FINAL

Office of River Protection
Consent Decree
Monthly Report
February[1] 2017

Consent Decree, *State of Washington v. Dept. of Energy*, Case No. 2:08-cv-05085-FVS (October 25, 2010)
Amended Consent Decree, *State of Washington v. Dept. of Energy*, Case No. 2:08-CV-5085-RMP (March 11, 2016)
Second Amended Consent Decree, *State of Washington v. Dept. of Energy*, Case No. 2:08-5085-RMP (April 12, 2016)[2]

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[1] The narrative descriptions of progress in this report cover the period from December 1-31, 2016. Earned Value Management System data and descriptions cover the period of November 1-30, 2016; this includes the facility completion percentage estimates included at various locations in the Waste Treatment and Immobilization Plant section.

[2] The cited consent decrees are between the State of Washington and U.S. Department of Energy. For each of these decrees, there are companion, separate consent decrees with the State of Oregon, as Intervenor, under the same case numbers.

Acronyms and Abbreviations

BNI	Bechtel National, Inc.
BOF	Balance of Facilities
C5V	ventilation system for potential contamination zones C5
CD	Consent Decree (*State of Washington v. Dept. of Energy*, Case No. 2:08-cv-05085-FVS [October 25, 2010]; as amended, Amended Consent Decree, Case No. 2:08-cv-05085-RMP [March 11, 2016]; as amended, Second Amended Consent Decree, Case No. 2:08-cv-05085-RMP [April 12, 2016])
CV	cost variance
D&O	design and operability
DFLAW	direct-feed low-activity waste
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EM	U.S. Department of Energy, Office of Environmetnal Management
EMF	Effluent Management Facility
ERSS	extended reach sluicer system
FY	fiscal year
HAMTC	Hanford Atomic Metals Trades Council
HEPA	high-efficiency particulate air
HLW	High-Level Waste (Facility)
HPAV	hydrogen in piping and ancillary vessels
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
MARS-V	Mobile Arm Retrieval System-Vacuum
NQA-1	Nuclear Quality Assurance-1
ORP	U.S. Department of Energy, Office of River Protection
PDSA	preliminary documented safety analysis
PJM	pulse-jet mixer
PT	Pretreatment (Facility)
RLD	Radioactive Liquid Waste Disposal System
SCBA	self-contained breathing apparatus
SHSVD	standard high-solids vessel design
SV	schedule variance
WRPS	Washington River Protection Solutions LLC
WTP	Waste Treatment and Immobilization Plant

Consent Decree Milestone Statistics/Status

Milestone	Title	Due Date	Completion Date	Status
Fiscal Year 2020				
D-00A-07 Interim	LAW Facility Construction Substantially Complete	12/31/2020		On Schedule
D-16B-03	Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5	12/31/2020		Notice given that a serious risk has arisen. See letter 16-ORP-0097
Fiscal Year 2022				
D-00A-08 Interim	Start LAW Facility Cold Commissioning	12/31/2022		On Schedule
Fiscal Year 2023				
D-00A-09 Interim	LAW Facility Hot Commissioning Complete	12/31/2023		On Schedule
Fiscal Year 2024				
D-16B-01	Complete Retrieval of Tank Waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111	03/31/2024		On Schedule
D-16B-02	Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106. AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3 DOE may substitute any of the identified 9 SSTs and advice Ecology accordingly	03/31/2024		Notice given that a serious risk has arisen. See letter 16-ORP-0097
Fiscal Year 2030				
D-00A-02 Interim	HLW Facility Construction Substantially Complete	12/31/2030		On Schedule

Milestone	Title	Due Date	Completion Date	Status
Fiscal Year 2031				
D-00A-13 Interim	Complete Installation of Pretreatment Feed Separation Vessels	12/31/2031		On Schedule
D-00A-14 Interim	PT Facility Construction Substantially Complete	12/31/2031		On Schedule
D-00A-19 Interim	Complete Elevation 98 feet Concrete Floor Slab Placements in PT Facility	12/31/2031		On Schedule
Fiscal Year 2032				
D-00A-03 Interim	Start HLW Facility Cold Commissioning	06/30/2032		On Schedule
D-00A-06 Interim	Complete Methods Validations	06/30/2032		On Schedule
D-00A-15 Interim	Start PT Facility Cold Commissioning	12/31/2032		On Schedule
Fiscal Year 2033				
D-00A-04 Interim	HLW Facility Hot Commissioning Complete	12/31/2033		On Schedule
D-00A-16 Interim	PT Facility Hot Commissioning Complete	12/31/2033		On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033		On Schedule
Fiscal Year 2036				
D-00A-01	Achieve Initial Plant Operations for the Waste Treatment Plant	12/31/2036		On Schedule

DOE = U.S. Department of Energy
Ecology = Washington State Department of Ecology
HLW = high-level waste.
LAW = low-activity waste.
PT = pretreatment.
SST = single-shell tank.
WMA-C = C Farm waste management area.

Consent Decree Reports/Reviews

D-16C-03 series, Submit to State of Washington and State of Oregon Quarterly Report, Due: End of month following each calendar year quarter, Status: On Schedule.

D-00C-02 series, Submit to State of Washington and State of Oregon Monthly Summary Reports, Due: End of each month, Status: On Schedule.

D-006-00-B1, Provide State of Oregon notice of meetings in D-006-00-B, etc. no less than 30 days before they are scheduled, Due: November 10, 2016, Status: In Progress

D-006-00-B, Meet Approximately Every Three Years after Entry of Decree to review requirements of the Consent Decree, Due: December 10, 2016, Status: In Progress

Spare Reboiler Requirement Status

Facility Project Director: Glyn Trenchard

Facility Operations Activity Manager: Paul Hernandez

Milestone	Title	Due Date	Status
D-16E-01	DOE must purchase by December 31, 2016 a spare E-A-1 reboiler for the 242-A Evaporator	12/31/2016	Complete
D-16E-02	Have available spare E-A-1 reboiler for the 242-A Evaporator	12/31/2018	On Schedule

DOE = U.S. Department of Energy.

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

- The purchase of the reboiler occurred when WRPS awarded a not-to-exceed design/build contract to ABW Technologies for fabrication of a spare reboiler, with delivery prior to December 31, 2018.
- WRPS and ABW Technologies, Inc. are in the process of finalizing the design/fabrication schedule with associated with the new spare 242-A Evaporator reboiler.

Single-Shell Tank Retrieval Program

Facility Project Director: Glyn Trenchard

Facility Operations Activity Manager: Jeff Rambo

Milestone	Title	Due Date	Status
D-16B-03	Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5	12/31/2020	Notice given that a serious risk has arisen. See letter 16-ORP-0097
D-16B-01	Complete retrieval of tank waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111	03/31/2024	On Schedule
D-16B-02	Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106, AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3 DOE may substitute any of the identified 9 SSTs and advice Ecology accordingly	03/31/2024	Notice given that a serious risk has arisen. See letter 16-ORP-0097

DOE = U.S. Department of Energy.
Ecology = Washington State Department of Ecology.
SST = single-shell tank.
WMA-C = C Farm waste management area.

Significant Accomplishments for the Prior Three Months:

- Completed AX Farm air and water service building major utilities installation
- Received slurry pump hose support assemblies for AX-102/104
- Completed an additional AX Farm pit clean out (AX-04D); six of eight pit clean outs completed
- Completed AX POR-126 Exhauster and POR-127 exhauster cold operational acceptance tests and hot tie-ins
- Initiated foam and lead removal near AX-101 and AX-103
- Removed C-105 Mobile Arm Retrieval System-Vacuum (MARS-V) components were shipped to Environmental Restoration Disposal Facility for disposal

- Removed C-105 A and C pit cover blocks and completed pit/riser inspections
- Received three extended reach sluicer systems (ERSS) for installation in Tank C-105
- Completed C Farm POR008 exhauster isolation.

