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

AUG 08 2017

17-ECD-0054

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

Ms. Smith:

AUGUST 2017 QUARTERLY REPORT FOR THE STATE OF WASHINGTON VS.  
U.S. DEPARTMENT OF ENERGY, CASE NO. 08-5085-RMP, FOR WASTE TREATMENT  
AND IMMOBILIZATION PLANT CONSTRUCTION AND STARTUP ACTIVITIES AND  
TANK RETRIEVAL ACTIVITIES – APRIL 1, 2017, THROUGH JUNE 30, 2017

This letter transmits the U.S. Department of Energy August 2017 Quarterly Report (Attachment) under Section IV-C-1 of the subject referenced Consent Decree, for the period of April 1, 2017, through June 30, 2017. Pursuant to the Consent Decree, this report provides the status and progress made during the reporting period.

As requested by the Washington State Department of Ecology, copies of the written directives given to contractors for work required by the Consent Decree are also attached.

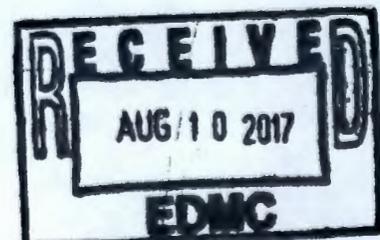
If you have any questions, please contact William F. Hamel, Assistant Manager, Waste Treatment and Immobilization Plant Project, (509) 376-6727, or Glyn D. Trenchard, Assistant Manager, Tank Farms Project, (509) 373-4016.

Kevin W. Smith  
Manager

ECD:RLE

Attachment

cc: See page 2



63

Ms. Alexandra K. Smith  
17-ECD-0054

-2-

AUG 08 2017

cc w/attach:

J.D. McDonald, Ecology  
K. Niles, Oregon Energy  
**Administrative Record**  
BNI Correspondence  
Environmental Portal  
WRPS Correspondence

cc w/o attach:

R.S. Skeen, CTUIR  
S.L. Dahl, Ecology  
J.J. Lyon, Ecology  
J.B. Price, Ecology  
C.L. Whalen, Ecology  
D.A. Faulk, EPA  
S.E. Hudson, HAB  
G. Bohnee, NPT  
R. Buck, Wanapum  
R. Jim, YN  
D. Rowland, YN

**Attachment  
17-ECD-0054  
(60 Pages Excluding Cover Sheet)**

**U.S. Department of Energy, Office of River Protection  
Quarterly Report, April 1, 2017, through June 30, 2017, and  
Waste Treatment and Immobilization Plant Written Directives**

# U.S. Department of Energy, Office of River Protection Quarterly Report

**April 1, 2017, through June 30, 2017**

Consent Decree, *State of Washington v. Dept. of Energy*, Case No. 2:08-cv-05085-FVS (October 25, 2010)

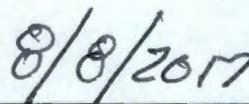
Amended Consent Decree, *State of Washington v. Dept. of Energy*, Case No. 2:08-CV-5085-RMP (March 11, 2016)

Second Amended Consent Decree, *State of Washington v. Dept. of Energy*, Case No. 2:08-5085-RMP (April 12, 2016)<sup>1</sup>



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

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

  
\_\_\_\_\_  
Date

<sup>1</sup> The cited consent decrees are between the State of Washington and U.S. Department of Energy. For each of these decrees, there are companion, separate consent decrees with the State of Oregon, as Intervener, under the same case numbers.

**Project Earned Value Management System Reflects through May 2017 Information**

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## Acronyms and Abbreviations

ABW	ABW Technologies
BNI	Bechtel National, Inc.
BOF	Balance of Facilities
CGD	commercial grade dedication
CV	cost variance
DFLAW	direct-feed low-activity waste
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EMF	effluent management facility
ERSS	extended reach sluicer system
EVMS	Earned Value Management System
FY	fiscal year
HEPA	high-efficiency particulate air
HLW	High-Level Waste (Facility)
LAB	Analytical Laboratory
LAW	Low-Activity Waste (Facility)
LBL	Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory
MARS-S	mobile arm retrieval system - sluicing
MARS-V	mobile arm retrieval system - vacuum
ORP	Office of River Protection
PDSA	preliminary documented safety analysis
PJM	pulse-jet mixer
PT	Pretreatment (Facility)
SCBA	self-contained breathing apparatus
SHSV	standard high-solids vessel
SV	schedule variance
TWRWP	tank waste retrieval work plan
WRPS	Washington River Protection Solutions LLC
WTCC	Waste Treatment Completion Company
WTP	Waste Treatment and Immobilization Plant

## **Introduction**

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

The narrative descriptions of progress in this report cover the period from April 1, 2017, to June 30, 2017. Earned Value Management System data and descriptions cover the period ending May 31, 2017; this includes the facility completion percentage estimates included at various locations in the Waste Treatment and Immobilization Plant section.

As the Washington State Department of Ecology has requested, written directives from April 1, 2017, through June 30, 2017, for work required by the Consent Decree have been included with this report.

**Tank Farm Actions and Milestones**

<b>Number</b>	<b>Title</b>	<b>Due Date</b>	<b>Status</b>
<i>Actions</i>			
D-16E-01	U.S. Department of Energy must purchase by December 31, 2016, a spare A-E-1 <sup>1</sup> reboiler for the 242-A Evaporator.	12/31/2016	Complete
D-16E-02	Have a spare A-E-1 <sup>1</sup> reboiler available by December 31, 2018.	12/31/2018	On Schedule
<i>Milestones</i>			
D-16B-03	“Of the 12 Single-Shell Tanks referred to in B-1 and B-2, complete retrieval of tank waste in at least 5.”	12/31/2020	Notice given that a serious risk has arisen. See letter 16-ORP-0097.
D-16B-01	“Complete retrieval of tank waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111.”	03/31/2024	On Schedule
D-16B-02	“Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106, AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3, DOE may substitute any of the identified 9 SSTs and advise the Ecology accordingly.”	03/31/2024	Notice given that a serious risk has arisen. See letter 16-ORP-0097.

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

WMA-C = C Farm waste management area.

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

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

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

Ecology responded to DOE's December 6, 2016, letter on January 4, 2017, and requested a meeting in accordance with Section IV.C.3.b of the Consent Decree. That meeting occurred on March 16, 2017, contemporaneously with the Joint Three-Year Review under Section VI of the Consent Decree.

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

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

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

- Completed all pit clean outs associated with Tank AX-102 and Tank AX-104 (eight of eight pit clean outs completed)
- Completed foam and lead removal at Tank AX-103 and initiated cover block removal
- Removed three thermocouples from Tank AX-102 and Tank AX-104
- Completed major equipment installation for Tank C-105 third technology
- Initiated Tank C-105 third technology construction acceptance testing
- Completed planned Tank C-105 construction second shift work activities to mitigate schedule impacts
- Completed contract negotiations for the Tank C-105 third retrieval technology
- Completed 801A Building demolition
- Removed eight hose-in-hose transfer lines from C Tank Farm and packaged them for disposal

- Installed two hot water skids and one cold water skid in the 285A water and chemical service building.

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

- Remove legacy long-length equipment from Tank AX-102 and Tank AX-104
- Remove Tank AX-103 cover blocks in preparation for cleaning out pits
- Receive three extended reach sluicer systems for Tank AX-101
- Complete major equipment installation at 285A water and chemical service building
- Receive the two exhausters for A Tank Farm (POR518/519)
- Initiate video inspection of Tank A-104 and Tank A-105
- Complete Tank C-105 third technology testing and retrieval readiness activities
- Complete AX Tank Farm POR126 and POR127 portable exhausters readiness activities
- Initiate Tank C-105 third technology retrieval operations
- Complete the removal of 10 hose-in-hose transfer lines from C Tank Farm
- Complete Tank AX-101 foam and lead removal.

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

DOE Office of River Protection (ORP) expects that Tank C-105 will be field complete by December 2017, which is three months later than the projected date reported in the October 2016, Consent Decree quarterly report (16-ECD-0054, "October 2016 Quarterly Report for the State of Washington vs. U.S. Department of Energy, Case No. 08-5085-RMP, for Waste Treatment and Immobilization Plant Construction and Startup Activities and Tank Retrieval Activities – July 1, 2016, through September 30, 2016"). The impacts encountered during the previous reporting period are still affecting schedule performance (recovery).

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

The mandatory use of supplied air consistent with the Memorandum of Agreement continues to adversely affect worker efficiency in this reporting period for all work inside the tank farms, with the exception of the deployment of air purifying respirators for certain activities in AP Tank Farm. As a result, field work in the AX Tank Farm and A Tank Farm will be impacted. The installation of the A Tank Farm portable exhausters has been impacted, due to continuing programmatic evaluation and modelling associated with the planned placement of the A Tank Farm portable exhausters near the 242-A Evaporator stack. ORP and Washington River Protection Solutions LLC (WRPS) will continue to evaluate and communicate to the State of Washington the near-term and long-term impacts of these actions.

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

WRPS continues to increase the number of health physics technicians, industrial hygiene technicians, and skilled construction workforce to support tank waste retrieval efforts.

**Tank Waste Retrieval Work Plan Status**

Tank	TWRWP	Expected Revisions	Retrieval Technology		
			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	-
C-109	RPP-21895, Rev. 5	Complete	Modified Sluicing	Chemical Retrieval Process	-

Tank	TWRWP	Expected Revisions	Retrieval Technology		
			First	Second	Third
				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-S = Mobile Arm Retrieval System-Sluicing  
MARS-V = Mobile Arm Retrieval System-Vacuum  
TWRWP = Tank Waste Retrieval Work Plan

**Tank Waste Retrieval Work Plan Accomplishments during the Reporting Period**

- Incorporated third retrieval technology into the C-105 Tank Waste Retrieval Work Plan.

**Tank Waste Retrieval Work Plan Accomplishments Expected in the Next Reporting Period**

- Finalize AX Tank Farm retrieval work plans.

