



**U.S. Department of Energy
Hanford Site**

NOV 13 2019

19-ECD-0081

Ms. Alexandra K. Smith, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
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Ms. Smith:

NOVEMBER 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 – JULY 1, 2019, THROUGH SEPTEMBER 30, 2019

This letter transmits The U.S. Department of Energy November 2019 Quarterly Report (Attachment) under Section IV-C-1 of the subject Consent Decree, for the period of July 1, 2019, through September 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

NOV 13 2019

cc w/attach:

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Administrative Record (D-16C-03N)
Environmental Portal

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**Attachment
19-ECD-0081
(70 Pages Excluding Cover Sheet)**

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

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Acronyms and Abbreviations

AoA	analysis of alternatives
BNI	Bechtel National, Inc.
BOF	Balance of Facilities
CV	cost variance
DFLAW	direct-feed low-activity waste
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
NLD	nonradioactive liquid drain
ORP	Office of River Protection
PJM	pulse-jet mixer
PT	Pretreatment (Facility)
RLD	radioactive liquid waste disposal
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 July 1, 2019, through September 30, 2019. Earned Value Management System (EVMS) data and descriptions cover the period ending August 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 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 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:

- Tank AX-102 construction acceptance testing
- High-resolution resistance leak detection monitoring system, fabrication and installation in the AX Tank Farm (Tank AX-102)
- Installed Tank AX-102 in-tank video recording system
- Removed Tank AX-103 R14 sluicer
- Completed pre-retrieval moisture data logging and gamma scans for Tank AX-102
- Removed the Tank AX-103 R9B thermocouple
- Removed AX-101 R9B thermocouple
- Completed removal of Tank A-101 C Pit cover block
- Completed installation of the air inlet stations for tanks A-104 and A-105
- Completed direct-push sampling of soil near tanks A-104 and A-105 (installation of remaining additional borehole)
- Completed building A-285 construction acceptance tests and operational acceptance tests and Tank AX-102 construction acceptance test and operational acceptance test punch list items
- Initiated Tank AX-102 retrieval operations
- Completed installation of AX Tank Farm lighting upgrade
- Completed waste retrieval design for A Tank Farm (tanks 101, 102, 103, and 106)

- Completed A Tank Farm exhauster ducting installation (no connections to the tank risers)
- Completed Tank A-103 Pit C cleanout
- Completed Tank A-101 Pit C cleanout
- Removed AX-103 Pit B Riser 14 sluicer

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 and Tank AX-101
- Removal of long-length equipment in the A Tank Farm
- 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)
 - Continue installation of tank air inlet stations
- Install waste retrieval equipment in Tank AX-104
- Re-video remaining waste volume in Tank C-106
- Continue Tank AX-102 waste retrieval operations (67 percent complete)

Accomplishments Expected in the Next Reporting Period

- Install AZ Tank Farm lighting upgrade
- Remove Tank A-102 thermocouple
- Install Tank A-101 air inlet station
- Remove Tank AX-103 R1B pump
- Remove Tank A-101 R2 thermocouple
- Remove A-101 1C Pit stuck shield plug

Issues Encountered in the Reporting Period

- On September 13, 2019, Tank AX-102 retrieval operations were suspended, due to issues associated with sluicer number 2 in the AX-102 C Pit and sluicer number 3 in the AX-102 D Pit. Operation of sluicer number 3 was suspended due to one of the hydraulic pistons, located at the articulating elbow, being identified as slightly bent. The initial investigation indicates that the sluicer contacted an in-tank obstruction. The sluicer is operable, with restrictions, until the engineering analysis is completed. Use of sluicer number 2 was stopped after liquid was observed flowing into the tank from the enclosed sluicer pit. The source of leak was the waste transfer line connection at the top of the

sluicer. The waste retrieval system was in a recirculation mode at the time. Repairs are underway and the system will be retested.

- 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. Retrieval of Tank AX-102 began on August 31, 2019, with the exhausters running at 1,000 scfm. DOE is assessing retrieval performance at this air flow rate, due to the high potential for fogging at various stages of the retrieval process, that may affect the overall schedule.

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.

- On April 18, 2019, Ecology provided a notice of incompleteness for the A and AX tank farms notice of construction letter (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, (COT-ENV-NOC-5252)”). ORP provided a response on May 14, 2019 (19-ECD-0038, “Response to 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, (COT-ENV-NOC-5252)”), which justified that the original application met the regulations and asked Ecology to continue processing the application.
- As of September 12, 2019, fogging in Tank AX-102 during retrieval operations resulted in 10 hours 21 minutes lost, from a total of 197 operating hours.

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.
- 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

- Report RPP-RPT-58933, *241-AX-102 Tank Waste Retrieval Work Plan*, modification to update schedule and vapor monitoring sections was approved.

Accomplishments Expected in the Next Reporting Period

- None.

Issues Encountered in the Reporting Period

- None.

Issues Expected in the Next Reporting Period

- None.

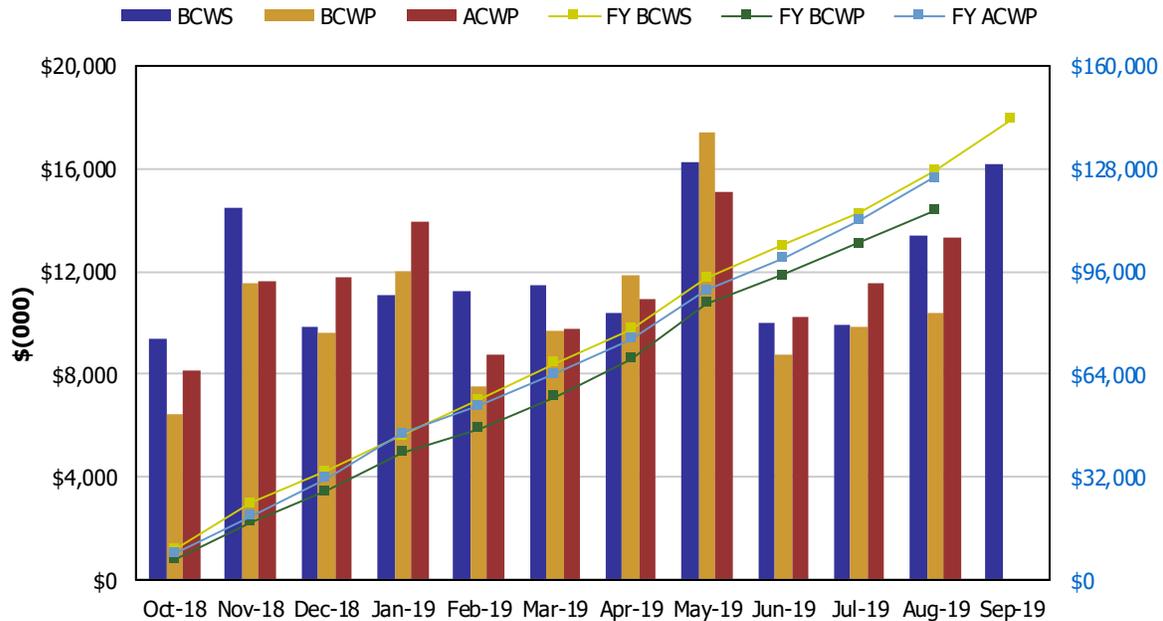
Tank Farm Earned Value Management System Quarterly Analysis

Earned Value Data: Fiscal Year 2019

August-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	\$8,740	\$10,257	0.88	0.85	\$104,092	\$94,828	\$100,335	0.91	0.95
Jul 2019	\$9,931	\$9,859	\$11,507	0.99	0.86	\$114,023	\$104,687	\$111,841	0.92	0.94
Aug 2019	\$13,359	\$10,410	\$13,315	0.78	0.78	\$127,381	\$115,097	\$125,156	0.90	0.92
Sep 2019	\$16,142					\$143,523				

CTD	\$1,068,120	\$1,045,827	\$1,103,654	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 June 2019, July 2019, and August 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 of an unfavorable SV in the month the work was planned.