Significant Planned Activities in the Next Three Months:

- Initiate C Farm hose-in-hose transfer line removals planned for FY 2017
- Negotiate contract proposal for installing and performing the third retrieval technology at Tank C-105
- Complete Tank C-105 third retrieval technology design
- Initiate C-105 ERSS installation
- Complete AX ventilation readiness/turnover at portable exhauster POR126 and POR127
- Initiate AX-102 and AX-104 in-tank equipment removal
- Complete the two remaining AX-104 pit clean outs
- Initiate AX-101 and AX-103 pit clean out activities.

Issues:

- See previous reports for a description of the history of the July 11, 2016 Hanford Atomic Metal Trades Council (HAMTC) "stop work" order requiring mandatory use of supplied air within the perimeter fence lines of both single- and double-shell tank farms, the August 31, 2016 Memorandum of Agreement between HAMTC and Washington River Protection Solutions, LLC, that lifted the stop work based upon WRPS's agreement to remain on supplied air until chemical cartridge testing is complete and reviewed by a third party selected by HAMTC. The litigation between Hanford Challenge, United Association of Plumbers and Steamfitters Local Union 598, and the State of Washington and the Department of Energy and WRPS remains pending though on November 15, 2016 the Court denied the plaintiffs' Motions for Preliminary Injunction and the matter is now set for trial.
- On December 6, 2016, by letter number 16-ORP-0097, DOE formally notified Washington State Department of Ecology that serious risk has risen that DOE may be unable to meet Consent Decree milestones B-2 and B-3. In that letter, DOE notes that although the November 22, 2016, WRPS letter indicated that the expanded and extended usage of SCBA (self-contained breathing apparatus) within all tank farms had potential impacts on DOE's ability to meet Consent Decree Milestone A-9, Low Activity Waste (LAW) Facility Hot Commissioning Complete, DOE has determined that there are a number of options that remain available to modify operational and programmatic priorities so as to meet the A-9 milestone, As a result, DOE has not made a determination, at this time, that a serious risk has arisen that DOE may be unable to meet Milestone A-9 and, therefore, is not providing notification regarding Milestone A-9.

- The schedule for ERSS installation in C-105 has been delayed due to riser issues. A go/no-go gauge did not fit in the C-105 riser indicating that the ERSS may not fit in the riser. This could be due to rust/scale buildup or to riser configuration. Potential paths forward include cleaning the riser, re-testing with a new go-no-go gauge that closely matches the equipment to be installed, or laser scanning the riser. This delay will not impact any CD Milestones.

Tank Waste Retrieval Work Plan Status

			Retrieval Technology		
Tank	**TWRWP**	**Expected Revisions**	**First**	**Second**	**Third**
AX-101	RPP-RPT-58932, Rev. 0	In Progress	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
AX-102	RPP-RPT-58933, Rev. 0	In Progress	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
AX-103	RPP-RPT-58934, Rev. 0	In Progress	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
AX-104	RPP-RPT-58935, Rev. 0	In Progress	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
C-101	RPP-22520, Rev. 8	Complete	Modified Sluicing with ERSS	High-Pressure Water deployed with the ERSS	-
C-102	RPP-22393, Rev. 7	Complete	Modified Sluicing with ERSS	High-Pressure Water deployed with the ERSS	-
C-104	RPP-22393, Rev. 7	Complete	Modified Sluicing	Chemical Retrieval Process complete per 13-TF-0018	-
C-105	RPP-22520, Rev. 8	Complete	MARS-V	MARS-V-High Pressure Water Spray	Chemical Dissolution Process with ERSS
C-107	RPP-22393, Rev. 7	Complete	MARS-S	MARS-S -High Pressure Water Spray	Water Dissolution
C-108	RPP-22393, Rev. 7	Complete	Modified Sluicing	Chemical Retrieval Process complete per 13-TF-0025	-

			Retrieval Technology		
Tank	**TWRWP**	**Expected Revisions**	**First**	**Second**	**Third**
C-109	RPP-21895, Rev. 5	Complete	Modified Sluicing	Chemical Retrieval Process complete per 13-TF-0037	-
C-110	RPP-33116, Rev. 3	Complete	Modified Sluicing	Mechanical Waste Conditioning with an In-Tank Vehicle	High Pressure Water
C-111	RPP-37739, Rev. 2	Complete	Modified Sluicing	High pressure water using the ERSS	Chemical Dissolution Process with ERSS
C-112	RPP-22393, Rev. 7	Complete	Modified Sluicing	Chemical Retrieval Process	-

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

Significant Accomplishments:

- None.

Significant Planned Activities in the Next Three Months:

- Finalize AX Farm tank retrieval work plans.
- Incorporate third retrieval technology for C-105

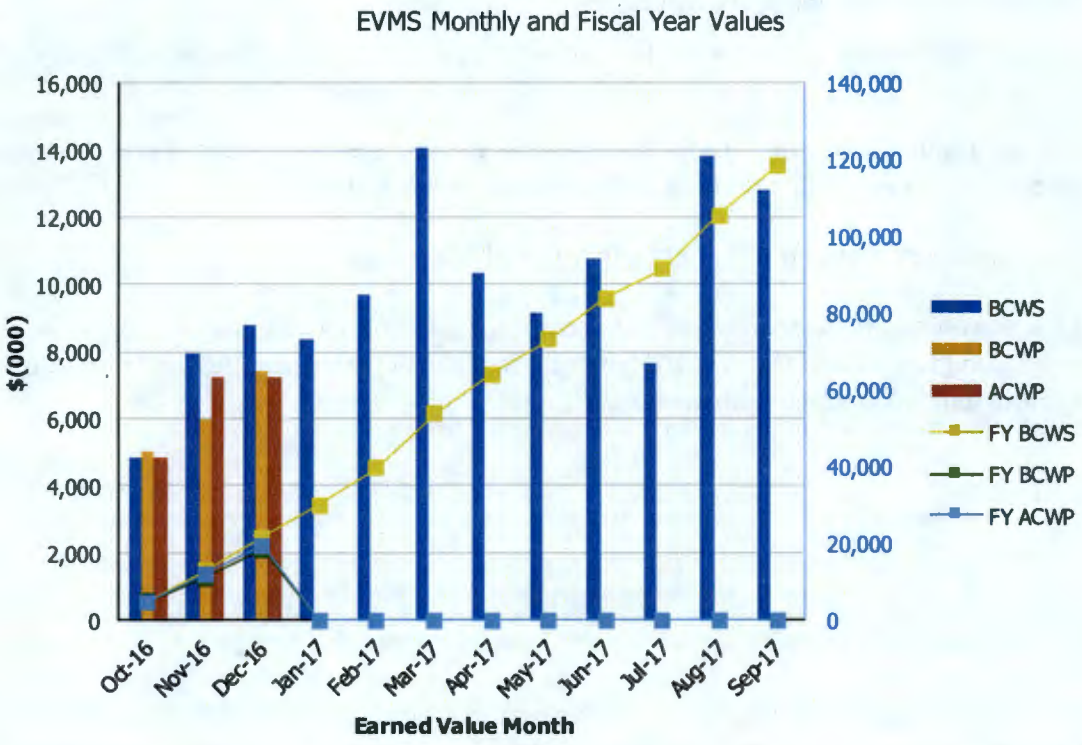
Issues:

- None.

