in anticipation of receiving engineering resources from DFLAW/LBL activities.

The planned work on the HLW Facility is being impacted by the delay of engineering staff transitioning from higher priority DFLAW/LBL activities. Engineering staff will continue to transition to HLW Facility activities as they complete their DFLAW/LBL activities. The impact of this delay is expected to continue into the next reporting period.

In March 2019, DOE awarded the AoA contract for the high-level waste treatment mission. The purpose of the AoA is to identify all viable options to meet mission needs and reduce risk, while providing decision-quality analysis and results to inform the acquisition authority and other stakeholders of all the alternatives to meet both Departmental and Environmental Management policy requirements. Additional information regarding the AoA process is included in the WTP section at the beginning of this report.

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

Accomplishments during the Reporting Period:

- BNI completed and issued an engineering study on April 1, 2019, for the HLW Facility hydrogen control strategy in alignment with the safety basis.
- ORP briefed Ecology on April 11, 2019, on the resolution of Ecology concerns regarding the RLD system and a tentative schedule for submittal of the revised permit request to support the vessel installations.
- BNI completed a hydrogen mitigation strategy emergency management workshop in May 2019, based on the results of an engineering study completed in April 2019.

- BNI continued to advance the RLD system to support a 60 percent design review scheduled for the fourth quarter of FY 2019.
- RLD-7 and RLD-8 vessels are in the final stages of fabrication for expected delivery by the end of 2019. These vessels are to be installed in the wet process cell to allow concrete slab placement above the wet cell. This activity supports roof installation and building enclosure.
- ORP continued to participate in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.
- BNI continued to focus on implementing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.

Accomplishments Expected in the Next Reporting Period:

- BNI will continue to ramp-up engineering design activities on key mechanical and process systems for the HLW Facility. Priority systems for 2019 include RLD and HLW Facility melter feed process systems. Engineering staff will continue to be hired and transitioned from DFLAW/LBL, as they become available.
- BNI will continue to manage plant equipment purchase orders to reduce storage and suspension costs and evaluate ways to reduce project procurement liability.
- ORP expects to continue meeting with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste treatment approaches.
- BNI will continue to implement ongoing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.

Issues Encountered during the Reporting Period:

- The HLW Facility planned work has been reprioritized because of the need for additional resources to support DFLAW/LBL activities. Reduced resources resulted in limited engineering assets to perform production work and in construction curtailment. Reprioritizing work activities affected design and construction such that installation of roofing and siding on the facility was delayed.
 - *Impact:* Delay in completing HLW Facility redesign activities.
 - *Actions initiated or taken to address potential project schedule slippage:* In accordance with the additional funding received for the HLW Facility in the *Consolidated Appropriations Act, 2018*, enacted on March 23, 2018, BNI has developed a plan for additional activities for the HLW Facility in FY 2019. Engineering resources from DFLAW/LBL modifications will be transitioned to support production engineering efforts for the HLW Facility as they become available.

Issues Expected in the Next Reporting Period:

- The HLW Facility planned work is expected to continue to be impacted by the delay of engineering resources transitioning from higher priority DFLAW/LBL activities. Engineering resource will continue to transition to HLW activities as they complete their DFLAW/LBL activities.
 - *Impact:* The HLW Facility redesign will progress only to the extent that additional funding and engineering resources allow.
 - *Actions initiated or taken to address potential project schedule slippage:* As discussed above, BNI has developed a plan for additional HLW Facility activities, in accordance with the additional funding received for the HLW Facility in the *Consolidated Appropriations Act, 2018*. BNI expects to continue implementing that plan in the next reporting period.
- BNI will continue seeking and transitioning engineering resources to support HLW Facility engineering restart.

Low-Activity Waste Facility⁷

Federal Project Director: Tom Fletcher

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 May 2019, the LAW Facility was 77 percent complete overall, engineering design was 94 percent complete, procurement was 93 percent complete, construction was 97 percent complete, and startup and commissioning was 24 percent complete.

Recent BNI efforts at the LAW Facility have focused on incorporating design changes, evaluating design changes against the approved safety basis, completion of procurement, and construction activities. Additionally, Construction is walking down completed systems with the Startup organization in support of turnover to Startup for testing and subsequent handover to the Plant Management organization.