The June 2019 unfavorable SV of (\$1,234,900) was primarily due to:

- During Construction Acceptance Testing (CAT) substantial repairs/rework were required, resulting in delays affecting completion of the retrieval system in Tank AX-102.
- Final installation of major equipment in Tank AX-104 is on hold, until Tank AX-102 retrieval operations are well underway, to minimize radiation exposure of the Tank AX-104 equipment in the high radiation environment.

The July 2019 unfavorable SV of (\$71,500) was primarily due to:

- Postponement of the installation of Tank AX-104 in-tank equipment, such as the pump and sluicers, until retrieval operations at Tank AX-102 have made sufficient progress. The installation of Tank AX-104 equipment will be timed to manage exposure to the tank's high radiation levels, which can negatively affect longevity.

The August 2019 unfavorable SV of (\$2,949,000) was primarily due to:

- Postponement of the installation of Tank AX-104 in-tank equipment, such as the pump and sluicers, until retrieval operations at Tank AX-102 have made sufficient progress. The installation of Tank AX-104 equipment will be timed to manage exposure to the tank's high radiation levels, which can negatively affect longevity.
- Delays in the installation and turnover of the Tank AX-102 waste retrieval system moved the start of retrieval operations from mid-July to the end of August.

Cost variance (CV) summary:

The June 2019 unfavorable CV of (\$1,516,900) was primarily due to:

- Field crews had to install a new water supply pipeline to the A-285 Building due to a leak discovered during testing.

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."

- Field crews spent more time than planned fabricating ventilation system duct spools and condensate drain lines. In addition, the rework and field verification for the duct spool installation was greater than the estimated value.

The July 2019 unfavorable CV of (\$1,647,700) was primarily due to:

- Rework required for the water supply piping to the A-285 water and chemical building
- Rework required to replace damaged check valves in the POR466 water system manifold
- Physical deterioration/damage of the thermocouple in A-103 Riser 2, which required changes to the approach for removing the thermocouple, resulting in additional costs.

The August 2019 unfavorable CV of (\$2,905,310) was primarily due to:

- Rework and testing of components in the A-285 water and chemical building, the POR466 water system manifold, and other items found during startup and readiness activities requiring expenditure of additional labor and construction subcontractor resources.
- Inefficiencies during installation of the A Tank Farm ventilation system and delays in the excavation for the A Tank Farm electrical conduit installation resulted in the unfavorable CV. The excavation required coordination with the planned 242-A Evaporator electrical outage.

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
 July 1, 2019, through September 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	490	0	490	2,003	24%	56
A/AX Tank Farms	13,447	28,477	41,924	242,537	17%	63
Total	13,937	28,477	42,414	244,540	17%	

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).

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 July 1, 2019, through September 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 August 2019, DFLAW modifications for the WTP Project were 78 percent complete, engineering design was 94 percent complete, procurement was 97 percent complete, and construction was 65 percent complete. As of August 2019, total LBL facilities were 78 percent complete, engineering design was 96 percent complete, procurement was 96 percent complete, construction was 92 percent complete, and startup and commissioning was 43 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*.

Membership on the DOE AoA Steering Committee was revised in July 2019 to include senior-level representation from DOE's Office of Project Management, Office of Cost Estimating and Program Evaluation, Office of the Chief Financial Officer, Office of Environmental Management, and Acquisition and Project Management for the National Nuclear Security Administration.

On September 4, 2019, DOE notified Ecology that there is a serious risk DOE may be unable to meet milestones for the HLW and PT facilities in the Amended Consent Decree.⁵ The notification stated:

...it is appropriate, out of an abundance of caution, to provide this notice of serious risk as described in the Amended Consent Decree ... Specifically, the Department is providing notice of a “serious risk ... that DOE may be unable to meet” Milestones A-1 and A-17 (Waste Treatment Plant), Milestones A-2 to A-4 (HLW Facility), and A-13 to A-16 and A-19 (PT Facility) of that Decree. With respect to the “preliminary recovery plan” required by the Amended Consent Decree, completion of the AoA is the first and most critical aspect of that plan. The steps that follow the completion of the AoA will be determined based on the final report's conclusions and the Department's consultations with Ecology.⁶

Accomplishments during the Reporting Period:

- The AoA team held an onsite working session July 16 through 18, 2019, to continue development of the detailed alternative definitions. An Ecology observer attended.
- The AoA team held an onsite working session August 13 through 15, 2019, to continue development of each alternative, which will lead to a review and the screening out of alternatives that do not meet the mission program requirements. An Ecology observer attended.
- ORP conducted a video teleconference orientation for the new members of the DOE AoA Steering Committee on August 16, 2019. The purpose of the orientation was to discuss AoA progress to date and revisions to the criteria and alternatives included in the Study Plan (Rev. 1).
- ORP conducted a workshop for the DOE AoA Steering Committee in Washington, D.C., on September 13, 2019. Representatives from the Parsons AoA team, along with the ORP Steering Committee Chair attended. ORP staff in Richland provided technical support via video teleconference. The objective of the workshop was to provide a detailed briefing on revisions to the *Waste Treatment and Immobilization Plant High-Level Waste Treatment Analysis of Alternatives Study Plan* (Study Plan), which included updated alternatives for analysis and incorporated AoA Steering Committee comments from the video teleconference orientation held on August 16, 2019. Ecology was provided with detailed meeting notes summarizing the workshop.
- ORP participated in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.

⁵ 19-ORP-0007, 2019, “Discussion of Amended Consent Decree – State of Washington v. Perry (E.D. Wash. No. 2:08-CV-5085).”

⁶ Footnotes 3 and 4 were omitted from this quote.

- 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:

- Pursuant to Section IV-C-3(b) of the Amended Consent Decree,⁷ in a letter dated September 25, 2019, Ecology requested a meeting with DOE staff to answer any questions Ecology may have concerning the serious risk as well as to discuss mitigation options, cooperative solutions, and problem-solving opportunities. The meeting was scheduled for October 16, 2019.
- The AoA team is planning onsite working sessions the weeks of October 7, 2019, and December 9, 2019. Topics will include modeling progress, continued development of detailed scope descriptions, process diagrams, facility sizing, and pre-conceptual layouts incorporating input and comments resulting from the AoA Steering Committee briefing on September 13, 2019, and detailing the path forward to complete the AoA. An Ecology observer will be invited to participate.
- ORP expects to approve the Study Plan (Rev. 3). The Study Plan (Rev. 3) was updated to incorporate comments from new AoA Steering Committee members to include the method, approach, and schedule to be used in conducting an independent AoA for the identified mission need.
- ORP expects to approve the DOE *AoA Steering Committee Charter* (Rev. 2), modified to reflect changes to the AoA Steering Committee membership. The *Steering Committee Charter* (Rev. 2) describes the functions, responsibilities, and authorities of the committee members responsible for providing oversight of the performance of the AoA team.
- 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.

⁷ *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016).

Waste Treatment and Immobilization Plant Milestones

Milestone	Title	Due Date	Status
Waste Treatment and Immobilization Plant (WTP) Project			
D-00A-06	Complete Methods Validations	06/30/2032	On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033	At Risk ¹
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	At Risk ¹
Pretreatment (PT) 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	At Risk ¹
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-O0001A/1B	12/31/2031	At Risk ¹
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	At Risk ¹
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	At Risk ¹
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	At Risk ¹
High-Level Waste (HLW) 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	At Risk ¹
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	At Risk ¹
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	At Risk ¹
Low-Activity Waste (LAW) 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
Balance of Facilities			
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete
Analytical Laboratory (LAB)			
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

¹ 19-ORP-0007, 2019, "Discussion of Amended Consent Decree – State of Washington v. Perry (E.D. Wash. No. 2:08-CV-5085)."