EXC-01a: Fiscal Year Cost and Schedule Report

Earned Value Data: Fiscal Year 2017 December-16

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



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	$4,816	$4,996	$4,822	1.04	1.04	$4,816	$4,996	$4,822	1.04	1.04
Nov 2016	$7,924	$5,969	$7,241	0.75	0.82	$12,740	$10,965	$12,063	0.86	0.91
Dec 2016	$8,772	$7,401	$7,262	0.84	1.02	$21,512	$18,365	$19,325	0.85	0.95
Jan 2017	$8,382	$0	$0	0.00	0.00	$29,894	$0	$0	0.00	0.00
Feb 2017	$9,675	$0	$0	0.00	0.00	$39,569	$0	$0	0.00	0.00
Mar 2017	$14,034	$0	$0	0.00	0.00	$53,602	$0	$0	0.00	0.00
Apr 2017	$10,367	$0	$0	0.00	0.00	$63,969	$0	$0	0.00	0.00
May 2017	$9,150	$0	$0	0.00	0.00	$73,119	$0	$0	0.00	0.00
Jun 2017	$10,766	$0	$0	0.00	0.00	$83,884	$0	$0	0.00	0.00
Jul 2017	$7,681	$0	$0	0.00	0.00	$91,565	$0	$0	0.00	0.00
Aug 2017	$13,840	$0	$0	0.00	0.00	$105,405	$0	$0	0.00	0.00
Sep 2017	$12,806	$0	$0	0.00	0.00	$118,211	$0	$0	0.00	0.00
CTD	$730,679	$716,415	$739,999	0.98	0.97					

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.

Retrieve and Close Single-Shell Tanks (5.02)

The December 2016 **unfavorable** schedule variance (SV) of ($1,372K) is due to:

- DOE delayed removal of in-tank legacy equipment within AX Farm until this work could be supported by an operating exhauster.
- Winter weather and sampling for beryllium in work spaces have limited and at times have caused field activities to be suspended within AX Farm and C Farm.
- Winter weather and sampling for beryllium in work spaces have limited and at times briefly suspended field activities within AX Farm and C Farm.

The current month **favorable** cost variance (CV) of $139K is due to:

- Less man-hours have been required to remove the foam, lead and legacy electrical wiring/conduit around the AX-103 pits as a result efficiencies and lesson learned from C Farm and AX-102/104 pit work.

Waste Treatment and Immobilization Plant Project

Federal Project Director: Bill Hamel

Deputy Federal Project Director: Joni Grindstaff

Milestone	Title	Due Date	Status
D-00A-06	Complete Methods Validations	06/30/2032	On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033	On Schedule
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	On Schedule

WTP = Waste Treatment and Immobilization Plant

The Waste Treatment and Immobilization Plant (WTP) Project currently employs approximately 2,866 full-time equivalent contractor, Bechtel National, Inc. (BNI), and subcontractor personnel. This includes 533 craft, 588 non-manual, and 177 subcontractor full-time equivalent personnel working at the WTP construction site (all facilities).

The WTP Project continues to focus on completion of the Low-Activity Waste (LAW) Facility, Balance of Facilities (BOF), and Analytical Laboratory (LAB) (collectively known as LBL, including direct-feed LAW [DFLAW] and LBL facility services). As of December 2016, total LBL facilities were 53 percent complete, design and engineering was 78 percent complete, procurement was 67 percent complete, construction was 69 percent complete, and startup and commissioning was 14 percent complete.

The WTP Project has 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.

Significant Accomplishments during the Prior Three Months:

- ORP briefed the Defense Nuclear Facilities Safety Board (DNFSB) on attaining resolution of the nuclear safety technical issues, "Preventing Potential Hydrogen Build-Up" and "Preventing Criticality" (also referred to as ORP technical issue T1 in relation to hydrogen gas events in vessels; T2 in relation to criticality in pulse-jet mixer [PJM] vessels; and T3 in relation to hydrogen in piping and ancillary vessels). This briefing took place in Washington, D.C. on January 31, 2017.
- The Acting Assistant Secretary for Environmental Management, Susan M. Cange, sent a letter and supporting documentation to the DNFSB Chairman, dated January 24, 2017. The letter noted since design-related activities on the Pretreatment (PT) Facility and the High-Level Waste (HLW) Facility were suspended in 2012, DOE and the WTP contractor have performed a comprehensive set of work activities, which now provides ORP with sufficient confidence to direct the resumption of design activities affected by the nuclear safety technical issues noted in the above bullet.
- The ORP and BNI contract modification and Baseline Change Proposal to support the new LBL/DFLAW work scope was approved by the Deputy Energy Secretary, in her role

as the Chief Executive for Project Management, and the Energy System Acquisition Advisory Board.

Significant Planned Activities in the Next Three Months:

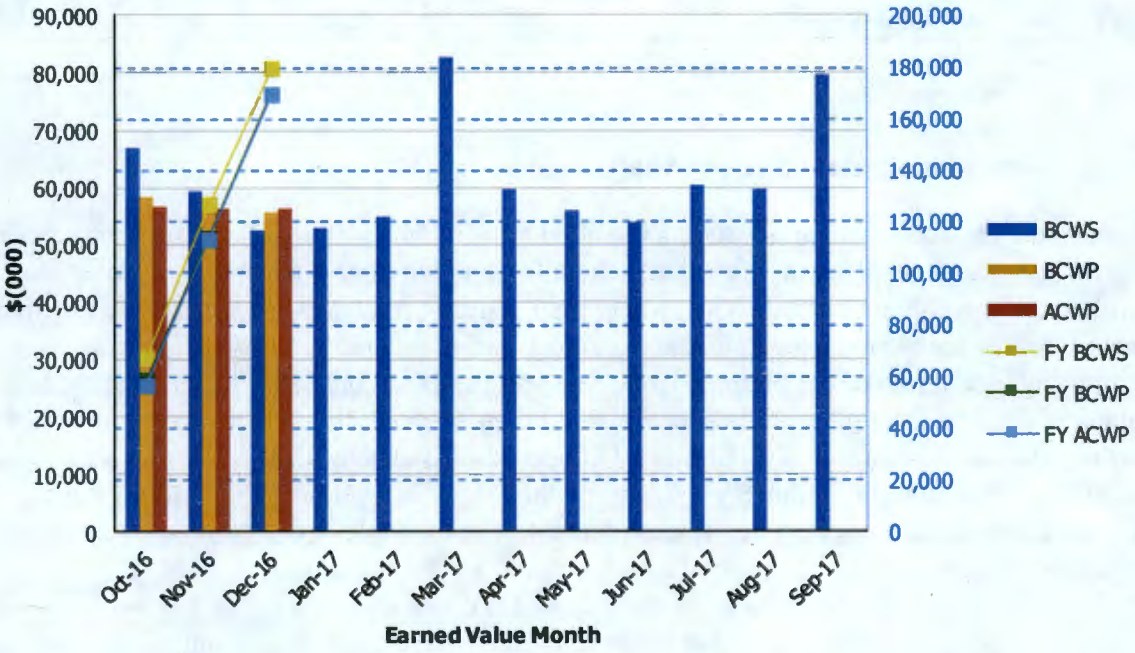
- Significant planned activities in the next three months are noted in project reports for Pretreatment (PT) Facility, High-Level Waste (HLW) Facility, LAW, BOF, and LAB.

EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2017 Earned Value Data Data as of: December 2016

River Protection Project
Waste Treatment Plant (WTP) Project

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	$67,019	$58,321	$56,633	0.87	1.03	$67,019	$58,321	$56,633	0.87	1.03
Nov 2016	$59,361	$55,681	$56,299	0.94	0.99	$126,379	$114,002	$112,932	0.90	1.01
Dec 2016	$52,654	$55,489	$56,125	1.05	0.99	$179,033	$169,491	$169,057	0.95	1.00
Jan 2017	$52,807									
Feb 2017	$55,076									
Mar 2017	$82,761									
Apr 2017	$59,577									
May 2017	$56,008									
Jun 2017	$53,902									
Jul 2017	$60,343									
Aug 2017	$59,761									
Sep 2017	$79,533									
PTD	$10,007,148	$9,970,501	$9,899,146	1.00	1.01					

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.

Project Schedule and Cost Variance Performance

Performance Tracking	SV ($x1,000)	CV ($x1,000)
Current Period (December 2016)	$2,836	($636)
Fiscal Year 2017 to-date	($9,542)	$435
Cumulative (through December 2016)	($36,647)	$71,355

CV = Cost Variance.
SV = Schedule Variance.