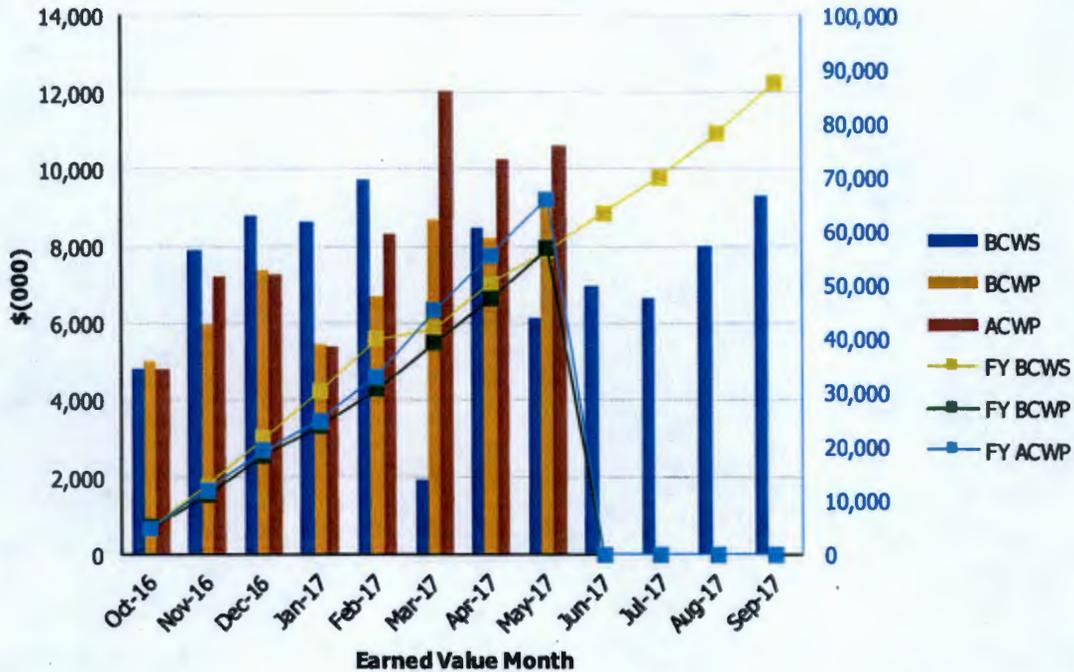
**EXC-01a: Fiscal Year Cost and Schedule Report**

Earned Value Data: Fiscal Year 2017

May-17

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	\$4,816	\$4,996	\$4,822	1.04	1.04	\$4,816	\$4,996	\$4,822	1.04	1.04
Nov 2016	\$7,924	\$5,969	\$7,241	0.75	0.82	\$12,740	\$10,965	\$12,063	0.86	0.91
Dec 2016	\$8,772	\$7,401	\$7,262	0.84	1.02	\$21,512	\$18,365	\$19,325	0.85	0.95
Jan 2017	\$8,646	\$5,422	\$5,360	0.63	1.01	\$30,158	\$23,787	\$24,685	0.79	0.96
Feb 2017	\$9,716	\$6,707	\$8,341	0.69	0.80	\$39,874	\$30,495	\$33,026	0.76	0.92
Mar 2017	\$1,903	\$8,675	\$12,056	4.56	0.72	\$41,777	\$39,170	\$45,082	0.94	0.87
Apr 2017	\$8,477	\$8,214	\$10,268	0.97	0.80	\$50,254	\$47,384	\$55,350	0.94	0.86
May 2017	\$6,110	\$9,406	\$10,604	1.54	0.89	\$56,364	\$56,790	\$65,953	1.01	0.86
Jun 2017	\$6,982	\$0	\$0	0.00	0.00	\$63,345	\$0	\$0	0.00	0.00
Jul 2017	\$6,664	\$0	\$0	0.00	0.00	\$70,010	\$0	\$0	0.00	0.00
Aug 2017	\$8,015	\$0	\$0	0.00	0.00	\$78,025	\$0	\$0	0.00	0.00
Sep 2017	\$9,314	\$0	\$0	0.00	0.00	\$87,339	\$0	\$0	0.00	0.00
<b>CTD</b>	<b>\$765,531</b>	<b>\$754,839</b>	<b>\$786,627</b>	<b>0.99</b>	<b>0.96</b>					

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

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

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

Project Earned Value Management System (EVMS) reflects data for March 2017, April 2017, and May 2017.

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

For the March EVMS reporting period, a net **favorable schedule variance (SV)** of approximately **\$6,772K** was reported, primarily due to the following:

- A baseline change request was processed in March resulting in a point adjustment in the fiscal year (FY) 2017 budget as a result of the Continuing Resolution. Adjustments included field work within AX Tank Farm originally planned to be performed this year but constrained due to self-contained breathing apparatus (SCBA) inefficiencies, beryllium precautions, limited personnel, and funding restrictions.

For the April EVMS reporting period, a net **unfavorable SV** of approximately **(\$263K)** was reported, primarily due to the following:

- Delays in the delivery of several equipment procurements.

For the May EVMS reporting period, a net **favorable SV** of approximately **\$3,297K** was reported, primarily due to the following:

- Schedule recovery: Procurement milestone payments were made for Tank AX-101 and Tank AX-103 extended reach sluicer systems and A Tank Farm exhausters during May as a result of a revised fabrication schedule; these payments were originally planned to be made in April.
- Schedule recovery: The hot and cold water skids to support A Tank Farm and AX Tank Farm retrieval were received onsite; these skids were originally planned to be delivered in FY 2016, but were part of the FY 2016 scope deferrals. This deferral resulted from impacts to the A Tank Farm and AX Tank Farm retrieval schedule caused by several issues, including worker inefficiencies resulting from mandatory use of supplied air, funding issues caused by the Continuing Resolution, etc.

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

For the March EVMS reporting period, a net **unfavorable cost variance (CV)** of approximately **(\$3,381K)** was reported, primarily due to the following:

- Increased costs are associated with the continued inefficiencies associated with SCBA usage. In addition, unanticipated costs have been incurred as a result of possible beryllium contamination, and sampling requirements in A Tank Farm, AX Tank Farm, and C Tank Farm for personnel protection.

For the April EVMS reporting period, a net **unfavorable CV** of approximately **(\$2,064K)** was reported, primarily due to the following:

- Beryllium and vapor mitigation has resulted in additional planning, labor, engineering, and construction support.
- Additional costs have been realized due to construction overtime work (weekends) to recover schedule.
- Equipment procurements and subcontract actuals have been higher than the estimate.

For the May EVMS reporting period, a net **unfavorable CV** of approximately **(\$1,197K)** was reported, primarily due to the following:

- Additional costs have been realized due to the construction surge (overtime/weekend work) to maintain current restart Tank C-105 retrieval (July).

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

**Federal Project Director:** Bill Hamel

**Deputy Federal Project Director:** Joni Grindstaff

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

The WTP Project currently employs approximately 2,860 full-time equivalent contractor (Bechtel National, Inc. ([BNI])) and subcontractor personnel. This includes 680 craft, 658 non-manual, and 133 subcontractor full-time equivalent personnel working at the WTP construction site (all facilities).

The WTP Project continues to focus on completion of the Low-Activity Waste (LAW) Facility, Balance of Facilities (BOF), and the Analytical Laboratory (LAB) (collectively referred to as LBL, including direct-feed low-activity waste (DFLAW) and LBL facility services). As of May 2017, LBL facilities were 57 percent complete, design and engineering was 83 percent complete, procurement was 70 percent complete, construction was 74 percent complete, and startup and commissioning was 19 percent complete.

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

- Accomplishments during the reporting period are noted in project reports for the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility, LAW Facility, BOF, and LAB.

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

- Accomplishments expected 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**

- Issues encountered during the next reporting period are noted in project reports for PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

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

- Issues expected in the next reporting period are noted in project reports for PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

**Waste Treatment and Immobilization Plant Milestones**

Milestone	Title	Due Date	Status
<b>Waste Treatment and Immobilization Plant Project</b>			
D-00A-06	Complete Methods Validations	06/30/2032	On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033	On Schedule
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	On Schedule
<b>Pretreatment Facility</b>			
D-00A-18	Complete Structural Steel Erections Below Elevation 56' in PT Facility	12/31/2009	Complete
D-00A-19	Complete Elevation 98' Concrete Floor Slab 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
<b>High-Level Waste Facility</b>			
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
<b>Low-Activity Waste Facility</b>			
D-00A-07	LAW Facility Construction Substantially Complete	12/31/2020	On Schedule
D-00A-08	Start LAW Facility Cold Commissioning	12/31/2022	On Schedule
D-00A-09	LAW Facility Hot Commissioning Complete	12/31/2023	On Schedule
<b>Balance of Facilities</b>			
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete
<b>Analytical Laboratory</b>			
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

BOF = balance of facilities.

LAW = low-activity waste.

HLW = high-level waste.

PT = pretreatment.

LAB = analytical laboratory.

WTP = Waste Treatment and Immobilization Plant.

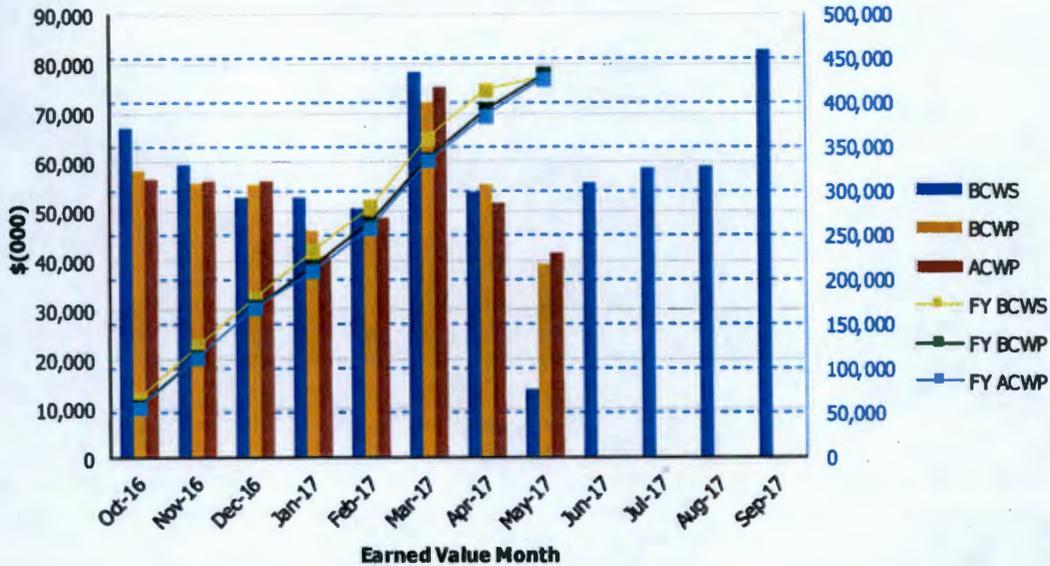
**EXC-01a: Fiscal Year Cost and Schedule Report**

