



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

20-ECD-0006

FEB 12 2020

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

Dear Ms. Smith:

FEBRUARY 2020 QUARTERLY REPORT FOR THE STATE OF WASHINGTON VS. U.S. DEPARTMENT OF ENERGY, CASE NO. 08-5085-RMP, FOR WASTE TREATMENT AND IMMOBILIZATION PLANT CONSTRUCTION AND STARTUP ACTIVITIES AND TANK RETRIEVAL ACTIVITIES – OCTOBER 1, 2019, THROUGH DECEMBER 31, 2019

This letter transmits the U.S. Department of Energy, Office of River Protection February 2020 Quarterly Report (Attachment) under Section IV-C-1 of the subject Consent Decree, for the period of October 1, 2019, through December 31, 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, Office of River Protection, on (509) 376-4941, or Robert G. Hastings, Assistant Manager, Tank Farms Project, Office of River Protection, on (509) 376-9824.

Sincerely,

Brian T. Vance
Manager

ECD:BRT

Attachment

cc: See page 2

Ms. Alexandra K. Smith
20-ECD-0006

-2-

FEB 12 2020

cc w/attach:

E. A. Connell, EM-4.4
L. Contreras, YN
J. S. Decker, Ecology
J. J. Lyon, Ecology
J. D. McDonald, Ecology
J. Moon, EM-3.31
K. Niles, Oregon Energy
S. R. Ross, EM-4.31
L. C. Suttora, EM-3
M. J. Turner, MSA
Administrative Record (D-16C-03N)
Environmental Portal

cc w/o attach:

J. Bell, NPT
R. Buck, Wanapum
S. L. Dahl, Ecology
D. R. Einan, EPA
R. Ferri, YN
M. Johnson, CTUIR
S. Leckband, HAB
P. Mills, CTUIR
J. B. Price, Ecology

**Attachment
20-ECD-0006**

**U.S. Department of Energy, Office of River Protection
Quarterly Report, October 1, 2019, through December 31, 2019, and
Tank Farm/Waste Treatment and Immobilization Plant
Direction Letters**

(70 Pages Including Cover Sheet)

Office of River Protection Quarterly Reporting Period October 1, 2019, through December 31, 2019¹

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

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

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

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



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

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

Date

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

² The Consent Decree, Amended Consent Decree and Second Amended Consent Decree are between the State of Washington and U.S. Department of Energy. For each of these decrees, there are companion, separate consent decrees with the State of Oregon, as Intervener, under the same case numbers.

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Acronyms and Abbreviations

AoA	analysis of alternatives
BNI	Bechtel National, Inc.
BOF	Balance of Facilities
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
ERSS	extended reach sluicer system
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
PPR	Project Review Team
PT	Pretreatment (Facility)
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 October 1, 2019, through December 31, 2019. Earned Value Management System (EVMS) data and descriptions cover the period ending November 30, 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

Technical Lead: Jeff Rambo

Accomplishments in the Reporting Period

Completed Accomplishments:

- Removed Tank A-103 Pit 03C pump
- Removed Tank AX-103 R1B pump and completed AX-103 long-length equipment removals
- Completed readiness for A, B, C, and D pits at Tank AX-104 for equipment installation
- Removed the top portions (approximately 21 feet) of Tank A-101 riser 2 thermocouple
- Completed lowering the remaining section of Tank A-101 riser 2 thermocouple to the tank bottom
- Completed lowering the remaining damaged section of Tank A-103 riser 2 thermocouple to the tank bottom
- Completed installation of the electrical power to the A Tank Farm exhausters (POR518/519)
- Resumed Tank AX-102 waste retrieval operations (71 percent complete)
- Completed A Tank Farm exhausters construction acceptance testing.

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-101
- Removal of long-length equipment in the A Tank Farm

- Installation of A Tank Farm ventilation system:
 - Install control systems for the exhauster
 - Remove cover blocks, clean pits, and remove thermocouple trees from risers (to connect the ventilation system)
 - Installation of duct riser assemblies, air inlet stations, and testing
- Install waste retrieval equipment in Tank AX-104
- Tank AX-102 waste retrieval operations (71 percent complete)
- Installation of electrical and support infrastructure at Tank AX-103.

Accomplishments Expected in the Next Reporting Period

- Remove Tank A-103 03C saltwell screen
- Complete core drilling of Tank A-101 1C Pit stuck shield plug and install air inlet station
- Complete A Tank Farm ventilation system cold operational acceptance tests
- Install the AX-104 Pit B extended reach sluicer system (ERSS) and initiate testing
- Remove AX-101 Pit D riser 24 pump
- Perform initial volume displacement measurement of Tank AX-102.

Issues Encountered in the Reporting Period

- A temporary shortage of respirator masks impacted retrieval fieldwork. Due to an employee concern regarding the cleanliness of masks, masks that were processed prior to November 15, 2019, were returned to the vendor for additional cleaning, resulting in a temporary shortage. The masks contained some fine lint and a slight film on the inside of the lens. Additional masks have been ordered to increase the onsite inventory.
- 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 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).

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.

- 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.
 - Removal of Tank A-103 riser 2 thermocouple required a duration of 209 days to complete. The lower section of the thermocouple was damaged and could not be removed. Unique tooling was required to lower the remaining section to the tank bottom.
 - Removal of Tank A-101 riser 2 thermocouple required the top sections to be removed in two sections and the remaining third section to be lowered to the tank bottom.
 - Removal of Tank A-106 riser 2 thermocouple will require removal in sections, with the lower section left in the tank.
 - A stuck shield plug in Tank A-101 01C Pit will require an alternative method (core drilling) to tie in the ventilation system.
 - A stuck shield plug in Tank AX-102 02B Pit prevented the installation of the planned third extended reach sluicer.
- 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 establish a compliant and cost effective 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 did 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 potential for fogging at various stages of the retrieval process that may affect schedule.
- As of December 31, 2019, time lost due to fogging in Tank AX-102 during retrieval operations was 11 hours 5 minutes.
- 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. ORP submitted a revised application on October 31, 2019 (19-ECD-0080, “U.S. Department of Energy, Office of River Protection Submittal of Revised Notice of Construction Application for the Operation of Portable Exhausters Supporting Single-Shell Tank Waste Retrieval at the 241-AX Tank Farm”), to provide supplemental information to address Ecology’s concerns.

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 the A and AX tank farms 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 personnel 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 was aware of potential impacts to A and AX Tank Farm retrievals, and possibly associated Consent Decree milestones, if Ecology did 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. 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 potential for fogging at various stages of the retrieval process that may affect schedule.

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

- The AX-104 Tank Waste Retrieval Work Plan modification notice, 2019-02, was approved by Ecology December 1, 2019.

Accomplishments Expected in the Next Reporting Period

- None.

Issues Encountered in the Reporting Period

- None.

Issues Expected in the Next Reporting Period

- None.

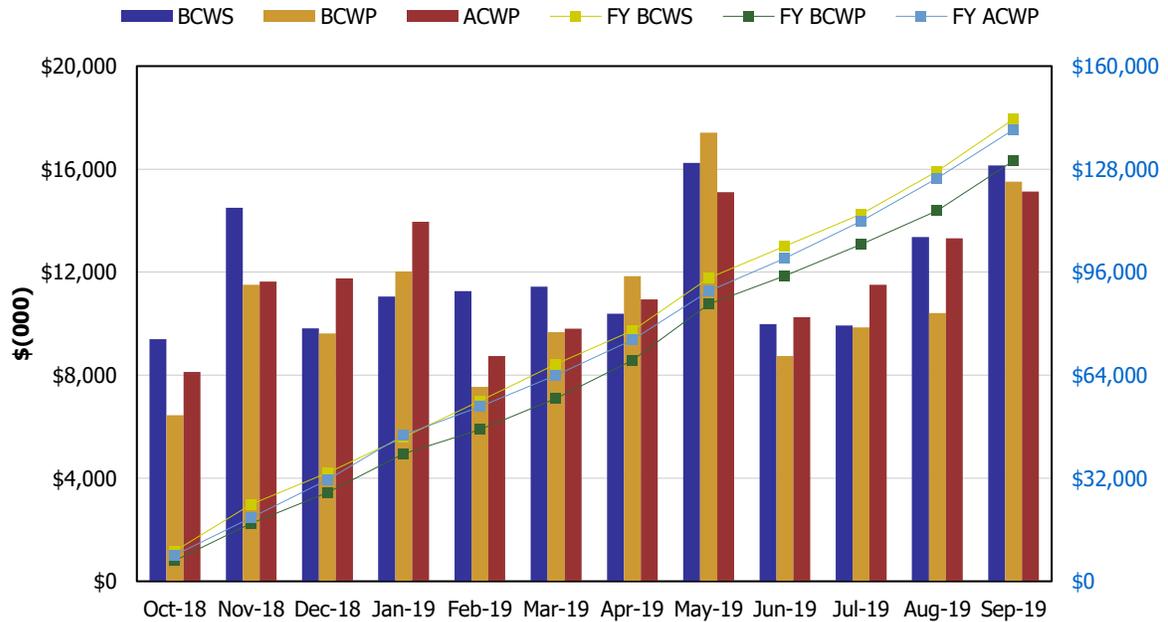
Tank Farm Earned Value Management System Quarterly Analysis