Earned Value Management System Analysis

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

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

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

For the December reporting period, a net favorable SV of approximately $2.8 million was reported (meaning a net of $2.8 million more work was completed than scheduled during the month), primarily due to the following:

- PT reported a net favorable SV of $3.6 million, mostly related to deferral of technical teams erosion/corrosion scope due to FY 2017 funding constraints; test completion team

resumption of simulant procurement and analysis, which had been scheduled in prior periods, and early plant equipment payment for a procurement for distribution panels, transformers, etc., which was scheduled for closure in April 2017.

- HLW reported a net favorable SV of $0.1 million, tied to removal of the scope and budget for the Radioactive Liquid Waste Disposal System (RLD) mixing study since it was determined while completing the analysis of the RLD vessels, the process mixing study for the RLD vessels is no longer needed.
- LBL reported a net unfavorable SV of ($0.9 million), resulting from delays in the carbon media testing technical subcontract; DFLAW mechanical support is behind as a result of procurement delays; LBL construction was impacted by delays in the temporary authorization permitting process and challenges with on-time pipe procurement; BOF startup and commissioning experienced delays in non-RLD testing and not receiving turnover of systems in the cooling tower and water treatment buildings.

For the December reporting period, a net unfavorable CV of approximately ($0.6 million) was reported (meaning it cost a net $0.6 million more than estimated), primarily due to the following:

- Project Services reported a net unfavorable CV of ($1.5 million) related to higher than expected General/Other services site closure costs. Procurement reported Other Direct Costs that should have been charged to other facilities (these costs will be corrected next month). Construction reported a labor overrun of six full-time equivalents and more relocation costs than anticipated during the current year. Integration, Startup, Completions, and Plant Operations reported an unfavorable CV due to a sales tax adjustment from prior years. These overruns were offset by engineering under-running the labor budget by about 12 full-time equivalents due to holiday and vacation time.
- LBL reported a net unfavorable CV of ($0.2 million) for LBL Startup and Commissioning related to BOF and Management Suspension of Work that has impacted maintenance work. These overruns were partially offset by a labor underrun in LBL Support Functions, related to the holidays and WTP weather closures.
- PT reported a net favorable CV of $0.7 million, tied to technical teams staff efficiencies for deliverables related to T4 (PJM vessel mixing and control) and reduced support from the national laboratories.
- HLW reported a net favorable CV $0.3 million, primarily due to the inclement weather resulting in office and site delays/closures and increased use of paid time-off due to holidays, which favorably affects level of effort labor control accounts.

Through the current monthly reporting period, there are no SVs or CVs impacting current Consent Decree milestones.

Pretreatment Facility

Federal Project Director: Bill Hamel

Facility Federal Project Director: Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-18	Complete Structural Steel Erection Below Elevation 56′ in PT Facility	12/31/2009	Complete
D-00A-19	Complete Elevation 98′ Concrete Floor Slab in PT Facility	12/31/2031	On Schedule
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels	12/31/2031	On Schedule
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	On Schedule
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	On Schedule
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	On Schedule

PT = pretreatment.

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

ORP continues to focus on resolving five outstanding WTP technical issues as described in the Amended Consent Decree (i.e., preventing potential hydrogen buildup, preventing criticality, ensuring control of the PJM, protecting against possible erosion and corrosion, and ensuring an adequate ventilation system), while performing hazards analyses, and completing safety evaluations for process systems in accordance with the revised PT Facility Three-Year Interim Work Plan.

The WTP Project has made sustained progress on resolution of the five outstanding technical issues. ORP attained resolution of the nuclear safety technical issues, "Preventing Potential Hydrogen Build-Up" and "Preventing Criticality" during December 2016 (specifically, T1 in relation to hydrogen gas events in vessels; T2 in relation to criticality in PJM vessels; and T3 in relation to hydrogen in piping and ancillary vessels). Work will continue in 2017 on resolving the remaining technical issues. ORP has worked with BNI to develop closure packages for each technical issue, defining work scope, required deliverables, and technical issue closure criteria.

Significant Accomplishments during the Prior Three Months:

- ORP, in coordination with BNI and DOE Office of Environmental Management (EM) staff, provided the technical basis for resolution of the DNFSB safety issue associated with hydrogen generation and control in PT Facility process vessels mixed with PJM (also referred to as ORP technical issue T1). The documents were provided to the former DOE Assistant Secretary for Environmental Management (EM-1). Based on the extensive analyses completed, ORP considers the DNFSB safety issue regarding hydrogen retention and control and heat transfer in PJM vessels resolved. The Acting EM-1 issued a letter with supporting documentation to the DNFSB Chairman detailing the significant progress made to address issues associated with this technical issue. Detailed design and the PDSA update for the implementation of the control will proceed as part of design completion.
- ORP, in coordination with BNI and EM staff, provided the technical basis to the former EM-1 for resolution of the DNFSB safety issue associated with criticality in PJM vessels (also referred to as ORP technical issue T2). The criticality issue was extensively investigated and does not represent a credible hazard based on the proposed controls in the WTP Preliminary Criticality Safety Evaluation Report, and a proposed strategy in an engineering study used to evaluate potential treatment of Hanford tank waste containing plutonium particulates and oxide. Based on the resolution of the DNFSB safety issue on criticality, ORP considers the criticality issue resolved. The Acting EM-1 issued a letter with supporting documentation to the DNFSB Chairman detailing the significant progress made to address issues associated with this technical issue. Detailed design and the PDSA update for the implementation of the control will proceed as part of design completion.
- ORP, in coordination with BNI and EM staff, provided the technical basis to the former EM-1 for resolution of the DNFSB safety issue associated with hydrogen in piping and ancillary vessels (HPAV) (also referred to as ORP technical issue T3). The Acting EM-1 issued a letter with supporting documentation to the DNFSB Chairman detailing the significant progress made to address issues associated with this technical issue. Detailed design and the PDSA update for the implementation of the control will proceed as part of design completion.
- ORP and BNI initiated testing of a proposed PJM standard high-solids vessel (SHSV) design to replace a number of vessel designs in the PT Facility (this is in relation to resolving concerns over PJM vessel mixing and control, also referred to as ORP technical issue T4). A prototype of the 16-foot-diameter SHSV was commissioned on December 22, 2016. The scheduled testing will complete the final stage of PJM control system testing to support resolution of control issues applicable to PT Facility vessels with high solids concentrations and non-Newtonian slurries. This testing will demonstrate the required PJM control parameters and control approach to be used during the qualification of the design for the SHSV design. Testing is expected to be completed by December 2017 and will provide the required design and operations information to support completion of the PT Facility design.
- BNI issued a Basis of Design Change Notice establishing the erosion/corrosion basis of design parameters (this is in relation to resolving concerns over erosion/corrosion in piping and vessels, also referred to as ORP technical issue T5).

- BNI issued the draft SHSV Conceptual Design Plan to ORP for review.
- BNI started the full-scale vessel operational set point test as part of the PJM controls testing.