Data Set: FY 2017 Earned Value Data

Data as of: May 2017

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	\$67,019	\$58,321	\$56,633	0.87	1.03	\$67,019	\$58,321	\$56,633	0.87	1.03
Nov 2016	\$59,361	\$55,681	\$56,299	0.94	0.99	\$126,379	\$114,002	\$112,932	0.90	1.01
Dec 2016	\$52,654	\$55,489	\$56,125	1.05	0.99	\$179,033	\$169,491	\$169,057	0.95	1.00
Jan 2017	\$52,807	\$46,077	\$40,881	0.87	1.13	\$231,840	\$215,568	\$209,938	0.93	1.03
Feb 2017	\$50,489	\$49,354	\$48,627	0.98	1.01	\$282,329	\$264,922	\$258,565	0.94	1.02
Mar 2017	\$78,183	\$72,145	\$75,415	0.92	0.96	\$360,512	\$337,067	\$333,981	0.93	1.01
Apr 2017	\$54,085	\$55,376	\$51,509	1.02	1.08	\$414,597	\$392,443	\$385,490	0.95	1.02
May 2017	\$13,975	\$39,451	\$41,659	2.82	0.95	\$428,572	\$431,894	\$427,148	1.01	1.01
Jun 2017	\$55,706									
Jul 2017	\$58,918									
Aug 2017	\$59,063									
Sep 2017	\$82,650									
<b>PTD</b>	<b>\$10,256,687</b>	<b>\$10,232,903</b>	<b>\$10,157,237</b>	<b>1.00</b>	<b>1.01</b>					

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

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

<b>Performance Tracking</b>	<b>SV (\$x1,000)</b>	<b>CV (\$x1,000)</b>
Cumulative (through May 2017)	(\$23,784)	\$75,666
Fiscal Year 2017 to-date	\$3,322	\$4,746
May 2017	\$25,476	(\$2,208)
April 2017	\$1,292	\$3,867
March 2017	(\$6,038)	(\$3,270)

SV = schedule variance.

CV = cost variance.

### Earned Value Management System Analysis

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

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

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

**Schedule Variance Summary:**

For the May EVMS reporting period, a net **favorable** SV of approximately \$25.5 million was reported, primarily due to the following:

- LBL reported a net favorable SV of \$26.2 million, mostly due to implementation of LAW/DFLAW contract modifications resulting from Baseline Change Proposal 17-0049. This removed work scope no longer planned to be performed as part of the DFLAW initiative and provided a revised construction execution plan to proceed forward.
- PT Facility reported a net unfavorable SV of (\$0.7 million), due to early completion of test operations, simulant procurement and analysis, and engineering design scope for the standard high-solids vessel (SHSV) concept design (T6) earned in prior periods.

For the April EVMS reporting period, a net **favorable** SV of approximately \$1.3 million was reported, primarily due to the following:

- HLW Facility reported a favorable SV of \$1.0 million, mostly resulting from an adjustment of prior scheduled scope and budget related to the engineering, engineering and safety health, and nuclear safety engineering accounts (Trend IFT-PC-17-0020). Most of the planned work for the month was completed as scheduled.
- LBL reported a net favorable SV of \$0.4 million, resulting from LAW Facility construction craft working ahead of schedule, and early delivery of control room furniture, actuated valves, and safety isolation contactors. This favorable SV was offset by LAW Facility engineering delays in mechanical systems, controls and instrumentation, and plant design (impacted by the change in LAW Facility preliminary documented safety analysis [PDSA] execution strategy, which includes deferring some work); and delays in DFLAW engineering and material deliveries.

For the March EVMS reporting period, a net **unfavorable** SV of approximately (\$6.0 million) was reported, primarily due to the following:

- LBL/DFLAW reported a net unfavorable SV of (\$6.0 million). LBL Engineering contributed about (\$2.5 million) of the unfavorable SV, as the LAW Facility mechanical systems, controls and instrumentation, and plant design continue to be impacted by the change in PDSA execution strategy. LBL Construction, Startup, and Commissioning reported an unfavorable SV of (\$3.0 million). However, this variance is mostly related to implementation of the Waste Treatment Completion Company (WTCC) subcontract into the BNI Performance Measurement Baseline. The existing BNI Construction, Startup, and Commissioning control accounts were closed and all remaining effort was transferred to the new WTCC control accounts. The change resulted in *current period* adjustments and administrative impacts to performance reporting, but did not significantly impact the to-date variances.

**Cost Variance Summary:**

For the May EVMS reporting period, a net **unfavorable** CV of approximately (\$2.2 million) was reported, primarily due to the following:

- LBL reported a net unfavorable CV of (\$4.2 million), due in part to a diversion of resources from the LAW Facility to support BOF activities, primarily in testing, maintenance, and plant engineering. In addition, LAW Facility engineering resources were charged to special purpose charge codes for the revised PDSA execution strategy review. Construction subcontractor cost settlements related to LAW Facility insulation requiring extensive preparation and delamination costs associated with special protective coatings, and a Request for Equitable Adjustment regarding BOF heat tracing also had an unfavorable impact on CV.
- Project Services reported a net favorable CV of \$1.1 million, primarily from site closure cost adjustments in Project and Business Management and construction subcontract costs previously attributed to Project Services that will be cost adjusted to LAW Facility.

For the April EVMS reporting period, a net **favorable** CV of approximately \$3.9 million was reported, primarily due to the following:

- LBL reported a net favorable CV of \$2.5 million, resulting from LBL support functions using fewer resources than originally planned and DFLAW construction experienced a favorable CV performance related to concrete placements. In addition, miscellaneous accounting corrections related to the transition from WTP to the WTCC were implemented. The favorable CV was offset by extra LAW Facility engineering resources expended on the revised LAW Facility PDSA execution strategy.
- Project Services reported a favorable CV of \$0.8 million, resulting from attrition of open positions and the budgeted wage rate being higher than the actual wage rate paid.
- PT Facility reported a favorable CV of \$0.3 million because fewer construction forces were needed than planned and because Potain crane maintenance parts were received earlier than scheduled. In addition, the technical teams reported early positive performance from the SHSV design alternative study (i.e., T6 in relation to design redundancy and in-service inspection) and favorable completion of pulse-jet mixer (PJM) controls Phase 2 reports (i.e., T4 in relation to PJM vessel mixing and control).

For the March EVMS reporting period, a net **unfavorable** CV of approximately (\$3.3 million) was reported, primarily due to the following:

- LBL/DFLAW reported a net unfavorable CV of (\$2.0 million). LBL Engineering recorded about \$1.7 million of the unfavorable CV, related to LAW Facility Engineering resources charging to special purpose charge codes in executing the revised PDSA execution strategy. LBL Construction, Startup, and Commissioning recorded an unfavorable CV of (\$0.5 million). This was related to implementation of the WTCC subcontract into the BNI Performance Measurement Baseline (as noted above).

- Project Services reported a net unfavorable CV of (\$1.5 million). General/Other services recorded a net unfavorable CV of (\$1.1 million) primarily due to site closure costs and Information Technology equipment and software lease costs that were deferred and will be corrected in future reports.
- PT Facility reported a net unfavorable CV of (\$0.2 million), related to the extra effort of the technical teams to complete the SHSV design plant vessel structural analysis and additional support of the full-scale vessel test program from the national laboratories.

#### **WTP Project Cumulative through May 2017**

Through May 2017, the WTP Project is behind the planned work scheduled by approximately (\$23.8 million), but it has cost approximately \$75.7 million less to perform the work than originally estimated. The cumulative to-date schedule and cost variances are reported against the LBL/DFLAW Performance Measurement Baseline, while the HLW Facility, PT Facility, and Project Services variances are still being reported against an Internal Forecast, pending revised Baseline Change Proposals for those areas.

## **Pretreatment Facility**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Wahed Abdul

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

ORP and BNI continue to work on resolving the remaining technical issues as described in the Amended Consent Decree, which includes, “Ensuring Control of the Pulse Jet Mixers,” (i.e., technical issue T4 in relation to PJM vessel mixing and control); “Protecting Against Possible Erosion and Corrosion” (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels); and “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process offgas treatment), while performing hazards analyses, and completing safety evaluations for process systems in accordance with the revised PT Facility Three-Year Interim Work Plan.

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

Full-scale testing is ongoing and significant progress has been made in addressing the PJM controls and mixing issue. Test plans have been designed to demonstrate adequacy of the PJM control system and the vessel mixing to support resolution of PJM issues applicable to PT Facility vessels with high-solids concentrations and non-Newtonian slurries. Test results will be used to support the PT Facility redesign with the SHSV design. ORP continues to work with BNI to develop closure packages for each technical issue, defining work scope, required deliverables, and technical issue resolution criteria.

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

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

- BNI submitted a revised report to ORP in late May 2017 on spray leak methodology and sliding bed wear, incorporating issues identified by the Defense Nuclear Facilities Safety Board (DNFSB) in its 26<sup>th</sup> Annual Report to Congress, dated March 2016. The DNFSB was briefed on the revised report.
- ORP and BNI continued the testing of a proposed PJM 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 (i.e., T4)). A prototype of the 16-foot-diameter SHSV was commissioned and is now being used for mixing testing. The testing results will provide the required design and operations information to support PT Facility design. Full-scale PJM controls testing was completed in April 2017. Mixing testing was initiated in late June 2017 and is expected to be completed in September 2017.

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

- BNI will continue to work on issues related to spray leak methodology and sliding bed wear, and will respond to any concerns identified by the DNFSB during its review of the revised report noted above.
- BNI will continue full-scale testing of the SHSV design prototype, focusing on completion of the full-scale PJM mixing systems testing.
- BNI to develop an engineering study documenting SHSV conceptual design functions and requirements in support of resolving issues in relation to design redundancy and in-service inspection (i.e., T6).
- BNI will continue the erosion/corrosion synergistic test simulant qualification to determine the final recipe.
- BNI plans to complete the non-Newtonian blend testing at the National Engineering Technology Laboratory.
- BNI to issue an update to the localized corrosion test basis document.

