Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-PRO-0088

JAN 28 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – FISCAL YEAR (FY) 2012 AVAILABLE FEE SETTLEMENTS

References: (1) CHPRC ltr. to J. C. Connerly, RL, from J. C. Fulton, "Contract Number DE-AC06-08RL14788 – Fiscal Year 2012 Available Fee," CHPRC-1203895A R2, dtd. November 5, 2012.

(2) RL ltr. to J. G. Lehew III, CHPRC, from J. C. Connerly, "Contract No. DE-AC06-08RL14788 – Fiscal Year (FY) 2012 Available Fee," 12-PRO-0412, dtd. September 17, 2012.

The U.S. Department of Energy (DOE) Richland Operations Office (RL) has reviewed CH2M HILL Plateau Remediation Company (CHPRC) completion documentation contained in Reference (1) for the settlement milestones identified in Reference (2). Accordingly, CHPRC is authorized to draw from the Special Financial Account earned fee of $7,450,000. If you have any questions, please contact me, or you may contact Jonathan A. Dowell, Assistant Manager for River and Plateau, on (509) 373-9971.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

PRO:JCC

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC

Department of Energy
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P.O. Box 550
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13-PRO-0097

FEB 19 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – REQUEST FOR PERFORMANCE MEASURE COMPLETION ACCEPTANCE FOR PLUTONIUM FINISHING PLANT

CH2M HILL Plateau Remediation Company's (CHPRC's) request for acceptance pursuant to paragraph (c) of Clause B.8, Fee Determination and Payment, contained in letter number CHPRC-1203455, dated August 27, 2012, is approved. Accordingly, CHPRC is authorized to execute a draw-down against the Special Financial Institution Account of provisional fee totaling $1,812,565.46. If you have any questions, please contact me at (509) 376-8362.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

PRO:JCC

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
S. W. Bork, CHPRC
J. A. Cuicci, CHPRC
R. M. Millikin, CHPRC

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Richland, Washington 99352

13-PRO-0113

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – REQUEST FOR PERFORMANCE MEASURE COMPLETION ACCEPTANCE FOR WASTE MANAGEMENT COMPLETION

CH2M HILL Plateau Remediation Company's (CHPRC's) request for acceptance pursuant to paragraph (c) of Clause B.8, Fee Determination and Payment, contained in letter number CHPRC-1204953, dated December 5, 2012, is approved. Accordingly, CHPRC is authorized to execute a draw-down against the Special Financial Institution Account of incremental fee totaling $100,000.00. If you have any questions, please contact me at (509) 376-8362.

Sincerely,

Jenise C. Connerly
Contracting Officer

PRO:JCC

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
S. W. Bork, CHPRC
J. A. Cuicci, CHPRC
R. M. Millikin, CHPRC

Department of Energy
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Richland, Washington 99352

13-PRO-0302

JUL 08 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 REQUEST FOR PERFORMANCE MEASURE COMPLETION ACCEPTANCE FOR PLUTONIUM FINISHING PLANT

CH2M HILL Plateau Remediation Company's (CHPRC's) request for acceptance pursuant to paragraph (c) of Clause B.8, Fee Determination and Payment, contained in letter number CHPRC-1204952, dated November 27, 2012, is approved. Accordingly, CHPRC is authorized to execute a draw-down against the Special Financial Institution Account of provisional fee totaling $1,422,722.52. If you have any questions, please contact me at (509) 376-8362.

Sincerely,

Jenise C. Connerly
Contracting Officer

PRO:JCC

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
S. W. Bork, CHPRC
J. A. Cuicci, CHPRC
R. M. Millikin, CHPRC

Department of Energy
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13-AMRP-0227

JUN 2 4 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NUMBER DE-AC06-08RL14788 – ALTERNATIVE METHOD FOR DRAW DOWN OF PROVISIONAL FEE AGAINST PLUTONIUM FINISHING PLANT PROGRESS

This letter responds to the November 7, 2012, (CHPRC-1204566) request to draw down provisional fee against Plutonium Finishing Plant progress based on earned value data during Fiscal Year (FY) 2013, rather than the installments defined in the associated performance measure. The DOE Richland Operations Office (RL) has reviewed the CH2M HILL Plateau Remediation Company's (CHPRC) letter and, based on the information provided, has determined an alternate method may be utilized for FY 2013. CHPRC is authorized to draw down the difference between the total provisional payments completed through FY 2012 ($22,392,423) and 80 percent of the amount that CHPRC would earn based on its current Performance Measurement Baseline. The resulting difference, $7,222,889.27, may be drawn down in 12 monthly installments during FY 2013. Authorization for draw down of installments through May 2013 was provided by electronic mail on May 17, 2013. This alternate payment schedule is only authorized during FY 2013.

CHPRC shall continue to submit completion verification documentation according to the Provisional Fee installments defined in the Performance Evaluation and Measurement Plan as work units are completed. Payments of Provisional Fee installments will be offset by payments made according to the alternate payments schedule described above.

Mutually agreeable consideration is required for this fee payment schedule revision. RL suggests that this alternate schedule is adequate consideration for the change in CHPRC's anticipated fee payment cash flow for FY 2013 due to budget Sequestration. CHPRC's concurrence with this exchange is requested before additional fee draws are executed.

If you have any questions please contact me, or your staff may contact Jonathan Dowell, Assistant Manager for the River and Plateau, on (509) 373-9971.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

AMRP:BLF

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
S. W. Bork, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC

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13-PRO-0007

OCT 2 3 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – FINAL RECONCILIATION OF AVAILABLE FEE FOR THE AMERICAN RECOVERY AND REINVESTMENT ACT WORK (ARRA)

This letter provides a summary of the disposition of Available Fee for ARRA, and formal correspondence to document the government's direction for the utilization of unearned fee, pursuant to Clause B.7, Fee Structure. The following table summarizes the disposition of Available Fee:

ARRA FEE (CLIN VI)	FEE TOTALS
Total Available Fee	$72,471,115.17
Earned via performance measure completions	$64,905,355.90
Earned via fixed fee settlements for change orders.	$6,454,098.77
Unearned/Forfeited fee	$1,111,660.50

Pursuant to Clause B.7, forfeited fee of $1,111,660.50 was utilized to continue Plutonium Finishing Plant ARRA work scope in Fiscal Year 2012. If you have any questions, please contact us, or you may contact Jonathan A. Dowell, Assistant Manager for River and Plateau, on (509) 373-9971.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

PRO:CMJ

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
S. M. Bork, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC

Department of Energy
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13-AMRP-0134

MAR 2 2 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NUMBER DE-AC06-08RL14788 -- ENDORSEMENT OF THE CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) PROJECT MANAGEMENT INSTITUTE INTERNATIONAL "PROJECT OF THE YEAR" NOMINATION FOR THE HANFORD RL-0030.C, GROUNDWATER REMEDY IMPLEMENTATION FOR 200-ZP-1 AND 100 DX TREATMENT SYSTEMS CAPITAL ASSET PROJECT

The purpose of this letter is to provide the U.S. Department of Energy (DOE) Richland Operations Office full endorsement of CHPRC's nomination of the Hanford Groundwater Remedy Implementation for 200-ZP-1 (200 West Pump and Treatment) and 100 DX Treatment Systems project for the Project Management Institute International Project of the Year.

The overall project (consisting of multiple components, individual baselines and funding sources) was completed and turned over to operations on June 28, 2012, and received Critical Decision 4, Approve Start of Operations/Project Completion July 31, 2012, one month ahead of schedule. Also, due to proactive risk mitigation, the project final cost was almost $50 million below the DOE approved Total Project Cost of $385.4 million. The project was also successful in meeting specific Key Performance Parameters contained in the approved DOE Project Execution Plan, complying with American Recovery and Reinvestment Act requirements as well as completing Hanford Federal Facility Agreement and Consent Order regulatory milestones related to startup of 100 DX Pump and Treatment System by December 31, 2010, and begin Phase I Operations of the 200 West Pump and Treatment System by December 31, 2011.

Although faced with numerous complex challenges during both construction and startup, the successful management of the Capital Asset Project as outlined in DOE O 413.3B, Program and Project Management for Acquisition of Capital Assets, resulted in the 200 West Pump and Treatment Facility component becoming the first DOE Environmental Management Facility to be awarded the Leadership in Energy and Environmental Design "Gold" Award for design and construction; the implementation of new and additional groundwater treatment capabilities for the 100 and 200 Areas, as well as the installation of 265 groundwater monitoring wells and the decommissioning of 280 old wells and boreholes across the Hanford Site. In addition, Project RL-0030.C was completed safely with no lost time injuries.

The long term value to the government of this completed project will be very significant. All facilities are now in operation and have exceeded design specifications for performance. The 100 DX facility design identified the use of ResinTech™ SIR-700 resin for removing hexavalent chromium from groundwater which is expected to result in a cost avoidance of more than $200 million when implemented at other Hanford groundwater pump and treatment facilities. In addition the 2,500 gallon per minute 200-ZP-1 pump and treatment facility will now treat carbon tetrachloride over the next 25 years at a cost of approximately one cent per gallon compared to a previous treatment cost of over one dollar per gallon.

The successful completion of this Capital Asset Project was due to the team's application of the Project Management Institute project management principles to overcome obstacles as evident in the successful planning, management of project challenges and execution of objectives. One example of this was that CHPRC's design team managed the award the long lead equipment contracts during the design phase instead having the construction contractor perform this during the construction phase. This allowed schedule acceleration to meet established milestones.

In summary, Briant Charboneau, Federal Project Director for the RL-0030.C project, has recognized the overall management team for dedication to performance, safety, and quality in delivering this important project ahead of schedule and under budget which will support continued remediation of groundwater at Hanford and protection of the Columbia River.

If you have any questions, please contact me, or your staff may contact Jonathan Dowell, Assistant Manager for the River and Plateau on (509) 373-9971

Sincerely,

Doug A. Shoop for

Matt McCormick
Manager

AMRP:BLC

cc: M. T. Bachand, CHPRC
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
S. W. Bork, CHPRC
M. J. Cherry, CHPRC
J. A. Ciucci, CHPRC
D. E. Dooley, CHPRC
J. R. Freeman-Pollard, CHPRC
C. R. Kronvall, CHPRC
R. M. Millikin, CHPRC
M. J. Ostrom, CHPRC
R. S. Popielarczyk, CHPRC

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13-AMRP-0081

FEB 0 8 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NUMBER DE-AC06-08RL14788 – SAMPLING AND ANALYSIS PLAN FOR INSTALLATION OF 100-HR-3 GROUNDWATER OPERABLE UNIT REPLACEMENT WELLS, DOE/RL-2012-45, REVISION 0

This letter responds to the January 7, 2013, (CHPRC-1205387) submittal of the approved Sampling and Analysis Plan for Installation of 100-HR-3 Groundwater Operable Unit Replacement Wells, DOE/RL-2012-45, Revision 0.

The Sampling and Analysis Plan was transmitted to the State of Washington Department of Ecology and U.S. Environmental Protection Agency by letter (13-AMRP-0056) dated December 5, 2012. Actual delivery was delayed until receipt of the page correction contained in your January 7 submittal.

This report is considered complete as a deliverable under CHPRC Section C, "Statement of Work," Table C.5, deliverable C.2.4.6-1, "Remedial Action Documentation."

If you have any questions please contact me, or your staff may contact Jonathan Dowell, Assistant Manager for the River and Plateau, on (509) 373-9971.

Sincerely,

Jenise C. Connerly
Contracting Officer

AMRP:JPH

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
S. W. Bork, CHPRC
J. A. Ciucci, CHPRC
D. E. Dooley, CHPRC
R. M. Millikin, CHPRC

Department of Energy
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12-AMRP-0170

DEC 13 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NUMBER DE-AC06-08RL14788 – NOTIFICATION OF CHANGE DUE TO TRANSURANIC WASTE CONTAINERS NOT IN A CONDITION FOR LONG-TERM STORAGE AT CENTRAL WASTE COMPLEX

This letter responds to the August 2, 2012, (CHPRC-1202929) Notification of a Change associated with the storage of deteriorated waste boxes at the Central Waste Complex. After reviewing this notification, the DOE Richland Operations Office (RL) determined that the identified conditions are consistent with the Contract and do not represent a changed condition defined by the applicable PRC Contract Clause I.102, FAR 52.243-2, "Changes - Cost Reimbursement, Alternate II," paragraph (a). Similarly, RL has determined that the related conditions CH2M HILL Plateau Remediation Company (CHPRC) described during meetings with RL regarding the referenced notice are also within Contract scope and therefore do not represent a change as defined by Clause I.102.

While the conditions described in the subject Notification of Change are not entitled to additional fee, a change in estimated costs to perform the contract requirements may represent the realization of a contractor risk. If so, it would be appropriate to handle cost and schedule impacts through risk mitigation planning. If CHPRC determines the cost is different (i.e., higher. lower, time-sequence) than what CHPRC originally proposed, CHPRC may submit a proposed revision to the contract estimated cost stipulated in Table B.4-1, "Contract Cost and Contract Fee," and a Baseline Change Request to revise the Budgeted Cost of Work Scheduled. This proposed revision shall also identify candidate workscope for deferral to Contract Line Item Number 7.

If you have any questions please contact me, or your staff may contact Jonathan Dowell, Assistant Manager for the River and Plateau, on (509) 373-9971.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

AMRP:MSC

cc: M. V. Bang, CHPRC
L. T. Blackford, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC

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12-AMSE-0038

OCT 1 1 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE (RL) SAFETY CULTURE GOOD PRACTICES EVALUATION REPORT

Attached for your information is the recently completed RL Safety Culture Good Practices Evaluation Report. This document is for your information only and requires no response back to RL. If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

AMSE:JEP

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

This document is publicly available at:
https://hsspublic.energy.gov/deprep/2013/AttachedFile/TB13S30A_EM-RL-Evaluation.pdf

DOE RL Safety Culture Good Practices Evaluation Report

September 11, 2012

Approved: J. E. Parsons

M. R. Steelman

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Table 1 -- Good Practices Distribution by Organization

Appendix A - Good Practices Database

Appendix B - Safety Culture Review Plan

Appendix C – Good Practices Guidelines

ACRONYMS

ATL	ATL International Inc.
BNI/WTP	Bechtel National Inc./ Waste Treatment Project
CAS	Contractor Assurance System
CHPRC	CH2MHILL Plateau Remediation Company
CONOPS	Conduct of Operations
CWB & CTC	Central Washington Building and Construction Trades Council
DNFSB	Defense Nuclear Facility Safety Board
DOE-HSS	Department of Energy – Office of Health, Safety and Security
DOE-ORP	Department of Energy – Office of River Protection
DOE-RL	Department of Energy - Richland Operation Office
EMS	Environmental Management System
ESH&Q	Environmental, Safety, Health & Quality
ESRB	Executive Safety Review Board
HAMTC	Hanford Atomic Metals Trade Council
HGU	Hanford Guards Union
HILLS	Hanford Information Lessons Learned System
HRB	Hazard Review Board
ICAP	Integrated Corrective Action Plan
ISMS	Integrated Safety Management System
JSV	Joint Safety Vision
LOI	Lines of Inquiry
MSA	Mission Support Alliance
OA	Operational Awareness
PAAA	Price-Anderson Amendments Act
PFP	Plutonium Finishing Plant
PNL	Battelle (Pacific Northwest Laboratories)
POP	Personal Observation Program
PRCNS	Plateau Remediation Company Notification System
PP&I	Project Planning and Integration
RIMS	Richland Integrated Management System
RM	Responsible Manager
SCWE	Safety Conscious Work Environment
SGRP	Soil & Groundwater Remediation Project
SIPs	Safety Improvement Plans
SPOC	Single Point of Contact
VPP	Voluntary Protection Program
WCH	Washington Closure Hanford
WRPS	Washington River Protection Solutions

1.0 Executive Summary

DOE-Richland Operations Office (RL) and its prime contractors (Mission Support Alliance (MSA), CH2MHILL Plateau Remediation Company (CHPRC) and Washington Closure Hanford (WCH) conducted a Safety Culture Review to (1) gather "good practices" in regards to safety culture at DOE-RL and (2) perform a first look at RL and its' Prime Contractors in as a follow on to the June 2012, DOE Site-Wide Safety Culture Survey. The review was conducted during July and August 2012. The team interviewed over 250 individuals, reviewed 500 documents and attended greater than 70 meetings and/or work evolutions in the field.