Significant Planned Activities in the Next Three Months:

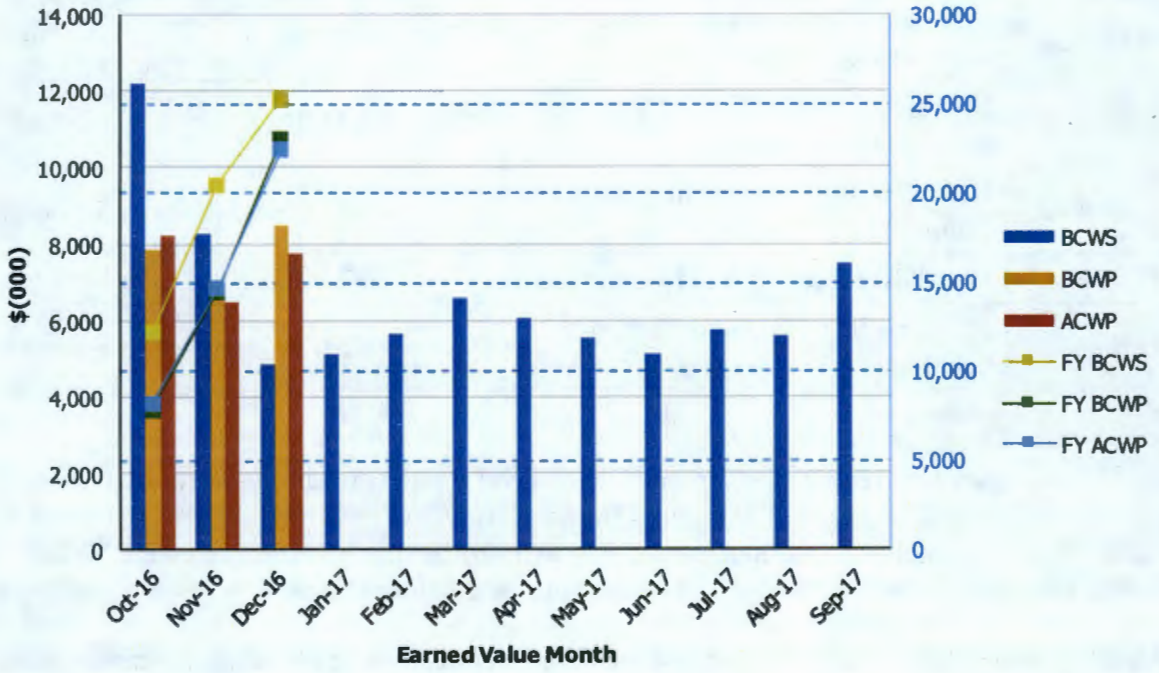
- BNI to complete the erosion/corrosion synergistic test simulant qualification and final recipe.
- BNI will continue testing the SHSV design prototype, focusing on the PJM control system testing.
- ORP and BNI will continue efforts to resolve the spray leak methodology and sliding bed wear issues identified by the DNFSB in its *26th Annual Report to Congress*, dated March 2016.
- BNI to complete operational set point tests.
- BNI to complete non-Newtonian blend testing at the National Engineering Technology Laboratory that supports the full-scale vessel testing.
- ORP to review the SHSV Conceptual Design Plan.
- BNI to issue localized corrosion test basis document revision.

EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2017 Earned Value Data Data as of: December 2016

River Protection Project
Pretreatment Facility (WBS 1.01)

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	$12,193	$7,845	$8,196	0.64	0.96	$12,193	$7,845	$8,196	0.64	0.96
Nov 2016	$8,254	$6,654	$6,487	0.81	1.03	$20,447	$14,500	$14,684	0.71	0.99
Dec 2016	$4,851	$8,480	$7,738	1.75	1.10	$25,298	$22,980	$22,421	0.91	1.02
Jan 2017	$5,139									
Feb 2017	$5,642									
Mar 2017	$6,582									
Apr 2017	$6,064									
May 2017	$5,554									
Jun 2017	$5,109									
Jul 2017	$5,739									
Aug 2017	$5,592									
Sep 2017	$7,461									
PTD	$1,873,575	$1,873,220	$1,849,994	1.00	1.01					

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.

High-Level Waste Facility

Federal Project Director: Bill Hamel

Facility Federal Project Director: Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-20	Complete Construction of Structural Steel to 14′ in HLW Facility	12/31/2010	Complete
D-00A-21	Complete Construction of Structural Steel to 37′ in HLW Facility	12/31/2012	Complete
D-00A-02	HLW Facility Construction Substantially Complete	12/31/2030	On Schedule
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	On Schedule
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	On Schedule

HLW = high-level waste.

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

As of September 2012, the HLW Facility was 62 percent complete overall, with engineering design 89 percent complete, procurement 81 percent complete, construction 43 percent complete, and startup and commissioning 4 percent complete. Physical percent complete for the HLW and PT facilities were frozen as of September 2012, pending development of a revised baseline to address technical and design issues.

Work on the HLW Facility is now being performed in accordance with the FY 2017–FY 2021 Interim Work Plan. BNI is still working under a limited construction and procurement authorization, and efforts are focused on completing activities required to obtain full-production authorization from ORP. BNI has submitted a facility completion plan identifying the strategy for obtaining full authorization to complete engineering, procurement, and construction of the HLW Facility, which is currently under review by ORP.

BNI Engineering is focused on activities to support implementation of technical core team recommendations and development of engineering studies and analysis to disposition design and operability (D&O) review comments. The final D&O engineering analysis, Phase II of the HLW Facility melter offgas treatment process/process vessel vent engineering study, has been issued and BNI is now coordinating the development of a final D&O report to summarize recommendations to support DOE authorization for full construction. Design of the remaining portions of the RLD system is in progress.

The HLW Facility Preliminary Documented Safety Analysis (PDSA) update to align design and the safety basis was previously submitted to ORP. The ORP-chartered Safety Basis Review

Team provided initial comments, and will work with BNI over the next few months on the comment resolution for formal submittal of the PDSA to DOE for approval. This work has been delayed due to the LBL PDSA review and approval, which is a higher WTP priority at this time. Once the PDSA is approved, system design requirements will be confirmed to ensure facility design is aligned with the nuclear safety basis.

High-efficiency particulate air (HEPA) filter media design and testing is now complete. These filter designs were evaluated to ensure the qualified filters support the needs of both the HLW and LBL facilities. Nuclear Quality Assurance-1 (NQA-1) qualification testing of the full-scale filter designs at Mississippi State University has been completed. All testing of the filter "Design 4" for the safe-change and remote change housings have been completed successfully. The final report from the results of the testing is planned to be issued in 2017.

Significant Accomplishments during the Prior Three Months:

- ORP provided comments to BNI on the submitted HLW Facility Completion Plan for resolution.
- BNI issued the HLW canister pour handling system engineering study.
- BNI completed NQA-1 HEPA filter qualification testing of the "Design 4" safe-change and remote change filters.
- BNI issued the draft HLW Facility offgas process system Phase II engineering study.
- ORP is in the process of reviewing the draft HLW PDSA update submitted by BNI.
- BNI released material procurement and fabrication of RLD-7 and RLD-8 vessels. These vessels are located in the wet process cell and must be installed prior to concrete slab placement, which supports roof installation.

Significant Planned Activities in the Next Three Months:

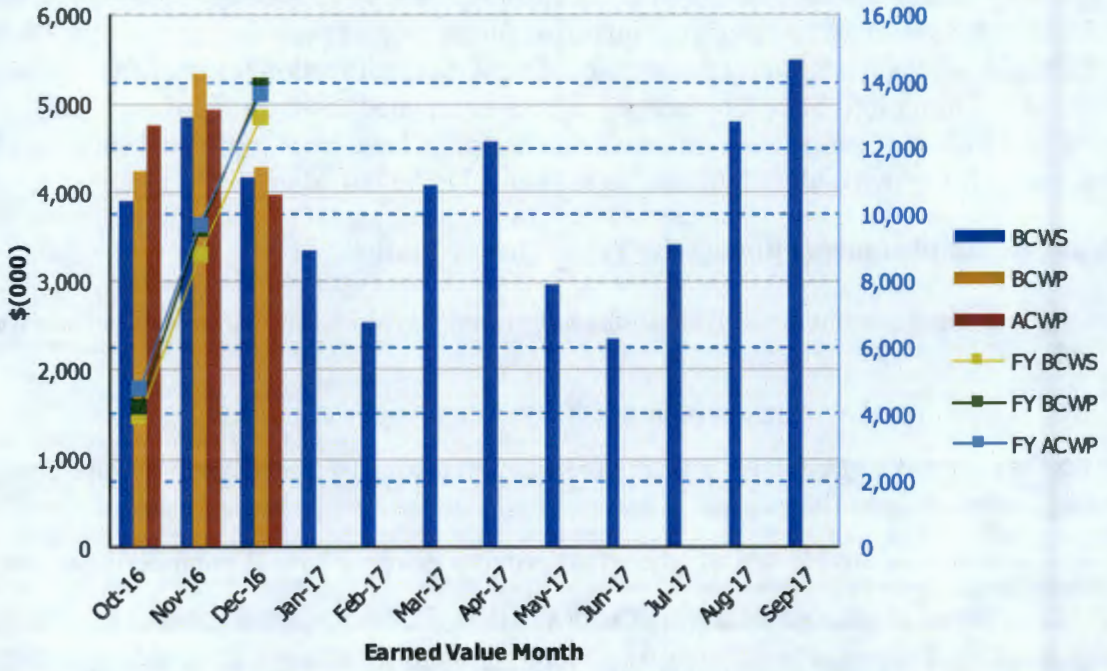
- BNI to issue the reports associated with the full-scale testing and final selection of HEPA filters supporting the ventilation and offgas systems of HLW and LBL facilities.
- ORP to complete review of the draft PDSA update.
- BNI to complete the disposition of design and operability comments and issue final report to DOE.
- DOE to approve the HLW Facility Completion Plan.
- BNI to continue focusing on weathering in the building and facility preservation maintenance.

EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2017 Earned Value Data Data as of: December 2016

River Protection Project
High-Level Waste Facility (WBS 1.03)

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	$3,910	$4,231	$4,761	1.08	0.89	$3,910	$4,231	$4,761	1.08	0.89
Nov 2016	$4,855	$5,337	$4,930	1.10	1.08	$8,766	$9,568	$9,692	1.09	0.99
Dec 2016	$4,163	$4,292	$3,960	1.03	1.08	$12,929	$13,860	$13,652	1.07	1.02
Jan 2017	$3,343									
Feb 2017	$2,543									
Mar 2017	$4,086									
Apr 2017	$4,585									
May 2017	$2,962									
Jun 2017	$2,353									
Jul 2017	$3,404									
Aug 2017	$4,803									
Sep 2017	$5,503									
PTD	$1,295,960	$1,295,441	$1,274,647	1.00	1.02					

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.

Low-Activity Waste Facility

Federal Project Director: Bill Hamel

Facility Federal Project Director: Jeff Bruggeman

Milestone	Title	Due Date	Status
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

LAW = low-activity waste.

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 December 2016, the LAW Facility was 59 percent complete overall, with engineering design 80 percent complete, procurement 75 percent complete, construction 83 percent complete, and startup and commissioning 8 percent complete.

Significant Accomplishments during the Prior Three Months:

- BNI received delivery of the second shipment of caustic scrubber internals and initiated installation.
- BNI completed LAW Facility secondary offgas/vessel vent process system pipe tie-ins at caustic scrubber and thermal catalytic oxidizer.
- BNI issued the 90 percent design review reports for the following:
  - C1 ventilation system (C1V)–C5 ventilation system (C5V).
  - Radioactive solid waste handling system.
  - LAW melter handling system.
  - LAW melter equipment support handling system.
  - Carbon dioxide gas system.
  - Plant cooling water system.
- BNI installed and tested melter bubblers and completed welding on melter shield lids.
- ORP and BNI received approval of the melter dangerous waste permit from Ecology.
- BNI completed redesign of the melter jack-bolts as progress continues on completing the melters.

- BNI installed 230 linear feet of process piping.
- BNI installed 1,060 linear feet of conduit and pulled 11,660 linear feet of cable.
- BNI installed 72 process area penetration seals.
- BNI set the caustic scrubber vessel in its final position.
- BNI completed base frame modifications on both melters.
- BNI completed radiographic testing of wet electrostatic precipitator nozzles to verify adequacy of welds.

Significant Planned Activities in the Next Three Months:

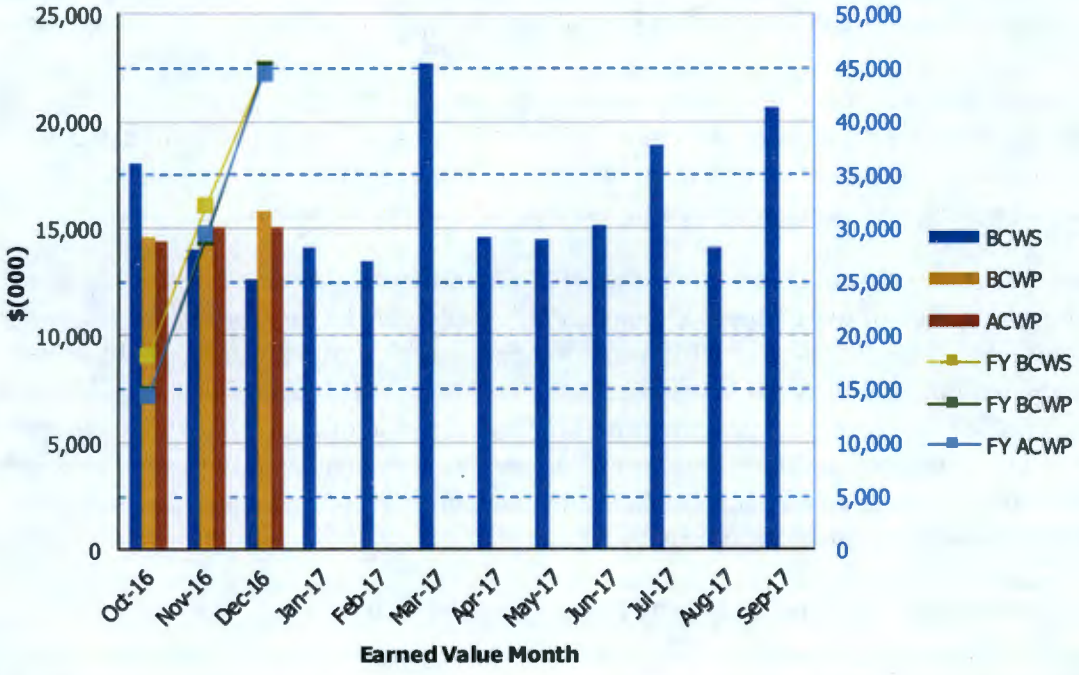
- BNI to install melter offgas caustic scrubber internals.
- BNI to reinstall wet electrostatic precipitator internals now that radiographic testing to verify adequacy of welds is complete.
- BNI to receive and install redesigned melter jack-bolts.
- BNI to perform initial system walkdowns for the following:
  - Chilled water system.
  - Domestic (potable) water system.
  - C1 ventilation system.
- ORP to complete caustic scrubber vessel vertical slice review.
- ORP to evaluate preliminary hazard category calculation for LAW Facility.
- BNI to develop hazard identification checklist, what-if tables, and process hazard analysis events for accident scenarios to support PDSA update development.

EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2017 Earned Value Data Data as of: December 2016

River Protection Project
Low-Activity Waste Facility (WBS 1.02)

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	$18,055	$14,539	$14,396	0.81	1.01	$18,055	$14,539	$14,396	0.81	1.01
Nov 2016	$14,013	$14,564	$15,062	1.04	0.97	$32,068	$29,102	$29,458	0.91	0.99
Dec 2016	$12,629	$15,785	$15,081	1.25	1.05	$44,697	$44,887	$44,539	1.00	1.01
Jan 2017	$14,122									
Feb 2017	$13,463									
Mar 2017	$22,715									
Apr 2017	$14,535									
May 2017	$14,478									
Jun 2017	$15,152									
Jul 2017	$18,876									
Aug 2017	$14,112									
Sep 2017	$20,672									

PTD	$1,493,726	$1,483,080	$1,480,732	0.99	1.00

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.

Balance of Facilities

Federal Project Director: Bill Hamel

Facility Federal Project Director: Jason Young

Milestone	Title	Due Date	Status
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete

BOF will provide services and utilities to support operation of the main production facilities: PT, HLW, LAW, and LAB. As of December 2016, BOF was 62 percent complete overall, with engineering design 82 percent complete, procurement 79 percent complete, construction 89 percent complete, and startup and commissioning 22 percent complete.