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

- PT Facility planned work has been reprioritized because of the need for additional resources to support DFLAW/LBL activities. This has resulted in limited work on technical issue resolution related to erosion/corrosion in piping and vessels and progression of the conceptual design incorporating the SHSV test design prototype due to reduced resources.
  - *Impact:* Delay in completing PT Facility redesign activities. However, the effect of reprioritizing planned PT Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including the remaining technical issue resolution, and engineering, procurement, and construction work at the PT Facility.

### Issues Expected in the Next Reporting Period

- PT Facility planned work could continue to be reprioritized due to increased focus on higher priority DFLAW/LBL activities within WTP. This would result in limited work on technical issue resolution and conceptual design of the SHSV prototype.
  - *Impact:* The PT Facility redesign could be delayed. However, the effect of reprioritizing planned PT Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including the remaining technical issue resolution, and engineering, procurement, and construction work at the PT Facility to ensure funds are made available.

### Status of Outstanding WTP Technical Issues

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

ORP has worked with BNI to develop closure packages for each technical issue, defining work scope, required deliverables, and technical issue closure criteria. The status for each of the five technical issues as referenced in the Second Amended Consent Decree 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 the previous Quarterly Report, 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 the previous Quarterly Report, 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 in a configuration that could result in an inadvertent criticality event (i.e., T2).
  - *Status:* As noted in the previous Quarterly Report, this technical issue has been sufficiently resolved to allow engineering to proceed in support of design and safety basis development.
- **Ensuring Control of the PJMs:**
  - *Issue:* Concern with adequacy of PJMs and PJM controls to adequately mix high-solids slurries in PT Facility process vessels (i.e., T4 (PJM vessel mixing and control)).
  - *Status:*
    - As noted in previous reports, BNI is conducting a test program to demonstrate the ability of PJM vessels to adequately mix high-solids slurries in the PT Facility. Results from the first and second phase of PJM control system testing were previously provided. The final phase of PJM control system testing continues.
    - ORP and BNI have identified a new proposed PJM mixing SHSV design to replace a number of vessel designs in the PT Facility. A prototype of the 16-foot-diameter SHSV design was commissioned for the final stage of PJM control system testing to support resolution of PJM mixing and control issues applicable to vessels with high-solids concentrations and non-Newtonian slurries. This testing will demonstrate the required PJM control parameters and control approach to be used during the qualification of the design for the SHSV implementation. PJM controls testing was completed in April 2017. Mixing testing was initiated in late June 2017, is expected to be completed in September 2017, and will provide the required design and operations information to perform PT Facility design.
- **Protecting against Possible Erosion and Corrosion:**
  - *Issue:* Uncertainties exist in waste feed characteristics and the ability to meet a 40-year service life; requiring confirmation of the erosion/corrosion design basis, including margin, through testing and analysis (i.e., T5).
  - *Status:*
    - A testing program to provide the technical information to underpin the design basis for erosion and corrosion is being implemented.
    - A WTP Basis of Design Change Notice establishing the erosion/corrosion basis of design parameters has been issued.
    - A pipe loop test platform to evaluate wear in piping is complete and the test plan is in final development. Additional assessments are being made to determine how much of this testing is required.

- Laboratory scale corrosion testing to assess localized corrosion material degradation mechanisms continues. This testing involves immersion of small metal samples in fluids representing anticipated WTP chemistries. Material degradation mechanisms being evaluated include pitting, crevice cracking, and stress cracking.
  - Test platform shakedown of bench scale jet impingement test equipment apparatus continues. This test platform will be used to evaluate erosion wear from the impinging PJM jets in process vessels.
  - A multi-mineral synergistic test simulant is being developed for the erosion testing. Selection and qualification of the simulant minerals is in progress.
- **Ventilation System:**
    - *Issue:* There are multiple technical challenges associated with the PT Facility ventilation system, including cascading airflows from lower to higher contaminated areas and performance of high-efficiency particulate air (HEPA) filters (i.e., T8).
    - *Status:*
      - Resolution of this technical issue requires completing engineering/nuclear safety assessments to ensure the PT Facility ventilation system meets performance requirements, which will be initiated once the PJM testing and its ventilation demands are finalized.
      - Testing of HEPA filters to ensure filters can withstand environmental conditions and loading during normal and off-normal operating conditions continues. HEPA filter design and qualification testing have been performed and reported under the HLW Facility project. Several filter designs were under consideration for testing and qualification. One of the filter designs has successfully completed Nuclear Quality Assurance-1 qualification testing at Mississippi State University for all WTP normal and abnormal conditions. Based on the successful filter design bounding all WTP normal and abnormal conditions, it was concluded that alternative filter designs and testing are not required. The final test report is expected to be issued in August 2017.

## **High-Level Waste Facility**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Wahed Abdul

Work on the HLW Facility is being performed in accordance with the FY 2017–FY 2021 Interim Work Plan, although BNI is still working under a limited construction and procurement authorization.

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. 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.

The WTP contractor is currently focusing its efforts on completing activities required to obtain full-production authorization from ORP. In addition, BNI is performing work consistent with the October 2016, Facility Completion Plan, which defines the strategy for completing engineering, procurement, and construction of the HLW Facility.

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

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

- BNI incorporated ORP comments into the final HLW Facility Completion Plan and ORP approved the plan on April 13, 2017. The document provides the strategy, approach, and key deliverables required for ORP to authorize full release of procurement and construction of the HLW Facility. In addition, the plan provides the strategy for development of the revised performance baseline.
- BNI completed Nuclear Quality Assurance-1 full-scale HEPA filter testing of the “Design 4” safe-change and remote-change filters to support the WTP ventilation and offgas needs.
- BNI transmitted the revised PDSA change package, incorporating responses to the ORP Safety Basis Review Team comments. ORP provided BNI with the balance of its comments in late June 2017.
- BNI released material procurement and fabrication of RLD-7 and RLD-8. Fabrication of these vessels continues.
- BNI completed disposition of all design and operability comments and issued the design and operability final disposition report on June 28, 2017.

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

- BNI to resolve ORP comments on the submitted draft HLW PDSA update, with final approval anticipated in September 2017. BNI provided its initial response to the significant comments in early July 2017. BNI's complete response to all comments is anticipated by the end of July 2017.
- BNI will continue to design the remaining portions of the radioactive liquid waste disposal system (Phase II).
- ORP to complete the review and comment resolution of the draft PDSA update.
- 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.
- BNI to continue focusing on facility preservation and maintenance.
- BNI will continue to update its long-range planning documents to support the future rebaseline effort in FY 2018.

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

- HLW Facility planned work has been reprioritized because of the need for additional resources to support DFLAW/LBL activities. This has resulted in limited engineering assets to perform production work and construction curtailment. Reprioritizing work activities impacted design and construction such that installation of roofing and siding on the facility is not expected in the near term.
  - *Impact:* Delay in completing HLW Facility redesign activities. However, the effect of reprioritizing planned HLW Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including the remaining engineering, procurement, and construction work at the HLW Facility.
    - ORP will continue to evaluate funding alternatives and planning scenarios to define additional scope that could be performed if increased funding becomes available.

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

- HLW Facility planned work could continue to be reprioritized due to higher priority DFLAW/LBL activities within WTP. This would result in limited engineering and construction resources to perform production work.
  - *Impact:* The HLW Facility redesign activities could be delayed. However, the effect of reprioritizing planned HLW Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.

- *Actions initiated or taken to address potential project schedule slippage:* ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including identification of necessary funding to efficiently proceed with remaining engineering, procurement, and construction work at the HLW Facility.

## **Low-Activity Waste Facility**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Jeff Bruggeman

As of May 2017, the LAW Facility was 63 percent complete overall, with engineering design 84 percent complete, procurement 77 percent complete, construction 87 percent complete, and startup and commissioning 10 percent complete.

Milestones associated with the commissioning of LAW are on schedule.

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

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

- ORP approved completion of contractual Interim Milestone A-2, “LBL Construction Complete Performance Based Incentive Fee,” “Complete Final Assembly of Melter #1.”
- BNI completed hydrostatic pressure testing on all process cell vessels requiring the assessment.
- BNI completed installation of the melter jack-bolts on melter No. 2.
- BNI issued the 90 percent design review report for the uninterruptible power electrical system.
- ORP approved a PDSA Interim Change Package to reflect additional defense-in-depth structures, systems, and components and changes in safety-significant structures, systems, and components’ safety functions and functional requirements.
- ORP completed caustic scrubber vessel vertical slice review.
- BNI completed repairs for the LAW Facility primary offgas system wet electrostatic precipitator vessel nozzle welds.
- BNI installed and tested melter bubblers and completed welding on melter shield lids.
- BNI completed base frame modifications on both melters.

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

- BNI scheduled to complete contractual Interim Milestone A-3, “LBL Construction Complete Performance Based Incentive Fee,” “Complete Final Assembly of Melter #2” ahead of late-September 2017 contract date.
- BNI to perform 90 percent design reviews of the primary and secondary offgas systems.
- BNI to move melter No. 1 into final position.
- BNI to complete installation of melter offgas pre-heaters.
- BNI to repair cracked melter refractory in the discharge chamber.
- BNI to install primary offgas spool fittings (hilltop fittings).
- BNI to perform initial system walkdowns for the following:
  - Direct current electrical system
  - Plant service air system.
- BNI developing process hazard analysis events for accident scenarios to support PDSA update development.
- ORP to evaluate preliminary hazard category calculation for LAW Facility.
- BNI to reinstall wet electrostatic precipitator internals now that radiographic testing to verify adequacy of welds is complete.

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

- No new issues were encountered during the reporting period.

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

- As noted in previous reports, an ongoing issue for the project has been the concern about how BNI has managed its commercial grade dedication (CGD) program.
  - *Impact:* This puts at risk some of the equipment purchased that performs a specific safety function in the LAW Facility. The consequence of identified CGD deficiencies are:
    - Material requisitions with vendors will need to be revised or reestablished to incorporate the new CGD documentation and test requirements.
    - CGD plans produced by both vendors and WTP will be required to be updated; additional documentation and testing will be required to meet the updated CGD plans; where test results or documentation cannot demonstrate items meet the required critical characteristics, items will need to be repurchased to replace existing equipment.