To date, 68 of the 93 LAW Facility systems have been turned over from Construction⁸ to the Startup organization. In addition, Plant Management has accepted handover of 20 of the 93 LAW Facility systems from the Startup organization. The LAW Facility annex continues to support startup testing for systems in LBL.

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

Accomplishments during the Reporting Period:

- BNI received the following procurements from vendors:
 - Melter system crush pads
 - LAW Facility secondary offgas/vessel vent process vacuum breakers
 - Safety uninterruptible power electrical supply system batteries
 - Upper steel to support installation of active gas analyzer in room L-0304G
 - Quality-grade level three-way ball valves
 - Input switchgear breaker for melter power supplies.

⁷ Information about the related Low-Activity Waste Pretreatment System and tank-side cesium removal 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).

⁸ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

- BNI Construction turned over the following LAW Facility systems to the Startup organization:
 - LAW Facility primary offgas process systems 1 and 2 (LOP-L-01 and LOP-L-02)
 - LAW Facility container finishing handling systems 1 and 2 (LFH-L-01 and LFH-L-02)
 - LAW Facility concentrate receipt process systems 1 and 2 (LCP-L-01 and LCP-L-02)
 - LAW Facility melter feed process systems 1 and 2 (LFP-L-01 and LFP-L-02)
 - Environmental monitoring system (EMJ-L-01)
 - LAW Facility melter equipment support handling system (LSH-L-01)
 - LAW Facility C3 ventilation system (C3V-L-01)
 - LAW Facility C2 ventilation system (C2V-L-01)
 - Process and mechanical handling closed circuit television system (PTJ-L-01).
- BNI's Startup organization completed "System Available for Use" status for the following systems:
 - Domestic (potable) water system (DOW-L-01)
 - LAW Facility melter handling system (LMH-L-01)
 - Process service water (PSW-L-01).
- BNI's Startup organization submitted handover of the following systems to Plant Management:
 - Plant service air systems 1, 2, 3, and 4 (PSA-L-01, PSA-L-02, PSA-L-03, and PSA-L-04)
 - Heat trace electrical system (HTE-L-01)
 - Medium-voltage electrical system 1 (MVE-L-01)
 - Instrument service air systems 1, 2, 3, and 4 (ISA-L-01, ISA-L-02, ISA-L-03, and ISA-L-04)
 - Low-voltage electrical systems 1, 2, and 4 (LVE-L-01, LVE-L-02, and LVE-L-04).
- BNI's Plant Management completed refurbishment of the following systems:
 - Plant cooling water system 5 (PCW-L-05)
 - LAW Facility C1 ventilation system (C1V-L-01).

Accomplishments Expected in the Next Reporting Period:

- BNI Construction expects to continue completing additional three-week walkdowns on various systems in support of turning those systems over to the Startup organization.

- BNI Construction expects to turn the following LAW Facility systems over to the Startup organization during the fourth quarter of FY 2019:
 - Radioactive solid waste handling system (RWH-L-02)
 - LAW Facility container pour handling system (LPH-L-01)
 - Radioactive liquid waste handling system (RLD-L-01).
- BNI's Startup organization expects to continue handing over LAW Facility systems to Plant Management.

Issues Encountered during the Reporting Period:

- None.

Issues Expected in the Next Reporting Period:

- Completion of simulator software and procedures associated with loss-of-power testing has been identified as a risk.
 - *Actions expected to be initiated or taken to address potential project schedule slippage:* While testing is not scheduled until August 2020, BNI is providing senior-level attention to support the timely completion of operator training.

Balance of Facilities

Federal Project Director: Tom Fletcher

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 May 2019, BOF was 83 percent complete overall, engineering design was 94 percent complete, procurement was 100 percent complete, construction was 91 percent complete, and startup and commissioning was 62 percent complete. Design of the EMF was 98 percent complete.

BNI engineering efforts are focused on confirming EMF design, supporting EMF procurement activities, and providing field support for BOF startup activities. Construction efforts are focused on the installation of EMF pipe racks, piping, and HVAC ductwork. Startup testing continues for systems in the steam plant and chiller compressor plant.

To date, all BOF systems have now been turned over from the Construction⁹ to the Startup organization. In addition, 31 of the 56 BOF systems have been handed over from the Startup organization to Plant Management.

The BOF systems 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.