Engineering activities continue to support the DFLAW initiative. Current efforts are focused on progressing the design of the Effluent Management Facility (EMF), supporting the EMF dangerous waste permit, supporting EMF procurement activities, and providing field support for BOF startup activities. Construction efforts are focused on rebar placement for the EMF walls, and completion of the remaining items required for energization of the BOF switchgear building from the WTP switchgear building. Additional construction punchlist activities are underway to support turnover of the Water Treatment Building and Cooling Tower Facility to the startup organization for component-level testing.

Significant Accomplishments during the Prior Three Months:

- BNI completed turnover of the following systems to its startup organization:
  - Cooling Tower Facility process control system.
  - Water Treatment Building process control system.
  - Water Treatment Building fire detection and alarm system.
  - Water Treatment Building low voltage electrical system.
  - Water Treatment Building non-RLD.
- BNI completed placement of the construction aids (soldier piles) to support excavation of EMF low-point drain.
- EMF Secondary Containment Dangerous Waste Permit package formally submitted and public comments received.
- BNI completed the acceptance test report for switchgear Building 87 and BOF switchgear Building 91.
- BNI completed the functional review of installation of the fire detection and alarm system fire detection equipment in the Water Treatment Building (Building 86) and Cooling Tower Facility (Building 83).
- BNI initiated startup testing for the cathodic protection system rectifiers.

- ORP and Ecology provided informal comments to BNI on the EMF Underground Transfer Line Permit package.

Significant Planned Activities in the Next Three Months:

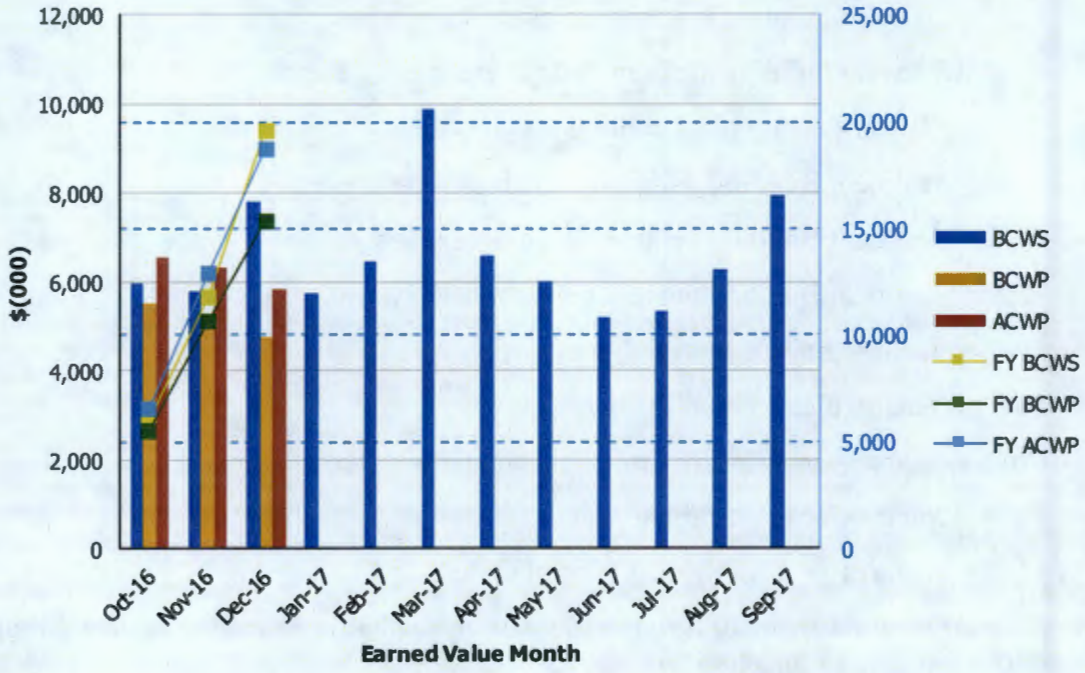
- BNI expects to turn over the following systems to its startup organization:
  - BOF switchgear building low voltage electrical system.
  - BOF switchgear building medium voltage electrical system.
  - Cooling Tower Facility plant cooling water system.
  - Water Treatment Building domestic (potable) water system.
  - Water Treatment Building demineralized water system.
  - Water Treatment Building process service water system.
  - Fuel oil facility process control system.
  - Fuel oil facility diesel fuel oil system.
  - Chiller compressor plant fire detection and alarm system.
  - Chiller compressor plant chilled water system.
  - Chiller compressor plant process control system.
- BNI to confirm final sizing of new rectifiers for the cathodic protection system through completion of current injection test.
- BNI to issue EMF evaporator fabrication material requisition for bid.
- BNI to complete energized testing in support of Phase 2 energization to BOF switchgear Building 91.
- BNI to disposition comments received from ORP and Ecology, and prepare EMF Underground Transfer Line Permit package for formal submittal.

EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2017 Earned Value Data Data as of: December 2016

River Protection Project
Balance of Facilities (WBS 1.05)

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	$5,977	$5,519	$6,535	0.92	0.84	$5,977	$5,519	$6,535	0.92	0.84
Nov 2016	$5,773	$5,120	$6,338	0.89	0.81	$11,751	$10,640	$12,874	0.91	0.83
Dec 2016	$7,799	$4,729	$5,843	0.61	0.81	$19,549	$15,369	$18,717	0.79	0.82
Jan 2017	$5,754									
Feb 2017	$6,469									
Mar 2017	$9,868									
Apr 2017	$6,608									
May 2017	$6,007									
Jun 2017	$5,216									
Jul 2017	$5,342									
Aug 2017	$6,270									
Sep 2017	$7,924									
PTD	$547,156	$537,162	$541,980	0.98	0.99					

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.

Analytical Laboratory

Federal Project Director: Bill Hamel

Facility Federal Project Director: Jason Young

Milestone	Title	Due Date	Status
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

LAB = analytical laboratory.

The LAB will support WTP operations by analyzing feed, vitrified waste, and effluent streams. As of December 2016, the LAB was 63 percent complete overall, with engineering design 80 percent complete, procurement 88 percent complete, construction 95 percent complete, and startup and commissioning 15 percent complete.

During this reporting period, efforts were focused on evaluating options for the C5V in the DFLAW configuration, location of in-town laboratory options, and finalizing the trend for delaying laboratory startup efforts.

Significant Accomplishments during the Prior Three Months:

- BNI completed installation of the test engineers' workstation and turned equipment over to startup.
- BNI completed turnover of the fire protection water system in support of the test engineers' workstation to startup.
- BNI completed turnover of the process control system in support of the test engineers' workstation to startup.
- BNI continued final wall and floor coatings.
- BNI continued development of procedures for the WTP analytical methods development process.
- BNI received the replacement heating, ventilation, and air-conditioning (HVAC) condenser.

Significant Planned Activities in the Next Three Months:

- ORP and BNI to reach an agreement on proposed C5V modifications, if needed.
- BNI to issue the temporary laboratory space request for proposal, which allows for earlier laboratory methods development and training to ensure laboratory staff are ready at the start of commissioning.
- BNI to continue testing control and monitoring systems in the test engineers' workstation to support the non-RLD functional tests.
- BNI to award procurement for toxicity refrigerant monitor needed for beneficial occupancy.