- *Actions initiated or taken to address potential project schedule slippage:*
  - Additional personnel have been added to the CGD group to work on both WTP-generated and vendor-generated CGD packages to update the CGD plans and documentation to meet current customer expectations.
  - New staff and/or subcontractors have been added to provide subject matter expertise and oversight to enhance the CGD program.
  - Efforts will be made to qualify existing items to the new CGD plans. This may involve modifying existing requisitions or reopening closed material requisitions to upgrade the CGD plans and provide additional documentation and testing of items, or generating new material requisitions to purchase replacement equipment that cannot be qualified.
- Also noted in previous reports, nuclear safety documents being developed by BNI during the design phase PDSA and the scheduled activities for the final documented safety analysis are taking longer than planned.
  - *Impact:* Delay in DOE approval of the documented safety analysis could impact some early LAW Facility commissioning activities. However, the effects of the delay are not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP approved a PDSA Interim Change Package to reflect additional defense-in-depth structures, systems, and components and changes in safety-significant structures, systems, and components' safety functions and functional requirements. Additional resources (BNI and ORP) have been added to improve process hazard analysis development. Weekly PDSA/documented safety analysis completion progress meetings are held by ORP and BNI where planned metrics are reviewed and discussed.

## **Balance of Facilities**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Jason Young

As of May 2017, BOF was 68 percent complete overall, with engineering design 88 percent complete, procurement 81 percent complete, construction 92 percent complete, and startup and commissioning 28 percent complete. Design of the Effluent Management Facility (EMF) was 74 percent complete.

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

BOF will provide services and utilities to support operation of the main production facilities: PT, HLW, LAW, and LAB. The BOF are designed to support operation of the entire WTP, and construction is complete for the majority of BOF systems. To improve operational flexibility and support WTP operations in a DFLAW configuration, additional construction and facility modifications are required. Operational flexibility improvements to the BOF include:

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

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

- The public comment period for the EMF Underground Transfer Line Permit modification package closed June 9, 2017, and Ecology approved the Class II permit modification.
- BNI completed EMF large slab concrete placements and continued rebar and formwork activities to support additional stem wall placements at EMF.
- BNI received temporary authorization for placement of EMF topping slabs with the associated ring beams and embedded steel.

- BNI self-performed the design of the EMF evaporator to accelerate the EMF design. Northwest Copper was awarded the contract for evaporator fabrication.
- BNI completed the EMF design to a committed status and submitted the “Schedule Declaration of Completion” for the CLIN 2.1, “Direct-Feed Low-Activity Waste (DFLAW) Facility Design” completion contractual milestone. ORP reviewed the milestone completion documentation and concurred with BNI that the requirements were met.
- BNI completed energization of BOF switchgear Building 91 and functional testing is upcoming to support a turnover to operations.
- BNI initiated liquid effluent services (ICD-5) and performed functional tests of the nonradioactive, non-dangerous liquid disposal system.
- BNI completed transfers from the WTP non-dangerous liquid disposal system to the off-construction site Mission Support Alliance, LLC Treated Effluent Disposal Facility.
- BNI initiated potable water services (ICD-2) from Mission Support Alliance, LLC to begin flushing and wetted testing of systems in the water treatment facility.
- BNI energized both the original and the supplemental cathodic protection systems, and system balancing is in progress.
- BNI installed the additional rotary screw compressor to support DFLAW.
- BNI issued steam plant DFLAW modification drawings for construction.
- BNI completed turnover of the following systems to its startup organization:
  - Chiller compressor plant fire detection and alarm system
  - Water treatment building domestic (potable) water system
  - Cooling tower low voltage electrical system.

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

- BNI to continue with placement of EMF stem walls, which will be followed by placement of the EMF low-point drain walls and the second lift concrete placement for the evaporator process cell walls.
- BNI to complete balancing of the cathodic protection system.
- BNI to complete functional testing for BOF switchgear building.
- BNI to install ring beams and place topping slabs for EMF.
- BNI expects to complete turnover of the following systems to its startup organization:
  - Steam plant facility process control system
  - Steam plant facility fire detection and alarm system
  - Steam plant facility low-voltage electrical system
  - Cooling tower facility plant cooling water system
  - Chiller compressor plant low-voltage electrical system

- Chiller compressor plant chilled water system
- Chiller compressor plant process control system.

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

- Continued delays during BOF system completion and turnover to startup, as described below, are impacting the project schedule.
  - *Impact:* Delayed BOF system completion and turnover to startup is resulting in extending the construction schedule and narrowing the available durations for startup testing. However, the effect of the delays in the schedule are not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - BNI is conducting weekly management meetings to evaluate system completion against the schedule and emphasize the need for system punchlist completion.

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

- BNI is experiencing delays in the system startup program due to aging and obsolescence of existing equipment, and resource availability. In general, startup activities are linked together so when one activity is delayed it creates a waterfall affect. Delays in system turnovers and inadequate procedure preparation are slowing the startup testing process.
  - *Impact:* Delayed testing of interdependent BOF systems creates a cascading effect impacting testing in other facilities in BOF. However, the effect of the delays in the schedule are not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - Production meetings are focusing on completion of outstanding work items.
    - Startup testing organization has introduced additional rigor into system reviews prior to turnover.
    - A task team of inspectors from Underwriters Laboratories, Inc. has been assembled to ensure installed equipment has the appropriate Nationally Recognized Testing Laboratory certifications ahead of construction completion turnovers to the startup organization.
    - Test procedure preparation is being prioritized by BNI engineering to support reviews and approval in advance of system testing.
    - BNI is working proactively with vendors to inspect and refurbish equipment as needed.

## **Analytical Laboratory**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Jason Young

The LAB will support WTP operations by analyzing samples of waste feed, vitrified waste, and effluent streams from the WTP processing facilities. As of May 2017, the LAB was 68 percent complete overall, with engineering design 85 percent complete, procurement 88 percent complete, construction 96 percent complete, and startup and commissioning 19 percent complete.

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

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

- BNI submitted the LAB operating permit to ORP for approval.
- ORP formally submitted the LAB operating permit to Ecology.
- BNI completed LAB radioactive liquid waste disposal system 90 percent design review.
- BNI completed turnover of fire detection and alarm scoped systems to startup operations.
- BNI completed turnover of the sanitary disposal system to startup operations.
- BNI completed turnover of the C1V system to startup operations.
- BNI continued final wall and floor coatings.

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

- BNI to occupy temporary laboratory space allowing for earlier laboratory methods development and training to ensure laboratory staff are ready at the start of commissioning.
- BNI to receive and install toxicity refrigerant monitor needed for beneficial occupancy.
- BNI to complete 90 percent design review of ventilation systems (C1V, C2V, C3V, and C5V).
- BNI to complete turnover of the low-voltage electrical system to the startup organization.
- BNI to complete turnover of the grounding and lightning protection system to the startup organization.
- ORP and BNI to reach an agreement on proposed C5V modifications, if needed.
- BNI to continue testing control and monitoring systems in the test engineer's workstation.
- BNI to install the replacement heating, ventilation, and air-conditioning condenser.

Office of River Protection

**Issues Encountered during the Reporting Period**

None encountered.

**Issues Expected in the Next Reporting Period**

None expected.

## Written Directives

Written directives from April 1, 2017, through June 30, 2017, have been included with this report.

No written directives, regarding the Single-Shell Tank Retrieval Program were issued to WRPS during the reporting period.

Fourteen written directives were issued to BNI during the reporting period. The letters are listed below and copies are attached:

- 17-WTP-0064, "Request to Prepare a Baseline Change Proposal to Remove Hot Commissioning Scope Associated with Low-Activity Waste Facility, Balance of Facilities, Analytical Laboratory and Direct Feed Low-Activity Waste from the Waste Treatment and Immobilization Plant Project Performance Measurement Baseline," dated April 5, 2017
- 17-SHD-0011, "Approval of Fiscal Year 2017 Third and Fourth Quarter Performance Objectives, Measures, and Commitments," dated April 11, 2017
- 17-WTP-0077, "Approval of the High-Level Waste Facility Completion Plan," dated April 13, 2017
- 17-WTP-0085, "Direction for Future Electrical Installation Methods at the Waste Treatment and Immobilization Plant Project," dated April 28, 2017
- 17-CPM-0055, "Reissue 2 – Request for Signature – Contract Modification No. 391," dated May 3, 2017
- 17-CPM-0061, "Award Fee Determination for Period 2016," dated May 9, 2017
- 17-WTP-0068, "Cancellation of Construction Authorization Agreement between the U.S. Department of Energy, Office of River Protection and Bechtel National, Inc.," dated May 15, 2017
- 17-WTP-0099, "Approval of Bechtel National, Inc. Revised Contract Deliverable 1.2 – 24590-WTP-PL-TE-01-012, Rev 7, Project Execution Plan," dated May 15, 2017
- 17-WTP-0014, "Required Work to Resolve Technical Issues and Support Conditional Release of Production Engineering, Procurement and Construction for the Pretreatment Facility," dated May 18, 2017
- 17-CPM-0074, "Transmittal of Contract Modification No. 393," dated May 30, 2017
- 17-WTP-0125, "Approval of Completion of Activity Milestone Low-Activity Waste A-2, Complete Final Assembly of Melter No. 1," dated June 8, 2017
- 17-WTP-0116, "Approval and Acceptance of Contract Deliverables Required for Implementing DOE-STD-1195-2011 for Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory and Transmittal of the Technical Evaluation Report," dated June 19, 2017.

- 17-CPM-0088, “Transmittal of Contract Modification No. 395,” dated June 22, 2017
- 17-CPM-0091, “Transmittal of Contract Modification No. 396 – Revision to the Not-to-Exceed Value for the Funding Limitation Established to Conduct Supplementary Analysis of Vessels RLD-VSL-00007 and RLD-VSL-00008 Beyond the Waste Treatment and Immobilization Plant Code of Record, and Modify the RLD-VSL-00007 and RLD-VSL-0008 Vessel Design in Modification 371,” dated June 27, 2017

## Retrieval Labor Hours

*Tank Farms Assistant Manager:* Glyn Trenchard

*Federal Program Manager:* Jeff Rambo

### Labor Hours Expended on SST Retrieval [SCBA] April 1, 2017, through June 30, 2017<sup>1</sup>

	SCBA Direct Labor Hours	SCBA Subcontractor Hours <sup>2</sup>	Total SST Operation Hours	Total Hours <sup>3</sup>	Total Percent on SCBA	Detrimental Impacts <sup>4</sup>
C Farm	9,489	11,540	21,029	98,590	21%	41
A/AX Farm	2,974	7,220	10,194	57,578	18%	41
AY Farm	595	340	935	7,496	12%	21
<b>Total</b>	<b>13,058</b>	<b>19,100</b>	<b>32,158</b>	<b>163,664</b>	<b>20%</b>	<b>41</b>

<sup>1</sup> SCBA logs were available through June 2, 2017. Delays in data uploads are due to the PUREX event and quality assurance log inspections.