Earned Value Data: Fiscal Year 2019

September-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	\$15,515	\$15,129	0.96	1.03	\$143,523	\$130,611	\$140,285	0.91	0.93
CTD	\$1,084,262	\$1,061,342	\$1,118,783	0.98	0.95					

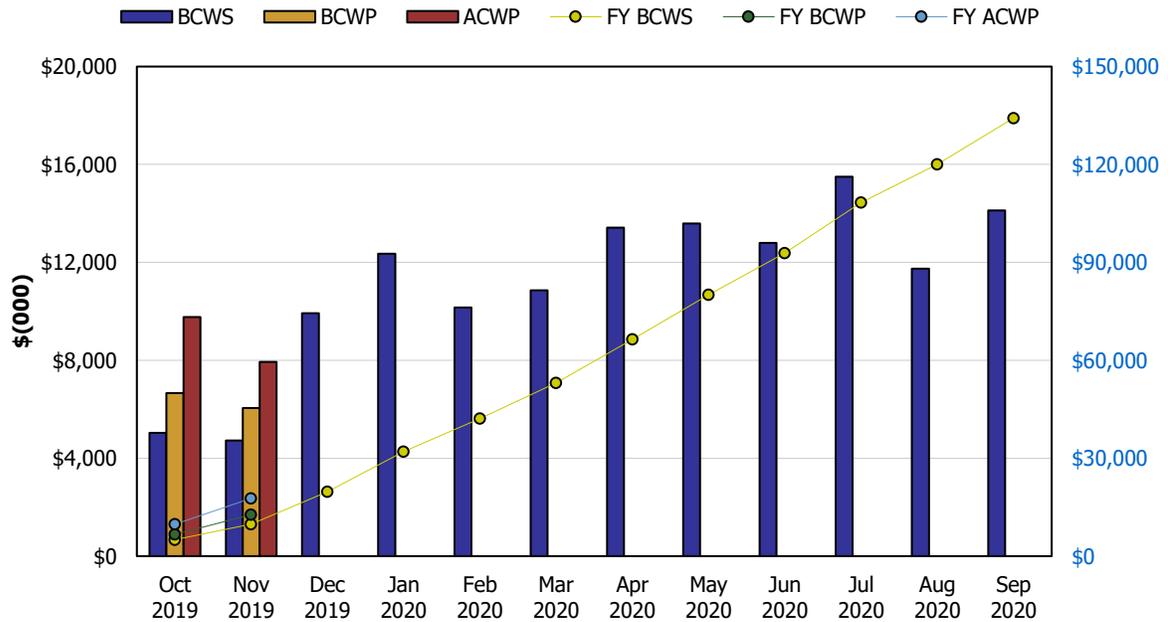
- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- CTD = contract to date.
- EVMS = earned value management system.
- FY = fiscal year.
- SPI = schedule performance index.

Earned Value Data: Fiscal Year 2020

November-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 2019	\$5,039	\$6,662	\$9,772	1.32	0.68	\$5,039	\$6,662	\$9,772	1.32	0.68
Nov 2019	\$4,722	\$6,050	\$7,940	1.28	0.76	\$9,761	\$12,712	\$17,711	1.30	0.72
Dec 2019	\$9,921			0.00	0.00	\$19,682			0.00	0.00
Jan 2020	\$12,359			0.00	0.00	\$32,041			0.00	0.00
Feb 2020	\$10,151			0.00	0.00	\$42,192			0.00	0.00
Mar 2020	\$10,855			0.00	0.00	\$53,047			0.00	0.00
Apr 2020	\$13,419			0.00	0.00	\$66,466			0.00	0.00
May 2020	\$13,592			0.00	0.00	\$80,057			0.00	0.00
Jun 2020	\$12,792			0.00	0.00	\$92,849			0.00	0.00
Jul 2020	\$15,495			0.00	0.00	\$108,344			0.00	0.00
Aug 2020	\$11,742			0.00	0.00	\$120,085			0.00	0.00
Sep 2020	\$14,127			0.00	0.00	\$134,212			0.00	0.00
CTD	\$1,094,023	\$1,074,053	\$1,136,494	0.98	0.95					

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

Earned Value Management System Quarterly Analysis

Retrieve and Close Single-Shell Tanks (5.02)⁴

Project EVMS reflects data for September 2019, October 2019, and November 2019.

Schedule Variance Summary:

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

The September 2019 unfavorable SV of (\$627,000) was primarily due to:

- Final installation of AX-104 Tank in-tank equipment, such as the pump and ERSSs, being delayed until the leaking Purex connector on one of the AX-102 Tank ERSSs could be repaired and AX-102 Tank retrieval operations resumed. The delay was intended to manage radiation exposure of the AX-104 Tank waste retrieval equipment to reduce risk and achieve the expected design life of the equipment.

The October 2019 favorable SV of \$1,622,300 was primarily due to:

- Schedule recovery for activities:
 - Trench/Install A Tank Farm exhaust electrical
 - Install A Tank Farm ducting/condensate lines
 - Install A Tank Farm heat trace for vent system
 - Perform A Tank Farm at-tank installation of vent equipment
 - AX-103 Tank equipment removal – remove pump from R01B
 - AX-103 Tank equipment removal – dispose pump from R01B
 - AX-103 Tank equipment removal – A Pit equipment installation preparation
 - A Tank Farm equipment removal vent – remove A-103 A-03C Pump
 - A Tank Farm equipment removal vent – remove thermocouple A-101 riser 2
 - A Tank Farm equipment removal vent – cleanout pit/loadout debris A-101 pit A-01C
 - A Tank Farm equipment removal vent – dispose of A-103 A-03C Pump
 - A Tank Farm equipment removal vent – remove thermocouple A-103 riser 2.

This positive SV was impacted by an unfavorable SV due to a leaking Purex connector on an ERSS, which occurred during AX-102 Tank retrieval operations.

The November 2019 favorable SV of \$1,328,100 was primarily due to:

- Schedule recovery from delays incurred in early 2019 related to the waste retrieval system installation, and the initial AX-102 Tank retrieval operations progressing faster

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.”

than planned. AX-102 Tank retrieval operations continued with a limited ERSS functionality to transfer tank waste.

- The positive SV was partly offset by issues with the AX-102 Tank Purex connector waste leak. The issues with the Purex connector delayed the hose-in-hose transfer line connection at AX-104 Tank and installation of the freeze protection.

Cost variance (CV) summary:

The September 2019 favorable CV of \$386,000 was primarily due to:

- Performance of AX-102 Tank retrieval operations were significantly higher than planned during the first 2 weeks of operations.

The October 2019 unfavorable CV of (\$3,110,200) was primarily due to:

- Subcontractor overtime being greater than planned. The October workscope focused on completing the electrical installation fieldwork for the A Tank Farm exhausters, which included the electrical conduit installation (e.g., trenching, installation, backfill, wire pulls, and terminations).
- The impacts were also due to a leaking Purex connector and a bent piston rod on the ERSS. During AX-102 Tank retrieval operations in September, the ERSS in the 02C Pit developed a leak at the Purex connector, and the ERSS in 02D Pit sustained a bent hydraulic piston rod. The costs incurred were the result of investigations, recovery actions, and retrieval equipment configuration changes.
- Work on the A-103 Tank riser 2 thermocouple removal. This thermocouple removal was originally planned to take 24 days, but took 209 days to complete. The activity is not worked continuously. The significant increase in duration is attributed to greater than expected in-tank thermocouple deterioration (damaged). Unique equipment fabrication not originally planned had to be performed by the subcontractor to complete this workscope.