The DOE-RL and Prime Contractor's generally has a healthy respect for safety that is not compromised by production, budget or schedule priorities. The majority of personnel interviewed believes in always doing work safely and was found to embrace the concepts and precepts of Safety Culture, Integrated Safety Management System (ISMS), Voluntary Protection Program (VPP) and a variety of Company/Organization specific practices that serve to improve safety behaviors.

The Safety Culture at Hanford under the DOE-RL purview has matured and grown. The Review Team believes that most of the personnel interviewed at Hanford understand the value and importance of a robust safety culture and are eager to offer ways of performing work better and safer. Management has discussed expectation for safety behaviors that will lead to a culture of safety first even if stand downs or stop work is required. *(During the review, one Prime Contract initiated a one day stand down on a project due to indication that safety was not the priority. This was initiated by the President).* Most felt they had the freedom, support and expectation to raise issues to supervision and management without fear of retaliation. Although there were a few "pockets" where personnel interviewed had not raised issues, those instances were identified and turned over to the appropriate organization.

During the course of this review, 46 Safety Culture "Good Practices" were identified across all organizations. These are listed below by Company/Organization: Additional details for each of these good practices are provided in Section 3.0 and Appendix A, Good Practices Database.

Appendix C was utilized to organize the good practices into a structured format. (See Appendix C, Good Practices Guidelines, for the reference code description at the end of each good practice below.)

1.1 Site Wide

- *Hanford Information Lessons Learned System (HILLS) (6.a)*
- *DOE Voluntary Protection Program (7.b)*
- *HAMTC Safety Representatives (8.i)*
- *Safety Councils (2.f)*
- *Site Wide Safety Standards (3.b)*
- *Site Wide Executive Safety Review Board (ESRB) (8.g)*
- *Interface Management for the Hanford Site (8.f)*
- *Site Wide Traffic Safety (7.i)*
- *Standardized Stop Work Policy (7.c)*

1.2 DOE-RL

- *Maturity of Contractor Assurance System (CAS) (5.c)*
- *DOE Field Office Safety Culture Survey (5.b)*
- *National support for ISM (2.f)*
- *Organization functions and authorities built on healthy tension model (3.b)*
- *Richland Integrated Management System (RIMS) (4.b)*
- *HAMTC – RL monthly meetings (1.c)*
- *RL ESH&Q scheduled open door meeting (8.b)*
- *Operational Awareness (6.a)*

1.3 CHPRC

- *Plutonium Finishing Plant (PFP) Personal Observation Program (POP) (6.b)*
- *Worker Involvement at the engineering level (8.d)*
- *QMap (1.e)*
- *Single Point of Contact (SPOC) (1.b)*
- *Responsible Manager (8.c)*
- *Project Hazard Review Board (6.b)*
- *Advanced Dress/Undress Instruction (2.f)*
- *Plateau Remediation Company Notification System (1.b)*
- *Conduct of Operations (CONOPS) Mentors/Coaches (2.a)*
- *Target Zero (3.c)*
- *Joint Safety Vision (8.g)*
- *Integrated Corrective Action Plan (6.d)*

1.4 WCH

- *Disciplined Operations Plan (3.c)*
- *Performance Excellence Training (2.d.)*
- *Management walk-thru process (5.c)*
- *Presidents expectations (8.g)*
- *WCH Event Notification Form (1.b)*
- *Safety Culture Policy (3.b)*
- *Closure coaches (2.a)*
- *IWCP Pre-Evolution feedback process (6.c)*
- *Communication (1.b)*

1.5 MSA

- *Project Planning and Integration (PP&I) (4.a)*
- *Crane and Rigging Reference Guide (1.e)*
- *Water Utilities Director one-on-one sit downs(8.i)*
- *Information Management Dedicated HAMTC Safety Representative (2.f)*
- *ISMS Surveillance Team (5.c)*

- *Company New Employee Orientation (2.b)*
- *VPP Mini Assessments (7.b)*
- *Integrated Approach to Management of Risks (8.f)*

Table 1 - Good Practices Distribution by Organization

	(1) Communication Mechanisms	(2) Knowledge Sharing	(3) Organizational Goals & Objectives	(4) Resource Allocations	(5) Monitoring and Oversight	(6) Feedback	(7) Improvement Initiatives	(8) Leadership
Site-Wide		1	1			1	3	3
DOE-RL	1	1	1	1	2	1		1
CHPRC	3	2	1			3		3
WCH	2	2	2		1	1		1
MSA	1	2		1	1		1	2
TOTAL	7	8	5	2	4	6	4	10

For additional information regarding these Safety Culture Good Practices, contact the following individuals:

DOE- RL: Ed Parsons: joe.parsons@rl.doe.gov 509-376-2876

MSA: Lanette Adams: lanette_k_adams@rl.gov 509-373-9669

CHPRC: Mike Hassell: harold_m_hassell@rl.gov 509-376-3108

WCH: Gary Grant: gmgrant@wch-rcc.com 509-372-9568

2.0 Introduction

DOE-Richland Operations Office (RL) and its prime contractors (Mission Support Alliance (MSA), CH2MHILL Plateau Remediation Company (CHPRC) and Washington Closure Hanford (WCH) conducted a Safety Culture Review to (1) gather "good practices" in regards to safety culture at DOE-RL and (2) perform a first look at RL and its' Prime Contractors as a follow on to the June 2012, Safety Culture Site-Wide Survey.

The review focused on the attributes associated with a strong safety culture described within the Integrated Safety Management System (ISMS) Guide in Attachment 10 and key lessons learned from independent assessments of safety culture performed by DOE HSS. This Guide provided the following focus statement regarding safety culture within DOE:

> "Safety culture is an organization's values and behaviors modeled by its leaders and internalized by its members, which serve to make safe performance of work the overriding priority to protect the workers, public, and the environment. "

Attachment 10 of the Guide identified the following three safety culture focus areas and associated attributes (those that support a Safety Conscious Work Environment (SCWE) are highlighted in yellow).

2.1 Leadership

a. Demonstrated safety leadership
b. Risk-informed, conservative decision making
c. Management engagement and time in field
d. Staff recruitment, selection, retention, and development
e. Open communication and fostering an environment free from retribution
f. Clear expectations and accountability

2.2 Employee/Worker Engagement

a. Personal commitment to everyone's safety
b. Teamwork and mutual respect
c. Participation in work planning and improvement
d. Mindful of hazards and controls

2.3 Organizational Learning

a. Credibility, trust and reporting errors and problems
b. Effective resolution of reported problems
c. Performance monitoring through multiple means
d. Use of operational experience
e. Questioning attitude

Lines of inquiry (LOIs) were developed in accordance with ISMS Guide and "key lessons learned" from the HSS review. The Safety Culture Review Plan is included in Attachment B.

2.4 Review Team

The review team was selected for their experience in evaluation activities and techniques, familiarity with the Hanford Site and related experience in understanding and assessing safety culture at both DOE and commercial nuclear activities. In addition, the review team participated in preparing the Review Plan, Safety Culture Training and interviewing techniques specific to this review. Team membership included representation from the Hanford Atomic Metals Trade Council (HAMTC), the Hanford Guards Union (HGU) and exempt staff as identified below:

RL Independent Evaluation Team Members

- Ed Parsons, Co-Lead, Organizational Liaison (DOE-RL)
- Mark R. Steelman, Co-Lead, Consultant (Steelman Associates, Ltd)
- Gary Grant, Organizational Liaison (WCH)
- Mike Hassell, Organizational Liaison (CHPRC)
- Barbara Williams, Exempt (CHPRC)

- Lanette Adams, Organizational Liaison (MSA)
- Emily Millikin, Organizational Liaison (WCH)
- Rocky Simmons, HAMTC (MSA)
- Gordon Denman, HGU (MSA)
- Dennis Hurshman, Exempt (WCH)

MSA ISMS Surveillance Team:

- Art Garcia, Exempt (Steelman Associates, Ltd)
- Henry Sparks, HAMTC (MSA)
- Robin Quinton, HAMTC (MSA)
- Hoyt Mitchell, HAMTC (MSA)
- Terri McEvoy, Database Administrator (Steelman Associates, Ltd)
- Caitlin Gordon, Administrative, (Summer Intern, MSA)

3.0 Safety Culture Good Practices

3.1 Site Wide

- **Hanford Information Lessons Learned System (HILLS)**

  HILLS is a collaborative effort lead by the Department of Energy Richland Operations and Office of River Protection for management of operating experience to prevent adverse operating incidents and to expand the sharing of information among Hanford contractors. The HILLS web application provides a single management tool for storage, delivery and retrieval of both internal and external operating experience including: lessons learned, good work practices, and safety and health information.

- **VPP**

  The Department of Energy created the DOE Voluntary Protection Program (DOE-VPP) to recognize and encourage excellence in occupational safety and health protection. The Hanford site has embraced this concept and has maintained a high level of participation. VPP continues to be one of the cornerstones of the Hanford safety culture.

  DOE has long recognized that compliance with OSHA standards and DOE Orders cannot by itself accomplish all the goals desirable in a comprehensive health and safety program. No matter how carefully conceived and properly developed, DOE Orders and regulatory standards will never address all unsafe activities and conditions. At the same time, contractors and their employees at all levels possess valuable firsthand knowledge of the processes, materials, and hazards involved in their own operations. This knowledge, combined with the ability to quickly evaluate and address unique hazards, can improve facility health and safety in ways which are simply not available through DOE or other oversight agencies.

  DOE contractors and subcontractors who participate in the DOE-VPP must have incorporated these minimum elements:

- Management Leadership

  Managers at all levels need to be involved in the VPP process, and show their commitment to worker safety and health by identifying worksite hazards and reducing the danger of injury and illness to employees.

- Employee Involvement

  Getting everyone involved is the key to success. A number of programs exist in organizations such as safety councils, that can share ownership and foster an active management / employee role in the programs and policies that are in place to protect them.

- Worksite Analysis

  Every task and jobsite needs to be carefully reviewed to identify potential hazards and the ability to recognize and correct hazards as they arise.

- Hazard Prevention and Control

  Comprehensive health and safety surveys should be conducted by trained and qualified safety and health professionals at intervals appropriate for the nature of workplace operations, to identify existing hazards and potentially significant risks and to ensure employer awareness and control of those risks.

- Safety & Health Training

  Safety and health training is provided to Hanford employees.

- **HAMTC Safety Representatives**

  The HAMTC Safety Representatives Program was initiated in July 1997 to establish a group of worker representatives that focus on health and safety. Worker representatives are appointed to HAMTC/HGU safety group and formally serve as full-time safety and health representatives for the work force. The program includes all Hanford contractors and affiliated unions.

  As a result of this program, there has been fewer safety and health related concerns which has translated into better worker health and safety, as well as substantial cost savings. This program has created a greater degree of worker involvement at all stages of work planning and execution, increased ownership of safety, and a partnering culture between union and management.

- **Safety Councils**

  Employee and management Safety Councils work to protect and improve the health and safety culture of all employees. They do this by demonstrating commitment to affect positive change within the five elements of the U.S. DOE VPP. They strive to achieve a single safety program, and provide the leadership to influence positive behavior and continual improvement toward the achievement of zero accidents. This is a cooperative

effort by all Hanford Contractors to provide a healthy, safety and injury-free workplace. Across the Hanford site, there are numerous councils including the Employees Zero Accident Council (EZAC), President Zero Accident Council (PZAC), and many lower tier councils and programs (e.g., Safety Log).

- **Site Wide Safety Standards**

  The Hanford Site-Wide Standards Management Plan (MSC-MP-41080) established site-wide standards and standardized training where similar hazards, requirements, and worker expectations exist throughout the Hanford Site. This effort was directed by the DOE-HSS in 10 CFR 851.11 of the Worker Safety and Health Program.

  Since Hanford Site workers perform work in facilities controlled by multiple Hanford-Site contractors, safety was improved by having such standards and training in place. The desired outcome of the Plan is to establish site-wide standards and standardized training that provides a consistent approach for workers to perform work safely on the Hanford Site.

  The process defined in the Plan is designed to achieve collaboration from the U.S. DOE, all affected contractors, the HAMTC, HGU, and the CWB & CTC on the Hanford Site.

- **Site-Wide Executive Safety Review Board (ESRB)**

  The DOE-RL Prime Contractors (MSA, CHPRC, and WCH) have developed an ESRB. The purpose of the ESRB is to oversee and monitor the effectiveness of programs and processes associated with the Safety Management Programs, Quality Assurance Program, ISMS/EMS Implementation activities and the PAAA program.

  The result of this process has been an effective exchange of ideas and concepts between organizations. Additionally, the ESRB is an accepted forum for ESH&Q to air issues that are cross-cutting on the Hanford site.

- **Interface Management for the Hanford Site**

  DOE-RL and DOE-ORP require prime contractors enter into interface agreements with one another to ensure the effective delivery and performance of site services. MSC and prime contractor Interface Management staff and Project Liaisons conduct interface management discussions to ensure the delivery of services in a safe, timely, cost-efficient, and quality driven manner. All prime contractors manage interfaces so that potential issues are resolved at the lowest level possible.

  Integrated Project Teams (IPTs) were established as the primary inter-contractor working level team for responding to and resolving specific issues on an as-needed, case-by-case basis. This is a valuable process that has prevented some possible undesired results.

- **Standardized Stop Work Policy**

  The Hanford site has established a uniform policy that ensures that any Hanford worker has both the responsibility and authority to stop work when the worker believes that a situation exists that places them, their coworker(s), contracted personnel, or the public at risk or in danger; could adversely affect the safe operation or cause damage to the facility; or result in a release of radiological or chemical effluents to the environment above regulatory requirements or approvals. The Stop Work policy also provides the expectations on the resolution and communication of the issue for both the worker and his/her management.

- **Site-Wide Traffic Safety**

  The Hanford Site Traffic Safety Enhancement Committee (TSEC) was established to serve as the advisory group providing consensus direction for Hanford Site Highway and vehicle issues affecting Site Contractors. The DOE-RL, DOE-ORP and affected Contractors acknowledge that a joint committee provides the best approach for identification, evaluation, and recommendations for implementing traffic safety related issues. The parties agreed to cooperate in a teambuilding manner to ensure that the full intent of the Committee's mission is met and will be responsibly carried out by their respective organizations. The committee was comprised of Hanford Site Contractors, DOE personnel and Site Labor groups.

  The committee helped to create the Hanford Transportation Safety Initiative. The purpose of this initiative was to identify near and medium-term improvements in road infrastructure, traffic operations, traffic safety education, and traffic enforcement to address traffic safety issues on the Hanford Site. The overall goal of this initiative is to get Hanford employees safely to work and home each day. The committee has also developed a positive relationship with the Benton County Sheriff's Office that has led to improvements in regard to Site enforcement activities.

3.2 DOE-RL

- **Maturity of Contractor Assurance System (CAS)**

  For fiscal year 2012, the expectation of a defined contractor performance monitoring system has matured to a point that the RL office is shifting its emphasis from leading the development and use of a CAS to simply monitoring the contractor's use of the CAS as an effective management tool. Both RL and the prime contractors now recognize the value in a performance monitoring system that is both comprehensive and flexible.

- **DOE Field Office Safety Culture Survey**

  RL has organized a Hanford site organizational climate and safety conscious work environment survey that included both the RL and ORP, including the prime contractors and their subcontractors. This survey utilizes an independent survey management and

analysis company to minimize biasing and ensure the workforce that the input to the survey will allow anonymous participation.

By using an independent survey organization, the survey was structured to provide comparison to national norms. The comparisons will be against the following categories:

- US Transitioning Companies Performance Norm
- US National Norm
- US Engineering & Construction Industry Norm

The results of the survey (expected in October 2012) will be used to establish a base line for future surveys and to measure continuous improvements.

- **National Support for ISM**

The RL assistant manager for environmental, health and safety co-chairs the ISM Champions Council at the national level. Through chairmanship as a field manager, the RL Assistant Manager for ES&H provides a first-hand perspective of the field organizations when integrated safety management policy is debated at a national level.

- **Organization Functions and Authorities Built on Healthy Tension Model**

RL has established a fundamental operational concept that the balance between operations (security, legal, human resources, safety, etc.) and production is through the management of risks. Each organization within RL is expected to perform their specific, delegated functions in support of the site missions and provide RL manager with information and recommendations that represent their organizational position (i.e., risk). RL organizations are expected to function within their assigned authorities and shall be accountable to the RL manager for their assigned responsibilities. Additionally, each supporting organization will manage their specific assigned functions as defined within the RIMS processes.