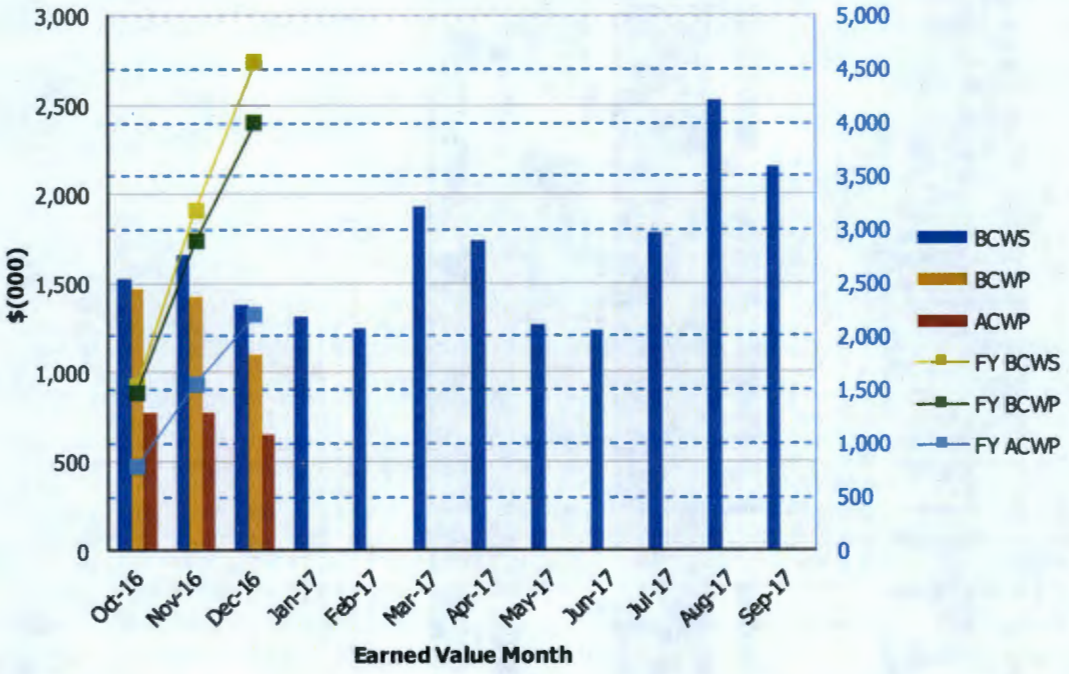
- BNI to turn C1V over to startup.
- BNI to install the replacement HVAC condenser.

EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2017 Earned Value Data Data as of: December 2016

River Protection Project
Analytical Laboratory (WBS 1.06)

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	$1,521	$1,470	$776	0.97	1.89	$1,521	$1,470	$776	0.97	1.89
Nov 2016	$1,661	$1,426	$777	0.86	1.83	$3,182	$2,896	$1,553	0.91	1.86
Dec 2016	$1,375	$1,098	$645	0.80	1.70	$4,557	$3,994	$2,198	0.88	1.82
Jan 2017	$1,309									
Feb 2017	$1,238									
Mar 2017	$1,931									
Apr 2017	$1,742									
May 2017	$1,264									
Jun 2017	$1,233									
Jul 2017	$1,785									
Aug 2017	$2,527									
Sep 2017	$2,149									

PTD	$343,163	$340,568	$331,223	0.99	1.03

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.

Waste Treatment Plant Project Percent Complete Status (Table)

Waste Treatment Plant Project - (LBL/Project Services) Percent Complete Status

Through December 2016

(Dollars - Millions)	Overall Facility Percent Complete Unallocated Dollars			Design/Engineering Unallocated Dollars			Procurement Unallocated Dollars			Construction Unallocated Dollars			Startup & Plant Operations Unallocated Dollars			Project Management & Shared Services Unallocated Dollars		
Facilities	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete
Low-Activity Waste	2,308.7	1,354.4	59%	552.8	442.9	80%	373.9	280.5	75%	686.9	569.6	83%	690.9	57.3	8%	4.0	4.0	100%
Balance of Facilities	760.4	475.0	62%	153.2	125.2	82%	72.6	57.6	79%	260.7	231.3	89%	273.6	60.4	22%	0.5	0.5	100%
Analytical Lab	523.8	328.0	63%	107.8	86.7	80%	65.6	57.4	88%	162.7	154.4	95%	187.1	29.0	15%	0.5	0.5	100%
Direct Feed LAW	395.3	89.7	23%	95.5	55.9	59%	56.6	4.9	9%	234.3	24.9	11%	0.0	0.0	0%	8.9	4.0	45%
LBL Facility Services	608.0	166.5	27%	0.0	0.0	0%	60.5	23.0	38%	132.3	38.2	29%	254.8	55.3	22%	160.4	49.9	31%
Total LBL	**4,596.2**	**2,413.6**	**53%**	**909.3**	**710.8**	**78%**	**629.2**	**423.5**	**67%**	**1,477.0**	**1,018.4**	**69%**	**1,406.4**	**202.0**	**14%**	**174.3**	**58.9**	**34%**
Project Services	1,021.5	399.5	39%	129.7	57.2	44%	74.2	36.4	49%	118.2	71.8	61%	1.7	1.7	100%	697.7	232.4	33%
Total Project Services	**1,021.5**	**399.5**	**39%**	**129.7**	**57.2**	**44%**	**74.2**	**36.4**	**49%**	**118.2**	**71.8**	**61%**	**1.7**	**1.7**	**100%**	**697.7**	**232.4**	**33%**
Total LBL, DFLAW & Project Services	**5,617.7**	**2,813.1**	**50%**	**1,038.9**	**768.0**	**74%**	**703.4**	**459.9**	**65%**	**1,595.2**	**1,090.2**	**68%**	**1,408.1**	**203.7**	**14%**	**872.0**	**291.3**	**33%**
PT/HLW/SS Percent Complete Status Frozen as of September 2012 (due to project rebaselining efforts)																		
High-Level Waste	1,478.6	922.1	62%	364.4	325.2	89%	433.9	349.4	81%	561.1	243.2	43%	119.2	4.4	4%	n/a	n/a	n/a
Pretreatment	2,517.3	1,410.5	56%	761.7	645.8	85%	679.9	380.4	56%	890.0	378.6	43%	185.8	5.6	3%	n/a	n/a	n/a
Shared Services	4,726.9	3,632.6	77%	1,047.0	977.9	93%	451.7	395.0	87%	1,436.5	1,143.0	80%	453.5	133.2	29%	1,338.1	983.5	73%
Total HLW/PT/SS	**8,722.8**	**5,965.2**	**68%**	**2,173.1**	**1,948.9**	**90%**	**1,565.5**	**1,124.8**	**72%**	**2,887.6**	**1,764.8**	**61%**	**758.5**	**143.2**	**19%**	**1,338.1**	**983.5**	**73%**
Undistributed Budget	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total WTP	**14,340.5**	**8,778.3**	**61%**	**3,212.0**	**2,716.9**	**85%**	**2,268.9**	**1,584.7**	**70%**	**4,482.8**	**2,855.0**	**64%**	**2,166.6**	**346.9**	**16%**	**2,210.1**	**1,274.8**	**58%**

Source: Preliminary WTP Contract Performance Report - Format 1, Data for December 2016

Note: In September 2012, the LBL Replan was incorporated into the project OTB baseline resulting in increases/decreases to the LBL facility budgets, which correspondingly increased/decreased the facility/function to-date percent complete values. In October 2012, the PT/HLW/SS Interim Work Plan was incorporated into the project OTB baseline resulting in decreases to the PT/HLW/SS facility budgets, this was due to a work scope shift from the Distributed budget to UB. Percent Complete Values shown for PT, HLW and SS have been frozen with the September 2012 values due to the Interim Work Plan and budgets being moved into UB. UB value for the project for PT/HLW/SS is $2,014M. The percent complete values for the Total WTP are the current total LBL BCWP added to the frozen HLW/PT/SS BCWP values. In March 2014, Project Controls and Project Management work scope was moved out of Shared Services control accounts into the facilties with new control accounts being set up in the facilities. These will now be seen under Project Management/Shared Services by facility. The Shared Services PMB value has not been changed to reflect this change due to the freeze on HLW/PT and SS and the budgets remaining in UB. October 2014 data reflects the incorporation of Direct Feed LAW and the split of Shared Services into LBL Facility Services and Project Services. March 2016 LBL percent complete data is a total of LAW-BOF-LAB-DFLAW and LBL Facility Services. The Project Services Allocation account (zPSA), as shown on the CPR Format 1, is not added to LBL for percent complete purposes.