The November 2019 unfavorable CV of (\$1,889,500) was primarily due to:

- Rework activities on the A Tank Farm ventilation system and additional unplanned workscope. Rework activities included electrical tie-ins and breaker replacement, reinstalling the seal pot heat trace, and reinsulating and replacing the pressure differential indicating transmitters in exhausters POR518/519. The initial design assumed exhauster controls would be wireless connections; however, software requirements led to installing fiber optic wires, which required the purchase of the fiber optic cable, controller Human Machine Interface, and steel plates to protect the wires.
- The unfavorable CV was partly offset by lower subcontractor and architectural and engineering costs due to prioritizing the architectural and engineering contractor to finalize the waste retrieval system design for A Tank Farm. Subcontractor labor costs were lower than estimated due to understaffing.

- Removal of existing degraded equipment requiring additional proof of concept mockups and tool development. Long-length equipment removals were difficult due to corroded and damaged conditions (A-101 and A-103 tank thermocouples) and high radiation levels (A-101 riser 2 thermocouple). Additional shielding was required and unique tools for sectioning and lowering damaged sections to the tank bottom were required. These issues required unplanned mockups and training.

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
 October 1, 2019, through December 31, 2019.

	SCBA Direct Labor Hours	SCBA Subcontractor Hours¹	Total SST Operation Hours	Total Hours²	Total Percent on SCBA	Detrimental Impacts Days³
C Tank Farm	612	0	612	2,820	22%	56
A/AX Tank Farms	7,224	10,802	18,026	198,265	9%	69
Total	7,836	10,802	18,638	201,085	9%	

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 October 1, 2019, through December 31, 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 November 2019, DFLAW modifications for the WTP Project were 84 percent complete, engineering design was 96 percent complete, procurement was 98 percent complete, and construction was 75 percent complete. As of November 2019, total LBL facilities were 80 percent complete, engineering design was 97 percent complete, procurement was 97 percent complete, construction was 94 percent complete, and startup and commissioning was 48 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 the 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

Pursuant to Section IV-C-3(b) of the Amended Consent Decree⁷, as requested by Ecology in a letter dated September 25, 2019, DOE staff met with Ecology on October 16, 2019, to answer questions Ecology had concerning the serious risk as well as to discuss mitigation options, cooperative solutions, and problem-solving opportunities.

The Office of Project Management conducted a Project Peer Review (PPR) of the WTP Project in late November 2019. The PPR focused on DFLAW programs and projects for delivering waste from tanks, pretreating the waste to remove radioactive cesium and solids, vitrifying the low-activity waste, treating effluent waste from the LAW Facility, and disposing of the treated effluent wastes. The PPR team also reviewed infrastructure projects needed to provide essential services to all facilities that will play a role in the DFLAW Program. The PPR team issued its final report to ORP in December 2019. ORP is in the process of reviewing the recommendations included in the final report.

Accomplishments During the Reporting Period:

- The AoA team held an onsite working session October 8 through 10, 2019. Topics included modeling progress, continued development of detailed scope descriptions, process diagrams, facility sizing, preconceptual layouts incorporating input and comments resulting from the Steering Committee, and detailing the path forward to complete the AoA. An Ecology observer attended.

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.

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

- ORP approved the *Waste Treatment and Immobilization Plant High-Level Waste Treatment Analysis of Alternatives Study Plan* (Rev. 3) on October 10, 2019. The study plan was updated to incorporate comments from new Steering Committee members to include the method, approach, and schedule to be used in conducting an independent AoA for the identified mission need.
- The AoA team continued to update the alternative descriptions and corresponding flowsheets, along with the threats and opportunities document after incorporating comments from ORP in November 2019. Modeling continued on various alternatives.
- The AoA team held an onsite working session December 10 through 12, 2019. Topics included reviewing interim modeling results from various alternatives with unconstrained funding. An Ecology observer attended.
- The AoA team provided the DOE AoA Steering Committee Chair with updated alternative descriptions and corresponding flowsheets, along with interim modeling results from various alternatives with unconstrained funding, and the associated threats and opportunities on December 16, 2019. The DOE AoA Steering Committee was briefed on the status of the various alternatives on January 15, 2020.
- ORP participated in Leadership Forum meetings with Ecology on October 11, 2019; December 6, 2019; and December 20, 2019, to discuss the tank waste mission and high-level waste treatment approaches.
- Other significant accomplishments during the reporting period are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

Accomplishments Expected Next Reporting Period:

- The AoA team is planning an onsite working session January 14 through 16, 2020. Topics will include reviewing all primary modeling results, setting up the risk evaluation process and reviewing the cost results from the modeling. An Ecology observer will be invited to participate in the onsite working session.
- The AoA team is tentatively planning onsite working sessions February 11 through 13, 2020, and February 25 through 27, 2020. The AoA team expects to receive the final modeling results during these working sessions and will begin the qualitative risk analysis on the various alternatives. An Ecology observer will be invited to participate in the onsite working sessions.
- ORP expects to receive DOE Headquarters approval of the DOE AoA *Steering Committee Charter* (Rev. 2), modified to reflect changes to the Steering Committee membership. The charter describes the functions, responsibilities, and authorities of committee members responsible for providing oversight of the performance of the AoA team.
- ORP expects to continue the Leadership Forum meetings with Ecology and the U.S. Environmental Protection Agency 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 the 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 the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

Waste Treatment and Immobilization Plant Milestones

Milestone	Title	Due Date	Status
Waste Treatment and Immobilization Plant (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)."

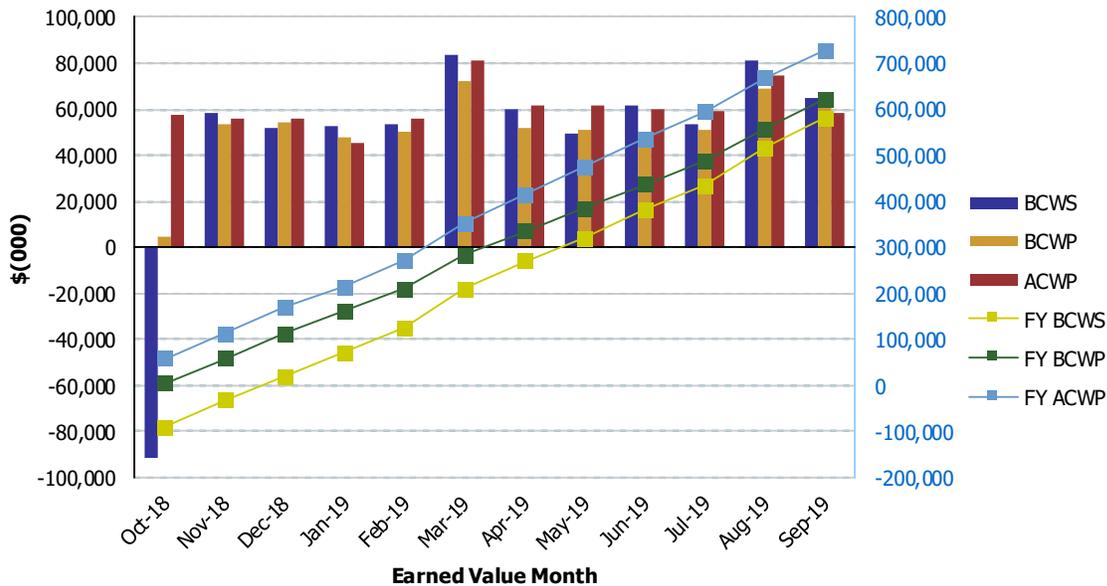
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: September 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	\$65,299	\$65,634	\$58,679	1.01	1.12	\$581,435	\$622,356	\$727,697	1.07	0.86
PTD	\$11,878,228	\$11,778,061	\$11,749,730	0.99	1.00					