Ideally, the consensus of the RL organizations will guide the RL manager in the decision-making process. While each RL organization is expected to advocate those specific, delegated functions by the FEM, all organizations are expected to integrate the fundamental RL mission into the execution of their specific duties.

The expected result of this organizational approach is to establish a healthy, professional tension where both safety and production are evaluated and managed with the RL manager balancing the overall risks and priorities. Each RL organization is to ensure that safety is integrated into management and work practices at all levels so that RL's mission is accompanied efficiently while protecting the workers, the public, and the environment.

- **Richland Integrated Management System (RIMS)**

The RIMS provides the Richland Operations Office with structured approach to doing business. The RIMS is organized around 16 different management systems that reflect

the conduct of RL operation. Each management system is comprised of a related set of requirements-based processes and procedures used by the RL staff to perform their assigned work activities. This documented set of systems, processes, procedures, and program descriptions is kept current and accurate and is deployed electronically for easy access by all RL employees.

This system establishes clear expectations for the DOE-RL workforce and provides a unified direction to the RL staff.

- **HAMTC – RL monthly meetings**

On a monthly basis, the RL ES&H manager meets with safety representatives from HAMTC. The purpose of these meetings are to provide an additional communications tool that allows the exchange of viewpoints and clarifications of site safety issues, including noted changes in organizational behaviors. This direct communication tool reduces loss of insight and provides immediate feedback. These meetings are not intended to usurp the conventional contractor management authorities, but to obtain a broader understanding of the issues.

- **RL ESH&Q scheduled open door meeting**

The deputy RL manager has scheduled a weekly, one hour, open door period that is devoted exclusively to ES&H issues. During this time, any ES&H SME may discuss any issue of their concern, inform the deputy RL manager of any notable events, or bring to his attention any potential risks that may be up-coming in the future.

This communication mechanism has provided the ES&H SME staff with a better understanding into what goes into decisions made by the manager's office as well providing the manager's office with a better understanding of technical issues through verbal discussion.

- **Operational Awareness (OA)**

RL's operational awareness program is an informal oversight of contractor business and functional activities; baseline/fee performance; environment, safety, and health; legal; support; and program/project activities. Routine operational awareness is performed by facility representatives for day-to-day facility operations, subject matter experts for functional area implementation, project managers for performance against cost, scope, and schedule commitments, and RL management for oversight of field activities.

RL's operational awareness program executes the RL manager's commitment to promoting management awareness of project and facility conditions, and maintaining a DOE presence at field work sites. To this end, all project managers and operational support managers having responsibility for oversight of contractor projects, facilities, and activities must establish an effective monitoring program. The monitoring program should include periodic walkthroughs by RL staff and management. RL staff and managers are expected to identify field walkthrough objectives and prioritize their field

oversight activities based on risk, significance to organizational performance, and to maintain operational awareness.

The Operational Awareness Database is used to document walkthrough and field oversight results. Results are typically entered directly into the Operational Awareness database. Each RL manager is expected to track their time performing operational awareness as necessary to support their commitments. Time spent in the field may be documented in the oversight summary portion of the Operational Awareness template.

Operational awareness focuses on performance and effectiveness, rather than simple compliance with requirements. Monitoring activities may also involve reviewing baseline information, contractor fee and other performance information, contractor work products, contractor self-assessments, and contractor corrective action management activities. In addition, RL monitoring provides operational awareness of project and facility conditions, and demonstrates RL field presence and involvement.

3.3 CHPRC

- **Caught in the Act**

  A program called "Caught in the Act" (Soil & Groundwater Remediation Project [SGRP]) is a peer to peer program that rewards individuals who are observed by their peers performing a safe act. A nomination is written that describes the safety act and placed in a lock box. Individual slips are then drawn from the box and selected individuals are given two movie tickets. Examples include performing a 360 walk-around of vehicles, moving items that are a potential tripping hazard, and use of proper safety gloves for the hazard. For the month of July, the SGRP nominated 74 individuals.

- **Plutonium Finishing Plant (PFP) Personal Observation Program (POP)**

  PFP's POP is used to conduct Observations/Behaviors at risk. An individual fills out a card and turns it in. After five cards per month for an individual are submitted, they are entered for a safety award drawing. These drawings are conducted weekly with strong worker participation. The behavior questions on the cards change quarterly.

- **Worker Involvement at the engineering level**

  Worker involvement at the engineering level was observed throughout CHPRC. A representative example involved a group of craft workers who were given the opportunity by management to implement their idea that resulted in both a safer and more productive task. The task involved the inspection of a large shaft. The workers presented their concept to management and were given an opportunity to construct the apparatus. The apparatus was successful.

  Additionally, the expected end users of the sludge removal equipment were involved during the design phase. From this involvement, over 60 changes were made to the design. With the utilization of the craft worker's concepts by management, the craft

workers felt ownership of the improvements and appreciated the trust instilled in them by management.

- **QMap**

  CHPRC has designed a software package that gives first responders the location of workers in remote locations. Q Map locates the worker via GPS. The emergency dispatcher uses Q Map to determine their location.

- **Single Point of Contact**

  SGRP has developed a process to capture issues/notifications at a single point by project and then disseminate the information to employees/workers. One of the duties performed by the Single Point of Contact (SPOC) for SGRP is to communicate issues/notifications to the VP, Facility Representatives, HAMTC Safety Representatives and others, as needed. A few examples of issues that employees would call the SPOC are: First Aid/Injuries, Stop Work, and Leaks/Spills

- **Responsible Manager**

  CHPRC has developed and implemented a Responsible Manager (RM) program. The RM, as described in PRC-PRO-WKM-12115, Work Management, is accountable and responsible for the implementation of work management of a specific work scope, from its inception to completion. The RM by provides continuity throughout the work planning and implementation process.

- **Project Hazard Review Board**

  The project Hazard Review Board (HRB) as described in PRC-PRO-WKM-40004, *Hazard Review Board*, provides a method for the review of select, planned work activities (particularly complex, high-hazard tasks) and a review of hazard controls to be implemented for the work. The HRB Chairperson is a Project Manager, Vice President, or designee that has overall authority for implementation of the HRB process.

  Personnel assigned to the work activity are expected to attend the HRB to ensure, that work instructions have adequately addressed job hazards. The Field Work Supervisor (FWS) presenting the work package to the HRB must be the FWS who will oversee the high risk portion of the work and is knowledgeable of the hazards and emergency response actions. HRBs are convened to promote positive contributions toward performing work safely and provide an opportunity for the project management team to demonstrate their standards and expectations towards work instruction.

- **PFP Advanced Dress/Undress Instruction**

  The PFP Advanced Dress/Undress instruction for entering and exiting Very High Contamination Areas and Airborne Areas was developed through a collaborative effort between a Nuclear Chemical Operator (NCO) and Radiological Control Technician

(RCT). The length of time it was taking to dress and undress was created two problems; extended duration of dressing/un-dressing and unacceptable numbers of personnel contaminations. The enhanced instruction now informs all radiological workers of the expectations for entry and exiting a highly contaminated and/or airborne area, thereby reducing time and contamination events.

- **Integrated Corrective Action Plan (ICAP)**

The Integrated Corrective Action Plan (ICAP) was an integrated improvement strategy developed and approved by CHPRC and DOE-RL leadership to address performance gaps associated with four focus areas:

Corrective Action Management
Work Management
Organizational Performance
Self-Assessment and Performance Trending

The ICAP was put together in the midst of ARRA funding impacts and was critical in helping CHPRC establish expectations in these four areas which ultimately shaped the organizational culture that exists today. The ICAP went through two independent verification and validation processes (CH2MHill Corporate and DOE-RL) and was found to effectively influence the organization's behaviors and performance.

- **Plateau Remediation Company Notification System (PRCNS)**

The PRCNS is a web-based software application that allows CHPRC to notify and transmit information to selected personnel about CHPRC events. The PRCNS system pulls contact information from the Hanford PeopleCore (HPC) into pre-defined distribution lists and ad-hoc notification contacts for an event notification message. The PRCNS system can send an event notification message to each recipient's, pager, cell phone, work e-mail, and home e-mail.

- **CONOPS Mentors**

CHPRC has put into place Conduct of Operations Mentors where a cadre of senior mentors is assigned to selected CHPRC projects to mentor and promote continual improvement in conduct of work across the broad spectrum of CHPRC work activities. The goal of Conduct of Work mentoring is to affect behaviors and habits that reliably implement the principles of Human Performance Improvement (HPI) and conduct of work to ensure continuous improvement in implementation of ISMS/EMS and conduct of work.

Objectives of the program include the following:

- Error prevention is fundamental in work performance
- Awareness and questioning are ingrained habits
- Conduct of work and HPI techniques are understood and applied
- Work is performed as authorized

- Stopping work when changes or uncertainties exist is a fundamental practice
- Management expectations for safety and compliance are ingrained, measured, and rewarded

- **Target Zero**

Target Zero is a CH2M HILL initiative to foster a culture based on individual commitment to eliminating injuries, illnesses, environmental impacts, and errors/omissions. CHPRC embraces the "Target Zero" culture. Target Zero, adopted by all CH2M HILL projects and offices, is an operational and educational program that cultivates a safe work environment, fostering a 24/7 culture of safe behavior, and a continual drive towards no adverse environmental impact. CHPRC has incorporated Target Zero in its Integrated Safety Management System/Environmental Management System (ISMS/EMS) to promote a culture emphasizing a desire to have zero illnesses, injuries, environmental impacts, errors, or omissions in the performance of the PRC scope of work.

CHPRC ESH&Q policies provide management expectations for implementing this philosophy and build it into the CHPRC safety culture. To achieve Target Zero, the ISMS/EMS includes safety initiatives such as the Voluntary Protection Program, Human Performance Improvement, and the Earned Value Management System. CHPRC Safety Communications developed to promote the Target Zero culture include the Thinking Target Zero, a weekly bulletin to keep employees informed of relevant topics and objectives, and the Thinking Target Zero: Special Safety Bulletin, a real-time communication published for health, safety and environmental emergent issues.

- **Joint Safety Vision (JSV)**

The JSV is a joint document developed between CHPRC and DOE-RL to address specific areas where CHPRC has been struggling in the implementation of project activities. These areas include behaviors of management, organizational structure of the project, and empowerment of the Environmental, Safety, Health, and Quality organizations. The JSV was written to document these three agreed upon areas of concern with expectations established that provided added clarification for each area.

The JSV itself is not a requirements document in contract space, nor is it intended to supersede or conflict with any program or process, but rather to help focus energy in specific areas of programs and processes that are already in place to support improvement. In general, the JSV's implementation is integrated into various CHPRC processes; the most visible is the monthly Contractor Assurance System where process and program health is monitored. Additionally, key elements are rolled into a separate monthly document titled "CHPRC Safety Performance Metrics & Objectives" which provides a joint CHPRC-RL agreed upon goals and status of achievement.

3.4 WCH

- **Disciplined Operations Plan**

  The Disciplined Operations Plan serves as the single document that outlines how WCH is strengthening performance as the WCH project progresses towards closure. This Plan provides the strategy and general actions being taken to ensure reasonable sustainable performance to closure.

- **Performance Excellence Training**

  WCH senior leadership had conducted or received a number of assessments results over the previous months indicating respectable results however, the WCH leadership team was not completely satisfied with these results and has taken upon itself the need to drive safety to the next level. This drive for continuous improvement is necessary to ensure WCH work teams do not become complacent given the hazardous work that needs to be performed safely to complete the contract mission through 2015. Over the past several months a number of initiatives, both internal to the company and external, along with several internal issues have identified a need to have an integrated approach and common understanding of human performance improvement and safety culture.

- **Management walk-thru process (Procedure QA-1-1.14)**

  This procedure describes how Washington Closure Hanford (WCH) establishes and implements an effective management walkthrough process. This procedure describes the process for management to perform and document structured operational awareness walkthroughs of projects and facilities. In addition, WCH senior leadership has established minimum expectations for each manager to perform walk-throughs each month. This expectation is in addition to that established by the parent company. These walk-throughs are tracked each month and reported as part the contractor assurance systems.

- **President's Expectations**

  The WCH President & Project Manager published and promulgated her expectations for performance in a clear and concise manner. These expectations are found in posters and other media that start with safety performance relative to stop work, disciplined operations, individual accountability and caring for fellow employees. These expectations are discussed and provided to the workforce in company safety messages and other communications media.

- **WCH Event Notification Form**

  WCH has on its webpage, under Safety & Health, Safety a notification process (text message). This process allows the sender to distribute a brief summary of an event to a pre-determined list of WCH personnel. *For Example: Vehicle accident 100N. Dump truck struck private vehicle. No injuries. < $1000 damage. Call 373-0000 for more info.*

This notification process is described in procedure SEM-3, *Incident Response and Investigation, Event Management*. There are no access limitations to those that can create a message.

- **Safety Culture Policy**

  WCH developed and formalized its Nuclear Safety Culture Policy in document PM-ESHQ-15. This policy documents the expectation WCH management has relative to developing and strengthening its nuclear safety culture and safe work environment for all work conducted in all facilities, all areas, and by all employees on the WCH Project.

- **Closure Coaches**

  Given the nature of the WCH as closure project, WCH management has determined that it is essential to support the safe, cost-effective completion of the mission of the RCCC, retain the necessary talent until the right time, and assist employees in moving to the next phase of their career of life. To accomplish this, WCH established closure coaches staffed from the HR organization and assigned to each company organization to help the work force transition as their specific project comes to an end. These coaches help as needed and in many activities to enable and support project personnel in the transition process. WCH has been able to find available work for 80% of the exiting staff as of September 1, 2012.

- **IWCP Pre-Evolution Feedback Process**

  As part of the revised Integrated Work Control Process, WCH improved the Pre-Evolution briefing checklist (WCH-FS-210) to proactively identify issues or improvements, work technique issues or improvements, or good practices that could be useful to future work, work in other projects or to improve safety. These lessons learned that are identified proactively during the Pre-Evolutions are evaluated and used to improve future work package content or procedure activities or other routine work activities.

- **Communication**

  WCH utilizes diverse communication forms and media to ensure safety messaging reaches all employees. These forms and media include The Howler a periodic newsletter from the Local Safety Improvement teams, Weekly Safety Roundup that is a computation of daily safety messages, Daily Safety messages that provide daily safety related information from recent events, i.e., accidents, injuries, Local Safety Improvement Teams, the President Safety Committee, and Contractor Assurance Reports. In addition, WCH provides communiqués from the president. As an example, a recent president message discussed a Stop Work called by the president due to potential adverse trend in lock and tag performance.

3.5 MSA

- **Project Planning and Integration (PP&I)**

  MSA's Project Planning & Integration (PP&I) organiztion utilizes a good practice on how Employee Performance Appraisals are conducted. To facilitate the performance appraisal, PP&I has developed a list of Employee Objectives that, when completed, will reinforce the attributes associated with a good safety culture.

- **Crane and Rigging Reference Guide**

  Crane & Rigging has developed and uses a reference guide (checklist) to ensure that all steps are performed prior to initiating a lift. The checklist is adhesive and can be attached to a hardhat, note pad, equipment, etc. and remain visible during the evolution.

- **Water Utilities Director one-on-one sit downs**

  The Public Works Director has executed an open communication policy within his organization. As an example, he has conducted one-on-one conversations with each employee assigned to Water & Sewer Utilities. Initially, this dialogue served as an introduction between employee and manager. His goal is to further foster a relationship where employees feel free to bring forth safety issues, concerns, and opportunities for improvement, or anything that may cause distraction.

- **Information Management Dedicated HAMTC Safety Representative**

  The Information Management organization, which includes approximately 450 Lockheed Martin Services Incorporation (LMSI) employees, was introduced to ISMS and VPP in fiscal year 2010. MSA assigned a HAMTC Safety Representative to mentor and educate appropriate management, employees, and bargaining unit personnel on the core functions and guiding principles of ISMS and VPP tenets.

  Engaging a HAMTC Safety Representative to mentor employees not previously involved in ISMS or VPP is viewed as a good practice. Their involvement was instrumental in the success of this organization's implementation of ISMS and VPP.

- **.ISMS Surveillance Team**

  The MSA ISMS surveillance team consists of HAMTC bargaining unit workers and subcontracted technical experts that provide ongoing evaluation/ feedback/ mentoring of field work activities. This activity is performed to enhance the sustainability and maintainability of the MSA ISMS program elements, consistent with the ISMS System Description, the Annual ISMS Declaration of Readiness, and the FY 2012 ISMS Surveillance Team Plan.