⁹ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management. In addition, the sanitary disposal and lighting/electrical systems are now under the Island Completion team.

Accomplishments during the Reporting Period:

- BNI Construction fabricated stack ductwork for utility building 126MA.
- BNI resubmitted the DFLAW radioactive air operating permit application to ORP.
- BNI's Startup organization submitted handover of the following systems to Plant Management:
 - Medium-voltage electrical system in the standby diesel generator building (MVE-B-03)
 - Standby diesel generator system (SDX-B-01)
 - Process control system in the chiller/compressor building (PCJ-B-06)
 - Process control system in the diesel fuel oil storage facility (PCJ-B-07).
- BNI Construction completed installation of steel for east-west exterior pipe racks for EMF.
- BNI vendor completed its factory-acceptance testing of the EMF powerhouse.
- BNI Construction received the vendor-fabricated EMF powerhouse and completed its installation.
- BNI Construction received vessels 5A and 5B in support of the DFLAW/EMF process system.
- BNI Construction has been welding four vessels in the EMF and initiated installation of the skirts for vessels 5A and 5B in support of the DFLAW/EMF process system.
- BNI Construction completed installation of more than 50 percent of large- and small-bore piping in the EMF.
- BNI Engineering completed development of software functional requirements specifications for multiple EMF systems.
- BNI Construction continued to install EMF pipe racks between the process building and utility buildings.
- BNI Construction continued installation of HVAC and electrical commodities and large- and small-bore piping at the EMF utilities building.

Accomplishments Expected in the Next Reporting Period:

- BNI Construction expects to continue installation of structural steel and piping, along with HVAC ductwork at EMF.
- BNI Startup and Plant Management will continue their focus on ensuring BOF air, water, and power systems are ready for operations.

Issues Encountered during the Reporting Period:

- The EMF overall construction schedule is being challenged by the late arrival of bulk materials (piping, valves, and structural steel) and the compact configuration of the facility.
 - *Impact:* Delays to the EMF construction schedule narrow the available periods for startup testing and commissioning of EMF. 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 has constructed large items, such as the C3 and C5 roof structures, outside of the EMF footprint to minimize interferences and disruptions during installation.
 - BNI has accelerated discrete work items such as the C3 and C5 roof structures where possible.
 - A night shift was initiated to accelerate completion of pipe installation and de-conflict work interferences between the installations of different commodity types.
 - BNI is communicating daily with vendors in an effort to improve quality and accelerate delivery.
- The installation of waste transfer piping has been delayed due to the identification of manufacturing defects and inadequate verification testing by the piping supplier.
 - *Impact:* This issue is not currently affecting the overall DFLAW schedule, but the effort required to correct the situation is substantial. No impact is anticipated on 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 working with the vendor to repair identified manufacturing defects
 - BNI is working with the vendor to correct and verify the procedures that resulted in testing errors.

Issues Expected in the Next Reporting Period:

- Continued challenges with the delivery of bulk construction materials for EMF, as described above.
- Continued challenges with waste transfer piping repair, retesting, and installation, as described above.

Analytical Laboratory

Federal Project Director: Tom Fletcher

Facility Federal Project Director: Jason Young

The LAB will support WTP operations by analyzing feed, vitrified waste, and effluent streams. As of May 2019, the LAB was 79 percent complete overall, engineering design was 94 percent complete, procurement was 100 percent complete, construction was 99 percent complete, and startup and commissioning was 39 percent complete.

Activities in the LAB are focused on system turnovers and startup testing of LAB systems. To date, all LAB systems have been turned over from BNI Construction¹⁰ to the Startup organization. In addition, 12 of the 35 LAB systems have been handed over from Startup to Plant Management. Procedures and methods development continues at the offsite laboratory facility. BNI is preparing to move a limited amount of analytical equipment onsite to the LAB.

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

Accomplishments during the Reporting Period:

- BNI Startup submitted handover of the following system to Plant Management:
 - Autosampling control system (ASJ-A-01).
- BNI Startup continued component and system startup testing for multiple LAB systems.
- BNI Plant Management continued operational testing and refurbishment of multiple LAB systems.
- BNI continued offsite activities to progress LAB procedure development and analytical method validation.

Accomplishments Expected in the Next Reporting Period:

- BNI is expected to continue startup testing of LAB systems and handover of systems to Plant Management (i.e., operations) when startup testing of systems is complete.