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

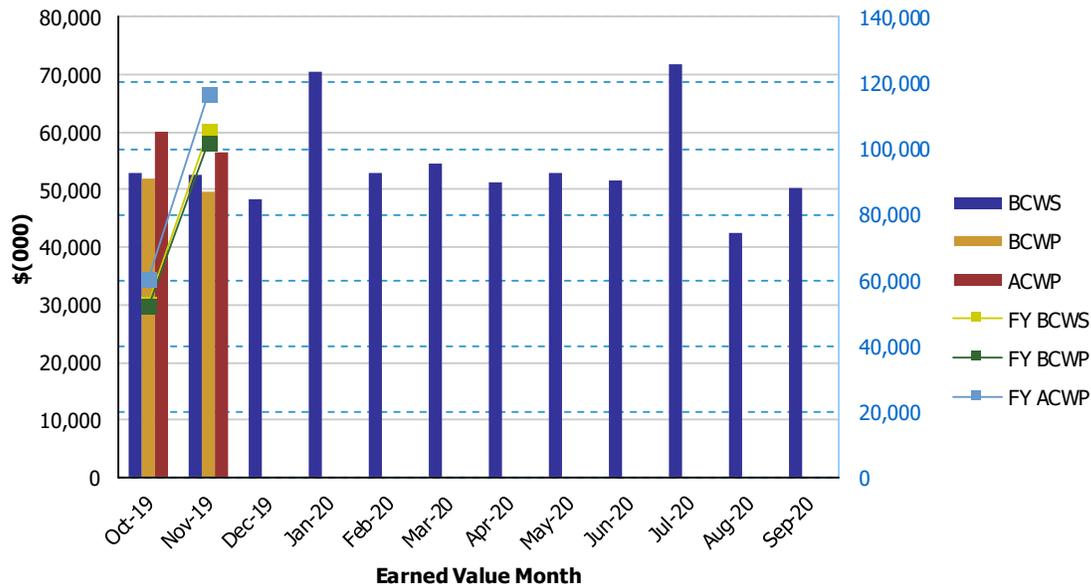
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2020 Earned Value Data

Data as of: November 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 2019	\$52,863	\$52,079	\$60,216	0.99	0.86	\$52,863	\$52,079	\$60,216	0.99	0.86
Nov 2019	\$52,457	\$49,780	\$56,387	0.95	0.88	\$105,320	\$101,859	\$116,603	0.97	0.87
Dec 2019	\$48,219									
Jan 2020	\$70,577									
Feb 2020	\$52,909									
Mar 2020	\$54,435									
Apr 2020	\$51,334									
May 2020	\$52,893									
Jun 2020	\$51,750									
Jul 2020	\$71,896									
Aug 2020	\$42,633									
Sep 2020	\$50,434									

PTD	\$11,983,548	\$11,879,920	\$11,866,334	0.99	1.00
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- | | | | | | |
|------|---|----------------------------------|------|---|---------------------------------|
| ACWP | = | actual cost of work performed. | EVMS | = | earned value management system. |
| BCWP | = | budgeted cost of work performed. | FY | = | fiscal year. |
| BCWS | = | budgeted cost of work scheduled. | PTD | = | project to date. |
| CPI | = | cost performance index. | SPI | = | schedule performance index. |

Performance Tracking	SV (\$x1,000)	CV (\$x1,000)
Cumulative (through November 2019)	(\$103,628)	\$13,586
Fiscal Year 2020 to-date	(\$3,461)	(\$14,744)
September 2019	\$336	\$6,955
October 2019	(\$784)	(\$8,137)
November 2019	(\$2,677)	(\$6,607)

SV = schedule variance.

CV = cost variance.

Earned Value Management System Analysis

Schedule Variance Summary:

For the September 2019 EVMS reporting period, a net favorable SV of approximately \$336,000 was reported, primarily due to the following:

- LAW Facility Equipment reported a favorable SV due to schedule recovery associated with the melter power supply and pressure regulators. This was partially offset by LAW Facility Startup reporting an unfavorable SV due to system turnover delays for the heating, ventilation, and air-conditioning (HVAC); container handling; and melter feed process systems.
- LAB Startup reported a favorable SV due to progress with startup testing of the HVAC systems. This was partially offset by DFLAW Construction reporting an unfavorable SV due to delays in Effluent Management Facility (EMF) piping and electrical installation as a result of building congestion and delays associated with waste transfer line repairs.

For the October 2019 EVMS reporting period, a net unfavorable SV of approximately (\$784,000) was reported, primarily due to the following:

- The LAW Facility reported an unfavorable SV due to delayed procurements, changes in execution strategy for training and documented safety analysis implementation being less than planned, and resequencing of Plant Engineering deliverables being pushed out to future months. In addition, some system turnovers were delayed impacting startup testing for the HVAC systems, plant cooling water systems, and the radioactive liquid waste disposal system.

For the November 2019 EVMS period, a net unfavorable SV of approximately (\$2.7 million) was reported, primarily due to the following:

- LAW Facility Plant Management reported an unfavorable SV due to delays in receipt of procurements and resequencing of engineering procurement deliverables. In addition, a change in execution strategy resulted in delays in training and documented safety analysis implementation.

- LAW Facility Startup reported an unfavorable SV due to system turnover delays impacting testing. The most notable examples included the LAW Facility container finishing handling system, the LAW Facility plant cooling water system, and the LAW Facility primary offgas process system.

For the September 2019 EVMS reporting period, a net favorable CV of approximately \$7.0 million was reported, primarily due to the following:

- PT Facility Equipment reported a favorable CV due to the termination of evaporator purchase orders originally planned for this reporting period, but completed in July 2019.

For the October 2019 EVMS reporting period, a net unfavorable CV of approximately (\$8.1 million) was reported, primarily due to the following:

- LAW Facility Construction reported an unfavorable CV due to additional field nonmanual support required for the completion of construction activities. Startup reported an unfavorable CV due to equipment and component failure, which caused delays in testing and resulted in the need for additional testing and troubleshooting.
- DFLAW/EMF Construction reported an unfavorable CV due to overtime work and back charges related to pipe coating repairs. Additional factors include scaffolding inspections, staging of the argon tank, relocating temporary power lines above radioactive waste transfer lines, and various material purchases.

For the November 2019 EVMS reporting period, a net unfavorable CV of approximately (\$6.6 million) was reported, primarily due to the following:

- DFLAW/EMF Construction continued to report an unfavorable CV due to overtime/weekend work to support construction completion, relocating temporary power lines above radioactive waste transfer lines, and material purchases for concrete/controlled density fill for waste transfer line backfill.
- LBL Facility Services reported an unfavorable CV due to increased craft labor overtime support and training.

WTP Project Cumulative through November 2019

The WTP Project is behind the planned work scheduled by approximately (\$103.6 million) through November 2019, but it has cost approximately \$13.5 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 is intended to 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 Decrees⁸:

- “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)
- “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process offgas treatment).⁹

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.¹⁰

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

⁸ *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016).

⁹ 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.

¹⁰ 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.

Accomplishments during the Reporting Period:

- 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.
 - *Impact:* Although resolution of the PT Facility technical issues are complete, PT Facility redesign continued to be delayed.
 - *Actions initiated or taken to address potential project schedule slippage:* ORP is analyzing the alternatives associated with the high-level waste treatment mission and the potential impacts of continued funding limitations on the WTP Project.

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:

- “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)
- “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 making 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 intended to 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.

Based on the availability of carryover funding, additional engineering workscope was performed in FY 2019. This carryover funding continues to be the primary funding source for engineering effort in FY 2020. Engineering staff will continue to transition to HLW Facility activities as they complete their DFLAW/LBL activities.

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 completed a revised work plan for FY 2020 and FY 2021 in October 2019.
- Fabrication of radioactive liquid waste disposal system vessels 7 and 8 (i.e., RLD-7 and RLD-8) was complete in October 2019. The vendor is finishing the quality verification documents. 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 completed a 60-percent design review of the HLW Facility melter feed process system in December 2019.

- BNI continued to manage suspended plant equipment purchase orders to reduce storage and suspension costs and evaluate ways to reduce project procurement liability.
- 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 is expected to issue the 60-percent design review report for the HLW Facility melter feed process system.
- BNI is expecting delivery of radioactive liquid waste disposal system vessel 8 in early calendar year 2020. BNI received delivery of radioactive liquid waste disposal system vessel 7 in early January 2020.
- 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.
- 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:* 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 influenced by reduced FY 2020 funding. Engineering resources will continue to transition to HLW Facility activities as they complete higher priority 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 Facility¹¹

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 November 2019, the LAW Facility was 81 percent complete overall, engineering design was 97 percent complete, procurement was 100 percent complete, construction was 98 percent complete, and startup and commissioning was 32 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, 91 percent of LAW Facility systems have been turned over from Construction¹² to the Startup organization. In addition, Plant Management has accepted handover of 38 percent of the LAW Facility systems from the Startup organization. The active gas analyzer was delivered in November 2019 and was the last of 6,800+ pieces of tagged equipment to arrive, completing all LAW Facility major equipment deliveries.