  MSA endorses continual in-depth evaluations, mentoring, and coaching of MSA personnel performing and supervising work processes at the facility, project, sub-project, and/or activity level, including construction activities. The team evaluation strategy is

designed to provide immediate feedback to MSA management (including senior leadership) relative to ISMS implementation in the field and complete a "reality check" on ISMS process use and efficiency.

- **Company New Employee Orientation**

  It was recognized that new employees and those who transferred to MSA through the "bump and roll" process were not adequately briefed on the company's expectations for "do work safely", Target Zero, and associated safety culture attributes. To remedy this, a new employee safety orientation presentation was developed and added to MSA's Human Resource's "on-boarding" agenda. When assigned to their organization, new employees also receive orientation specific to their workgroup or project.

- **VPP Trimester Assessments**

  Participating VPP sites are required to conduct an annual self-assessment. To conserve time and resources, MSA subdivided the focus areas for the annual VPP evaluation into three manageable assessments to be performed on a trimester basis. Immediate feedback of strengths and weaknesses are communicated to the respective Vice President which allows for ongoing improvements and focus areas as opposed to a once a year "snapshot in time". Results of the trimester evaluations will be consolidated into the annual VPP self-assessment report and subsequently submitted to DOE HQ in February the following year. This process was viewed as commendable by MSA's DOE-RL customer.

- **Integrated Approach to Management of Risks**

  MSA is responsible for implementing an integrated approach to the management of risks that supports successful execution and completion of the contract work scope. The Risk Analysis, Processing and Reporting process establishes the requirements and work process for management of risks associated with the execution of work scope under the Mission Support Contract (MSC). Risk analysis includes key processes to accomplish efficient and cost-effective measures to manage risks.

- **Worker Involvement**

  The Hanford Fire Department (HFD) established a committee that addresses issues regarding the use and safety of required PPE. Whenever there is an issue with their PPE, fire fighters feel free to report their concerns to the Committee. The Committee evaluates the affected PPE and researches how to best improve the situation. This is a good practice and demonstrates involvement of the workers.

  MSA maintains a robust Zero Accident Council that is structured and operates on a "bottoms up" approach. As issues are identified in the field or office environment, information provided by workers is elevated to appropriate safety and management personnel. The originator of the issue is involved in the resolution process.

MSA management encourages all employees to submit safety or environmental topics they feel worthy of incorporating into weekly "Safety Starts". These topics do not necessarily have to be related to work place hazards; MSA strongly endorses a 24/7 safety culture. "Safety Starts" are shared at Monday morning back-to-work meetings and intended to stimulate conversation within work groups on safety or environmental related issues.

The Fire Systems Maintenance group includes workers in the planning of preventive maintenance packages, which includes both corrective maintenance and acceptance testing packages.

Appendix A

Good Practices Database

Safety Culture Evaluation Good Practices

Evaluation No	Type of Evaluation	Subject	Evaluation Date	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-CHPRC-2012-SC-001	GP	Tailgate Meeting/SAC Call	7/30/12	CHPRC/ S&GW/ 200W Pump & Treat	None	N/A	Program called "Caught in the Act" is a peer to peer program that rewards individuals who are observed by their peers performing a safe act. Nominations are written that describes the safety act and placed in a lock box. Individual slips are then drawn from the box and selected individuals are given two movie tickets. Examples include performing a 360 walk-around of vehicles, moving items that are a potential tripping hazard, and use of proper safety gloves for the hazard. For the month of July, the groundwater project nominated 74 individuals.	Observed that audience participation was limited. There was good participation on the SAC call.
ISMS-CHPRC-2012-SC-002	GP	Plateau Remediation Company Notification System (PRCNS)	7/30/12 - 8/3/12	CHPRC	Senior Management	N/A	The PRCNS is a web-based software application that allows CHPRC to notify and transmit information to selected personnel about CHPRC events. The PRCNS system pulls contact information from the Hanford PeopleCORE (HPC) into pre-defined distribution lists and ad-hoc notification contacts for an event notification message. The PRCNS system can send an event notification message to each recipient's, pager, cell phone, work e-mail, and home e-mail.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/I OI	Evaluation Summary	Comments
ISMS-CHPRC-2012-SC-003	GP	PFP morning plan-of-the-day meeting and day visit	7/31/12	CHPRC/ PFP	Plan of the day/ site visit/ facility personnel	N/A	The PFP morning brief is very robust with a great approach to include everyone in attendance. All the work assigned for the day was discussed and resources aligned to meet the needs for the day. A great opportunity with an open exchange for ideas and issues with peer/ leadership groups before the day gets started. Very good practice with daily brief OS/IH team every morning. This group discusses common subject area content which fosters a collaborative understanding between each of these CHPRC safety departments work/project groups. The team can communicate/ distribute the information that has relevance to all the workers in the work groups in an immediate fashion.	None
ISMS-CHPRC-2012-SC-004	GP	PFP POP Program	7/31/12	CHPRC/ PFP	HAMTC Safety Rep	N/A	PFP has a program called the Personal Observation Program (POP). This program is used to conduct Observations/ Behavior at risk. An individual fills out a card and turns it in to the appropriate individual. After turning five cards per month they are put in a drawing for a pair of movie tickets. These drawings are conducted weekly with good worker participation. The questions on the cards change quarterly.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Date	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-CHPRC-2012-SC-005	GP	Work Management	7/31/12	CHPRC/ PFP Closure/ PFP	Plan of the day with management	N/A	Attended plan-of-the-day (POD) meeting held in MO-273. A safety topic was continued from the day before concerning a HEPA filter change out or removal from a glovebox. The job sounds simple and routine but there were complications concerning wire mesh on the filter. The wire mesh was protruding out and poking through the plastic bags and duct tape used to seal the contamination in the bag. The NCO's were very careful and packaged the filter with added layers without spreading contamination and injuring themselves. A success story and example of a good safety culture. There were three pages of work planning covered in the POD with each page representing 15-20 jobs for the day. The leader went through each job and confirmed the readiness and resources to complete the work. This happened quickly and was very useful. All present were attentive and down to business, very professional. If anyone had a problem it was talked about and help was given to some who	This is an example of the Safety Culture that was observed. It shows the good practice CHPRC is utilizing at PFP and this helps the workers keep a good and healthy safety culture on the job.
ISMS-CHPRC-2012-SC-006	GP	Work Management	7/31/12	CHPRC/ PFP Closure/ PFP	Plan of the day with management	N/A	A post-job review presentation was given to the group. The presenter explained the reason for post-job reviews and how to conduct them, who should conduct a post-job review. The presenter also quoted the procedure attachment that lists requirements for giving post-job review. The presenter explained this is unsatisfactory and all workers should be involved that are working a job that requires a post-job.	This is an example of the safety culture that was observed. It shows the good practice CHPRC is utilizing at PFP and this helps the workers keep a good and healthy safety culture on the job.

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ISMS-CHPRC-2012-SC-007	GP	Work Management	7/31/12	CHPRC/ PFP Closure/ PFP	Plan of the day with management	N/A	While interviewing a craft worker the Safety Culture team heard how the worker and a few of his peers were given the opportunity to approach management with a better idea. The workers needed a way to hold a large shaft while inspecting it so they designed a mechanism to do this. The workers presented it to their management and engineers, and were given a green light to build the apparatus. The workers built the apparatus and it worked well. The workers appreciated this respect and felt ownership in their work.	This is an example of the Safety Culture that was observed. It shows the good practice CHPRC is utilizing at PFP and this helps the workers keep a good and healthy safety culture on the job.
ISMS-CHPRC-2012-SC-008	GP	Soil & Ground Water Monday back-to-work meeting	7/30/12	CHPRC/ S&GW/ 2268E	None	N/A	CHPRC designed software that gives first responders the location of the workers in remote locations. Q Map locates the worker via GPS and well number identification. The emergency dispatcher uses Q Map and uses information from caller about which well they are to determine from their location from Q Map if QMAP needs to be identified and explained.	This is a good practice and by practicing it the organization will keep injuries and hazards under control.
ISMS-CHPRC-2012-SC-009	GP	Soil & Ground Water Monday back-to-work meeting	7/30/12	CHPRC/ S&GW/ 2268E	None	N/A	Soil & Ground Water discovered a new resin they could use to treat the contaminated water. The new resin lasts much longer than the old and this saves operators from replacing the old resin as often. Reducing the work load reduces associated hazards plus it saves large amounts of money in product, manpower, and shipping.	This is a good practice and by practicing it the organization will keep injuries and hazards under control.

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ISMS-CHPRC-2012-SC-010	GP	Shift Office Single Point of Contact	7/30/12	CHPRC/ S&GW	Rep from Operations Assurance	N/A	Soil & Groundwater Remediation Project (SGRP) has developed a process to capture issues/ notifications at a single point and then disseminate the information to employees/workers. One of the duties performed by the Single Point of Contact (SPOC) for SGRP is to communicate issues/ notifications to the VP, Fac Rep, HAMTC Safety Rep and others as needed. A few examples of issues that employees would call the SPOC for would be: - First Aid/Injuries - Stop Work - Leaks/Spills - Well Access Problems	None

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ISMS-CHPRC-2012-SC-014	GP	Responsible Manager	7/30 - 8/2/12	CHPRC	(3) Responsible Manager, Managers, (2) Planners, (2) FWS	N/A	Based on several interviews with Responsible Managers (RM), planners, and FWSs at S&GW, PFP, and 100K it appears that CHPRC has established a "Good Practice" in the development and implementation of the RM program. The process for the RM program is described in PRC-PRO-WKM-12115, Work Management, Section 2.8. The RM is an individual accountable and responsible for the implementation of work management for specific body of work from its inception to completion by providing continuity of purpose and understanding throughout the work planning and implementation process. The RM must meet the qualification requirements specified in a CHPRC training course and Project specific qualification courses. Some of the basis responsibilities include the following: - Implements Integrated Safety Management (ISM) Core Functions and Guiding Principles and Environment Management System (EMS) Core Elements through the work management process. - Confirms that work is/is not radiological work according to the definition in CHPRC requirements documents. - Determines if work activities are skill-based or beyond skill-based with input from the FWS, Planner and workers, as needed. - Performs final arbitration for comment resolution. - Supports FWS in resolving issues when performing work.	None

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ISMS-CHPRC-2012-SC-020	GP	Hanford Job Specific Beryllium Work Permit	7/31/12	CHPRC/ PFP Closure/ PFP	Industrial Hygienist	N/A	On Tuesday afternoon a training meeting was held at MO-273 for employees at PFP. These employees were exempt employees. The meeting was to train them on the new Beryllium Work Permit (BWP). The Industrial Hygienist (IH) manager and IH Technician (IHT) lead presented the training. The BWPs (three) were reviewed with employee's present. After explaining to the group present the employees were given the opportunity to ask questions. There were numerous questions and by a majority of the employees. The questions were very good and the IH manager could not answer them all. The IH manager explained that the BWPs were written downtown without input from these employee's or others that will be using them at PFP. After much discussion and controversy, the conduct of operations manager spoke up and declared there is action to take and that the employee's present were not going to be able to clear up the issues that were brought up. The problem is that these BWPs are finalized and that the IH manager and lead were to go and train another group immediately following this meeting.	This is an example of good practices, using the questioning attitude to clear up issues before the changes are made. The IH manager and lead went to the safety manager and were explaining the issues. It appears they will be revising or rewriting the BWPs. This will help with the concerns of the workers.

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ISMS-CHPRC-2012-SC-022	GP	Workers Promoted to Field Work Supervisor	7/31/12	CHPRC/ PFP Closure/ PFP	Electrician FWS, RCT FWS	N/A	Based on interviews with workers, HAMTC FWSs and FWSs, it appears that PFP has implemented an effective process that enables promoting workers to FWS. PFP has promoted six HAMTC members to FWSs. These selected individuals are required to pass the same qualification program as the exempt FWSs. This program ensures that enough qualified FWSs are available to account for planned or unplanned absences and heavy schedules. Because these individuals are not only qualified and have actual hands on experience, the workers have confidence in their capabilities and trust their input and decisions.	None
ISMS-CHPRC-2012-SC-023	GP	Good Practice at PFP	7/31/12	CHPRC/ PFP Closure Project/ PFP	NCOs in the Operations Mobile Office	N/A	PFP has enlarged blue prints of rooms placed on magnetic eraser boards that are used in pre-job briefs. The boards identify the placement of CAMS, phones with listed numbers, bottle carts, etc. This is a great visual tool.	None

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ISMS-CHPRC-2012-SC-025	GP	PFP Training Information Bulletin #2012-001	7/31/12	CHPRC/ PFP	Plan of the Day/ Site Visit/ Facility Personnel		The PFP fan incident story was told to us by a worker who was involved from cradle to grave. The situation was not favorable as the fan failed and broke due to, workers opinion, lack of preventive maintenance. The good practice in the mind of the employee was the response f rom the PFP team to engage knowledgeable and qualified workers along with the engineering department to decipher the potential problem and create a fix that will be long lasting and safety based. This employee said he has never been part of such good work and caring process before. This all happened from a post-job discussion.	Lots of good examples and discussion across the board with the opportunity of this is evident in briefings - most of those interviewed gave positive comments on this practice.
ISMS-CHPRC-2012-SC-026	GP	Good Practice at PFP	7/31/12	CHPRC/ PFP Closure Project/ PFP	NCOs		The 4H program for workers performing a peer check of equipment prior to entering an ARA. The 4H stands for inspection of Housing, Hose, HEPA (filter) and Hood. After completing the peer check a four leaf clover is place on their co-workers.	CHPRC has some great programs.

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ISMS-CHPRC-2012-SC-028	GP	Interview with QA Employees, CHPRC Work Site Assessment Report	8/2/12	CHPRC/ STP/ Fed Bldg.	QA Employees	N/A	D&D/ STP (DWF&RS) QA employees work to a PRC-PRO-QA-40091, Revision 3. This is a review of STP assessments/ surveillances/ observations and CR's generated FYTD to identify any potential trends. A review of STP MA's, WSA's, MOP's, QA's and CR's resulted in a list of many OFI's. These OFI's were then binned to enable a track and trend process. The QA employees entered this information into a data base and are also given to the managers of the respective work groups.	This is a good practice and should be noted as so.

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ISMS-CHPRC-2012-SC-030	GP	Good Practice Hazard Review Board	7/30/12 - 08/02/12	CHPRC	HRB Chairpersons, FWS, Administrative Support, Workers	N/A	Based on interviews with HRB chairpersons, FWSs, administrative support (supports with minutes, schedules the meeting, etc.) and workers, it appears that CHPRC has effectively implemented a "Good Practice", the Project Hazard Review Board. This board provides a method for the review of select planned work activities (particularly complex, high-hazard tasks) and a review of safety measures that are implemented to support this work. HRB Chairperson is the Project Manager, Vice President, or designee that carries overall authority for implementation of the HRB process as described in PRC-PRO-WKM-40004, Hazard Review Board. Bargaining unit personnel attend the HRB and are expected to provide additional information, as needed, regarding work planning assumptions, workability of the work documentation. They will also ensure, for a worker's standpoint, that work instructions have adequately addressed job hazards. The FWS presenting the work package to the HRB must be the FWS who will oversee the high risk portion of the work and is knowledgeable of the hazards and emergency response actions. HRBs are convened to promote positive contributions toward performing work safely and provide an opportunity for the project management team to demonstrate their standards and expectations towards work instruction, and for personal who lead the work activities.	None

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ISMS-CHPRC-2012-SC-031	GP	Plan-of-the-day Meeting	8/1/12	CHPRC/ 100K/ Sludge Retrieval	Sludge Retrieval Managers	N/A	Attended meeting in the 3rd floor conference room at the Federal Building with managers from 100K Basin Sludge Removal. The meeting was professional and the participants were knowledgeable. The list of activities for the next 30 days was lengthy. It had approximately 294 items on the list. The Lead went through each item and the corresponding manager reported the status. It was impressive.	This communication is a good practice and beneficial to all with interest in the project.
ISMS-CHPRC-2012-SC-032	GP	WESF Plan-of-the-day Meeting	8/1/12	CHPRC/ WESF	Manager, EZAC Chair, BU Worker	N/A	Attended the plan-of-the-day meeting and the Employee Zero Accident Counsel (EZAC). The manager communicated activities for the day. Good information. The EZAC meeting was held and run by a bargaining unit worker. The worker did an excellent job. The worker had an agenda and shared extra safety information with the group. The EZAC gave a large number of awards and voted on Employee of the Month. There were seven candidates nominated with various reasons of nomination, all safety related. An ALARA presentation was given and the lead asked for volunteers to reassess some areas and several volunteers stepped forward. Safety Project good news 3.5 million hours, without lost work day. They have gone one year without a DART injury.	None

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ISMS-CHPRC-2012-SC-039	GP	Good Practice at PFP	7/31/12	CHPRC/ PFP Closure Project/ PFP	NCOs	N/A	The PFP Advanced Dress/ Undress Instruction: a. A NCO and RCT put this program together for entering and exiting Very High Contamination Areas/ Airborne Areas. They had observed the length of time it was taking to dress and undress and the problems that were occurring during this process. b. This training allows workers who are inexperienced with highly contaminated work to know exactly what to expect and that the NCOs and RCTs will be there to support them.	CHPRC has some great programs.
ISMS-CHPRC-2012-SC-050	GP	100K Sludge Treatment Best Practice	8/6/12	CHPRC/ Sludge Treatment/ 100K	Manager of Operations	N/A	Upon visiting with the Manager of Operations, the Safety Culture team asked for good practices to report on. The manager spoke of how the NCOs asked for better PPE. The NCO's wear double Anti-C's and with the high temperature and humidity in the basin, this made for very hot and uncomfortable working conditions. Management decided to look for a better PPE to provide for the workers. A garment was found that is supposed to be more breathable and water resistant. The suits have only been here a short time and the group is still deciding on how well the suits work.	The fact that the company is willing to help the workers do their jobs better and in more comfort builds a culture of mutual respect that also helps workers want to do a better job safely and by procedure.