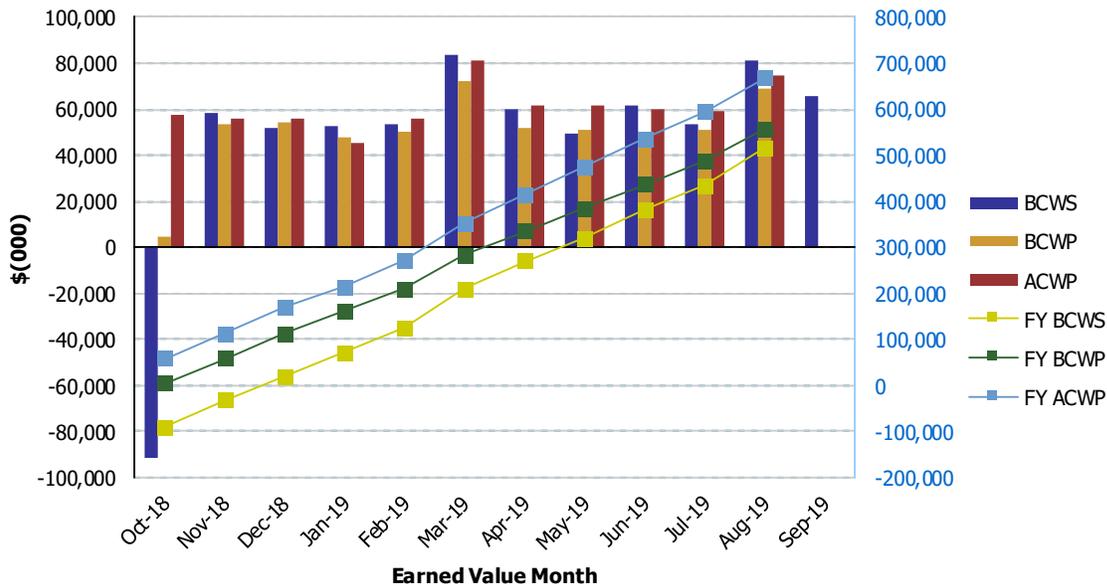
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: August 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	\$61,624	\$50,393	\$59,959	0.82	0.84	\$380,954	\$436,277	\$535,239	1.15	0.82
Jul 2019	\$53,706	\$51,148	\$59,407	0.95	0.86	\$434,660	\$487,425	\$594,646	1.12	0.82
Aug 2019	\$81,476	\$69,297	\$74,371	0.85	0.93	\$516,136	\$556,722	\$669,018	1.08	0.83
Sep 2019	\$65,534									

PTD	\$11,812,930	\$11,712,427	\$11,691,051	0.99	1.00
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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.
- PTD = project to date.
- EVMS = earned value management system.
- FY = fiscal year.
- SPI = schedule performance index.

Performance Tracking	SV (\$x1,000)	CV (\$x1,000)
Cumulative (through August 2019)	(\$100,503)	\$21,375
Fiscal Year 2019 to-date	\$40,586	(\$112,296)
June 2019	(\$11,231)	(\$9,566)
July 2019	(\$2,558)	(\$8,259)
August 2019	(\$12,179)	(\$5,075)

SV = schedule variance.

CV = cost variance.

Earned Value Management System Analysis

Schedule Variance Summary:

For the June 2019 EVMS reporting period, a net unfavorable SV of approximately (\$11.2 million) was reported, primarily due to the following:

- LAW Facility Construction and LAW Facility Startup reported an unfavorable SV due to craft direct-hire resource availability, prioritization of electricians, delays in procurement of gas analyzer equipment, and bulk piping associated with vacuum breakers, which delayed turnover.
- DFLAW / Effluent Management Facility (EMF) Construction continues to report an unfavorable SV due to procurement challenges in the EMF, delaying pipe installation, and issues attributed to underground radioactive waste transfer line coating repairs delaying pipe installation and backfill.
- LAW Facility and DFLAW Engineering reported point adjustments, which resulted in a collective unfavorable SV of approximately (\$3.7 million). Baseline change proposals were implemented in May; however, the number of punch list items planned in June were not completed.

For the July 2019 EVMS reporting period, a net unfavorable SV of approximately (\$2.6 million) was reported, primarily due to the following:

- LAW Facility Construction reported an unfavorable SV due to craft availability for prioritization of electricians and delayed piping installation stemming from initial steel delays.
- LAW Facility Plant Equipment reported an unfavorable SV due to delay in delivery of melter power supply components.
- LAW Facility Startup reported an unfavorable SV primarily due to system turnover delays affecting component testing. Most notable for this reporting period were the heating, ventilation, and air-conditioning (HVAC); LAW Facility container pour handling; and radioactive liquid waste disposal systems turnover delays.

- EMF Construction continued to have an unfavorable SV due to procurement challenges with piping and structural steel.
- DFLAW/LBL Engineering reported a collective favorable SV of approximately \$3.0 million due to point adjustment corrections on engineering subcontracts, offsetting some of the overall unfavorable SV.

For the August 2019 EVMS reporting period, a net unfavorable SV of approximately (\$12.2 million) was reported, primarily due to the following:

- LAW Facility Construction is taking longer than planned to complete subcontract work focused on penetration seals, HVAC installation, and coatings; delays in procurement and cancellation of requests for proposals for testing material (i.e., glass-forming chemicals, immobilized low-activity waste containers, and startup frit⁸) due to price exceeding proposal; and system turnover delays for HVAC, LAW Facility melter feed process, LAW Facility container pour handling, and radioactive liquid waste disposal systems being impacted by additional component testing.
- BOF Construction had continued delays in final grading due to project priorities.
- EMF Construction was delayed due to procurement challenges with piping, electrical, and instrumentation equipment.
- DFLAW Facility Services reported an administrative point adjustment correction of approximately \$5.9 million on a termination settlement and equipment buyback from the vendor, offsetting some of the overall unfavorable SV.

For the June 2019 EVMS reporting period, a net unfavorable CV of approximately (\$9.6 million) was reported, primarily due to the following:

- LAW Facility Engineering reported an unfavorable CV due to labor charges from January, adjusted to BOF in this reporting period; safety software other direct costs, which currently cannot be earned until the final report is completed; and complexity of the punch list items.
- LAW Facility Startup reported an unfavorable CV due to equipment or component testing failures, requiring increased hours to perform additional testing and troubleshooting.
- DFLAW/EMF Construction continued to report 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 Startup and Plant Management reported an unfavorable CV due to increased hours to support direct work, additional training hours for new craft hires,

⁸ Frit is a startup material for melters. It is a mixture of chemicals melted in a furnace, cooled to form glass, and fragmented or formed into a specific shape and particle size.

premium overtime directed for schedule recovery, increased subcontract administrator support, and purchases of test equipment and field supplies.

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

- LAW Facility Construction reported an unfavorable CV due to higher nonmanual support required for pen seals, coatings and insulation subcontractor, and overtime cost.
- LAW Facility Startup reported an unfavorable CV due to equipment/component failures, which caused testing to be paused and required additional testing.
- BOF Plant Management reported an unfavorable CV due to higher-than-planned refurbishment costs, sanitary sewer pumping costs, and increased technical support required for maintenance.
- DFLAW Construction reported an unfavorable CV due to back-charge work for waste transfer line coating repairs, procurement challenges, and overtime work for schedule recovery.

For the August 2019 EVMS reporting period, a net unfavorable CV of approximately (\$5.1 million) was reported, primarily due to the following:

- LAW Facility Construction was unable to maximize bulk installations efficiently. Startup continued to have higher costs due to equipment/component failures and repairs and additional testing.
- BOF Construction had higher costs than planned for heat trace and special protective coatings and insulation subcontract work. Plant Management had higher costs than planned due to ongoing corrective maintenance needed to support system testing.
- DFLAW Construction had higher costs than planned due to back-charge work for waste transfer line coating repairs, field nonmanual, and overtime work.