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

Accomplishments During the Reporting Period:

- BNI vendor completed factory-acceptance testing of the active gas analyzer.
- BNI vendor completed shipment of the active gas analyzer.

¹¹ 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).

¹² Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

- BNI Construction completed turnover of the following LAW Facility systems to the Startup organization for testing:
 - Melter feed process system (LFP-L-03).
 - Primary offgas process system (LOP-L-03).
 - Programmable protection system (PPJ-L-01).
 - Uninterruptible power electrical system (UPE-L-03).
 - Melter process system subsection (LMP-L-03).
 - Process control system subsection (PCJ-L-03).
 - Vessel vent system (LVP-L-01).
 - Sodium hydroxide reagent system (SHR-L-01).
 - High-pressure steam system subsection (HPS-L-02).
- BNI's Startup organization submitted handover of the following LAW Facility system to Plant Management:
 - Data warehouse system (DWJ-L-01).
- BNI's Startup organization completed handover of the following LAW Facility demineralized water master subsection systems to Plant Management:
 - Demineralized water system (DIW-L-01).
 - Demineralized water system (DIW-L-02).
 - Demineralized water system (DIW-L-03).
 - Demineralized water system (DIW-L-04).
 - Demineralized water system (DIW-L-05).
 - Chilled water system (CHW-L-02).

Accomplishments Expected in the Next Reporting Period:

- 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 November 2019, BOF was 87 percent complete overall, engineering design was 97 percent complete, procurement was 100 percent complete, construction was 93 percent complete, and startup and commissioning was 71 percent complete. Design of EMF was 100 percent complete.

BNI engineering efforts are focused on supporting EMF construction and providing field support for BOF startup activities. Construction efforts were focused on the installation of EMF pipe racks, piping, HVAC ductwork, EMF siding, and electrical commodities. Startup testing continued for systems in the steam plant, chiller compressor plant, and the standby diesel generator.

All BOF systems, excluding EMF, have been turned over from Construction¹³ to the Startup organization. In addition, 91 percent of BOF systems to date have been handed over from the Startup organization to Plant Management. BNI is working to complete construction activities and turn over the scoped systems in EMF to support early startup testing activities.

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

Accomplishments During the Reporting Period:

- BNI's Startup organization completed handover of the following BOF systems to Plant Management:
 - Diesel fuel oil system (DFO-B-01).
 - Plant service air systems (PSA-B-01, PSA-B-02).
 - Steam plant communication system (PCJ-B-08).
 - Chiller compressor plant low-voltage system (LVE-B-07).
 - Glass former facility low-voltage system (LVE-B-10).
 - Cooling tower facility systems (PCW-B-01, PCW-B-02, and PCW-B-03).
 - Chiller compressor plant chilled water system (CHW-B-01).
- BNI completed loading of silica into the glass former storage facility in support of upcoming system testing.

¹³ 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 completed draining and refill of the cooling tower reservoir to support heater element replacement and valve maintenance.
- BNI completed load testing for the standby diesel generator.
- BNI initiated testing of steam condensate systems and continued restoration of the high-pressure steam system in preparation for upcoming testing.
- BNI continued to pull the cables between the powerhouse and EMF.
- BNI continued installation of structural steel, piping, HVAC ductwork, roofing, siding, and electrical commodities at EMF.
- 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 will continue installation of process piping, electrical commodities, roofing, and siding for EMF.
- BNI is expected to complete the glass former system dry runs.
- BNI's Startup organization and Plant Management will continue to 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 nonradioactive liquid drain (NLD) system has prevented transfers from WTP to the Hanford treatment facility.
 - *Impact:* High iron content in the BOF NLD system has required the use of trucks to transport water offsite for treatment. This is impacting operations of the BOF steam plant and the ability to perform system flushing in the LAW Facility. However, the effect of these delays on 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 was initially able to do select batch discharges from the BOF NLD.
 - All transfers from BOF NLD are currently being made to trucks for offsite disposal.
 - A semi-permanent filtration capability is being procured to mitigate this issue during initial system flushing and startups.

Issues Expected in the Next Reporting Period:

- Continued challenges with the BOF NLD system 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 November 2019, the LAB was 83 percent complete overall, engineering design was 97 percent complete, procurement was 100 percent complete, construction was 99 percent complete, and startup and commissioning was 52 percent complete.

Activities in the LAB were focused on the completion of startup testing and handover of the remaining systems to Plant Management. To date, all of the LAB systems have been handed over from the Startup organization to Plant Management¹⁴. Procedure and methods development continues at the offsite laboratory facility, and BNI continues to install and tune analytical equipment in the LAB.

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

Accomplishments during the Reporting Period:

- BNI continued installation of analytical equipment and tuning of equipment enclosure ventilation systems.
- BNI's Startup organization completed handover of the following LAB systems to Plant Management.
 - Process control system (PCJ-A-01).
 - Environmental monitoring system (EMJ-A-01).
 - Temporary control room controls system (PCJ-B-23).
 - Stack discharge monitoring system (SDJ-A-01).
 - C2V ventilation system (C2V-A-01).
 - C3V ventilation system (C3V-A-01).
 - C5V ventilation system (C5V-A-01).
 - Radiological liquid waste disposal system (RLD-A-01).
- BNI received the LAB occupancy permit, and Plant Management personnel began to occupy office space in the LAB.
- BNI continued component and system startup testing, operational testing, and refurbishment of multiple LAB systems.

¹⁴ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management

- BNI continued offsite activities to progress LAB procedure development and analytical method validation.

Accomplishments Expected in the Next Reporting Period:

- BNI is expected to continue component and system startup testing, operational testing, and refurbishment of multiple LAB systems.

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 October 1, 2019, through December 31, 2019, for work required by the consent decrees.

Thirteen 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 below¹⁵ and copies are attached:

- 19-WTP-0116, “Contract No. DE-AC27-01RV14136 – Response to Request for Contracting Officer Direction for Pipe Integrity Program for the Installed Underground Piping,” dated October 7, 2019
- 19-WTP-0111, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0115, ‘LAW – Carbon Dioxide Gas Decontamination System Deletion,’” dated October 8, 2019
- 19-WTP-0113, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0118, ‘LBL – Scope Deletion Related to Specialized Requirements Verification Matrix and System Descriptions,’” dated October 8, 2019
- 19-WTP-0114, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0156, ‘Direct Feed Low-Activity Waste – T-52 Site Parking Cost Savings Initiative,’” October 8, 2019
- 19-WTP-0115, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0170, ‘Direct Feed Low-Activity Waste Balance of Facilities Island Completion Team Rad Transfer Line Piping and Quantity Reconciliation,’” dated October 8, 2019
- 19-WTP-0112, “Contract No. DE-AC27-01RV14136 – Approval of Point Adjustment Associated with Baseline Change Proposal 24590-WTP-TN-PC-19-0163, ‘LAW – Revised Approach for Sodium Hydroxide and Access Controls,’” dated October 17, 2019
- 19-NSD-0032, “Contract No. DE-AC27-01RV14136 – Approval of Documents 24590-LAW-DSA-NS-18-0001, ‘Documented Safety Analysis for the Low-Activity Waste Facility,’ Rev. 2, and 24590-LAW-TRS-NS-18-0001, ‘Low-Activity Waste Facility Technical Safety Requirements,’ Rev. 2,’” dated October 17, 2019
- 19-WTP-0119, “Contract No. DE-AC27-01RV14136 – Approval of Pretreatment Facility Interim Work Plan for the Period FY2019 – FY2020,” dated October 18, 2019
- 19-WTP-0124, “Contract No. DE-AC27-01RV14136 – Schedule Risk Analysis,” dated October 22, 2019

¹⁵ Written directives are listed in chronological order in accordance with the stamp date on each letter.