Issues Encountered during the Reporting Period:

- None.

Issues Expected in the Next Reporting Period:

- None.

¹⁰ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

Written Directives for Waste Treatment and Immobilization Plant Project

Written directives given by DOE to the WTP contractor from April 1, 2019, through June 30, 2019, for work required by the Consent Decrees.

Five letters of direction were issued to BNI during the reporting period in reference to Contract No. DE-AC27-01RV14136, *Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant*. The letters are listed below and copies are attached:

- 19-CPM-0047, “Contract No. DE-AC27-01RV14136 – Award Fee Determination for Period Calendar Year 2018,” dated April 19, 2019
- 19-WTP-0050, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0018, ‘LBL/DFLAW Change Multiple Plant Equipment and Material Procurements,’” dated May 6, 2019
- 19-WTP-0051, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0071, ‘EMF Partial Giveback of Implementation of ANSI/ISA 5.06.01,’” dated May 6, 2019
- 19-WTP-0066, “Contract No. DE-AC27-01RV14136 – Identification of Factors to Improve Project Performance and Schedule Recovery Plan,” dated May 24, 2019
- 19-NSD-0011, “Contract No. DE-AC27-01RV14136 – Proposed Approach for Safe Control of Sodium Hydroxide in the Low-Activity Waste Facility,” dated June 13, 2019.

Enclosure

(8 Pages Excluding Cover Sheet)

Written Directives from April 1, 2019, through June 30, 2019



OFFICE OF RIVER PROTECTION

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

19-CPM-0047

APR 19 2019

Valerie McCain, Project Director
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – AWARD FEE DETERMINATION FOR PERIOD
CALENDAR YEAR 2018

- References: 1. Contract No. DE-AC27-01RV14136 – Section B.8 Award Fee Administration.
2. Performance Evaluation and Measurement Plan (PEMP) for Award Fee Period
2018, Rev.1.

The U.S. Department of Energy, Office of River Protection (ORP), has evaluated Bechtel National Inc. (BNI) performance during the Calendar Year (CY) 2018 against the criteria established in the subject contract, Section J Attachment R, Performance Evaluation Measurement Plan (Reference 2).

I am making this determination based on the Performance Evaluation Board's recommendation, BNI's Self-Assessment, detailed performance input from U.S. Department of Energy Headquarters and Environmental Management staff, the Award Fee Evaluation Report, and my own personal observations of BNI performance. I have determined that BNI earned an overall rating of Satisfactory, earning \$3,767,815 (47.9%) of the award fee pool for the CY 2018 period. The attached Award Fee Determination Scorecard reflects my determination, identifies the Achievements, and Areas for Improvement relating to performance objectives of the PEMP.

If you have any questions, please contact me, (509) 372-2315.

A handwritten signature in black ink, appearing to read "B. T. Vance".

Brian T. Vance, Manager
Office of River Protection
Fee-Determining Official

CPM:REC

Attachment

cc w/attach: BNI Correspondence



OFFICE OF RIVER PROTECTION

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

MAY 06 2019

19-WTP-0050

Valerie McCain, Project Director
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF POINT ADJUSTMENT ASSOCIATED WITH BASELINE CHANGE PROPOSAL 24590-WTP-TN-PC-19-0018, “LBL/DFLAW CHANGE MULTIPLE PLANT EQUIPMENT AND MATERIAL PROCUREMENTS”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change Proposal 24590-WTP-TN-PC-19-0018, LBL/DFLAW Change Multiple Plant Equipment and Material Procurements,” CCN: 312384, dated April 03, 2019.

The U.S. Department of Energy (DOE), Office of River Protection (ORP) hereby approves implementation of the *negative* historical Point Adjustment of \$7,330,163 associated with the subject Baseline Change Proposal (BCP). The subject BCP removes scope and budget tied to multiple procurements that have either been completed, or the scope was determined not to be needed. The BCP decreases the budget in the Performance Measurement Baseline by \$7,757,989, including the negative Point Adjustment of \$7,330,163, and was done in accordance with contractor procedures.