<sup>2</sup> Subcontractor hours include labor hours from subcontractors including North Point Electrical Contracting, Inc.; Geophysical Survey, Inc.; Fowler General Construction; American Electric; BNL Technical Services; and Intermech Inc.

<sup>3</sup> Includes all labor hours supporting SST farms in retrieval including support outside farm fence (Engineering, Project Management and other support accounts).

<sup>4</sup> Detrimental impacts are presented as the number of days in which a stop work related to SCBA use prevented field operations from continuing. It is limited to SCBA stop works only and excludes vapor impacts (i.e., AOP-15 events).

SCBA = self-contained breathing apparatus.

SST = single-shell tank.

## **Spare Reboiler Requirement Status**

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

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

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

- WRPS awarded a not-to-exceed design/build contract to ABW Technologies (ABW) in the amount of \$461 thousand for fabrication of a spare reboiler, with delivery prior to December 31, 2018. Total estimate at completion is \$776 thousand.
- Design of the new spare 242-A Evaporator reboiler is ongoing with ABW. A finite element analysis associated with the reboiler is in the process of being performed. The bounding conditions associated with the finite element analysis model were provided to ABW from WRPS engineering. The commercial grade dedication plan submitted by ABW has been reviewed by WRPS engineering. Comments associated with the commercial dedication plan have been generated by WRPS and have been submitted back to ABW for disposition.
- WRPS and ABW are in the process of finalizing the design/fabrication schedule associated with the new spare 242-A Evaporator reboiler.

**Enclosure**

**(21 Pages Excluding Cover Sheet)**

**Written Directives from April 1, 2017, through June 30, 2017**



**OFFICE OF RIVER PROTECTION**

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

**APR - 5 2017**

17-WTP-0064

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

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – REQUEST TO PREPARE A BASELINE CHANGE PROPOSAL TO REMOVE HOT COMMISSIONING SCOPE ASSOCIATED WITH LOW-ACTIVITY WASTE FACILITY, BALANCE OF FACILITIES, ANALYTICAL LABORATORY AND DIRECT FEED LOW-ACTIVITY WASTE FROM THE WASTE TREATMENT AND IMMOBILIZATION PLANT PROJECT PERFORMANCE MEASUREMENT BASELINE**

Per the December 15, 2016, Waste Treatment and Immobilization Plant (WTP) Project Performance Baseline update, Baseline Change Proposal (BCP) -02, approved by the Deputy Secretary, hot commissioning is now removed from the WTP Performance Baseline (i.e., WTP line-item project: ORP-0060); however, the hot commissioning scope still remains in the Bechtel National, Inc. (BNI) contract, to be paid for from a different funding source. For purposes of BCP-02, hot commissioning was just deleted on a bottom-line basis. As the Project Assessment and Reporting System (PARS IIe) baseline reporting values for the WTP Project now reflect the reduction of scope and costs (approximately \$245 million) for hot commissioning, the BNI WTP Project Contract Performance Reports are reporting high by the value of hot commissioning, and this is causing discrepancies in the reporting in PARS IIe.

BNI is requested to prepare a BCP to remove the hot commissioning scope associated with; Low-Activity Waste (LAW) Facility, Balance of Facilities, Analytical Laboratory (collectively LBL) and Direct Feed LAW (DFLAW) from the WTP Project Performance Measurement Baseline, as well as to determine the associated Management Reserve and Fee values to remove from the project reporting values for both total WTP and for the new LBL/DFLAW Project report in PARS IIe.

Mr. C.K. Binns  
17-WTP-0064

-2-

APR - 5 2017

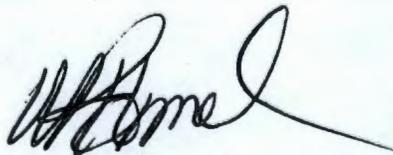
As this work is still on contract, but not in the WTP Project, it is recommended that BNI modify the monthly Total Project Change Summary report, which ties to the total Contract value, to add a section for the Hot Commissioning OPEX Project scope that is removed from the WTP Project, to allow the reconciliation to the total Contract value. It should include the Project Performance Measurement Baseline, Management Reserve, Fee, and as agreed with the U.S. Department of Energy (DOE) Office of River Protection, values for DOE Contingency and 'Non-Contract Cost' (Office of River Protection support cost) associated with LBL/DFLAW hot commissioning. Hot commissioning associated with the High-Level Waste and Pretreatment facilities will be removed from the WTP Project as part of their rebaseline efforts.

Associated with creation of a new Contract Performance Report to support the new LBL/DFLAW "Project" PARS IIe report, the LBL portion of the Work Breakdown Structure (WBS) 1.90, Shared Services, needs to be transferred to the LBL/DFLAW "project" WBS. BNI is requested to prepare a BCP transferring the LBL portion of Shared Services (WBS 1.90, Closed), valued at \$1,393,035,000, into a new Control Account under WBS 1.10, LBL Facility Services. It is understood that this will result in a point adjustment, which the WTP Project Federal Project Director will need to approve.

If you have any questions, please contact Mr. Dennis Brown, Director WTP Project Controls Division, (509) 376-6202.



Ronnie L. Dawson  
Contracting Officer



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

WTP:RLC

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**APR 11 2017**

17-SHD-0011

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

Mrs. McCullough:

**CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF FISCAL YEAR 2017 THIRD AND FOURTH QUARTER PERFORMANCE OBJECTIVES, MEASURES, AND COMMITMENTS**

Reference: BNI letter from M. McCullough to R.L. Dawson, ORP, "Fiscal Year 2017 Performance Objectives, Measures, and Commitments," CCN: 296353, dated March 16, 2017.

The U.S. Department of Energy, Office of River Protection has reviewed and approves the Bechtel National, Inc., Fiscal Year 2017 Third and Fourth Quarter Performance, Objectives, Measures, and Commitments. The Office of River Protection appreciates the informal discussions and collaborative approach followed to expand on the Fiscal Year 2017 Performance Objectives, Measures, and Commitments to ensure stronger predictors of Bechtel National, Inc. performance.

If you have any questions, please contact me, or your staff may contact Ricky Bang, Director, Safety and Health Division, (509) 376-4151.

Handwritten signature of Ronnie L. Dawson in blue ink.

Ronnie L. Dawson  
Contracting Officer

Handwritten signature of Joanne F. Grindstaff in blue ink.

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

SHD:PKB

cc: D.E. Gergely, BNI  
P.D. Worley, BNI  
BNI Correspondence



OFFICE OF RIVER PROTECTION

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

APR 13 2017

17-WTP-0077

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

Mrs. McCullough:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF THE HIGH-LEVEL WASTE FACILITY COMPLETION PLAN

- References:
1. ORP letter from R.L. Dawson and W.F. Hamel to M.G. McCullough, BNI, "High-Level Waste Facility Path to Full Authorization and Revised Baseline," 16-WTP-0010, dated January 28, 2016.
  2. BNI letter from M.G. McCullough to W.F. Hamel, ORP, "Submission of 24590-HLW-PL-MGT-16-0001, Rev. A, *High-Level Waste Facility Completion Plan*," CCN: 289763, dated October 6, 2016.
  3. BNI letter from M.G. McCullough to W.F. Hamel, "Submission of 24590-HLW-PL-MGT-16-0001, Rev. B, *High-Level Waste Facility Completion Plan*," CCN: 294932, dated March 31, 2017.

The U.S. Department of Energy, Office of River Protection (ORP) provided Bechtel National, Inc. (BNI) additional clarification for returning the High-Level Waste (HLW) Facility to full production through a two-phased process in Reference 1. Reference 1 also directed BNI to prepare a HLW Facility Completion Plan (FCP) to establish the strategy for:

- Completing activities necessary to obtain Decisions 2A and 2B
- Performing full production activities for completing design and construction
- Developing a revised performance baseline of the full engineering, procurement, construction, and commissioning scope of the HLW Facility.

The ORP and BNI HLW Integrated Project Team worked together for several months to develop the HLW FCP submitted by BNI as Rev. A, for ORP approval, on October 6, 2016, (Reference 2). Upon receipt of Rev. A of the FCP, an ORP inter-discipline team reviewed and provided additional comments to BNI on December 1, 2016. Subsequently, ORP and BNI worked together to enhance the plan and address ORP comments. Based on this effort, BNI issued Rev. B of 24590-HLW-PL-MGT-16-0001, *High-Level Waste Facility Completion Plan*, on March 31, 2017 (Reference 3).

APR 13 2017

This letter provides ORP approval of the HLW FCP submitted in Reference 3. Consistent with the plan, ORP reiterates adherence to the following established key process improvements:

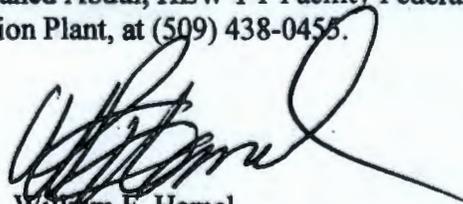
- BNI performance of 60 percent design review, as a minimum, prior to a new procurement and installation of facility equipment to ensure it meets the design, operability, and safety requirements.
- BNI commitment to continue with engineering and nuclear safety process improvements, including backward and forward pass reviews, and quality engineering oversight. BNI shall coordinate with ORP on potential future changes to these processes.

Additionally, the BNI letter submitting the original HLW FCP (Reference 2) stated that "approval of the plan constitutes ORP concurrence with the objective evidence that has been outlined for each of the criteria," summarized in Appendix A. In general, ORP agrees that the criteria described in Appendix A constitutes the necessary documentation for a future authorization to resume HLW Facility procurement and construction (Decision 2A). However, ORP reserves the right to determine the adequacy of objective evidence through the ORP oversight and assessment process. Accordingly, additional evidence may be required to confirm readiness for Decision 2A.

To support development of a future HLW Facility rebaseline, ORP acknowledges the need for BNI to continue with long range planning.

The action taken herein is considered to be within the scope of work of the existing contract and does not authorize the Contractor to incur any additional costs (either direct or indirect) or delay delivery to the Government. If the Contractor considers that carrying out this action will increase contract/project costs or delay of delivery, the Contractor shall promptly notify the Contracting Officer orally, confirming and explaining the notification in writing within ten (10) calendar days, and otherwise comply with the requirements of the Contract clause I.84 FAR 52.243-7, -- "Notification of Changes (APR 1984)." Following submission of the written notice of impacts, the Contractor shall await further direction from the Contracting Officer.