- 19-WTP-0147, “Contract No. DE-AC27-01RV14136 – Approval of High-Level Waste Facility Interim Work Plan for the Period Fiscal Year 2020 Through Fiscal Year 2021,” dated December 4, 2019
- 19-WTP-0150, “Contract No. DE-AC27-01RV14136 – Approval of 24590-WTP-RPT-RECA-19-001, Rev. 0, WTP Startup Notification Report: December 1, 2019 to November 30, 2020,” dated December 5, 2019
- 19-NSD-0045, “Contract No. DE-AC27-01RV14136 – Submittal of Document 24590-WTP-GPP-RANS-NS-0002, Safety Evaluation Process for DOE-Approved Preliminary Documented Safety Analysis, Rev. 6, for U.S. Department of Energy, Office of River Protection Approval,” dated December 11, 2019
- 19-WTP-0143, “Contract No. DE-AC27-01RV14136 – High-Level Waste Facility Melter Feed Process System and Vessel Design,” dated December 16, 2019.

Enclosure

(25 Pages Excluding Cover Sheet)

Written Directives from October 1, 2019, through December 31, 2019



OFFICE OF RIVER PROTECTION

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

OCT 07 2019

19-WTP-0116

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

Mrs. McCain,

CONTRACT NO. DE-AC27-01RV14136 – RESPONSE TO REQUEST FOR CONTRACTING OFFICER DIRECTION FOR PIPE INTEGRITY PROGRAM FOR THE INSTALLED UNDERGROUND PIPING

- References:
1. BNI letter from B.D. Ponte to R.L. Dawson, ORP, "WTP Contract Clause H.1 (D), Technical Direction, Contracting Officer Representative Concurrence with the Recommendation for Pipe Integrity Program for the Installed Underground Piping," CCN: 310220, dated August 28, 2019.
 2. BNI letter from B.D. Ponte to R.L. Dawson, ORP, "Final reports on Installed Underground Pipe Integrity Program," CCN: 298355, dated June 21, 2019.

The U.S. Department of Energy, Office of River Protection (ORP), Waste Treatment and Immobilization Plant Project reviewed the Bechtel National, Inc. request for the Contracting Officer direction for the proposed underground pipe integrity program (Reference 1). Based on the review, recommendations for developing a risk-based underground piping inspection plan were addressed within the reports (reference 2) and gave a process where industrial best practices are used as a basis for integrity management of underground commodities.

The review determined a number of the steps, noted in Section 7.2 of Reference 2 for the Waste Treatment and Immobilization Plant underground pipe integrity program, are to assure that a 40-year operating life for the Waste Treatment and Immobilization Plant is in accordance with the current contract and shall be performed under the existing pipe integrity program (e.g., monitoring, balancing, and adjusting the cathodic protection electrical system; ensuring that the capability is retained to perform future planned pneumatic testing of double-walled piping; performing opportunistic inspections using ultrasonic testing during excavations as part of construction work activities).

Valerie McCain
19-WTP-0116

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OCT 07 2019

ORP also recognizes that following actions, noted in Section 7.2, are not covered under the current contract: 1) Actions associated with procurement, installation, and monitoring of wall thicknesses using guide wave ultrasonic testing collar system with the establishment of a database repository; 2) Performance of annual Close Interval Survey inspection program during construction, consistent with the NACE SP0169, *Control of External Corrosion on Underground or Submerged Metallic Piping Systems*; 3) actions associated with the operating contract in performance of integrity inspections or monitoring of the underground piping systems (i.e., 5 or 10 years of service).

ORP requests Bechtel National, Inc. to provide a rough order of magnitude cost for inclusion of the first two actions (identified as out of scope) into the underground piping integration program within 30 days for ORP to make a decision. Until that decision is made, Bechtel National, Inc. shall ensure that all other identified steps are implemented as part of the program based on the current contract.

If you have any questions, please contact me, or your staff may contact Wahed Abdul, Federal Project Director for Engineering, Procurement, and Construction, Waste Treatment and Immobilization Plant, (509) 438-0455.



Ronald E. Cone Jr.
Contracting Officer

WTP:WA

cc: BNI Correspondence



OFFICE OF RIVER PROTECTION

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Richland, Washington 99352

OCT 08 2019

19-WTP-0111

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-19-0115,
“LAW – CARBON DIOXIDE GAS DECONTAMINATION SYSTEM DELETION”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0115, LAW – Carbon Dioxide Gas
Decontamination System Deletion,” CCN: 315264, dated August 08, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of (\$834,684) associated with the subject Baseline Change Proposal (BCP). The subject BCP removes the Carbon Dioxide Gas (CDG) system scope, which was deleted, and adds the scope for abandonment of the CDG system and an alternative decontamination method to replace CDG. The BCP decreases the budget in the Performance Measurement Baseline by (\$2,297,044), and was done in accordance with contractor procedures.

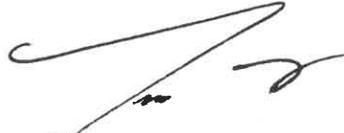
The action taken herein is considered to be within the scope of work of the existing contract and does not authorize the Contractor to incur any additional costs (either direct or indirect) or delay delivery to the Government. If the Contractor considers that carrying out this action will increase contract/project 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.

OCT 08 2019

Valerie McCain
19-WTP-0111

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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

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19-WTP-0113

OCT 08 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-19-0118, “LBL - SCOPE DELETION RELATED TO SPECIALIZED REQUIREMENTS VERIFICATION MATRIX AND SYSTEM DESCRIPTIONS”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change Proposal 24590-WTP-TN-PC-19-0118, LBL - Scope Deletion Related to Specialized Requirements Verification Matrix and System Descriptions,” CCN: 315272, dated September 17, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$528,194)** associated with the subject Baseline Change Proposal (BCP). The subject BCP deletes scope that is not needed for the Maintenance of Requirement Verification Matrix. The validation of requirement verification documentation is conducted as part of the system verification process as documented in 24590-WTP-3DP-G04B-00092, *System Verification*. The BCP decreases the budget in the Performance Measurement Baseline by **(\$555,290)**, and was done in accordance with contractor procedures.

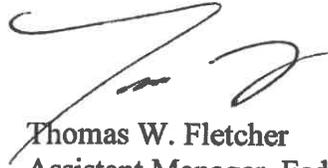
The action taken herein is considered to be within the scope of work of the existing contract and does not authorize the Contractor to incur any additional costs (either direct or indirect) or delay delivery to the Government. If the Contractor considers that carrying out this action will increase contract/project 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-0113

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OCT 08 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
M.G. McCluskey, BNI
BNI Correspondence



OFFICE OF RIVER PROTECTION

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19-WTP-0114

OCT 08 2019

Valerie McCain, Project Director
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Richland, Washington 99354

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF POINT ADJUSTMENT
ASSOCIATED WITH BASELINE CHANGE PROPOSAL 24590-WTP-TN-PC-19-0156,
“DIRECT FEED LOW-ACTIVITY WASTE -T-52 SITE PARKING COST SAVINGS
INITIATIVE”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0156, Direct Feed Low-Activity Waste - T-52
Site Parking Cost Savings Initiative,” CCN: 315273, dated September 19, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$103,718)** associated with the subject Baseline Change Proposal (BCP). The subject BCP incorporates revised designs to the new and existing high mast lights to the T-52, T-33, and Effluent Management Facility parking lot areas as detailed in the Balance of Facilities 5A site design work. The BCP decreases the budget in the Performance Measurement Baseline by **(\$1,775,742)**, 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-0114

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OCT 08 2019

If you have any questions, please contact me, or your staff 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 Correspondance



OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60
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OCT 08 2019

19-WTP-0115

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Richland, Washington 99354

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF POINT ADJUSTMENT ASSOCIATED WITH BASELINE CHANGE PROPOSAL 24590-WTP-TN-PC-19-0170, “DIRECT FEED LOW-ACTIVITY WASTE BALANCE OF FACILITIES ISLAND COMPLETION TEAM RAD TRANSFER LINE PIPING AND QUANTITY RECONCILIATION”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change Proposal 24590-WTP-TN-PC-19-0170, Direct Feed Low-Activity Waste Balance of Facilities Island Completion Team Rad Transfer Line Piping and Quantity Reconciliation,” CCN: 315275, dated September 19, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$804,534)** associated with the subject Baseline Change Proposal (BCP). The subject BCP recognizes a reduction in the quantity of engineered hangers for the Direct Feed Low-Activity Waste transfer pipe. The BCP decreases the budget in the Performance Measurement Baseline by **(\$941,185)**, 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-0115

-2-

OCT 08 2019

If you have any questions, please contact me, or your staff 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

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



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OCT 17 2019

19-WTP-0112

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Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF POINT ADJUSTMENT
ASSOCIATED WITH BASELINE CHANGE PROPOSAL 24590-WTP-TN-PC-19-0163,
“LAW –REVISED APPROACH FOR SODIUM HYDROXIDE AND ACCESS CONTROLS”

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Baseline Change
Proposal 24590-WTP-TN-PC-19-0163, LAW – Revised Approach for Sodium
Hydroxide and Access Controls,” CCN: 315269, dated September 17, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves implementation of the historical Point Adjustment of **(\$128,654)** associated with the subject Baseline Change Proposal (BCP). The subject BCP implements strategy changes associated with Technical Safety Requirement Optimization, sodium hydroxide reagent controls, and molten glass-related access controls. The BCP decreases the budget in the Performance Measurement Baseline by **(\$27,026)**, and was done in accordance with contractor procedures.