It should be noted that the processing of this BCP does not meet ORP’s expectations for timely development of BCPs. This BCP was not opened until March 2019, when these procurements were scheduled in the March to November of 2018 timeframe, resulting in the need for the Point Adjustment. These adjustments should have been made at the time they were occurring. This BCP is yet another example related to the timely processing of change control issue, and ORP will take this, as well as other similar BCPs, into account in the evaluation of Bechtel National, Inc.’s performance related to the Performance Evaluation and Measurement Plan fee determination.

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 I.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.

MAY 06 2019

Valerie McCain
19-WTP-0050

-2-

If you have any questions, please contact me, or you may contact Jon Peschong, Director, Waste Treatment and Immobilization Plant Project Controls Division, (509) 376-0375.



Thomas W. Fletcher
Assistant Manager, Federal Project Director
Waste Treatment and Immobilization Plant

WTP:RLC

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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MAY 06 2019

19-WTP-0051

Valerie McCain, Project Director
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF POINT ADJUSTMENT
ASSOCIATED WITH BASELINE CHANGE PROPOSAL 24590-WTP-TN-PC-19-0071,
“EMF PARTIAL GIVEBACK OF IMPLEMENTATION OF ANSI/ISA 5.06.01”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0071, EMF Partial Giveback of Implementation
of ANSI/ISA 5.06.01,” CCN: 312385, dated April 04, 2019.

The U.S. Department of Energy (DOE), Office of River Protection (ORP) hereby approves implementation of the *negative* historical Point Adjustment of \$196,479 associated with the subject Baseline Change Proposal (BCP). The subject BCP gives back scope and budget for work not needed now, as mutually agreed by Bechtel National, Inc. and ORP. The BCP decreases the budget in the Performance Measurement Baseline by \$403,616, includes the negative Point Adjustment of \$196,479, and was being done in accordance with contractor procedures and in a timely matter.

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 I.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.

If you have any questions, please contact me, or you may contact Jon Peschong, Director, Waste Treatment and Immobilization Plant Project Controls Division, (509) 376-0375.


Thomas W. Fletcher
Assistant Manager, Federal Project Director
Waste Treatment and Immobilization Plant

WTP:RLC

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60
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MAY 24 2019

19-WTP-0066

Valerie McCain, Project Director
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – IDENTIFICATION OF FACTORS TO IMPROVE PROJECT PERFORMANCE AND SCHEDULE RECOVERY PLAN

The U.S. Department of Energy, Office of River Protection remains concerned that despite actions taken to date by Bechtel National, Inc. (BNI) to improve project delivery performance, their performance is not improving as intended or required to meet contractual milestones. During the Waste Treatment and Immobilization Plant (WTP) Executive Sponsor Meeting in March 2019, BNI identified a number of opportunities and intended actions to improve project performance. BNI also stated that a realignment of the Estimate to Complete forecast would be performed in parallel with performance improvement actions and further communicated the intent to submit a revised delivery schedule forecast by late June 2019.

To date, project delivery data shows actions taken by BNI have not resulted in the performance recovery necessary to efficiently and effectively achieve contract milestones. As a result, BNI is directed to identify factors impacting project delivery and schedule execution performance and provide a recovery plan by June 14, 2019. The recovery plan actions should align with the issues identified by the factors, and any other internal or corporate reviews, with metrics that provide objective evidence that the actions being taken are delivering the required results for targeted project delivery performance areas. The resulting metrics and existing project performance data shall be briefed to the U.S. Department of Energy on a monthly basis to support ongoing measurement of progress and allow for mutual understanding of future course corrections. Ultimately, the recovery plan should enable BNI to improve schedule and cost performance areas to meet current contract milestones.

The Office of River Protection remains committed to the successful delivery of the WTP Project and will continue to constructively engage to assist in the identification and elimination of barriers in performance, as demonstrated during the May 17 workshop.

MAY 24 2019

Valerie McCain
19-WTP-0066

-2-

If you have any questions, please contact me, or you may contact Mat Irwin, Deputy, Waste Treatment and Immobilization Plant, (509) 373-9820.



Thomas W. Fletcher
Assistant Manager, Federal Project Director
Waste Treatment and Immobilization Plant

RMI:WTP

cc:BNi Correspondence



OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60
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JUN 13 2019

19-NSD-0011

Valerie McCain, Project Director
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – PROPOSED APPROACH FOR SAFE CONTROL OF SODIUM HYDROXIDE IN THE LOW-ACTIVITY WASTE FACILITY

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, "Proposed Approach for Safe Control of Sodium Hydroxide in the Low Activity Waste Facility," CCN: 314360, dated June 7, 2019.