WTP Project Cumulative through August 2019

The WTP Project is behind the planned work scheduled by approximately (\$100.5 million) through August 2019, but it has cost approximately \$21.4 million less to perform the work than originally estimated. The cumulative-to-date SVs and CVs are reported against the DFLAW/LBL 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 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 completed resolution of all technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees⁹ including, “Preventing Potential Hydrogen Build-Up” (i.e., T1 in relation to hydrogen gas events in vessels and T3 in relation to hydrogen in piping and ancillary vessels), “Preventing Criticality” (i.e., T2 in relation to criticality in pulse-jet mixer [PJM] vessels), “Ensuring Control of the Pulse Jet Mixers” (i.e., T4 in relation to PJM vessel mixing and control), “Protecting Against Possible Erosion and Corrosion” (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels), and “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process offgas treatment).¹⁰

In addition, ORP and BNI completed resolution of technical issues not included in the Third Order Regarding Motions to Modify Consent Decrees (i.e., T6 in relation to design redundancy and in-service inspection and T7 in relation to seismic ground motion criteria changes around 2005).

ORP notified BNI in July 2019 that it agreed with BNI’s determination that the PT Facility’s technical issues have been resolved.¹¹

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

Accomplishments during the Reporting Period:

- ORP and BNI completed final resolution documentation in July 2019 for the remaining open technical issues related to PJM vessel mixing and control (T4) and erosion/corrosion in piping and vessels (T5).

⁹ *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016).

¹⁰ At the outset of U.S. Department of Energy’s identification of the technical issues, the issues were grouped into eight issues. During the litigation, some issues were combined with others into five groups of issues. Consequently, the descriptions of the issues listed may be both different by number and somewhat different by description.

¹¹ 19-WTP-0078, “Contract No. DE-AC27-01RV14136 – Concurrence on the Resolution of Technical Issues (T1 – T8) for the Waste Treatment and Immobilization Plant Pretreatment Facility,” July 16, 2019.

- BNI continued to manage suspended 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 suspended 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 standard high-solids vessel test design prototype.
 - *Impact:* Delay in completing PT Facility technical issue resolution and redesign activities was encountered. However, resolution of technical issues is now complete.
 - *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 and BNI completed resolution of the five technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees including, “Preventing Potential Hydrogen Build-Up” (i.e., T1 and T3), “Preventing Criticality” (i.e., T2), “Ensuring Control of the Pulse Jet Mixers” (i.e., T4), “Protecting Against Possible Erosion and Corrosion” (i.e., T5), and “Ensuring Ventilation Balancing” (i.e., T8).

ORP worked with BNI to develop closure packages for each technical issue, defining 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 mix high-solids slurries in PT Facility process vessels (i.e., T4) adequately.
 - *Status:* The actions completed in reference to this technical issue have been 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. 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:* The actions completed in reference to this technical issue have been 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.

- ***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:* The actions completed in reference to this technical issue have been 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.

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 fiscal year (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 in FY 2019 and is expected to continue to ramp up in FY 2020 in anticipation of receiving engineering resources from DFLAW/LBL activities.

Planned work on the HLW Facility is being impacted by the delay of engineering staff transitioning from higher priority DFLAW/LBL activities and reduced funding in FY 2020. 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 viable options for meeting mission needs and reducing risk, while providing decision-quality analysis and results to inform the acquisition authority and other stakeholders of 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 continued to manage suspended plant equipment purchase orders to reduce storage and suspension costs and evaluate ways to reduce project procurement liability.
- Radioactive liquid waste disposal system vessels 7 and 8 (i.e., RLD-7 and RLD-8) are in the final stages of fabrication for expected delivery to BNI by the end of calendar year 2019. These vessels are to be installed in the wet process cell to allow concrete slab

placement above the wet cell, when construction resumes. This activity supports roof installation and building enclosure.

- BNI has successfully completed the 60-percent design review of the radioactive liquid waste disposal system.
- ORP continued to participate in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.
- BNI continued to implement 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 to develop a work plan for FY 2020 and FY 2021.
- BNI will continue to ramp-up engineering design activities on key mechanical and process systems for the HLW Facility. Priority systems for FY 2020 include the design of HLW Facility melter feed process and the primary offgas process systems.
- BNI will continue to manage suspended plant equipment purchase orders to reduce storage and suspension costs and evaluate ways to reduce project procurement liability.
- 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.
- 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 and remaining design 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 and

reduced FY 2020 funding. Engineering resources will continue to transition to HLW Facility 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 funding received for the HLW Facility. 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 Facility¹²

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 August 2019, the LAW Facility was 79 percent complete overall, engineering design was 96 percent complete, procurement was 98 percent complete, construction was 98 percent complete, and startup and commissioning was 27 percent complete.

Recent BNI efforts at the LAW Facility have focused on implementing design changes against the approved safety basis and 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 for facility commissioning.

To date, 78 percent of LAW Facility systems have been turned over from Construction¹³ to the Startup organization. In addition, Plant Management has accepted handover of 28 percent of the LAW Facility systems from the Startup organization. The active gas analyzer is the only piece of tagged equipment remaining to be delivered out of over 6,800 pieces of equipment.

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

Accomplishments during the Reporting Period:

- Vendor factory-acceptance testing of the active gas analyzer has been initiated to support shipment prior to the end of calendar year 2019.
- BNI received the following procurements from vendors:
 - Eight LAW Facility melter power supply bus duct adapters.
 - LAW Facility pressure regulators to support the offgas exhauster.

¹² 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).

¹³ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

- LAW Facility melter impact barriers (crush pads).
- LAW Facility secondary offgas/vessel vent process vacuum breakers.
- BNI Construction turned over the following LAW Facility systems to the Startup organization:
 - Uninterruptible power electrical system (UPE-L-02).
 - LAW Facility plant cooling water (PCW-L-02).
 - LAW Facility container export handling (LEH-L-01).
 - LAW Facility radioactive liquid waste disposal (RLD-L-01).
 - LAW Facility radioactive solid waste handling (RWH-L-02).
 - LAW Facility container pour handling (LPH-L-01).
- BNI's Startup organization submitted handover of the following systems to Plant Management:
 - Process service water system (PSW-L-01).
 - LAW Facility melter handling (LMH-L-01).
 - LAW Facility network infrastructure systems 1 and 2 (FNJ-L-01, FNJ-L-02).
 - LAW Facility nonradioactive liquid drain (NLD) system (NLD-L-01).

Accomplishments Expected in the Next Reporting Period:

- BNI vendor expects to ship the active gas analyzer prior to the end of calendar year 2019.
- BNI Construction expects to continue completing walkdowns on various systems in support of turning those systems over to the Startup organization.
- 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 August 2019, BOF was 85 percent complete overall, engineering design was 96 percent complete, procurement was 100 percent complete, construction was 92 percent complete, and startup and commissioning was 67 percent complete. Design of the EMF was 99 percent complete.

BNI engineering efforts are focused on supporting EMF construction and providing field support for BOF startup activities. Construction efforts are focused on the installation of EMF piping, facility siding, and major HVAC components. Startup testing continues for systems in the steam plant and chiller compressor plant.

All BOF systems, excluding EMF, have been turned over from Construction¹⁴ to the Startup organization. In addition, 64 percent of BOF systems to date have been handed over from the Startup organization to Plant Management. Eight percent of all EMF systems, specifically related to the EMF powerhouse, have been turned over from Construction to the Startup organization.

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

Accomplishments during the Reporting Period:

- BNI completed preassembly of the EMF stack to support final placement.
- BNI completed setting of process vessels DEP-VSL-00004A/B and DEP-VSL-00005A/B at EMF.
- BNI completed installation of all vessels in the EMF.
- BNI Construction turned the following EMF powerhouse systems over to the Startup organization:
 - EMF fire detection and alarm system (FDE-E-01).
 - EMF C1 ventilation system (C1V-E-01).
 - EMF lighting electrical system (LTE-E-01).
 - EMF uninterruptible power electrical system (UPE-E-01).
 - EMF grounding and lighting protection electric system (GRE-E-01).
 - EMF process control system (PCJ-E-01).

¹⁴ 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.