If you have any questions, please contact Wahed Abdul, HLW-PT Facility Federal Project Director, Waste Treatment and Immobilization Plant, at (509) 438-0455.



William F. Hamel  
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

**APR 28 2017**

17-WTP-0085

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

Ms. Irwin:

**CONTRACT NO. DE-AC27-01RV14136 – DIRECTION FOR FUTURE ELECTRICAL  
INSTALLATION METHODS AT THE WASTE TREATMENT AND IMMOBILIZATION  
PLANT PROJECT**

Reference: ORP letter from W.F. Hamel to J.M. St. Julian, BNI, "U.S. Department of Energy, Office of River Protection Approval of and Final Signature of the Charter for the Technical Issue Resolution Board (TIRB) for the Hanford Waste Treatment and Immobilization Plant (WTP) Project," 13-WTP-0260 (REISSUE), dated December 11, 2013.

The U.S. Department of Energy, Office of River Protection (ORP), and Bechtel National, Inc. (BNI) held a joint Technical Issue Resolution Board (TIRB) on April 13, 2017, to address certain electrical installation methods being used at the Waste Treatment and Immobilization Plant (WTP). The TIRB was conducted in accordance with the process established in the Reference. The TIRB specifically addressed issues associated with open-run cable drops from cable tray to electrical distribution equipment, and methods for entry of those cables into the distribution equipment in the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory (collectively LBL). The TIRB members concluded by majority vote that the electrical installation methods in question were considered to be National Electrical Code compliant. The formal results of the TIRB evaluation will be documented in a TIRB decision record in separate correspondence.

The TIRB provided the correct forum and an appropriate basis for reaching a fully-vetted conclusion regarding code compliance for specific WTP electrical installations. Notwithstanding the TIRB majority conclusion, ORP does not consider the current method of installing open-run cables from cable tray to electrical distribution equipment to be the optimal configuration to support future WTP operations. BNI is hereby directed to take the following actions.

APR 28 2017

1. Design of cable drops from cable tray to electrical distribution equipment will utilize conduit (or raceways) between the cable tray and electrical distribution equipment for all WTP electrical design work that has not yet been initiated, and all Pretreatment Facility and High-Level Waste Facility designs whether the design work has been initiated or not.
2. Within 30 days of receipt of this letter, please provide an accounting of all electrical design work associated with cable drops from cable tray to electrical distribution equipment in LBL and the Effluent Management Facility which:
  - a. Has been initiated but not yet issued-for-construction
  - b. Has been issued-for-construction but not yet installed
  - c. Has been issued for construction and is partially installed.

The accounting of this design work shall include whether the design includes open cable drops or conduit, and the stage (percent complete) of each specific instance of the design or installation.

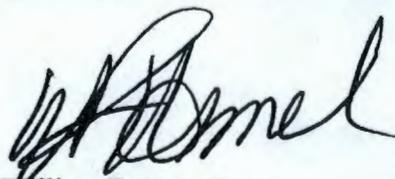
3. Within 45 days of receipt of this letter, please provide a rough-order-magnitude cost estimate for installing cables in conduit (or raceways) between cable tray and electrical distribution equipment for all future LBL and Effluent Management Facility installations. This estimate shall encompass any design media either: 1) initiated but not yet issued-for-construction; or 2) issued-for-construction but not yet installed. The estimate shall be itemized for each specific installation.

BNI is requested to schedule a meeting with ORP as soon as practicable after receipt of this letter to ensure a common understanding of the direction in this letter.

If you have any questions, please contact Bill Hamel, WTP Federal Project Director, at (509) 376-6727.



Marc T. McCusker  
Contracting Officer



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

WTP:JST

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**MAY 03 2017**

17-CPM-0055  
Reissue 2: 5/3/2017\*

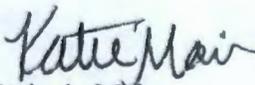
Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – REISSUE 2 - REQUEST FOR SIGNATURE -  
CONTRACT MODIFICATION NO. 391**

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

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

  
Katie A. Mair  
Contracting Officer

CPM: KAM

Attachment

cc w/attach:  
BNI Correspondence

\*This letter is being reissued a second time to transmit the entire revised Contract Modification No. 391.



**OFFICE OF RIVER PROTECTION**

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

**MAY 09 2017**

17-CPM-0061

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

Mrs. McCullough:

CONTRACT NO. DE-AC27-01RV14136 – AWARD FEE DETERMINATION FOR PERIOD  
2016

- References: 1. Contract No. DE-AC27-01RV14136 – Section B.8 Award Fee Administration  
2. Performance Evaluation and Measurement Plan (PEMP) for Award Fee Period  
2016, Rev.2

In accordance with Reference 1, under the subject Contract for Award Fee Period 2016, covering  
January 1, 2016 through December 31, 2016, the U.S. Department of Energy (DOE), Office of  
River Protection (ORP), determined Bechtel National, Inc.'s (BNI) Award Fee as follows:

Incentive B.1 – Award Fee-Project Management

Total Available Fee	\$7,770,000
Award Fee Rating (Numerical)	66.4*
Total B.1 Award Fee for 2016	<u>\$5,157,000</u>

Incentive B.2 – Award Fee-Cost

Total Available Fee	\$2,430,000
Award Fee Rating (Numerical)	85.8*
Total B.2 Award Fee for 2016	<u>\$2,085,000</u>

<u>Total Award Fee – Period 2016</u>	<u>\$7,242,000</u>
	71.0%

\*Figure rounded to one decimal place.

Mrs. Margaret McCullough  
17-CPM-0061

-2-

MAY 09 2017

I am making this determination based on the Federal Project Director's recommendation, BNI's Self-Assessment, and detailed performance input from DOE Headquarters and Environmental Management (EM) staff. Evaluating all of the internal and external input and my own personal observations of BNI's performance, I utilized my independent professional judgment to make the determination on the fee awarded to BNI for this rating period.

The Award Fee Determination Scorecard that reflects my determination and identifies the Key Positives and Key Areas for Improvement for the seven Award Fee Objectives will be posted to the DOE ORP website.

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



Kevin W. Smith, Manager  
Office of River Protection  
Fee-Determining Official

CPM:GFC

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**MAY 15 2017**

17-WTP-0068

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

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – CANCELLATION OF CONSTRUCTION  
AUTHORIZATION AGREEMENT BETWEEN THE U.S. DEPARTMENT OF ENERGY,  
OFFICE OF RIVER PROTECTION AND BECHTEL NATIONAL, INC.

- References:
1. ORP letter from S.J. Olinger to W.S. Elkins, BNI, "The U.S. Department of Energy, Office of River Protection (ORP) Notice to Proceed with Waste Treatment and Immobilization Plant (WTP) Construction Activities," 08-NSD-017, dated August 21, 2008.
  2. ORP letter from S.L. Samuelson to F.M. Russo, BNI, "Waste Treatment and Immobilization Plant (WTP) Startup Testing Phase," 12-WTP-0270, dated September 11, 2012.
  3. DOE/RL-96-0003, Revision 2, *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*, dated February 2001.

The Attachment to Reference 1 established a construction authorization agreement to identify the scope of the construction work authorized by the U.S. Department of Energy, Office of River Protection, and the terms and conditions associated with ensuring the achievement of adequate nuclear, radiological, and process safety. The authorization agreement was generated in accordance with Reference 3, which was subsequently removed from the Waste Treatment and Immobilization Plant (WTP) Contract in Modification Number M166. One action to clarify the authorization agreement was completed in Reference 2.

Requirements for WTP contract work authorization including construction, startup, and cold commissioning are captured in the Contract and associated requirements documents. The Attachment to Reference 1 authorization agreement is no longer required. Bechtel

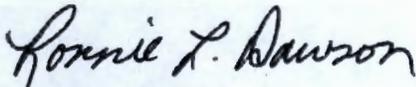
Mr. C.K. Binns  
17-WTP-0068

-2-

MAY 15 2017

National, Inc. continues to be authorized to perform both construction and startup testing work as previously authorized by the contract and letters of direction from the contracting officer. By this letter, DOE confirms that BNI is also authorized to perform commissioning testing of the WTP in the Direct-Feed LAW configuration in accordance with the terms of the contract. An authorization agreement will be developed prior to the Operational Readiness Review and will be approved to support WTP hot commissioning operations.

If you have any questions, please contact me, or your staff may contact Joanne F. Grindstaff, Deputy Federal Project Director, Waste Treatment and Immobilization Plant at (509) 376-6202.



Ronnie L. Dawson  
Contracting Officer



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

WTP:RAG

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**MAY 15 2017**

17-WTP-0099

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

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF BECHTEL NATIONAL, INC.  
REVISED CONTRACT DELIVERABLE 1.2 – 24590-WTP-PL-TE-01-012, REV 7, PROJECT  
EXECUTION PLAN

Reference: BNI letter from C.K. Binns to W.F. Hamel, ORP, "Contract Deliverable 1.2 –  
24590-WTP-PL-TE-01-012, Rev 7, Project Execution Plan," CCN: 276223,  
dated March 23, 2017.

As part of last year's rebaseline and contract modification effort, Bechtel National, Inc. (BNI) was required to update the BNI Waste Treatment and Immobilization Plant (WTP) Project Execution Plan (PEP). This is a contract deliverable which requires approval by the U.S. Department of Energy, Office of River Protection. The Office of River Protection has reviewed the referenced updated PEP, and approves the BNI WTP PEP as submitted.

If you have any questions, please contact Mr. Dennis Brown, Division Director, WTP Project Controls Division, (509) 376-4441.

Handwritten signature of Ronnie L. Dawson in cursive.

Ronnie L. Dawson  
Contracting Officer

Handwritten signature of William F. Hamel in cursive.