As a result of the efforts undertaken by the U.S. Department of Energy (DOE), Office of River Protection (ORP), and Bechtel National, Inc. (BNI), the Reference provides BNI's evaluation of the adequacy of controlling sodium hydroxide not contaminated with radioactive process feed under Title 10 Code of Federal Regulations, Part 851, *Worker and Health Safety Program* (10 CFR 851).

ORP specified control of the sodium hydroxide reagent system using Title 10 Code of Federal Regulations Part 830, *Nuclear Safety Management* (10 CFR 830), to fully align with 10 CFR 830 and DOE standards. This approach ensured the hazard controls (10 CFR 830.3) were properly established consistent with 10 CFR 830 and DOE standards. ORP's review has identified that with respect to non-radioactive sodium hydroxide hazards these elements within DOE standards are guidance. This grading is already documented in existing ORP direction by only requiring "consideration" of hazard control elevation for a case such as that of non-radioactive sodium hydroxide. As such, ORP has flexibility where other regulatory means are available and applied that will also ensure effective control of the hazard.

ORP has evaluated the hazard controls BNI derived through the original Low-Activity Waste (LAW) Facility hazards analysis under 10 CFR 830 and agrees that effective operational hazard controls would also likely be developed for this common industrial hazard through application of 10 CFR 851. The sodium hydroxide hazard is routinely addressed in industry using national consensus codes and standards with simple and effective hazard control approaches that do not require special analyses. The sodium hydroxide within the Waste Treatment and Immobilization Plant is similar to, or lesser than, that encountered in standard industrial practice. Accordingly, ORP agrees with BNI that the sodium hydroxide reagent hazard (non-radioactive) may be considered a standard industrial hazard for purposes of implementation of DOE-STD-3009 Change Notice 3, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*.

JUN 13 2019

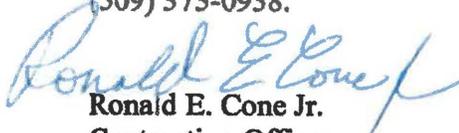
Accordingly, BNI may suspend LAW Facility safety basis implementation efforts for hazard controls that are exclusively associated with control of hazards arising from sodium hydroxide that has not been contaminated with process feed pending completion of the associated LAW Facility safety basis change. As identified by BNI, appropriate hazard controls for this sodium hydroxide will require implementation under 10 CFR 851. BNI must implement effective hazard controls in accordance with integrated safety management for the sodium hydroxide hazard under 10 CFR 851 prior to introduction of this sodium hydroxide hazard into the LAW Facility or the Effluent Management Facility.

Immediate changes to the LAW Facility safety basis are not necessary to implement this proposal since the LAW Facility safety basis will not be implemented pursuant to 10 CFR 830 until just prior to the DOE operational readiness review. The changes to the LAW Facility safety basis process hazards analysis, documented safety analysis, and technical safety requirements may be executed over the time period between now and prior to the DOE operational readiness review in a manner that minimizes project impacts. ORP will work with BNI to determine the most effective sequence of changes for the LAW Facility safety basis to facilitate this change. ORP requests that BNI provide a proposed schedule modification within 60 days that integrates this change into the LAW Facility safety basis implementation schedule.

Recognizing this transition, the safety evaluation process will also require modification. ORP requests within 30 days that BNI identify proposed changes in the execution of the safety evaluation process that can appropriately limit review of changes to the sodium hydroxide system and components affected by this change.

The Reference identifies a range of net potential cost benefits associated with conversion of the sodium hydroxide controls to control under 10 CFR 851 when this change is implemented. ORP is agreeing to this changed hazard control approach with the understanding that this proposed change will result in net cost benefits to the project. As BNI completes its planning process, if BNI determines that this change will not result in a net benefit, then BNI is requested to resubmit this proposal for ORP review and further direction.

If you have any questions, please contact Kevin Sandgren, Director, Nuclear Safety Division, (509) 373-0938.


Ronald E. Cone Jr.
Contracting Officer


Ben J. Harp
Deputy Manager

NSD:KRS

cc: A.J. Dobson, BNI
D.X. Klein, BNI
BNI Correspondence