- BNI's Startup organization received EMF flow meters, control valves, and active confinement ventilation equipment.
- BNI's Startup organization submitted handover of the following systems to Plant Management:
 - Process control and communications systems for the following buildings:
 - Cooling tower facility (PCJ-B-04).
 - Standby diesel generator building (PCJ-B-11).
 - Low-voltage electrical (480/208/120 V) in the following buildings:
 - Steam plant (LVE-B-03).
 - Cooling tower facility (LVE-B-06).
 - Anhydrous ammonia storage facility (LVE-B-11).
- BNI installed platform steel, interior stairs, and bulk piping and hangers at EMF.
- BNI continued to pull the cables between the powerhouse and EMF.
- BNI continued installation of structural steel, piping, HVAC ductwork, roofing, and siding at EMF.
- BNI continued restoration of the high-pressure steam and steam condensate systems in preparation for upcoming testing.
- BNI continued preparations for receipt of the stand-by diesel generator in support of upcoming load testing.
- BNI continued excavating around the EMF for installation of transfer piping.
- BNI continued installation of bulk process piping, electrical commodities, roofing, and siding at the EMF utilities building.

Accomplishments Expected in the Next Reporting Period:

- BNI expects to begin testing for the high-pressure steam and steam condensate systems.
- BNI expects to begin load testing for the stand-by diesel generator.
- BNI expects to continue installation of structural steel and piping and HVAC ductwork at EMF.
- BNI's Startup organization 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:

- Consistently high iron content in the BOF NLD system has complicated the process for conducting transfers external to WTP.
 - *Impact:* High iron content in the BOF NLD system caused delays in cooling tower repairs and LAW Facility system flushing. However, the effect of these 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 been limiting discharges to the BOF NLD system and sampling the NLD system contents prior to any batch transfers
 - A semi-permanent filtration capability is being considered to mitigate this issue during initial system startups.
 - Delays in the completion of startup testing for BOF is complicating and delaying the startup testing program for the LAB and LAW Facility.
 - *Impact:* Delays in completion of the steam plant, chiller compressor plant, and cooling tower facility are affecting the ability for BOF systems to provide permanent support services to the LAB and LAW Facility. The lack of steam has required BNI to place temporary heating in place for some facilities and delayed testing for HVAC systems in the LAB and LAW Facility. However, the effect of these 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:*
 - Temporary air compressors are used to support system testing in the LAB and LAW Facility.
 - System outages are taken as necessary to support repair and testing activities on the cooling tower facility.
 - The overall EMF construction schedule has been delayed by the late arrival of bulk materials (e.g., 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:*
 - Where possible BNI has constructed large items outside of the EMF footprint to minimize interferences and disruptions during installation.
 - BNI has prioritized specific procurements and work activities where necessary.
 - A night shift has been maintained to de-conflict work interferences between the installations of different commodity types.
 - Limited startup testing has been performed off site as part of vendor factory acceptance testing.
-

Issues Expected in the Next Reporting Period:

- Continued challenges with the completion of startup testing for BOF, as described above
- Continued challenges with the EMF construction completion, 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 August 2019, the LAB was 81 percent complete overall, engineering design was 96 percent complete, procurement was 100 percent complete, construction was 99 percent complete, and startup and commissioning was 45 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 Construction¹⁵ to the Startup organization. In addition, 78 percent of the 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 on site to the LAB.

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

Accomplishments during the Reporting Period:

- BNI completed testing and balancing for the C2, C3, and C5 cascading ventilation system design.
- BNI completed startup testing and handover of the following systems to Plant Management:
 - LAB closed circuit television (PTJ-A-01).
 - LAB domestic water (DOW-A-02).
 - LAB C1 ventilation (C1V-A-01).
 - LAB chilled water (CHW-A-01).
 - LAB bottled nitrogen gas (BNG-A-01).
 - LAB autosampling (ASX-A-01).
 - LAB low-pressure steam (LPS-A-01).
 - LAB steam condensate water (SCW-A-01).
 - LAB plant vacuum air (PVA-A-01).
 - LAB bottled argon gas (BAG-A-01).
 - LAB bottled helium gas (BHG-A-01).
- BNI Plant Management received HEPA filters to support ventilation operational testing.
- BNI's Startup organization submitted handover of the following systems to Plant Management:
 - Demineralized water (DIW-A-01).
 - Domestic (potable) water (DOW-A-01).

¹⁵ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

- BNI's Startup organization 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 expects 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.

Written Directives for Waste Treatment and Immobilization Plant Project

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

Fourteen 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-WTP-0080, “Contract No. DE-AC27-01RV14136 – Disapproval of Point Adjustment Associated With Baseline Change Proposal 24590-WTP-TN-PC-19-0027, ‘Test, Operate and Maintain DFLAW Plant Network Systems (CME),” dated July 8, 2019
- 19-WTP-0075, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0121, ‘FS - Partial Removal of Waste and Chemical Management Scope from BNI,” dated July 16, 2019
- 19-WTP-0077, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0122, ‘Startup Relocation Control Account Correction,” dated July 16, 2019
- 19-WTP-0078, “Contract No. DE-AC27-01RV14136 – Concurrence on the Resolution of Technical Issues (T1 – T8) for the Waste Treatment and Immobilization Plant Pretreatment Facility,” dated July 16, 2019
- 19-WTP-0079, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0119, ‘Multi-Year (2011-2018) Rebill,” July 16, 2019
- 19-WTP-0086, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0147, ‘BOF – Emergency Turbine Generator Vendor Buyback of Equipment,” dated July 29, 2019
- 19-WTP-0096, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0123, ‘LAW – Procedures and Plant Engineering DSA Implementation – Partial Descope,” dated August 7, 2019
- 19-WTP-0097, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0056, ‘LBL – Realignment of Existing Environmental Protection Scope and Budget,” August 7, 2019
- 19-WTP-0099, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0155, ‘Startup LAB Integrated Balancing Subcontract Support to HVAC Testing and Balancing,” dated September 10, 2019
- 19-WTP-0102, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0158, ‘EMF – Ready

to Operate – Scope Breakout and Variance for Plant Management Procedures,” dated September 16, 2019

- 19-WTP-0103, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0162, ‘LAW Active Gas Analyzer Reclassification from Q to CM and DFLAW – Engineering Reforecast Identified Changes,” dated September 16, 2019
- 19-WTP-0104, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0139, ‘FS – DOE Order 414.1D REA Settlement and Budget Reconciliation – Mod 454,’ and 24590-WTP-IFT-PC-19-0036, ‘PS – DOE Order 414.1D REA Settlement and Budget Reconciliation – Mod 454,” dated September 16, 2019
- 19-WTP-0107, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0101, ‘DFLAW – Alignment to Engineering Organization Change,” dated September 24, 2019
- 19-WTP-0106, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0116, ‘DFLAW – Transfer of EMF Subcontract Roofing and Siding Scope to Direct Hire,” September 26, 2019.

In addition, two letters were issued to The Honorable Bruce Hamilton, Chairman, Defense Nuclear Facilities Safety Board. The letters are listed below and copies are attached:

- 19-WTP-0041, “Resolution of Defense Nuclear Facility Safety Board Concerns Related to Control of Pulse-Jet Mixers Overblow and Impact to Vessels at the Waste Treatment and Immobilization Plant,” dated May 15, 2019.¹⁶
- 19-WTP-0092, “Resolution of Defense Nuclear Facility Safety Board Concerns Related to Erosion Wear Allowances for Piping, Vessels, and Pulse-Jet Mixers at the Waste Treatment and Immobilization Plant,” dated August 30, 2019.

¹⁶ 19-WTP-0041 was inadvertently omitted from the Quarterly Report covering the April 1, 2019, to June 30, 2019 reporting period.

Enclosure

(28 Pages Excluding Cover Sheet)

Written Directives from July 1, 2019, through September 30, 2019



OFFICE OF RIVER PROTECTION

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

JUL 08 2019

19-WTP-0080

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

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – DISAPPROVAL OF POINT ADJUSTMENT ASSOCIATED WITH BASELINE CHANGE PROPOSAL 24590-WTP-TN-PC-19-0027, TEST, OPERATE AND MAINTAIN DFLAW PLANT NETWORK SYSTEMS (CME)

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, "Baseline Change Proposal 24590-WTP-TN-PC-19-0027, Test, Operate and Maintain DFLAW Plant Network Systems (CME)," CCN: 314140, dated June 04, 2019.