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ISMS-CHPRC-2012-SC-051	GP	CSB/ LEF CHPRC	8/2/12	CHPRC/ CSB/ LEF	Work Planners, supervisors, workers	N/A	The maintenance department has developed a very realistic goals chart for CSB. The document is on the wall of the foray of the facility - using a high visible transparent poster for everyone to review. This allows everyone in the facility to see the actions taken and the status of these actions. The companion documents show where the goals charts are listed since the department is spread out over several buildings. This is also another companion document that tracks the status of evidence based for the closure items. Great job on this piece - it shows activity and truism to the team's efforts for improvements. REAP Bulletin B2010-003, April 2010, was posted up at CSB and LEF so we assumed this document "Expectations of the Management Team" was in play all over the CHPRC. However, this may be limited to select Waste and Fuels facilities. We believe this is a very good document to steer management and others to positive steps in reaching a "stronger safety culture through continued improvement" words from the poster. A great document to update and continue to grow. Poster "Guide to Safe Work Environment" is a commitment to free flow of information, "A letter to all members of my work group". This poster is signed by all of the CHPRC executive leadership team. Its principal doctrine is how to and what is expected when addressing presentation to the work force that spells out clear expectation for management/ worker relations for employees that have serious concerns. In its summary it offers a plea that says my goal is to be your choice for resolutions. Again a clear	None

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							statement from management for a trying to be part of the safety process to workers. We did hear good things from the planning department on how they review and incorporate lessons learned in the planning process. There are some post-job reviews being conducted in certain jobs that have provided some great feedback for improvement. Planners do walk-downs of the jobs with the subject matter experts and workers in some cases.	
ISMS-CHPRC-2012-SC-054	GP	Good practice at PFP	7/31/12	CHPRC/ PFP Closure Project/ PFP	NCOs	N/A	The CAC (Congested Area Checklist) is used to ensure congested area work hazards are identified and mitigated to avoid injuries.	CHPRC has some great programs.
ISMS-CHPRC-2012-SC-055	GP	Good Practice at PFP	7/31/12	CHPRC/ PFP Closure Project/ PFP	NCOs	N/A	The Operational Guidance Document provides best practice developed from lessons learned and corrective actions of several supplied breathing air work evolutions. This is a great document and has put numerous procedures into one document. It describes the following aspects of the supplied breathing air process: - Roles and Responsibilities - Dress and undress - Containment tent configuration - Hose management - Emergency Response - Notifications	CHPRC has some great programs.

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ISMS-CHPRC-2012-SC-056	GP	Best Practice of Process Equipment Removal Team (PERT)	8/27/12	CHPRC/ PFP Closure Project/ PFP	N/A	N/A	PFP utilizes the PERT (Process Equipment Removal Team) approach to perform D&D work. This appears to be a good practice as the team members form a close and congenial working group to achieve the same goal. The team must consist of workers that are able to work well together. Team members attend the Hazard Review Board for input on the work package and together perform a field walk-down of the work to be performed.	None
ISMS-CHPRC-2012-SC-059	GP	Integrated Corrective Action Plan (ICAP)	7/30/12 - 8/3/12	CHPRC	Senior Management	N/A	The ICAP was an integrated improvement strategy developed and approved by CHPRC and DOE-RL leadership to address performance gaps associated with four focus areas: Corrective Action Management Work Management Organizational Performance Self-Assessment and Performance Trending The ICAP was put together in the midst of ARRA funding impacts and was critical in helping CHPRC establish expectations in these four areas which ultimately shaped the organizational culture that exists today. The ICAP went through two independent verification and validation processes (CH2MHILL Corporate and DOE-RL) and was found to effectively influence the organization's behaviors and performance.	None

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ISMS-CHPRC-2012-SC-060	GP	Con Ops Mentor	7/30/12 - 8/3/12	CHPRC	Senior Management	N/A	CHPRC has put into place Conduct of Operations Mentors where a cadre of senior mentors are assigned to selected CHPRC projects to mentor and promote continual improvement in conduct of work across the broad spectrum of CHPRC work activities. The goal of Conduct of Work mentoring is to affect behaviors and habits that reliably implement the principles of Human Performance Improvement (HPI) and conduct of work to ensure continuous improvement in implementation of ISMS/EMS and conduct of work. Objectives of the program include the following: • Error prevention is fundamental in work performance • Awareness and questioning are ingrained habits • Conduct of work and HPI techniques are understood and applied • Work is performed as authorized • Stopping work when changes or uncertainties exist is a fundamental practice • Management expectations for safety and compliance are ingrained, measured, and rewarded	None

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ISMS-CHPRC-2012-SC-061	GP	Joint Safety Vision	7/30/12 - 8/3/12	CHPRC	Senior Management		The JSV is a joint document developed between CHPRC and DOE/RL to address specific areas where CHPRC has been struggling in the implementation of project activities. These areas include behaviors of management, organizational structure of the project, and empowerment of the Environmental, Safety, Health, and Quality organizations. The JSV was written to document these three agreed upon areas of concern with expectations established that provided added clarification for each area. The JSV itself is not a requirements document in contract space, nor is it intended to supersede or conflict with any program or process, but rather to help focus energy in specific areas of programs and processes that are already in place to support improvement. In general, the JSV's implementation is integrated into various CHPRC processes, the most visible is the monthly Contractor Assurance System where process and program health is monitored. Additionally, key elements are rolled into a separate monthly document titled "CHPRC Safety Performance Metrics & Objectives" which provides a joint CHPRC/RL agreed upon goals and status of achievement.	None

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ISMS-CHPRC-2012-SC-062	GP	Target Zero	7/30/12 - 8/3/12	CHPRC	Senior Management	N/A	Target Zero is a CH2M HILL initiative to foster a culture based on individual commitment to eliminating injuries, illnesses, environmental impacts, and errors/omissions. CHPRC embraces the "Target Zero" culture. Target Zero, adopted by all CH2M HILL projects and offices, is an operational and educational program that cultivates a safe work environment, fostering a 24/7 culture of safe behavior, and a continual drive towards no adverse environmental impact. CHPRC has incorporated Target Zero in its Integrated Safety Management System/Environmental Management System (ISMS/EMS) to promote a culture emphasizing a desire to have zero illnesses, injuries, environmental impacts, errors, or omissions in the performance of the PRC scope of work. CHPRC ESH&Q policies provide management expectations for implementing this philosophy and build it into the CHPRC safety culture. To achieve Target Zero, the ISMS/EMS includes safety initiatives such as the Voluntary Protection Program, Human Performance Improvement, and the Earned Value Management System. CHPRC Safety Communications developed to promote the Target Zero culture include the Thinking Target Zero, a weekly bulletin to keep employees informed of relevant topics and objectives, and the Thinking Target Zero: Special Safety Bulletin, a real-time communication published for health, safety and environmental emergent issues.	None

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ISMS-DOE-2012-SC-001	GP	Transition of Contractor Assurance System (CAS) Maturity	9/5/12	DOE-RL	None	N/A	For fiscal year 2012, the expectation of a defined contractor performance monitoring system has matured to a point that the RL office will shift its emphasis to monitoring the RL prime contractor's CAS in lieu of driving the need for a system requiring quarterly briefings. Both RL and the prime contractors now recognize the value in a performance monitoring system that is both comprehensive and flexible.	None
ISMS-DOE-2012-SC-002	GP	First DOE Field Office Safety Culture Survey	9/5/12	DOE-RL	None	N/A	RL has organized a Hanford site organizational climate and safety conscious work environment survey that covered both the RL and ORP, including the prime contractors and their subcontractors. This survey utilizes an independent survey management and analysis company to minimize biasing and ensure the workforce that the input to the survey will allow anonymous participation. By using an independent survey orgaznization, the survey can be structured to provide comparison to national norms. The comparisions will be against the following categories: - US Transitioning Companies Performance Norm - US National Norm - US Engineering & Construction Industry Norm The results of the survey will be used to establish a base line for future surveys and to measure continuous improvement.	None

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ISMS-DOE-2012-SC-003	GP	Standardized Stop Work Policy	9/5/12	DOE-RL	None	N/A	The Hanford site has established a uniform policy that ensures that any Hanford worker has both the responsibility and authority to stop work when the worker believes that a situation exists that places them, their coworker(s), contracted personnel, or the public at risk or in danger; could adversely affect the safety operation or cause damage to the facility; or result in a release of radiological or chemical effluents to the environment above regulatory requirements or approvals. The Stop Work policy also provides the expectations on the resolution and communication of the issue for both the worker and his/her management.	None
ISMS-DOE-2012-SC-004	GP	National Support for ISM	9/5/12	DOE-RL	None	N/A	The RL assistant manager for environmental, safety and health co-chairs the ISM Champions Council at the national level. Through chairmanship as a field manager, the RL assistant manager for ES&H provides a first-hand perspective of the field organizations when integrated safety management policy is debated at a national level.	None

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ISMS-DOE-2012-SC-005	GP	Organization Functions and Authorities Built on Healthy Tension Model	9/5/12	DOE-RL	None	N/A	RL has established a fundamental operational concept that the balance between operations (security, legal, human resources, safety, etc.) and production is through the management of risks. Each organization within RL is expected to perform their specific, delegated functions in support of the site missions and provide RL manager with information and recommendations that represent their organizational position (i.e., risk). RL organizations are expected to function within their assigned authorities and shall be accountable to the RL manager for their assigned responsibilities. Additionally, each supporting organization will manage their specific assigned functions as defined within the RIMS processes. Ideally, the consensus of the RL organizations will guide the RL manager in the decision-making process. While each RL organization is expected to advocate those specific, delegated functions by the FEM, all organizations are expected to integrate the fundamental RL mission into the execution of their specific duties. The expected result of this organizational approach is to establish a healthy, professional tension where both safety and production are evaluated and managed with the RL manager balancing the overall risks and priorities. Each RL organization is to ensure that safety is integrated into management and work practices at all levels so that RL's mission is accompanied efficiently while protecting the workers, the public, and the environment.	None

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ISMS-DOE-2012-SC-006	GP	Richland Integrated Management System (RIMS)	9/5/12	DOE-RL	None	N/A	The RIMS provides the Richland Operations Office with structured approach to doing business. The RIMS is organized around 16 different management systems that reflect the conduct of RL operation. Each management system is comprised of a related set of requirements-based processes and procedures used by the RL staff to perform their assigned work activities. This documented set of systems, processes, procedures, and program description is kept current and accurate and is deployed electronically for easy access by all RL employees. This system establishes clear expectations for the DOE-RL workforce and provides a unified direction to the RL staff.	None

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ISMS-DOE-2012-SC-007	GP	Site Wide Safety Standards	9/5/12	DOE-RL	None	N/A	The goal of the DOE-RL Site-Wide Organization's governing document, the Hanford Site-Wide Standards Management Plan (MSC-MP-41080) is to have site-wide standards and standardized training where there are similar hazards, requirements, and worker expectations. This effort is directed by the DOE Office of Health, Safety, and Security (HSS) in 10 CFR 851.11 of the Worker Safety and Health Program. Since Hanford Site workers may perform work in facilities controlled by multiple Hanford Site contractors, safety can be improved by having such standards and training in place. The desired outcome of the Plan is to establish site-wide standards and standardized training that provides a consistent approach for workers to perform work safely on the Hanford Site. The process defined in the Plan is designed to achieve collaboration from the U.S. DOE, all affected contractors, the Hanford Atomic Metals Trades Council (HAMTC) and the Central Washington Building and Construction Trades Council (CWB & CTC) on the Hanford Site.	None

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ISMS-DOE-2012-SC-008	GP	Operational Awareness	8/20/12	DOE-RL	Assistant Manager for Safety and Environmental	N/A	RL's operational awareness program is an informal oversight of contractor business and functional activities; baseline/fee performance; environment, safety, and health; legal; support; and program/project activities. Routine operational awareness is performed by facility representatives for day-to-day facility operations, subject matter experts for functional area implementation, project managers for performance against cost, scope, and schedule commitments, and RL management for oversight of field activities. RL's operational awareness program executes the RL manager's commitment to promoting management awareness of project and facility conditions, and maintaining a DOE presence at field work sites. To this end, all project managers and operational support managers having responsibility for oversight of contractor projects, facilities, and activities must establish an effective monitoring program. The monitoring program should include periodic walkthroughs by RL staff and management. RL staff and managers are expected to identify field walkthrough objectives and prioritize their field oversight activities based on risk, significance to organizational performance, and to maintain operational awareness. The Operational Awareness Database is used to document walkthrough and field over-sight results. Results are typically entered directly into the Operational Awareness database. Each RL manager is expected to track their time performing operational awareness as necessary to support their commitments. Time spent in the field may be documented in the	None

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							oversight summary portion of the Operational Awareness template. Monitoring field operations is useful for evaluating contractor performance to ascertain program status and compliance with the contract in the facilities. Operational awareness focuses on performance and effectiveness, rather than simple compliance with requirements. Monitoring activities may also involve reviewing baseline information, contractor fee and other performance information, contractor work products, contractor self-assessments, and contractor corrective action management activities. In addition, RL monitoring provides operational awareness of project and facility conditions, and demonstrates RL field presence and involvement.	