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

WTP:RLC

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**MAY 18 2017**

17-WTP-0014

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

Mrs. McCullough:

**CONTRACT NO. DE-AC27-01RV14136 – REQUIRED WORK TO RESOLVE TECHNICAL ISSUES AND SUPPORT CONDITIONAL RELEASE OF PRODUCTION ENGINEERING, PROCUREMENT AND CONSTRUCTION FOR THE PRETREATMENT FACILITY**

- References:
1. ORP letter from R.L. Dawson to F.M. Russo, BNI, "Modification of Direction for the Re-Baseline/Re-Plan of the Waste Treatment and Immobilization Plant (WTP) Project and Request for Baseline Change Proposal(s) and Associated Contract Change Proposal(s)," 12-WTP-0263, dated August 16, 2012.
  2. ORP letter from W.F. Hamel to M.G. McCullough, BNI, "Support to the U.S. Department of Energy (DOE) to Evaluate the Readiness to Proceed for the Waste Treatment and Immobilization Plant (WTP) High Level Waste (HLW) Facility," 13-WTP-0206, dated October 25, 2013.
  3. ORP letter from W.F. Hamel to M.G. McCullough, BNI, "Direction to Revise Planning and Requirements to Support Resolution of Technical Issues with the Pretreatment Facility," 15-WTP-0050 (Reissue), dated January 28, 2016.

The purpose of this letter is to document the requirements that the U.S. Department of Energy (DOE), Office of River Protection (ORP) will use to support a conditional release of production engineering, procurement, and construction (EPC) for the Pretreatment (PT) Facility. Previously ORP had determined production engineering work and construction for the PT Facility will not proceed until ORP determines there is high confidence that technical risks are substantially reduced (Reference 1). ORP will use a decision process, similar to that used for releasing EPC for the HLW Facility, for the PT Facility, as described in Reference 2, and summarized in the diagram in Attachment 1. As planned, ORP's decision process will involve two steps:

- Decision 1: Conditional release of production EPC based on completion of the work described in this letter. Additional work requirements will be specified in the conditional engineering release decision. Completion of this specified work will support ORP's decision for full release of EPC.

MAY 18 2017

- Decision 2: Full release of EPC.

ORP had previously defined requirements for resolution of the eight major technical issues associated with the PT Facility (Reference 3). This letter also updates the requirements for technical issue resolution based on the maturity of the technical strategies.

ORP acknowledges the completion of technical issue resolution endpoints and resolution of "Hydrogen Gas Release from Vessels" (T1), "Criticality in Vessels and Equipment" (T2), and "Hydrogen in Piping and Ancillary Vessels" (T3) as identified in Reference 3. Clarification of the remaining technical issues is provided in Attachment 2.

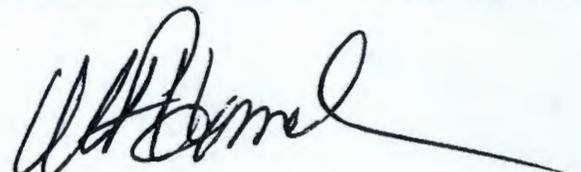
In addition, to support ORP's determination on PT conditional release of production engineering the following additional actions are required:

- Resolution of major technical issues T1 – T8 to ORP's satisfaction.
- Resolution of Defense Nuclear Facilities Safety Board issues associated with the spray leak methodology, aerosol entrainment coefficient, pulse jet mixer (PJM) control including PJM overblows, PJM impingement wear, pipeline wear including sliding bed wear, pipeline, plugging, and pump explosions.
- Evaluate project issues (e.g., condition reports) to determine design risks. Condition reports associated with the eight technical issues (e.g., T1 through T8) are to be resolved. Condition reports associated with long-term design and project completion actions are to be evaluated based on risk to completion of the PT project. The method to evaluate the long-term condition reports is to be presented to ORP for review.
- Preparation of a draft PT Facility Completion Plan providing strategy for addressing project work associated with production engineering, safety basis development, and development of a project baseline.
- Identification of proposed Waste Treatment and Immobilization Plant Contract changes to support resolution of the technical issue (e.g., T1 through T8) resolution outcomes.

If you have any questions please contact Wahed Abdul, Federal Project Director, PT and HLW Facilities, at (509) 438-0455 or you may contact Langdon K. Holton, WTP Senior Technical Authority, at (509) 373-9202.



Ronnie L. Dawson  
Contracting Officer



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

WTP:LKH

Attachments (2)

cc w/attachs: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**MAY 30 2017**

17-CPM-0074

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

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT  
MODIFICATION NO. 393**

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$55 million. This allotment of funding should mitigate any funding shortfall impacts referenced in BNI letter CCN 298382. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

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

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

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence.



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

JUN - 8 2017

17-WTP-0125

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

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF COMPLETION OF ACTIVITY  
MILESTONE LOW-ACTIVITY WASTE A-2, COMPLETE FINAL ASSEMBLY OF  
MELTER NO. 1

Reference: BNI letter from C.K. Binns to R.L. Dawson, ORP, "Notification of Completion of  
Activity Milestone LAW A-2, *Complete Final Assembly of Melter #1*,"  
CCN: 295771, dated May 12, 2017.

On May 12, 2017, Bechtel National, Inc. (BNI) notified the U.S. Department of Energy, Office  
of River Protection (ORP), via the Reference, that Activity Milestone A-2, *Complete Final  
Assembly of Melter #1*, had been completed. ORP has reviewed the information provided and  
concur that BNI has completed Activity Milestone A-2.

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

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

Handwritten signature of George F. Champlain in blue ink.

George F. Champlain  
Contracting Officer

Handwritten signature of William F. Hamel in blue ink.

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

WTP:JMB

cc: BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**JUN 19 2017**

17-WTP-0116

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

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – APPROVAL AND ACCEPTANCE OF  
CONTRACT DELIVERABLES REQUIRED FOR IMPLEMENTING DOE-STD-1195-2011  
FOR LOW-ACTIVITY WASTE FACILITY, BALANCE OF FACILITIES, AND  
ANALYTICAL LABORATORY AND TRANSMITTAL OF THE TECHNICAL  
EVALUATION REPORT**

Reference: BNI letter from L.W. Baker to W.F. Hamel, ORP, "Contract Deliverables  
Required for the Implementation of DOE-STD-1195 for LBL," CCN: 282177,  
dated February 17, 2017.

The U.S. Department of Energy, Office of River Protection (ORP), Waste Treatment and Immobilization Plant (WTP) received the contract deliverables as referred to above, and listed below in response to ORP direction to Bechtel National, Inc. to implement DOE-STD-1195-2011, *Design of Safety Significant Instrumented Systems used at DOE Nonreactor Nuclear Facilities* within the WTP. Proposed changes and markups to the following documents were provided.

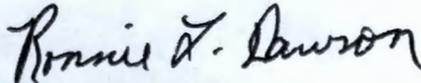
- 24590-WTP-COR-MGT-15-00001, *Engineering, Procurement, and Construction (EPC) Code of Record*, Rev. 0
- 24590-WTP-DB-ENG-01-0001, *Basis of Design*, Rev. 3
- 24590-WTP-SRD-ESH-01-001-02, *Safety Requirements Document Volume II*, Rev. 8
- DOE-STD-1195-2011, *Design of Safety Significant Instrumented Systems used at DOE Nonreactor Nuclear Facilities*
- ANSI/ISA 84.00.01-2004, *Functional Safety: Safety Instrumented Systems for the Process Industry Sector - Part 1: Framework, Definitions, System, Hardware and Software Requirements Part 1 (IEC 61511-1 Mod)*.

JUN 19 2017

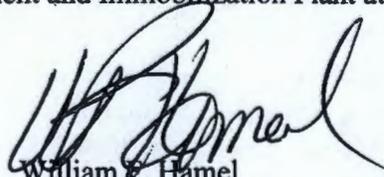
The proposed changes and markups were reviewed by ORP and found acceptable pending resolution of five comments identified in the attached Technical Evaluation Report. The Technical Evaluation Report also provides the evaluation methodology and the basis for approval and acceptance of the proposed changes. BNI is directed to resolve these comments and update required documents accordingly. Formal resubmittal of the documents is not required. ORP will verify resolution is complete.

The action taken herein is considered to be within the scope of work of the existing contract and does not authorize the Contractor to incur any additional costs (either direct or indirect) or delay delivery to the Government. If the Contractor considers that carrying out this action will increase contract/project costs or delay of delivery, the Contractor shall promptly notify the Contracting Officer orally, confirming and explaining the notification in writing within ten (10) calendar days, and otherwise comply with the requirements of the Contract clause I.84 FAR 52.243-7, -- "Notification of Changes (APR 1984)." Following submission of the written notice of impacts, the Contractor shall await further direction from the Contracting Officer.

If you have any questions, please contact me, or your staff may contact Joanne F. Grindstaff, Deputy Federal Project Director, Waste Treatment and Immobilization Plant at (509) 376-6202.



Ronnie L. Dawson  
Contracting Officer



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

WTP:MLR

Attachment

cc w/attach:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**JUN 22 2017**

17-CPM-0088

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

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT  
MODIFICATION NO. 395

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$54.5 million. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-5583.

A handwritten signature in blue ink that reads "Ronald E. Cone Jr." with a stylized flourish at the end.

Ronald E. Cone Jr.  
Contracting Officer

CPM:REC

Attachment

cc w/attach:  
BNI Correspondence



**OFFICE OF RIVER PROTECTION**

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

**JUN 27 2017**

17-CPM-0091

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

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT MODIFICATION NO. 396 – REVISION TO THE NOT-TO-EXCEED VALUE FOR THE FUNDING LIMITATION ESTABLISHED TO CONDUCT SUPPLEMENTARY ANALYSIS OF VESSELS RLD-VSL-00007 AND RLD-VSL-00008 BEYOND THE WASTE TREATMENT AND IMMOBILIZATION PLANT CODE OF RECORD, AND MODIFY THE RLD-VSL-00007 AND RLD-VSL-00008 VESSEL DESIGN IN MODIFICATION 371

The purpose of this letter is to transmit a signed original of Contract Modification No. 396. The modification increases the not-to-exceed (NTE) value for updating the conduct of a supplementary analysis of RLD-VSL-00007 and RLD-VSL-00008 from \$1,500,000 to \$2,400,000 consistent with the other contract terms and conditions and pending definitization of this change.

BNI is requested to provide notification to the Contracting Officer at which time the total costs are expected to reach 75% of the NTE value as detailed in the enclosed contract modification.

If you have any project-related questions, please contact William F. Hamel at (509) 438-1176. For contract-related questions, please contact me at (509) 376-5583.

A handwritten signature in blue ink, appearing to read "Ronald E. Cone Jr.", written over a printed name.

Ronald E. Cone Jr.  
Contracting Officer

CPM:REC

Attachment

cc w/attach:  
BNI Correspondence