The U.S. Department of Energy, Office of River Protection hereby disapproves implementation of the historical Point Adjustment of **(\$521,700)** associated with the subject Baseline Change Proposal (BCP) due to insufficient justification. The subject BCP transfers scope and budget from Startup to Plant Engineering and Maintenance for post-installation testing, and additional staffing to support system operation and maintenance. BCP's should not move Budgeted Cost of Work Scheduled from prior periods into the future, thus erasing a schedule variance.

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.

A handwritten signature in blue ink, appearing to read "Thomas W. Fletcher".

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

WTP:JJD

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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

JUL 16 2019

19-WTP-0075

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-19-0121, FS –
PARTIAL REMOVAL OF WASTE AND CHEMICAL MANAGEMENT SCOPE FROM BNI

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0121, FS – Partial Removal of Waste and
Chemical Management Scope from BNI,” CCN: 314142, dated June 04, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of (\$277,747) associated with the subject Baseline Change Proposal (BCP). The subject BCP removes partial commissioning waste and chemical management scope from Bechtel National, Inc. due to a change in approach (make or buy). The scope will be added to Waste Treatment Completion Company Plant Operations / Plant Management in a future trend. The BCP decreases the budget in the Performance Measurement Baseline by \$1,331,407, including the negative Point Adjustment of \$277,747, and was done in accordance with contractor procedures.

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.

JUL 16 2019

Valerie McCain
19-WTP-0075

-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.


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

WTP:JJD

cc: G.T. Lengenfelder, BNI
M.G. McCluskey, BNI
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

JUL 16 2019

19-WTP-0077

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

Mrs. McCain:

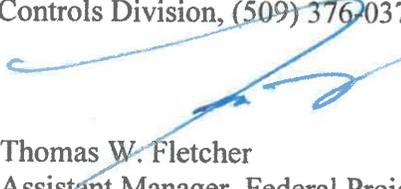
CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF POINT ADJUSTMENT
ASSOCIATED WITH BASELINE CHANGE PROPOSAL 24590-WTP-TN-PC-19-0122,
STARTUP RELOCATION CONTROL ACCOUNT CORRECTION

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, "Baseline Change
Proposal 24590-WTP-TN-PC-19-0122, Startup Relocation Control Account
Correction," CCN: 314143, dated June 04, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment (PA) of **(\$952,613)** associated with the subject Baseline Change Proposal (BCP). The subject BCP corrects an error where the scope and budget for Startup non-manual employees was improperly coded to the incorrect control account. This BCP corrects the error by transferring the scope and budget to the appropriate account. As this action is correcting an "error and omission," these PA deletions and alignments are appropriate. There are no changes to the Performance Measurement Baseline.

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:JJD

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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

JUL 16 2019

19-WTP-0078

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

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – CONCURRENCE ON THE RESOLUTION OF TECHNICAL ISSUES (T1 – T8) FOR THE WASTE TREATMENT AND IMMOBILIZATION PLANT PRETREATMENT FACILITY

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, "Completion of All Technical Endpoint Deliverables and Issue Resolution Activities for the Pretreatment Facility," dated June 20, 2019, CCN: 303801.

The U.S. Department of Energy, Office of River Protection is in agreement with Bechtel National, Inc.'s determination, as summarized in the Reference, that Pretreatment Facility technical issues have been effectively resolved. This outcome will support a future decision associated with the completion of the Pretreatment Facility.

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 Wahed Abdul, Engineering, Procurement, and Construction Federal Project Director, Waste Treatment and Immobilization Plant, (509) 438-0455.


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

WTP:LKH

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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

JUL 16 2019

19-WTP-0079

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-19-0119,
MULTI-YEAR (2011-2018) REBILL

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0119, Multi-Year (2011-2018) Rebill,”
CCN: 314141, dated May 29, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$1,972,300)** associated with the subject Baseline Change Proposal (BCP). As noted, on Page 3 of the Change Notice package, this BCP replaces provisional rates and updates the Bechtel National, Inc. cost processor with actual rates (stemming from Defense Contract Audit Agency Audit), resulting in a point adjustment change to prior reported values. The BCP decreases the Performance Measurement Baseline by **(\$1,972,300)** with a point adjustment value of **(\$1,972,300)**. The change is being done in accordance with contractor procedures.

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.

A handwritten signature in blue ink, appearing to read "T. W. Fletcher".

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

WTP:JJD

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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

JUL 29 2019

19-WTP-0086

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-19-0147, BOF
– EMERGENCY TURBINE GENERATOR VENDOR BUYBACK OF EQUIPMENT

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0147, BOF – Emergency Turbine Generator
Vendor Buyback of Equipment” CCN: 309420, dated July 11, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$3,056,873)** associated with the subject Baseline Change Proposal (BCP). The subject BCP addresses a termination settlement agreement with the supplier, which incorporates a buyback credit agreement and reduces outstanding line items in the purchase order. The BCP decreases the Performance Measurement Baseline by **(\$3,056,873)**. The change is being done in accordance with contractor procedures.

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.

A handwritten signature in blue ink, appearing to read "T. Fletcher".

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

WTP:JJD

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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

AUG 07 2019

19-WTP-0096

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-19-0123, LAW
– PROCEDURES AND PLANT ENGINEERING DSA IMPLEMENTATION – PARTIAL
DESCOPE

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Contract No.
DE-AC27-01RV14136 Baseline Change Proposal 24590-WTP-TN-PC-19-0123
LAW – Procedures and Plant Engineering DSA Implementation – Partial
Desclope,” CCN: 309419, dated July 11, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$730,000)** associated with the subject Baseline Change Proposal. The Baseline Change Proposal recognizes a change in execution strategy made by document 24590-LAW-DSA-NS-18-0001, *Documented Safety Analysis for the Low-Activity Waste Facility*, implementation team affecting Plant Management procedures and Plant Engineering. The Baseline Change Proposal decreases the budget in the Performance Measurement Baseline by **(\$968,792)**, and was done in accordance with contractor procedures.

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.

AUG 07 2019

Valerie McCain
19-WTP-0096

-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.


f. Thomas W. Fletcher

Assistant Manager, Federal Project Director
Waste Treatment and Immobilization Plant

WTP:JJD

cc: G.T. Lengenfelder, BNI
M.G. McCluskey, BNI
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

19-WTP-0097

AUG 07 2019

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-19-0056, “LBL - REALIGNMENT OF EXISTING ENVIRONMENTAL PROTECTION SCOPE AND BUDGET”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change Proposal 24590-WTP-TN-PC-19-0056, LBL - Realignment of Existing Environmental Protection Scope and Budget,” CCN: 309418, dated July 11, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$710,000)** associated with the subject Baseline Change Proposal (BCP). The subject BCP realigns existing environmental protection scope and budget with how the work is being performed. The BCP decreases the budget in the Performance Measurement Baseline by **(\$1,018,301)**, and was done in accordance with contractor procedures.

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.

AUG 07 2019

Valerie McCain
19-WTP-0097

-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.


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

WTP:JJD

cc: G.T. Lengenfelder, BNI
M.G. McCluskey, BNI
BNI Correspondence



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

SEP 10 2019

19-WTP-0099

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-19-0155, “STARTUP LAB INTEGRATED BALANCING SUBCONTRACT SUPPORT TO HVAC TESTING AND BALANCING”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change Proposal 24590-WTP-TN-PC-19-0155, Startup LAB Integrated Balancing Subcontract Support to HVAC Testing and Balancing,” CCN: 315266, dated July 31, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of \$7,138 associated with the subject Baseline Change Proposal (BCP). The subject BCP transfers the existing budget from the Analytical Laboratory (LAB) labor control account to the LAB non-labor control account for the Intermech, Inc. subcontract for LAB HVAC testing and balancing, and requests additional scope and budget to complete the Intermech, Inc. subcontract of LAB HVAC testing and balancing. The BCP increases the budget in the Performance Measurement Baseline by \$809,561, and was done in accordance with contractor procedures.

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.

Valerie McCain
19-WTP-0099

-2-

SEP 10 2019

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.