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/I OI	Evaluation Summary	Comments
ISMS-MSA-2012-SC-001	GP	Performance Appraisal	8/7/12	MSA/ PP&I/ PM	Project Management	N/A	Based on interviews with Project Management personnel it appears that Project Planning & Integration (PP&I) has a good practice on how Employee Performance Appraisals are conducted. To facilitate the performance appraisal, PP&I has developed a list of Employee Objectives that when completed will reinforce the attributes associated with a good safety culture. Some of the objectives are: - Leadership Focus Area * Safety Complete projects (activities) with NO INCIDENTS * Conduct weekly Project Team meetings with minutes * Become a champion of a project related procedure and develop a presentation to present to the group * Develop detailed, accurate, and useful project schedules in the project planning stage (this will assist in preventing schedules over safety) - Employee Engagement Focus Area * Attend and actively participate in PZAC/EZAC meetings * Communications - Good; Correct Form - Organizational Learning Focus Area * Develop and foster integrated teams * CAMS/IIFs - Lead corrective actions and have no delinquent actions. * Produce transaction requests and BCRs in a timely fashion to record project changes.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Date	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-MSA-2012-SC-005	GP	Crane and Rigging Reference Guide	8/8/12	MSA/ SI&L/ C&R	Crane and Rigging Manager	N/A	Crane & Rigging has developed and uses a reference guide (checklist) to ensure that all steps are performed prior to initiating a lift. The checklist is adhesive and can be attached to a hardhat, note pad, equipment, etc. Some of the items on the checklist are: - The work package or work instructions are complete and understood by all personnel involved with the lift. - Special written requirements, work procedures, manufacturer's requirement or other required information pertaining to the lift has been considered. - Pre-lift meeting held with participating personnel. Lifting points or attachment points have been inspected. - Spotter has been assigned for mobile crane working within extendable boom length of power lines and Utilities have been notified the day the work takes place. - Lifting points or attachment points have been inspected. - Do not proceed with lift until work area is clear of personnel that are non-essential to the lift.	None
ISMS-MSA-2012-SC-006	GP	WSCF	8/8/12	MSA/ WSCF	WSCF Analytical Lab Worker, and WSCF Environmental Site Services	N/A	WSCF extends beyond the minimum requirements of the Lock and Tag Program. Not all work requires a robust LOTO practice but this facility still applies the practice in most cases for a safer behavior process.	None

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ISMS-MSA-2012-SC-009	GP	Maintenance Services	8/9/12	MSA/ Maintenance Services	Manager	N/A	Maintenance Services personnel think the Lock and Tag Controlling Organization team (consisting of supervisors, technical authority, etc.) have a questioning attitude in the field all the time and makes our program sound. Senior Management keeps them all receiving consistent information in routine staff meetings and gives them his expectations and keeps the three managers together as a team. They feel Senior Managements' mentoring is needed to learn new things and this keeps them clear on new requirements, etc.	None
ISMS-MSA-2012-SC-011	GP	Maintenance Services	8/9/12	MSA/ Maintenance Services	FWS		There is open feedback from workers (crafts) and FWS and Managers in the maintenance services organization. They keep the dialogue friendly and open which allows 2-way communication.	None
ISMS-MSA-2012-SC-012	GP	Maintenance Services	8/9/12	MSA/ Maintenance Services	Sign Painter		The worker thinks that safety culture is very good here and the managers are doing what they need to do in order to come to conclusions and get safety issues rectified.	None

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ISMS-MSA-2012-SC-021	GP	MSA Custodial	8/8/12	MSA/Custodial	Supervisors/Workers	N/A	The workers felt very strong about the shared good ideas everyday in their kick off meetings. This approach allow for future discussions on basic ideas about safety and anything else.	We believe the group would not be successful without the current relationship with their supervisors and manager.
ISMS-MSA-2012-SC-039	GP	WSCF PCB Screenings	8/8/12	MSA/ WSCF	WSCF Analytical Lab Worker and WSCF Environmental Site Services	N/A	They perform screenings on every sample in the lab now identified as containing PCBs and by doing this it helps segregate where the sample needs to go for the right work group to perform analysis. Screenings also present the potential for a clearer hazard analysis up front; this helps determine with certainty the level of hazardous waste process which helps with the material stream process. NOTE: This process has been sanctioned by the Dept. of Ecology as well.	None

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ISMS-MSA-2012-SC-046	GP	Good Practice Employees List of Issues	8/8/12	MSA/ SIL/ WU	Manager	N/A	When current Director was assigned to Public Works, one of his first endeavors was to sit down one-on-one with each employee within Water & Sewer Utilities. In addition to wanting to better know the employee, he asked each person to relate to him, anonymously if necessary, any safety issues or concerns, safety improvements, and anything that is bothering them. A few weeks ago, the director presented to the employees (based on results from the interviews) "this is where we were and a list of what needs to be done". Based on actions they have completed and what needs to be done, this is the list of where they are today. Each employee was asked to report back 2-3 issues that are most important to them. From this, a list of approximately twenty issues was identified and prioritized. This list will be tracked and trended and periodically reviewed with the employees.	None
ISMS-MSA-2012-SC-053	GP	MSA Information Management	8/7/12	MSA/ IM/ Cyber Security	HAMTC Safety Rep., Manager, Bargaining and Exempt Personnel	N/A	Information Management was new to ISMS and the VPP program in 2010. A dedicated HAMTC Safety Representative was provided to the organization to mentor management and bargaining personnel about ISMS and VPP. This is considered a Best Practice due to the success of this organization. Having a VP that make workers feel they care about their safety. The groups have participated in Kizan workshops.	None

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ISMS-MSA-2012-SC-054	GP	ISMS Surveillance Team	8/15/12	MSA/ ESH&Q/ SC&A	ISMS Team Members	N/A	MSA utilizes an ISMS surveillance team, comprising of HAMTC bargaining unit representatives and technical experts, to provide ongoing evaluation/ feedback/ mentoring of field work activities to enhance the sustainability and maintainability of the MSA ISMS program elements, consistent with the ISMS System Description, the Annual ISMS Declaration of Readiness, and the FY 2012 ISMS Surveillance Team Plan. MSA continues to sponsor in-depth evaluations, mentoring, and coaching of MSA personnel performing and supervising work process at the facility, project, sub-project, and/or activity level including construction activities. The team evaluation strategy is designed to provide continuing feedback to MSA management (including senior leadership) relative to ISMS implementation in the field and complete a "reality check" on ISMS process use and efficiency.	None
ISMS-MSA-2012-SC-055	GP	MSA Custodial	8/8/12	MSA/ Custodial	Supervisors/ Workers	N/A	A positive relationship among the group (days and swing). With this in place anyone and everyone feels they can bring up issue or participate in any conversation to help solve problems.	We believe the group would not be as successful without the current relationship with their supervisors and manager.

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ISMS-MSA-2012-SC-058	GP	MSA New Employee Orientation	8/22/12	MSA	Industrial Safety SME	N/A	Due to the nature of business in their support of DOE RL and the "bump and roll" process of the Collective Bargaining Agreement, MSA experiences many new employees and transfers from OHC. MSC recognized that new employees typically receive a new employee orientation from their assigned project and may be missing the overall company safety culture attributes and safety requirements. To ensure this does not happen, a company new employee orientation presentation was developed. The HR organization has an agenda for all new employees and has added this orientation to that list. When assigned to their projects, new employees then get another orientation relative to the project.	None
ISMS-MSA-2012-SC-059	GP	VPP Trimester (Mini Assessment)	8/22/12	MSA/ SH&Q/ SC&A	Technical Specialist	N/A	VPP assessments are required to be done yearly, MSA completed a mini VVP assessment to check and see how they looked, DOE saw what they had done and liked it. MSA decided to perform three mini assessments a year and roll the three mini assessments into one yearly assessment. Each Vice President receives an update after each mini assessment. By performing the three mini VPP assessments: • saves resources such as time and money • allows the discovery of any problem areas sooner • each follow the same format, but change the criteria in each focus area	None

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ISMS-MSA-2012-SC-060	GP	MSA Lockheed at 1981 Snyder	8/7/12	MSA/ IM/ Safety	Lockheed Exempt Personnel	N/A	The organization has a scrolling Reader Board to display the monthly EZAC minutes, the Safety Performance information and other pertinent information.	None
ISMS-MSA-2012-SC-061	GP	MSA LMSI at 1981 Snyder	8/7/12	MSA/ IM/ Safety	Exempt Personnel	N/A	The organization has a computer program that reminds individuals to take breaks when doing computer work.	None
ISMS-MSA-2012-SC-062	GP	MSA LMSI	8/7/12	MSA/ IM/ Infrastructure/ Cyber Security	Exempt personnel, Radio Maintenance Tech. and Computer Tech.	N/A	The groups have participated in Kizan workshops to improve their work processes.	None
ISMS-MSA-2012-SC-064	GP	WSCF Response to Medical Needs	8/8/12	MSA/ WSCF	WSCF Analytical Lab Worker, and WSCF Environmental Site Services	N/A	Workers are impressed with the response and timeliness of dealing with a recent employee needing medical assistance at the project. A lot of great team work and quick response times from employees lending a hand.	None

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ISMS-MSA-2012-SC-065	GP	Safety Start	8/27/12	MSA	None	N/A	MSA implemented the MSA Weekly Safety Start on October 29, 2009, anticipating that employees would use these safety starts during Monday morning safety briefings to stimulate group discussions about safety. MSA's intent was to cover and feature a different safety topic, which consists of feedback from the field, each week. Since publishing its first safety start, MSA has found that holding weekly safety starts prior to going back to work after a weekend, or any other substantial time off work, is beneficial to all of us in getting back into concentrating on the task at hand. The use of the Weekly Safety Start, which consists of a subject, EMS topic, and includes our core functions, to open the Monday Back to Work Meeting which serves to open up conversation concerning safety and more times than not, workers will add additional safety topics, which starts the group to thinking safety.	None
ISMS-MSA-2012-SC-066	GP	Leadership Training	8/27/12	MSA/ Management	None	N/A	MSA management personnel were sent to a twelve week leadership training class. The training consisted of exercises to strengthen communication skills in various situations. The course involved impromptu speeches, problem solving scenarios, and group discussions dealing with different behaviors both on and off the worksite. The training is for VPs, managers, supervisors and some employees who work in lead positions.	A good practice to help management with their communication skills and leadership.

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ISMS-MSA-2012-SC-067	GP	Hanford Fire Department PPE Committee	8/28/12	MSA/ EST/ F&ER/ Stn. 92	Deputy Chief, Captain, HAMTC Safety Rep	N/A	Hanford Fire Fighters have organized a committee to address concerns regarding PPE they wear while on duty and while fighting fires or responding to emergency calls. The PPE committee is a joint effort with the Bargaining staff, Safety and Health org., and the Executive command staff. The committee meets when there is a concern brought to them and then the concern is evaluated and substantiated. When the decision is made to change the PPE it is studied and shopped for with approval from the Senior Management. The committee meets only when needed.	A good practice for safer and more comfortable PPE depending on conditions.
ISMS-MSA-2012-SC-068	GP	Activity Level/ On the Floor EZACs	8/28/12	MSA	None	N/A	MSA's Zero Accident Council consists of: • 46 EZAC Chairs • 25 EZAC Co-Chairs • Covers 46 work groups • EZAC Headcount is 2509 workers MSA uses an EZAC for each work group to strive to achieve a single safety program, and provide the leadership to influence positive behavior and continual improvement toward the achievement of zero accidents. EZAC Chairs are able to encourage use of the Safety Log Book to identify workplace safety hazards, team with management to actively support timely resolution of all entries, and follow up on resolution with concerned employees.	None

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ISMS-MSA-2012-SC-069	GP	MSA Risk Assessment	8/28/12	MSA	None	N/A	MSA is responsible for implementing an integrated approach to the management of risks that supports successful execution and completion of the contract work scope. The Risk Analysis, Processing and Reporting establishes the requirements and work process for management of risks associated with the execution of work scope under the Mission Support Contract (MSC). Risk analysis includes key processes to accomplish efficient and cost-effective measures to manage risks. Some of those processes are listed below: The RMB performs a review of the current project risks to determine if project conditions have changed warranting risk re-evaluation. • Risk planning consists of the up-front activities necessary to define and implement the risk management process. • Risk assessment includes the overall process of risk identification and analysis. • Risk identification is an organized approach for determining which risk events are likely to negatively impact performance or provide benefit and improvement for the MSC Project. • Risk prioritization is vital in determining which risks get handled and when and is accomplished through the MSA Risk Assessment Form by scoring risks based on Probability and Consequence and with the MSA Risk Prioritization Assignment Matrix.	None

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ISMS-SW-2012-SC-001	GP	Hanford Site VPP Webpage, VPP Mentoring, and Safety Improvement Plans (SIPS)	8/27/12	DOE RL/ CHPRC/ MSA/ WCH	None	Focus Area 1 - Leadership Focus Area 2 - Employee	The DOE-RL contactors meet monthly at a Hanford Site Champions forum. Other companies included in this meeting are: Battelle (Pacific Northwest Laboratories (PNL), Washington River Protection Solutions (WRPS), ATL International Inc. (ATL), Bechtel National Inc./ Waste Treatment Project. (BNI/WTP). This forum meets to share employee involvement activities and Good Practices and to mentor and support each other in performing self assessments in VPP. Examples of shared information include: Safety campaigns and posters, safety improvement plans (SIPS) which captures a company's goals and involves the employee safety councils to develop goals at the worker level that help achieve the overall company goal. The establishment and development of the new DOE-RL contractors VPP webpage was initiated on November 3, 2011 at a DOE-RL VPP POC kick off meeting introducing the new VPP POC for the DOE-RL and for CHPRC/MSA/WCH contractors. At the Hanford Site VPP Champions Committee meeting on December 12, 2011 it was discussed and agreed upon by the contractors to form a subcommittee to develop this webpage. SITE VPP WEBPAGE DEVELOPMENT: The VPP webmaster reports monthly on the efforts of the webpage subcommittee. The website is now active as of July 13, 2012. The website is open to the public and is populated with information to help commercial companies or other contractors learn about VPP. The goal for the website is for 80% of the information to remain	None

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							static and about 20% to be updated routinely.	
ISMS-SW-2012-SC-002	GP	Hanford Site Wide Stop Work Policy	8/27/12	DOE RL/ CHPRC/ MSA/ WCH	None	N/A	This procedure is applicable to all contractors and subcontract personnel working at the Hanford site. The employee has responsibility and authority to initiate a Stop Work IMMEDIATELY, without fear of reprisal, when the employee believes a situation exists which places himself/herself, a coworker(s), or the environment in danger or at risk. This procedure describes the responsibilities of the employee, Supervisor, Safety Professional, and Union Safety rep. (If filed by a bargaining employee). The procedure list appendixes that have requirements for DOE reporting.	This is a site wide safety procedure and is an effective way of keeping our work force safe and it also gives the workers a feeling of ownership that in turn supports a stronger safety culture.

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ISMS-SW-2012-SC-003	GP	HILLS	8/27/12	DOE RL/ CHPRC/ MSA/ WCH	None	N/A	The HILLS/OPEX Web site contains Hanford related operating experience articles including Lessons Learned, Safety Bulletins, Recalls, and other types of information that can be used for preventing recurrence of events, and sharing of good work practices. All Hanford contractors, DOE-RL and DOE-ORP use the Hanford Information and Lessons Learned Sharing (HILLS) Web application. They use it as a vehicle to learn and share operating experiences, lessons learned and other safety- and health-related information. Those who read, share and apply HILLS information are doing their part to improve the overall safety culture at Hanford.	None

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ISMS-SW-2012-SC-004	GP	ISMS "Flippy Book" for MSA and CHPRC	8/27/12	MSA/ CHPRC	None	N/A	MSA Employee Guide to ISMS is now called the MSA Safety Toolbox. The book has 54 pages and walks the employee through the 5 Core Functions and the 9 Guiding Principles. The book defines ISMS, VPP, and HPI. The book incorporates helpful information the employee may use during their daily work such as Stop Work, Rad Con, Hazard Communication, Reporting Injuries and Emergency Numbers to name a few. This is a very helpful resource that is pocket size. The ISMS/EMS Pocket Guide for CHPRC is also a great tool to aid the worker in the field. It has 70 pages broke into 12 "chapters" of Personal Safety, 10 CFR 851, ISMS, EMS, VPP, HPI, Conduct of Operations, EWP, EVMS, SMP, Acronyms, and My Safety Information. The guide has the SAFER dialogue and STAR Prevention Tool so the worker will have access to these two reminders and not have another card to carry. Both pocket guides are an excellent source of information for the workers in the field or office.	None

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ISMS-SW-2012-SC-005	GP	HAMTC Safety Representatives Program for MSA and CHPRC	8/28/12	MSA/ CHPRC	None	N/A	The HAMTC Safety Rep Program started in 1997 which includes all Hanford contractors and affiliated unions. The HAMTC Safety Reps have designated Responsibilities listed on both the MSA and CHPRC HAMTC Safety Representative web page. CHPRC 's list of benefits primarily describe issue resolutions, whereas MSA's list describes the benefits of the program to both the worker and management. WCH's HAMTC Safety Representative Program could not be accessed and therefore a review could not be performed. The HAMTC Safety Representative Program is unique only to the Hanford Site. It has proved to be a worthwhile program in as it has increased production due to the mitigation of Stop Works and other safety concerns. There is more worker involvement in work planning and a better partnership between management and workers. The Safety Reps attend top- and mid-level project staff meetings to provide assistance in resolving environmental, safety and health issues. This is a good practice that would benefit other DOE Sites and Contractors.	None