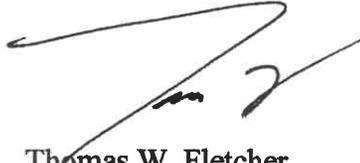
The action taken herein is considered to be within the scope of work of the existing contract and does not authorize the Contractor to incur any additional costs (either direct or indirect) or delay delivery to the Government. If the Contractor considers that carrying out this action will increase contract/project 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.

OCT 17 2019

Valerie McCain
19-WTP-0112

-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.

A handwritten signature in black ink, appearing to read 'Tom Fletcher', with a large, sweeping flourish at the end.

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 Correspondance



OFFICE OF RIVER PROTECTION

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

OCT 17 2019

19-NSD-0032

Mr. B.D. Ponte, Prime Contract Manager
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Mr. Ponte:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF DOCUMENTS 24590-LAW-DSA-NS-18-0001, “DOCUMENTED SAFETY ANALYSIS FOR THE LOW-ACTIVITY WASTE FACILITY,” REV. 2, AND 24590-LAW-TSR-NS-18-0001, “LOW-ACTIVITY WASTE FACILITY TECHNICAL SAFETY REQUIREMENTS,” REV. 2

Reference: BNI letter from V. McCain to T.W. Fletcher, ORP, “Regulatory Deliverable 9.1 – Submittal of Low-Activity Waste Facility Documented Safety Analysis and Technical Safety Requirements for ORP Approval,” CCN: 309738, dated October 2, 2019.

In accordance with the requirements of 10 CFR 830.202, “Safety basis,” and *Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant*, the U.S. Department of Energy, Office of River Protection (ORP) approves documents 24590-LAW-DSA-NS-18-0001, *Documented Safety Analysis for the Low-Activity Waste Facility*, Rev. 2, and 24590-LAW-TSR-NS-18-0001, *Low-Activity Waste Facility Technical Safety Requirements*, Rev. 2, which Bechtel National, Inc. provided to ORP on October 2, 2019 (Reference).

ORP’s review of documents 24590-LAW-DSA-NS-18-0001, Rev. 2, and 24590-LAW-TSR-NS-18-0001, Rev. 2, is contained in the attached safety evaluation report.

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

Handwritten signature of Ronnie L. Dawson in black ink.

Ronnie L. Dawson
Contracting Officer

Handwritten signature of Ben J. Harp in black ink.

Ben J. Harp
Deputy Manager

NSD:MGA

Attachment

cc: See page 2

Mr. B.D. Ponte
19-NSD-0032

-2-

OCT 17 2019

cc w/attach:
J.A. Hames, BNI
V. McCain, BNI
I. Milgate, BNI
P.D. Worley, BNI
J.B. Hebdon, NWS
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

OCT 18 2019

19-WTP-0119

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

Mrs. McCain:

**CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF PRETREATMENT FACILITY
INTERIM WORK PLAN FOR THE PERIOD FY2019 – FY2020**

Reference: BNI letter from V.S. McCain to T.W. Fletcher, ORP, "Request for Approval of
Pretreatment Facility Interim Work Plan for the Period FY2019 – FY2020,"
CCN: 303806, dated August 14, 2019.

The U.S. Department of Energy, Office of River Protection hereby approves the Waste Treatment and Immobilization Plant Pretreatment Facility Interim Work Plan for fiscal years 2019 and 2020, as requested in the Reference. This interim work plan prioritizes near term goals to reduce material procurement liabilities and implements preservation and maintenance activities to protect capital assets.

If you have any questions, please contact me, or you may contact Wahed Abdul, Engineering Procurement and Construction Federal Project Director, at (509) 438-0455.

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

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

WTP:WA

cc:
BNI Correspondence



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

19-WTP-0124

OCT 22 2019

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

Ms. McCain:

CONTRACT NO. DE-AC27-01RV14136 – SCHEDULE RISK ANALYSIS

- References:
1. BNI letter from R.L. Dawson and W.F. Hamel, ORP, to M.G. McCullough, BNI, "Schedule Risk Maintenance," CCN: 296083, dated February 16, 2017.
 2. BNI letter from C.K. Binns, BNI, to R.L. Dawson, ORP, "Response to Direction to Perform a Schedule Risk Assessment (SRA) Annually and to Provide a Plan to Track an Integrated Schedule Covering the One System Activities," CCN: 293373, dated May 26, 2017.
 3. BNI letter from C.K. Binns, BNI, to R.L. Dawson, ORP, "Submittal of LBL and DFLAW Schedule Risk Assessment," CCN: 311491, dated April 17, 2019.
 4. ORP letter from T.W. Fletcher, ORP, to V. McCain, BNI, "Identification for Factors to Improve Project Performance and Schedule Recovery Plan," 19-WTP-0066, dated May 24, 2019.
 5. BNI letter from V. McCain, BNI, to T.W. Fletcher, ORP, "Response to Direction to Identify Factors Impacting Project Delivery and Schedule Execution Performance at Waste Treatment and Immobilization Plant and Provide a Recovery Plan," CCN: 314361, dated June 14, 2019.

Correspondence between Bechtel National, Inc. (BNI) and the U.S. Department of Energy, Office of River Protection were as follows:

- Reference 1 provided Contracting Officer direction to perform a schedule risk analysis (SRA) on a yearly basis including some "enhancements" to past practice.
- Reference 2 provided BNI's response to the yearly requirement; however, stating that BNI would continue to use existing SRA desk instructions and procedures.

- Reference 3 provided BNI's SRA for 2018.
- Reference 4 contained a list of concerns regarding BNI schedule performance.
- Reference 5 provided a detailed recovery plan for completion of Contract Line Item Numbers (CLIN) 1 and 2 including recovery of scheduled dates.

Due to unfavorable project performance, BNI developed a schedule recovery plan as documented in Reference 5. Metrics were developed to measure success of this approach. As part of the BNI recovery plan, Office of River Protection is providing the following expectations related to SRA development:

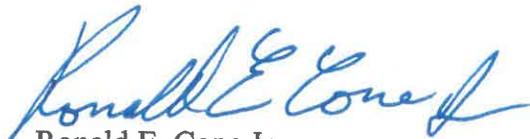
- BNI is directed to perform a new SRA using the most current forecast schedule for CLINs 1 and 2 in two phases. The first phase is up to loss of power. The second phase is for the entirety of the scope. This phased approach will allow for further work definition after loss of power. The SRA "Monte Carlo" results for phase one will be delivered by October 31, 2019. The results for phase two will be delivered by January 18, 2020. The SRA shall contain the following for each phase:
 - Entire scope of CLINs 1 and 2 subject to the two-phased approach described above.
 - "Conditioned" schedule used for the SRA shall:
 - Not be artificially constrained by schedule constraints.
 - Include all activities where total float is within 100 days of the most critical path in the forecast schedule.
 - Eliminate level of effort accounts.
 - All open-distributed CLIN 1 and 2 BNI and Office of River Protection risks in the risk management system shall be addressed in the SRA. It is recognized that the current risk system contains some "fatal" project issues, which if they occurred, would require major contract adjustments. An example would be risk 147, "Premature Melter Failure," which could disrupt the entire program. BNI should identify these types of risk and list them as exempted from SRA analysis.
 - Consistent with Contract No. DE-AC27-01RV14136, Standard 1(c)(4), "Risk Management," BNI shall include forecasts of expected changes to risk assessment status in the Monthly Status Report (Table C5-1.1, Deliverable 1.7).

OCT 22 2019

- Once new critical paths are identified, evaluate pertinent risk mitigation strategies for areas needing improvement.
- Develop risk-tracking metrics and add them to the Waste Treatment and Immobilization Plant Direct-Feed Low-Activity Waste performance dashboard.