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

WTP:DCM

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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

SEP 16 2019

19-WTP-0102

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-19-0158, “EMF - READY TO OPERATE - SCOPE BREAKOUT AND VARIANCE FOR PLANT MANAGEMENT PROCEDURES”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change Proposal 24590-WTP-TN-PC-19-0158, EMF - Ready to Operate - Scope Breakout and Variance for Plant Management Procedures,” CCN: 315267, dated August 02, 2019.

The U.S. Department of Energy (DOE), Office of River Protection (ORP) hereby approves implementation of the historical Point Adjustment (PA) of **(\$577,190)** associated with the subject Baseline Change Proposal (BCP). The subject BCP provides additional detail for Plant Management scope which is required to better understand the impact of Plant Management on Project completion, deletes refurbishment scope that is currently budgeted, and increases procedure preparation forecast. The BCP decreases the budget in the Performance Measurement Baseline by **(\$802,651)**, and was done in accordance with contractor procedures.

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.

SEP 16 2019

Valerie McCain
19-WTP-0102

-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.


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

WTP:JJD

cc: G.T. Lengenfelder, BNI
M.G. McCluskey, BNI
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

SEP 16 2019

19-WTP-0103

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-19-0162,
“LAW ACTIVE GAS ANALYZER RECLASSIFICATION FROM Q TO CM AND DFLAW –
ENGINEERING REFORECAST IDENTIFIED CHANGES”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0162 LAW Active Gas Analyzer
Reclassification from Q to CM and DFLAW – Engineering Reforecast Identified
Changes,” CCN: 315268, dated August 14, 2019.

The U.S. Department of Energy (DOE), Office of River Protection (ORP) hereby approves implementation of the historical Point Adjustment (PA) of **(\$1,893,447)** associated with the subject Baseline Change Proposal (BCP). The subject BCP captures cost and schedule savings respective to the Low-Activity Waste Facility active gas analyzer procurement reclassification and removes/reduces and transfers scope. The BCP decreases the budget in the Performance Measurement Baseline by **(\$7,941,266)**, and was done in accordance with contractor procedures.

It should be noted that even though the BCP title says, “... Active Gas Analyzer Reclassification ...,” cost reduction associated with the Gas Analyzer is less than \$300K. The trend includes budget reduction due to many other scope changes, as noted in the details of the trend.

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.

SEP 16 2019

Valerie McCain
19-WTP-0103

-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:JJD

cc: G.T. Lengenfelder, BNI
M.G. McCluskey, BNI
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

19-WTP-0104

SEP 16 2019

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-19-0139, “FS - DOE ORDER 414.1D REA SETTLEMENT AND BUDGET RECONCILIATION - MOD 454,” AND 24590-WTP-IFT-PC-19-0036, “PS - DOE ORDER 414.1D REA SETTLEMENT AND BUDGET RECONCILIATION - MOD 454”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change Proposal 24590-WTP-TN-PC-19-0139 and Internal Forecast Trend 24590-WTP-IFT-PC-19-0036 [sic] Regarding DOE Order 414.1D REA Settlement and Budget Reconciliation – Mod 454, CCN: 315271, dated August 02, 2019.

The U.S. Department of Energy (DOE), Office of River Protection (ORP) hereby approves implementation of the historical Point Adjustment (PA) of **(\$1,231,179)** associated with the subject Baseline Change Proposal (BCP) and Internal Forecast Trend (IFT). The subject BCP and IFT reconciles the existing baseline with the final negotiated Request for Equitable Adjustment No. 2015-005, Rev 1, DOE O 414.1D, Change 1, Quality Assurance Program Implementation. The BCP/IFT decreases the budget in the Performance Measurement Baseline by **(\$453,584)**, and was done in accordance with contractor procedures.

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.

SEP 16 2019

Valerie McCain
19-WTP-0104

-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.


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

WTP:JJD

cc: G.T. Lengenfelder, BNI
M.G. McCluskey, BNI
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

19-WTP-0107

SEP 24 2019

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-19-0101,
“DFLAW – ALIGNMENT TO ENGINEERING ORGANIZATION CHANGE”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0101, DFLAW – Alignment to Engineering
Organization Change,” CCN: 315263, dated July 30, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$12,500)** associated with the subject Baseline Change Proposal (BCP). The subject BCP transfers the remaining scope and budget from Production Engineering control accounts to Resident Engineering control accounts and transfers the scope for the spare melter and spare melter cooling. The BCP decreases the budget in the Performance Measurement Baseline by **(\$55,405)**, and was done in accordance with contractor procedures.

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.

Valerie McCain
19-WTP-0107

-2-

SEP 24 2019

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:JJD

cc: G.T. Lengenfelder, BNI
V. McCain, BNI
M.G. McCluskey, BNI
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

19-WTP-0106

SEP 26 2019

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-19-0116,
“DFLAW – TRANSFER OF EMF SUBCONTRACT ROOFING AND SIDING SCOPE TO
DIRECT HIRE”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0116, DFLAW – Transfer of EMF Subcontract
Roofing and Siding Scope to Direct Hire,” CCN: 315265, dated August 2, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$404,635)** associated with the subject Baseline Change Proposal (BCP). The subject BCP reconciles the transfer of planned work scope for the steel erection, roofing, and siding scope for Effluent Management Facility pre-engineered buildings from Apollo, Inc. to Waste Treatment and Completion Company, LLC direct hire. The BCP increases the Performance Measurement Baseline by \$129,297. DOE determined a change in execution strategy does not allow elimination of a negative schedule variance; however, Bechtel National Inc. is moving this effort from measured to a level-of-effort performance method, which procedurally requires them to make this change.

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.

Valerie McCain
19-WTP-0106

-2-

SEP 26 2019

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.



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

WTP:JJD

cc: G.T. Lengenfelder, BNI
V. McCain, BNI
M.G. McCluskey, BNI
BNI Correspondence



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

19-WTP-0041

MAY 15 2019

The Honorable Bruce Hamilton, Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, D.C. 20004

Dear Chairman Hamilton:

RESOLUTION OF DEFENSE NUCLEAR FACILITY SAFETY BOARD CONCERNS
RELATED TO CONTROL OF PULSE-JET MIXERS OVERBLOW AND IMPACT TO
VESSELS AT THE WASTE TREATMENT AND IMMOBILIZATION PLANT

- References:
1. *27th Annual Report to Congress*, Defense Nuclear Facilities Safety Board, Washington, D.C., dated April 27, 2017.
 2. DNFSB letter from J.E. Mansfield to I.R. Triay, DOE-HQ, "DNFSB Staff Review of the Pulse Jet Mixing Technology in the Pretreatment Facility of the Waste Treatment and Immobilization Plant (WTP) at the Hanford Site," dated January 6, 2010.
 3. DNFSB letter from P.S. Winokur to S. Chu, Secretary of Energy, "Recommendation 2010-2, Pulse Jet Mixing at the Waste Treatment and Immobilization Plant," dated December 17, 2010.
 4. HQ Memorandum from I.R. Triay to P.S. Winokur, DNFSB, "Response to DNFSB January 6, 2010 Letter Concerning the Design and Testing of PJM Technology," dated May 17, 2010.
 5. HQ Memorandum from D.B. Poneman to P.S. Winokur, DNFSB, "Revised Technical Approach to Resolve DNFSB Concerns Associated with Control and Operation of WTP PJM Vessels Containing Solids," dated September 11, 2013.
 6. DNFSB letter from P.S. Winokur to E. Moniz, Secretary of Energy, "DNFSB Closure of Recommendation 2010-2," dated January 28, 2014.

The Defense Nuclear Facilities Safety Board (DNFSB) concerns related to the design of the pulse-jet mixing systems in the Waste Treatment and Immobilization Plant (WTP) associated with the ability to control pulse-jet mixers (PJM) and prevent frequent overblows is listed in the *27th Annual Report to Congress* (Reference 1). The U.S. Department of Energy (DOE), Office of River Protection (ORP) requests that the Attachment to this letter be provided to the DNFSB to support DOE's determination that the technical issue on the control of PJMs in WTP process vessels has been resolved.