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ISMS-SW-2012-SC-006	GP	Site Wide Safety Standards	8/28/12	DOE RL/ CHPRC/ MSA/ WCH	None	N/A	The goal of the Plan is to have site-wide standards and standardized training where there are similar hazards, requirements, and worker expectations. MSA has the lead responsibility for managing this developmental process and ensuring appropriate, consistent and implementable site wide procedures and programs. MSA accomplishes this in conjunction with the Hanford Atomic Metal Trades Council (HAMTC), and the Central Washington Building and Construction Trades Council (CWB&CTC) other Hanford Contractors. The Site Wide Standards completed to date are: • DOE-0336 Hanford Site Lockout/Tagout Procedure • DOE-0342 Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP) • DOE-0342-001 Hanford Site Beryllium Work Permit (BWP) and Hazard Assessment Procedure • DOE-0343 Stop Work • DOE-0344 Hanford Site Excavating, Trenching and Shoring Procedure (HSETSP) • DOE-0346 Hanford Site Fall Protection Program (HSFPP) • DOE-0352 Hanford Site Respiratory Protection Program (HSRPP) • DOE-0355 Hanford Standardized HAZWOPER Training Program Description • DOE-0359 Hanford Site Electrical Safety Program (HSESP) • DOE-0360 Hanford Site Confined Space Procedure (HSCSP) • DOE-0361 Hanford Site-Wide Emergency Planning and Community Right-To-Know Act (EPCRA) Procedure • DOE-RL-92-36 Hanford Site Hoisting and Rigging Manual	None

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ISMS-SW-2012-SC-007	GP	Site Wide ESRB	8/28/12	CHPRC/ MSA/ WCH	None	N/A	The DOE-RL Prime Contractors, MSA, CHPRC and WCH have developed an Executive Safety Review Board (ESRB). The purpose of the Executive Safety Review Board (ESRB) is to oversee and monitor the effectiveness of programs and processes associated with Safety Management Programs, Quality Assurance Program, Integrated Safety Management System (ISMS)/Environmental Management System (EMS) implementation activities and the Price-Anderson Amendments Act (PAAA) program. The ESRB will perform the following: • Oversee the cause evaluation and corrective action plan development for issues identified as PAAA/Worker Safety and Health (WSH) reportable into the Noncompliance Tracking System (NTS) and other Significant Issues, as determined by the ESRB Chair and/or Sponsor. On a case by case basis, review the results of effectiveness reviews performed on these issues. • Provide senior management feedback and direction concerning the focus and conduct of assessments. • Periodically (annually) review Safety Management Program performance through scheduled management presentations focused on demonstrating program status and health. • Review events, issues, and adverse trends with safety, quality, or environmental significance and/or programmatic implications, as determined by the ESRB Chair or Sponsor.	None

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ISMS-SW-2012-SC-008	GP	Contractor Assurance Program	8/28/12	CHPRC/ MSA/ WCH	None	N/A	The DOE RL Prime Contractors MSA, CHPRC and WCH have developed a Contractor Assurance System (CAS). The CAS outlines the programs, processes, and mechanism that the Prime Contractors use to implement the requirements of DOE O 226.1B. The overall objective for health, safety, and quality is to develop and implement a CAS program which effectively monitors performance to prevent recurring events and proactively identifies performance issues through development and analysis of leading indicators. Fulfillment of these objectives will ensure the Prime Contractors' mission is being achieved; the workers, the public, and the environment are protected; that operational, facility, and business systems are effectively managed; and that contract/legal requirements are being fulfilled.	None

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ISMS-SW-2012-SC-009	GP	Interface Management for the Hanford Site	8/28/12	MSA Interface Management	None	N/A	RL and DOE's Office of River Protection (ORP) require prime contractors enter into interface agreements with one another to ensure the effective delivery and performance of Site services. MSC and prime contractor Interface Management staff and Project Liaisons will conduct interface management discussions to ensure the delivery of services in a safe, timely, cost-effective, and quality driven manner. All prime contractors will manage interfaces so that potential issues are resolved at the lowest level possible. Integrated Project Teams (IPTs) will be established as the primary inter-contractor working level team for responding to and resolving specific issues on an as-needed, case-by-case basis. This is a valuable process that has prevented some possible undesired results. When and if conflicts occur a resolution process is performed: Step 1 – Interface technical POCs attempt to resolve the issue. Step 2 – If the issue is not resolved it will be elevated to the Senior Functional Manager level. Step 3 – If still no resolution it will be elevated to the senior functional managers for resolution. It is expected the majority of issues will be resolved at this level. Step 4 – If disputes are not resolved it will be elevated to the company's President or designee. Step 5 – For issues that are not resolved either party may elevate the issue to DOE Contracting Officers for resolution.	None

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ISMS-SW-2012-SC-010	GP	Site Wide Traffic Safety	8/28/12	CHPRC/ MSA/ WCH	Industrial Safety Manager	N/A	In response to increased traffic safety concerns, the Department of Energy Richland Operations Office (DOE-RL) asked the Mission Support Alliance (MSA) to establish a site wide committee to help address traffic safety issues on the Hanford Site. The committee worked with a traffic safety consultant to conduct the study. The study offered several recommendations to enhance safety. DOE-RL has directed MSA to implement the following recommendations that are expected to have the most immediate and greatest positive impact on improving traffic safety. The Hanford Site Traffic Safety Enhancement Committee (TSEC) is established to serve as the advisory group providing consensus direction for Hanford Site Highway and vehicle issues affecting Site Contractors. The DOE Richland Operations Office (RL), Office of River Protection (ORP), and affected Contractors acknowledge that a joint committee provides the best approach for identification, evaluation and recommendations for implementation of traffic safety related issues. The parties agree to cooperate in a teambuilding manner to ensure that the full intent of the Committee's mission is met and will be responsibly carried out by their respective organizations. The committee is made up by Hanford Site Contractors, Department of Energy personnel and Site Labor groups. The committee helped to create the Hanford Transportation Safety Initiative. The purpose of this initiative was to identify near and medium-term improvements in road infrastructure,	None

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							traffic operations, traffic safety education, and traffic enforcement to address traffic safety issues on the Hanford Site. The overall goal of this initiative is to get Hanford employees safely to work and home each day. The committee has also developed a positive relationship with the Benton County Sheriff's Office that has led to improvements in regard to Site enforcement activities.	
ISMS-WCH-2012-SC-005	GP	ERDF Can Cycle	8/14/12	WCH/ ERDF/ ERDF Land Fill	Industrial Hygienist Manager	N/A	A video of the life of a can was filmed and shared with all who have interest in the scope of work. The film explains how and what happens to the ERDF cans.	This is a good practice as the workers coming to ERDF will understand through a learning tool how the worker will be doing their job and why.

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ISMS-WCH-2012-SC-006	GP	Maintenance of Discipline Operations	8/14/12	WCH/ Stoller/ ERDF / 6250	Industrial Hygienist Manager	N/A	The WCH Ops Manager stated the Stoller organization has developed a MODO (Maintenance of Discipline Operations). The WCH manager is responsible for the group of Eberline and Stoller employees. The program identifies training that the management and workers believe is needed for their work scope. The training is reviewed periodically depending on the priority given for each fundamental. The program is unique to the Company and is not procedurally driven. The organization owns the program and tracks the continuing training of each individual and in each fundamental. The categories are; Critical Procedure review, Hazard Reviews, IWCP Reviews, and Con Ops. Training requirements are annual, some are bi-annual, and some are quarterly depending on exposure and level of hazard.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-007	GP	Shipping Manifest	8/14/12	WCH/ ERDF	First Line Manager	N/A	Waste shipments require that an Onsite Waste Transfer Form (OWTF) be filled with pertinent shipping data provided by the waste shipper. Teamsters are required to review the data that pertains to their responsibilities in the OWTF and sign their name at the bottom and to the right of the form acknowledging that the information provided in the OWTF is correct. The waste shipper's signature is also required at the bottom of the form; however it is on the left side and is the first signature. There have been numerous instances when the teamsters have not signed the form. Discussions with the teamsters and SMEs determined that maybe the shipper's signature causes distractions and/or forgetfulness, which results in the form not being signed. The team decided to redesign the form and have one signature line (about the middle of the form) for the information that the teamster is held accountable for correctness. This appears to be working and very few instances occurs when teamsters fail to sign the form.	None
ISMS-WCH-2012-SC-014	GP	100 Area Exempt	8/15/12	WCH/ 100 Area/ D4	Exempt Workers	N/A	Workers think that "People are encouraged to voice their opinions and ask questions and management will answer them."	None

Evaluation No	Type of Evaluation	Subject	Evaluation Date	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-022	GP	Good Practice at 105B	8/15/12	WCH/ 105B	Manager	N/A	Plastic is placed underneath regulated equipment when it is not being used to prevent a possible spread of contamination.	None
ISMS-WCH-2012-SC-024	GP	Good Practice at D4 300 Area	8/15/12	WCH/ D4/ 300 Area	RCT, D&D Worker	N/A	A RCT explained to a new D&D Worker the importance of changing gloves after each evolution of work. The way it was explained showed the worker that the dose to his hands increased each time he performed a work evolution. That made such an impression on the worker that he now tosses his co-worker's gloves to prevent dose build up. A Safety Culture Team member suggested the D&D Worker explain to his co-workers the significance of tossing their gloves.	None
ISMS-WCH-2012-SC-031	GP	Disciplined Operations Plan	8/23/12	WCH	None	N/A	The WCH leadership team has taken upon itself the need to drive safety to the next level (beyond VPP Star Status). This drive for continuous improvement will ensure that WCH work teams do not become complacent given the hazardous work that needs to be performed safely to complete the contract mission through 2015. The results of the number of highly critical self-assessments served as a basis for the activities to strengthen Disciplined Operations, Integrated Work Control, Human performance and Safety Culture.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Date	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-032	GP	Performance Excellence Training	8/27/12	WCH	Quality Assurance Manager	N/A	WCH has developed a training program "Tools & Approaches to Take Safety to the Next Level" to provide the leadership team with proven tools and associated knowledge t improve performance through the prevention of events, near misses and occurrences that hinder effective delivery. The training outline consists of: • Overview of safety culture attributes, their relationship to ISMS, and the leadership principles that affect safety culture • How recent WCH occurrences, issues, and assessment results provide an insight into the WCH safety culture and our "at-risk" behaviors • How a targeted use of Human Performance tools can "break the chain" or sequence of at-risk actions/behaviors that lead to events/occurrences • How to effectively leverage management walkthroughs with target coaching and mentoring of work teams relative to event prevention	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-033	GP	Work/ Area Observation Checklist	8/27/12	WCH	Quality Assurance Manager	N/A	WCH uses a Work/Area Observation Checklist to ensure FWSs and workers are aware of their behavior and hazards associated with the work prior to initiating the activity. Some of the topical areas and associated hazards are: • Environment o Clear access/egress o Slip-Trip hazards o Adequate lighting o Changed conditions • Tools and Equipment o Correct tools for the job o Tool/ladder inspections o Rigging Inspections • Heavy Equipment Operation o Use of spotters o Travel path inspections o Loads secured o Unattended operation • Electrical Safety o Extension cords protected o Electrical panel access o LOTO o Arc flash protection • Disciplined Operations o FWS/RM presence in the field o Procedure compliance o Clear scope of work o Distractions	None

Evaluation No	Type of Evaluation	Subject	Evaluation Date	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-034	GP	Continued Employment of Building Trades during Work Stoppages	8/17/12	WCH	WCH President, Field Remediation Manager	N/A	Due to the local building trade's contract agreement, the use of the Stop Work Policy by local building trades is considered a negative incentive to bring safety issues forward. This is due to when a project is halted for any reason, the local building trades are sent home, without pay, until the project is re-started. Therefore, any stop work for safety reasons that requires some duration of time results in a loss of pay for the building trades. However, WCH is aware of the loss of pay impact and are taking positive actions to mitigate the impact. WCH does provide the building trade personnel with other work activities when possible to encourage participation as part of the WCH team.	The management awareness of the negative incentive to bring up safety issues by the building trades is noteworthy. While not completely resolvable, efforts to minimize the impact of a stand-down does improve the brining forward of safety issues.
ISMS-WCH-2012-SC-035	GP	Management Walk-Through Process (Procedure QA-1-1.14)	9/4/12	WCH	None	N/A	This procedure describes how Washington Closure Hanford (WCH) establishes and implements an effective management walk-through process. This procedure describes the process for management to perform and document structured operational awareness walk-throughs of projects and facilities. In addition, WCH senior leadership has established minimum expectations for each manager to perform walk-throughs each month. This expectation is in addition to that established by the parent company. These walk-throughs are tracked each month and reported as part of the contractor assurance systems.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-036	GP	Carol's Expectations	9/4/12	WCH	None	N/A	Carol Johnson, WCH President & Project Manager published and promulgated her expectations for performance. These expectations are found in posters and other media that start with safety performance relative to stop work, disciplined operations, and individual accountability and caring for fellow employees. These expectations are discussed and provided to the workforce in company safety messages and other communications media.	None
ISMS-WCH-2012-SC-037	GP	RCC Event Notification Form	9/4/12	WCH	None	N/A	WCH has its webpage under Safety & Health Safety a notification process (text message). This process allows the sender to distribute a brief summary of an event to a pre-determined list of WCH personnel. For Example: Vehicle Accident 100N. Dump Truce struck Private Vehicle.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-038	GP	Safety Culture Policy	9/4/12	WCH	None	N/A	WCH developed and formalized its Nuclear Safety Culture Policy in document PM-ESDH-15. This policy documents the expectation WCH management has relative to developing and strengthening its nuclear safety culture and safe work environment for all work conducted in all facilities, all areas, and by all employees on the WCH project. The policy has defined traits or attributes based on DOE-M 450 Attachment 10 that include the following: - Leadership Safety Values and Actions - Personal Accountability - Work Processes in accordance with ISMS principles - Continuous improvement - Environment for Raising Concerns, a safety conscious work environment - Effective Safety Communications - Respectful Work Environment, trust, and respect permeate the organization - Questioning Attitudes.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/ LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-039	GP	Closure Coaches	9/4/12	WCH	None	N/A	Given the nature of the WCH as closure project, it is essential that management support the safe, cost-effective completion of the mission of the RCCC, retain the necessary talent until the right time, and assist employees in moving to the next phase of their career of life. To accomplish this WCH established closure coaches staffed from HR organization and assigned to each company organization to help the work force transition as their specific project comes to an end. These coaches help as needed and in many activities to enable and support project personnel in the transition process.	None
ISMS-WCH-2012-SC-040	GP	IWCP Pre-Ev Feedback Process	9/4/12	WCH	None	N/A	As part of the Integrated Work Control Process (IWCP), WCH improved the Pre-Evolution briefing checklist (WCH-FS-210) to proactively identify issues or improvements, work technique issues or improvements, or good practices that could be useful to future work, work in other projects or to improve safety. These lessons learned that are identified proactively during the Pre-Ev are evaluated and used to improve future work package content or procedure activities or other routine work activities.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-041	GP	Robust Fact Finding Process	9/4/12	WCH	None	N/A	The Fact Finding process at WCH, LLC, is a subset of the Incident Response and Investigation process and is described in SEM-3-2.2, "Event Management". From this procedure, the definition of a Fact Finding is "A meeting of people involved in an event that seeks to understand the precursors leading to the event including an evalaution of immediate actions taken, potential causes, and the extent of conditions". The purpose of the fact finding process is to determine facts associated with an event/off-normal condition, not fault. Fact findings generally occur during the discovery stage in an inquiry or investigation where more information is needed to accurately assess the extent or severity of an event/off-normal condition. The procedure allows for the Project/ Functional Director (P/FD) to determine if an event investigation is warranted and, if so, conduct a Fact Finding. They also have the latitude to not conduct a Fact Finding if the facts of the incident are self-evident and clearly understood. Once the P/FD or RM determines that more information is needed, the next step in the procedure is to conduct a Fact Finding Meeting. The process is led by the P/FD or RM, this helps reduce the administrative burden on the Field Work Supervisor. In addition WCH utilizes a Performance Assurance Manager in an effort to ensure a robust feedback and improvement function exists with each project. The person also helps with fact finding and cause analysis activities.	None

Evaluation No	Type of Evaluation	Subject	Evaluation Dates	Co/Proj/ Facility Reviewed	Personnel Contacted	Focus Area/ CRAD/LOI	Evaluation Summary	Comments
ISMS-WCH-2012-SC-042	GP	Communication	9/4/12	WCH	None	N/A	WCH utilizes diverse communication forms and media to ensure safety messaging reaches all employees. These forms and media include The Howler, a periodic newsletter from the Local Safety Improvement Teams (LSIT), the Weekly Safety Roundup that is a computation of daily safety messages, Daily Safety messages that provide daily safety related information from recent events, accidents, injuries, etc., LSITs, the President Safety Committee, and Contractor Assurance Reports. In addition, WCH provides communiques from the President. A recent president message discussed a Stop Work called by the president due to potential adverse trend in lock and tag performance.	None

Attachment B

Safety Culture Review Plan

DOE RL Safety Culture Evaluation Plan

July-August 2012

Approved:

Mark R. Steelman for	Mark R. Steelman
J. E. Parsons	M. R. Steelman

1.0 Purpose & Scope

The Department of Energy (DOE)-Richland Operations Office (RL) and its prime contractors (Mission Support Alliance (MSA), CH2MHILL Plateau Remediation Company (CHPRC) and Washington Closure Hanford (WCH) conducted a Safety Culture Review to (1) gather "good practices" in regards to safety culture at DOE-RL and (2) perform a first look at RL and its' Prime Contractors in as a follow on to the June 2012. DOE Site-Wide Safety Culture Survey.