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 related to this SRA guidance, please contact Jon Peschong, Waste Treatment and Immobilization Plant Project Controls Division Director, at (509) 376-4424.



Ronald E. Cone Jr.
Contracting Officer



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

WTP: DM

CC: BNI Correspondance



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

DEC 04 2019

19-WTP-0147

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

Mrs. McCain,

**CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF HIGH-LEVEL WASTE
FACILITY INTERIM WORK PLAN FOR THE PERIOD FISCAL YEAR 2020 THROUGH
FISCAL YEAR 2021**

Reference: BNI letter from V.S. McCain to T.W. Fletcher, ORP, “Request for Approval of High-Level Waste Facility Interim Work Plan for the Period FY2020 – FY2021,” CCN: 303807, dated November 8, 2019.

The U.S. Department of Energy, Office of River Protection (ORP) hereby approves the Waste Treatment and Immobilization Plant (WTP) High-Level Waste Facility Interim Work Plan for fiscal years 2020 and 2021, as requested in the Reference. This interim work plan prioritizes near term goals to advance engineering design, maintain alignment with nuclear safety documentation, and implements preservation and maintenance activities to protect capital assets.

If you have any questions, please contact me, or you may contact Wahed Abdul, Engineering Procurement and Construction Federal Project Director, at (509) 438-0455.

Sincerely,


Thomas W. Fletcher
Assistant Manager, Federal Project Director
Waste Treatment and Immobilization Plant
Office of River Protection

WTP: WA

cc: BNI Correspondence



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

DEC 05 2019

19-WTP-0150

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

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF 24590-WTP-RPT-RECA-19-001,
REV. 0, WTP STARTUP NOTIFICATION REPORT: DECEMBER 1, 2019 TO
NOVEMBER 30, 2020

Reference: BNI letter from V.S. McCain to T.W. Fletcher, ORP, “Transmittal of Initial
WTP Startup Notification Report for ORP Approval,” CCN: 317308, dated
November 7, 2019.

The U.S. Department of Energy, Office of River Protection approves the Contractor Startup
Notification Report (Reference) as required by DOE Order 425.1D, *Verification of Readiness to
Start Up or Restart Nuclear Facilities, Attachment 1 Contractor Requirements Document*, for the
Direct Feed Low-Activity Waste 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.

*Richland Operations Office
P.O. Box 550
Richland, Washington 99352*

*Office of River Protection
P.O. Box 450
Richland, Washington 99352*

RL-729 (REV 1)

Valerie McCain
19-WTP-0150

-2-

DEC 05 2019

If you have any questions, please contact me, or your staff may contact Gary Olsen, Readiness Manager, Commissioning, Maintenance and Operations Division, (509) 376-0670.



Ben J. Harp
Deputy Manager
Office of River Protection

WTP:GBO

cc: BNI Correspondence



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

DEC 11 2019

19-NSD-0045

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

Dear Ms. McCain:

CONTRACT NO. DE-AC27-01RV14136 – SUBMITTAL OF DOCUMENT 24590-WTP-GPP-RANS-NS-0002, SAFETY EVALUATION PROCESS FOR DOE-APPROVED PRELIMINARY DOCUMENTED SAFETY ANALYSIS, REV. 6, FOR U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION APPROVAL

The U.S. Department of Energy (DOE), Office of River Protection (ORP) has completed a review of the Bechtel National, Inc.'s (BNI) Integration of Safety into the Design Process-like safety evaluation process, as described in document 24590-WTP-GPP-RANS-NS-0002, "Safety Evaluation Process for DOE-Approved Preliminary Documented Safety Analysis," Rev. 6, submitted via November 6, 2019, BNI letter CCN: 314805, "Submittal of 24590-WTP-GPP-RANS-NS-0002, Rev 6, Safety Evaluation Process for DOE Approved Preliminary Documented Safety Analysis, for ORP Approval." ORP approves this safety evaluation process with the following directed changes:

Directed Change 1

Page 9, Section k, second paragraph, add the following words under question 4:

"(..., change creates the possibility of an accident of a different type)."

Directed Change 2

Roles and Responsibilities section, page 6, under 5.1 MANAGER OF NUCLEAR SAFETY ENGINEERING (NSE), add the following bullet:

- "Ensures that NSE SE preparers/reviewers have a thorough understanding of the design and regulatory basis for the facility under review and understand the specific requirements of the applicable DOE regulations."

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Directed Change 3

Under Attachment 2, PREPARER and REVIEW Qualification Criteria, page 17, Education/Experience section, modify second bullet to read:

- “One year of nuclear facility experience with a minimum of three months SE process related experience or equivalent (e.g., experience with a USQ process from another facility), as approved by the Manager of NSE.”

Modify first bullet under Initial Training to read:

- “Classroom training on the following subjects: ~~equivalent training and experience may be substituted with the approval of the Manager of NSE:~~”

Modify fourth bullet under Initial Training to read:

- “Classroom training or Computer Based Training on the applicable facility design basis.”

Document 24590-WTP-GPP-RANS-NS-0002, Rev. 6, was developed in response to an agreement reached by the accelerated response team between BNI and DOE ORP implementing an Integration of Safety into the Design Process-like safety evaluation process for facilities without a documented safety analysis.

Document 24590-WTP-GPG-RANS-NS-0009, *Safety Evaluation Process Guide for DOE Approved Preliminary Documented Safety Analysis*, Rev. 0, has also been prepared in support of the new safety evaluation process and was reviewed by ORP.

The directed changes to this Safety Evaluation process shall be incorporated within 60 days of the date on this ORP approval letter.

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

Sincerely,



Ronnie L. Dawson
Contracting Officer
Office of River Protection



Ben J. Harp
Deputy Manager
Office of River Protection

NSD:GTW

cc: BNI Correspondence



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

DEC 16 2019

19-WTP-0143

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

Mrs. McCain:

CONTRACT NO. DE-AC27-01RV14136 – HIGH-LEVEL WASTE FACILITY MELTER
FEED PROCESS SYSTEM AND VESSEL DESIGN

- References:
1. BNI letter from V. McCain to T. W. Fletcher, ORP, "Conclusion of Technical Evaluation Regarding Removal of Spargers in the High Level Waste Facility Melter Feed Preparation/Melter Feed Vessel Design," CCN: 308184, dated August 8, 2019.
 2. DNFSB letter from B. Hamilton to J. R. Perry, DOE, regarding open DNFSB issues related to High-Level Waste Facility: Melter accidents, hydrogen control strategy, and seismic configuration of safety controls, May 9, 2019.

The U.S. Department of Energy, Office of River Protection, Waste Treatment and Immobilization Plant Project reviewed Reference 1 and provides the response in this letter.

Bechtel National, Inc. (BNI), as the design authority is responsible for the design of the High-Level Waste Facility melter feed process system and the melter feed preparation/feed vessels, to comply with applicable Waste Treatment and Immobilization Plant contract requirements. Including throughput and delivery of immobilized high-level waste. As part of the design verification, BNI shall address the hydrogen control strategy concerns by the Defense Nuclear Facilities Safety Board staff (Reference 2), as noted below:

The Board's staff concludes that this revised [hydrogen] control strategy [for hydrogen explosions following the loss of mixing process vessels containing non-Newtonian waste] is conceptually viable, and agrees with DOE and BNI have identified an acceptable path forward for resolving the original concern.

However, the Board's staff notes that this approach is technically challenging, and that BNI still needs to design the equipment and methods necessary to implement the strategy. For example, BNI must be able to show that the mechanical mixers and the process vessel air purge systems will perform reliably, as expected, or

DEC 16 2019

Valerie McCain
19-WTP-0143

-2-

provide an additional method for agitating the waste in the event of a mechanical mixer failure.

BNI shall ensure that all modes of operations, including abnormal/upset conditions are considered in verifying High-Level Waste Facility melter feed process requirements related to mixing made in Reference 1 and the verification methods meet the BNI design process.

If you have any questions, please contact me, or your staff may contact Wahed Abdul, Federal Project Director for Engineering, Procurement, and Construction, Waste Treatment and Immobilization Plant, (509) 438-0455.



Thomas W. Fletcher
Assistant Manager, Federal Project Director
Waste Treatment and Immobilization Plant
Office of River Protection

WTP: WA

cc: BNI Correspondence