MAY 15 2019

The Honorable Bruce Hamilton
19-WTP-0041

-2-

In coordination with, and participation from the DOE Office of Environmental Management staff, ORP is submitting this record documenting the technical basis for the resolution of the DNFSB safety concern with the ability to control PJM and prevent overblows in WTP PJM process vessels.

Background:

Over the last six years, ORP and DNFSB have jointly identified a number of technical issues on the WTP, specifically on the Pretreatment (PT) Facility and to a lesser extent with the High-Level Waste Facility. In 2012, ORP directed the WTP contractor to stop design-related activities on both facilities, except in areas of the High-Level Waste Facility not impacted by these issues. Also in 2012, the Secretary of Energy established a team to better understand fundamental technical weaknesses with the design of the WTP, particularly issues that could result in adverse consequences within the WTP black cells. A number of those issues overlapped with those identified by ORP and DNFSB. To provide a focus on resolution of all these technical issues, ORP and the WTP contractor assembled teams to address each of the issues.

As one condition of authorizing the WTP contractor to begin design activities on the PT Facility, ORP determined resolution of the technical issues was required. Documentation demonstrating a sound technical basis for closure of the first several of these were submitted to the DNFSB.

This letter documents Bechtel National, Inc.'s (BNI) position that concerns raised by the DNFSB regarding utilizing bubbler instrumentation in control of PJMs to prevent overblow in WTP (Reference 2) have been resolved.

Statement of Issue:

The DNFSB's specific concern related to control of PJMs and resulting impact on components within vessels was stated in Reference 2 as follows:

The presence of a deep sediment layer may also have a detrimental effect on the performance of bubbler systems used to measure the tank level and average density in the vessels. The tank level and average density are inputs to the calculation of the drive time of the pulse jet mixers, which is relied upon to prevent overblows. The cumulative effect of many overblows could result in the material failure of components internal to process vessels located in black cells.

MAY 15 2019

The Honorable Bruce Hamilton
19-WTP-0041

-3-

This concern was also captured in Board Recommendation 2010-2, *Pulse Jet Mixing at the Waste Treatment and Immobilization Plant* (Reference 3), stated as follows:

...the presence of a large solids inventory could have a detrimental effect on the vessel level instrumentation, which is required to control the PJMs.

This concern was addressed in Reference 4, providing a description to the DNFSB of the planned resolution, including full scale testing of PJM technology for use at WTP. Work activities completed after this letter led to a change in strategy provided in Reference 5, including testing planned to address PJM control issues. Acceptance of the proposed strategy was provided in Reference 6, noting that closure of the issue with control of PJMs remained unresolved:

Accumulation of solids that interfere with the pulse jet mixer control system, causing frequent overblows (discharge of air from the pulse jet mixer) that may lead to equipment damage...

The DNFSB has worked closely with the DOE to oversee testing of prototypic PJMs, as discussed in the *27th Annual Report to Congress* (Reference 1).

BNI has now completed the testing of prototypic PJMs in vessels settling solids, confirming the control system can adequately perform its function by operating PJMs in support of mixing functions while preventing overblows and impact to the vessel structure and ventilation system. In addition, results of structural analysis of PJM overblow events in high-solids vessels show that overblow is not a concern and will not cause equipment damage, even if PJM overblows were a normal occurrence (millions of cycles). The Attachment was prepared to address the concerns raised by the DNFSB staff in further detail.

Based on this information and on DOE acceptance of the prototypic testing of PJM control and operation of two WTP vessels and structural analysis of PJM vessels with high solids discussed in the Attachment to this memorandum, BNI considers DNFSB and DOE concerns, as stated above, are resolved and no longer present an impediment to the resumption of design and engineering in the PT Facility.

If you have any questions, please contact me, or you may contact Langdon Holton, Technical Authority, Waste Treatment and Immobilization Plant Project, (509) 373-9202.



Brian T. Vance
Manager

WTP:LKH

Attachment



OFFICE OF RIVER PROTECTION

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

AUG 30 2019

19-WTP-0092

The Honorable Bruce Hamilton, Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, D.C. 20004

Dear Chairman Hamilton:

**RESOLUTION OF DEFENSE NUCLEAR FACILITIES SAFETY BOARD CONCERNS
RELATED TO EROSION WEAR ALLOWANCES FOR PIPING, VESSELS, AND
PULSE-JET MIXERS AT THE WASTE TREATMENT AND IMMOBILIZATION PLANT**

- References:
1. DNFSB letter from P. Winokur to D. Huizenga, EM, "Erosion/Corrosion Wear Allowances, Waste Treatment and Immobilization Plant," dated January 20, 2012.
 2. EM letter from D. Huizenga to P.S. Winokur, DNFSB, "DOE Response to Erosion/Corrosion Wear Allowances, Waste Treatment and Immobilization Plant," dated March 5, 2012.

In coordination with, and participation from the U.S. Department of Energy (DOE), Office of Environmental Management, the DOE, Office of River Protection (ORP) is submitting this record documenting the technical basis for the resolution of the Defense Nuclear Facilities Safety Board (DNFSB) safety concern associated with erosion/corrosion wear allowances in the Waste Treatment and Immobilization Plant (WTP) design for piping, process vessels, and pulse-jet mixers.

Background:

Over the last several years, ORP and DNFSB have jointly identified a number of technical issues at the WTP, specifically on the Pretreatment Facility and to a lesser extent with the High-Level Waste Facility. In 2012, ORP directed the WTP contractor to stop design-related activities on both facilities, except in areas of the High-Level Waste Facility not affected by these issues.

Also in 2012, the Secretary of Energy established a team to better understand fundamental technical weaknesses with the design of the WTP, particularly issues that could result in adverse consequences within the WTP black cells. A number of those issues overlapped with those identified by ORP and DNFSB. To provide a focus on resolution of all these technical issues, ORP and the WTP contractor assembled teams to address each of the issues.

In the subject letter (Reference 1), the DNFSB evaluated erosion/corrosion wear allowances specified by Bechtel National, Inc. for design of piping, process vessels, and pulse-jet mixers for

AUG 30 2018

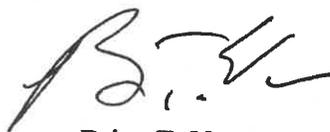
WTP and documented several issues. In response to DNFSB's issues, DOE responded (Reference 2) through commitment to address each issue in order to provide a defensible technical basis for design of wear allowances, which account for waste characteristics, operating parameters, and conditions representative of WTP processes.

DOE agreed with the DNFSB issues and provided two separate briefings to DNFSB staff. The first was on August 30, 2017, and a second briefing occurred on October 29, 2018, both in Richland, Washington. The presentations provided the approach for revising WTP erosion wear allowances based on reassessment of previous External Flowsheet Review Team Issue M2 test data, design basis waste characteristics, design and flowsheet changes, final assessment of the revised erosion wear allowances for installed vessels, and design changes to the standard high-solids vessel design.

Other design changes included revision of document 24590-WTP-DB-ENG-01-001, *Basis of Design*, to establish slurry particle property bases for erosion, mixing, and slurry transfers, and addition of Section 18, which is related to material selection for process and piping components. Section 18 now contains the consolidated set of erosion and corrosion basis of design requirements for material selection and thickness for process piping and equipment components used to treat Hanford Site tank farm waste.

This letter documents completion of our commitment to the DNFSB for providing a briefing and report on the resolution of issues regarding wear allowances, testing, and analysis. An extended discussion of the actions taken to resolve each specific DNFSB issue is provided in the Attachment.

If you have any questions, please contact me, or you may contact Tom Fletcher, Assistant Manager, Federal Project Director, Waste Treatment and Immobilization Plant Project, (509) 376-3434.



Brian T. Vance
Manager

WTP:IGP

Attachment

cc: w/attach
D.Y. Chung, EM-3.1
G. Sosson, EM-3.11
A.N. Suttora, EM-3.111
J. Olencz, AU-1.1
S.C. Petras, AU-1.1
P.K. Fox, DNFSB
B.K. Caleca, DNFSB