The evaluation focused on the attributes associated with a strong safety culture described within the Integrated Safety Management System (ISMS) Guide, Attachment 10 and key lessons learned from independent assessments of safety culture performed by DOE Office of Health, Safety and Security (HSS). The ISMS provides the following focus statement regarding safety culture within DOE:

> *"Safety culture is an organization's values and behaviors modeled by its leaders and internalized by its members, which serve to make safe performance of work the overriding priority to protect the workers, public, and the environment."*

Attachment 10 of the Guide identified the following three safety culture focus areas and associated attributes (those that most clearly support SCWI: are highlighted):

1. Leadership
   g. Demonstrated safety leadership
   h. Risk-informed, conservative decision making
   i. Management engagement and time in field
   j. Staff recruitment, selection, retention, and development
   k. Open communication and fostering an environment free from retribution
   l. Clear expectations and accountability
2. Employee/Worker Engagement
   e. Personal commitment to everyone's safety
   f. Teamwork and mutual respect
   g. Participation in work planning and improvement
   h. Mindful of hazards and controls
3. Organizational Learning
   f. Credibility, trust and reporting errors and problems
   g. Effective resolution of reported problems
   h. Performance monitoring through multiple means
   i. Use of operational experience
   j. Questioning attitude

The lines of inquiry (LOIs) described in Attachment 1 were developed in accordance with ISMS Guide and "key lessons learned" from the HSS review.

2.0 Team Members

The evaluation team is shown below. The team has experience in evaluation activities and related experience in assessing safety culture at both DOE and commercial nuclear activities.

RL Independent Evaluation Team Members

- Ed Parsons, Co-Lead, Organizational Liaison (DOE-RL)
- Mark R. Steelman, Co-Lead, Consultant (Steelman Associates, Ltd)
- Gary Grant, Organizational Liaison (WCH)
- Mike Hassel, Organizational Liaison (CHPRC)
- Barbara Williams, Exempt (CHPRC)
- Lanette Adams, Organizational Liaison (MSA)
- Emily Millikin, Organizational Liaison (WCH)
- Rocky Simmons, HAMTC (MSA)
- Gordon Denman, HGU (MSA)
- Dennis Hurshman, Exempt (WCH)

MSA ISMS Surveillance Team:

- Art Garcia, Exempt (Steelman Associates, Ltd)
- Henry Sparks, HAMTC (MSA)
- Robin Quinton, HAMTC (MSA)
- Hoyt Mitchell, HAMTC (MSA)
- Terri McEvoy, Database Administrator (Steelman Associates, Ltd)
- Caitlin Gordon, Administrative, (Summer Intern, MSA)

3.0 Methodology

The evaluation team will utilize Attachment 1 as a guide for categorizing good practices. The team may also determine that other items outside of the attachment 1 categories may also constitute a good safety culture practice and worthy of inclusion into the final report.

The lines of inquiry (LOIs) described in Attachment 2 were developed from the ISMS Guide, DOE G 450.4-1C, and "key lessons learned" from the HSS review. This set of LOIs have been developed for use by the team to perform to perform the secondary objective of providing a first look at RL and its' Prime Contractors in as a follow on to the June 2012, DOE Site-Wide Safety Culture Survey.

To develop a complete picture of performance associated with each LOI, it is necessary for the evaluation team to use a combination of data collection methods. These include document analysis, personnel interviews and observation of group situations (e.g., meetings, fieldwork).

3.1 Direct observation of work place behavior:

The team will evaluate workforce activities that implement mechanisms/processes that could impact safety culture/behaviors for all work activities from the planning stages to feedback, including reviews of work packages and hazard analysis/controls, attendance at pre and post-job briefings, and field observation of work performances.

3.2 Face-to-face interviews:

The evaluation team will use semi-structured interviews in which the main questions to be discussed are defined based on the LOIs. However, because it is important to make interview situations natural and easy for the interviewee, interviews will also be conducted while the employee is in their normal work setting.

3.3 Review of key safety culture related processes:

The evaluation team will review the following types of documentation. Specific documentation to be reviewed includes, but not limited to:

- Employee concerns policies.
- HR related policies and procedures relative to harassment and retaliation.
- Procedures and policies related to stop work authority
- Assessment procedures, schedules and completed assessments, management observations and associated training materials
- Issues management/corrective action procedures, problem/condition reports, checklists and associated training materials
- Organizational improvement training materials
- Records from the Contractor Assurance systems and associated management review meetings
- Records and other documentation from project/program Corrective Action Review Boards
- Communication plans and associated products associated with safety
- Performance measures/indicators
- Differing Professional Opinions (DPO)
- Contract mechanisms

Team members will document each observation on the Safety Culture Evaluation Report (see Attachment 2) and include the following:

- A clear purpose of the evaluation and the evaluation performed is concisely covered
- Include any noteworthy practices observed during the evaluation
- Include recommendation(s) to responsible management
- Document the pertinent evaluation information in the Data Base.

As a matter of best utilization of field time, and to reduce impact on the organizations, the team should refrain from requesting documents while in the field. The team should note any

references to documents from field observations on the Safety Culture Evaluation Form (see Attachment 3) for later evaluation.

4.0 Schedule

The performance period for this evaluation campaign is from July 16, 2012 to August 25, 2012. The Co-Team Leads will issue a final report no later than September 12, 2012. The team leads will hold a weekly status briefing every Friday to interested parties.

- July 16-20, 2012 – Review plan, team training, best practices presentations.

  During the week of July 16, 2012, the team leads are expecting each DOE-RL Prime Contractor to provide a presentation on the current status of their Safety Culture, including best practices. The Organizational Liaisons will be responsible for coordinating and scheduling each contractor specific presentation regarding the status of their safety culture.

- July 23-27, 2012 Organization #1 Field Evaluation
- July 30-August 3, 2012 Organization #2 Field Evaluation
- August 6-10, 2012 Organization #3 Field Evaluation
- August 13-25, 2012 Organization #4 Field Evaluation
- August 26-September 12, 2012 Develop and approve report

The Organizational Liaisons will be responsible for developing and managing the detailed schedule for their specific organizations' review.

Final Report

The team leaders will develop a report to document the results of the evaluation. This report will identify safety culture good practices and opportunities for improvement. These will be reported to RL and Prime Contractor Management.

The team leaders will transmit the report to DOE-RL AMSE.

The Safety Culture Evaluation report will be written with this format as a guide:

TITLE PAGE – The title page is the report cover and will state the subject of the Safety Culture Evaluation.

SIGNATURE PAGE – The signature page will be for the signatures of the Safety Culture Evaluation team members.

EXECUTIVE SUMMARY This is a brief summary of the review process including the most significant best practices identified during the Safety Culture Evaluation.

INTRODUCTION The introduction will provide information regarding the process reviewed the reason for the review, and the purpose and the scope of the Safety Culture

Evaluation. It will also contain a brief discussion of the overall objectives of the Safety Culture Evaluation. the review process, and team composition.

SAFETY CULTURE EVALUATION For each functional area, the report will discuss the Safety Culture evaluation results for the 15 attributes and a summary of each attribute.

Attachment 1

Good Practices Guidelines

Good Practices Guidelines

The approach to be used by this team to gather best practices will consist of two steps. The first step will be to gather information on methods, processes, improvement initiatives and leadership actions that define the safety culture of the organization.

The team is expected to share on a peer-to-peer level experiences and current practices that enhance overall safety behavior. The overall objective is for all organizations to benefit from this evaluation.

Areas that should be investigated for best practices include, but not limited to:

1. Communication mechanisms
    a. Tailoring of communication regarding safety behavior/culture
    b. Message delivery mechanisms and consistency
    c. Two way communication
    d. Response to requests
    e. Information access

2. Knowledge sharing
    a. Teaching of behavioral/cultural norms
    b. Training tailoring
    c. Training verses knowledge
    d. Knowledge utilization and re-enforcement
    e. Organizational learning methods
    f. Peer-to-Peer knowledge sharing

3. Organizational goals and objectives
    a. Ownership and development sharing
    b. Clarity and non-ambiguous
    c. Goals and objectives integration

4. Resource allocations
    a. Materials, methods, staffing, and time allocation
    b. Balanced priorities mechanisms

5. Monitoring and Oversight
    a. Metrics development and utilization
    b. Safety behavior/culture assessment mechanisms
    c. Critical self-evaluation
    d. Unsafe behavior management

6. Feedback
    a. Using and sharing operating experience
    b. Constant re-enforcement of safety behavior expectations
    c. Feedback integration
    d. Corrective action mechanisms and effectiveness

7. Improvement initiatives
    a. Human Performance Improvement
    b. Voluntary Protection Program
    c. Behavior Based Safety
    d. Conservative Decision Making
    e. International Organization for Standardization (ISO) Standard 9001, Quality Management System
    f. Total Quality Management
    g. Six Sigma quality programs
    h. ISO Standard 14001, Environmental Management System.
    i. Other

8. Leadership
    a. Participation of leaders in safety behavior
    b. Leaders create an engaged, thinking organization
    c. Ownership of issues
    d. Personnel motivation
    e. Minority opinion and dissent engagement mechanisms
    f. Approaches to balancing safety, risk, quality and production
    g. Unification of expectations
    h. Responsiveness, flexibility and adaptation
    i. Management and worker relationship development

Attachment 2

Lines of Inquiry

The following number codes are noted after each LOI to guide the evaluator on what organizational level the inquiry should be focused. Note that these are guidelines only and it is the evaluator's discretion on what level to apply the questioning.

1. Upper management
2. Middle Management
3. Front line management
4. Non-management/work teams

Focus Area 1: Leadership

1. Demonstrated safety leadership
    a. Does management, from immediate supervisor to senior managers, demonstrate their commitment to safety through their actions and behaviors? (2,3,4)
    b. Is safety more important than schedule in action and words? (3,4)
    c. How do you balance safety and production? (1,2)
    d. What are some examples that demonstrate the balance between safety and schedule? How did you derive that balance conclusion? (1,2)

2. Risk-informed, conservative decision making
    a. What processes/tools do you use to make decisions regarding safe work performance when faced with unexpected or uncertain conditions? (1,2,3)
    b. Before beginning work, how do you know the work is properly authorized? (2,3,4)
    c. What are your organization's expectations or requirements for stopping work? (1,2,3,4)
    d. When would you stop work? (1,2,3,4)
    e. Do you have a process/tool that supports your decision making regarding ESH risk? (1,2)
    f. Does contract incentives create budget or schedule pressures that impair the effectiveness for identifying and resolving safety and quality concerns or issues raised by employees? (1,2)

3. Management engagement and time in field
    a. What are the organizations expectations or requirements for management spending time in the field? (1,2,3)
    b. What are Management's expectations for observing field activities? (1,2,3)
    c. Do changes happen as a result of management time in field? (3,4)
    d. What is the value of management field presence? (3,4)

4. Staff recruitment, selection, retention, and development
    a. What are your organizations expectations or requirements to ensure you are capable to perform your job? (1,2,3,4)
    b. What are your organizations expectations for broadening and enhancing your capabilities or professional development? (1,2,3,4)
    c. How do you maintain technical proficiencies given budget uncertainties? (1,2)

5. Open communication and fostering an environment free from retribution
    a. When you raise a safety concern, what happens? (3,4)
    b. When a safety concern is raised, what happens? (1,2)
    c. Do you feel free to raise safety concerns without fear of retaliation? (1,2,3,4)
        - Are you aware of any un-reported safety concerns?
    d. Do individuals at all levels of the organization actively listen to each other to ensure they understand the meaning, intent, and viewpoints that are being communicated? (1,2,3,4)

6. Clear expectations and accountability
    a. Does my supervisor set clear expectations for safety and hold people accountable? (2,3,4)
    b. Is safety covered during my performance review? (2,3,4)
    c. How do my peers react to my bringing forward a safety issue? (3,4)
    d. Expectations are clearly communicated without conflicting messages from other communications/sources. (Mixed messages) (2,3,4)
        - Discuss a specific example.

Focus Area 2: Employee/Worker Engagement

1. Personal commitment to everyone's safety (Must ask in order)
    a. What is your personal commitment to safety? (1,2,3,4)
    b. Who makes technical decisions relative to safety? (1,2,3,4)
    c. Who makes the final decision regarding technical safety issues? (1,2,3,4)
    d. What is your responsibility relative to safety technical authorities' decisions? (1,2,3,4)
    e. Who owns safety? (1,2,3,4)

2. Teamwork and mutual respect
    a. Do conversations with my peers and my supervisor concerning safety occur? (3,4)
    b. When disagreements about safety are brought up, what happens? (1,2,3,4)
    c. When bad news is discussed, what is the tone of the discussion? (1,2,3,4)
    d. Does company or organizational boundaries affect how we work as a team? (1,2,3,4)

3. Participation in work planning and improvement
    a. Were you involved in developing the strategy in regards to your organization's work scope? (1,2,3)
    b. Describe your involvement in work planning? (3,4)
    c. Do you need/use "work-arounds" to be successful? (be honest) (1,2,3,4)

4. Mindful of hazards and controls
    a. What are your organization's expectations for performing pre-job briefings and performance of work in the field? (2,3,4)
    b. Before you start work, what is done to ensure that hazards are identified and adequately controlled? (3,4)
    c. What happens when a Stop Work is invoked? (2,3,4)

Focus Area 3: Organizational Learning

1. Credibility, trust and reporting errors and problems
    a. Do you trust your supervisor to make good decisions in regards to you and your peer's safety? (2,3,4)
    b. When someone makes an honest mistake that affects safety, what happens to that person? What about mistakes that affect production? (1,2,3,4)
    c. Describe your organization's process for reporting issues, errors and problems. (2,3,4)
    d. When an issue is reported to management, what happens? (3,4)
    e. Do managers respond in a timely manner to issues that are brought to their attention? (2,3,4)

2. Effective resolution of reported problems
    a. How does the corrective action management program communicate feedback and closure to individuals who have identified issues related to safety? (1,2,3,4)
    b. Does the organization encourage and solicit input from workers when seeking to resolve problems or to define potential improvements? (1,2,3,4)
    c. Describe your organization's event investigation expectation including membership, timeliness, and thoroughness. Is this expectation being met? (2,3,4)

3. Performance monitoring through multiple means
    a. What mechanisms are used to monitor safety performance? (1,2)
    b. What are some recent safety performance items shared/discussed by your supervision? (3,4)
    c. Does supervision share safety or other information in a timely manner? (1,2,3,4)
    d. How is safety performance measured? (1,2,3)
    e. How is safety performance information used to improve overall company performance? (1,2,3)

4. Use of operational experience
    a. Are lessons learned incorporated into the work planning/implementation process? (2,3,4)
    b. Is self-identification/self reporting viewed as part of the work scope? (1,2,3,4)
    c. Is effort given to collecting and sharing lessons learned? (2,3)
    d. What are some lessons learned you use when performing your job? (3,4)
    e. How have lessons learned influenced the work performed by your team? (2,3,4)

5. Questioning attitude
    a. Does your organization encourage discussion on different approaches before work is performed? (1,2,3,4)
    b. Does my supervision actively seek out and support different opinions on how to get the job done? (1,2,3,4)
    c. Is challenging "status quo" a valued and expected practice? (1,2,3,4)
    d. Are discussions, either formally or informally, held about how tasks can be improved? (1,2,3,4)
    e. Describe your organizations post-job review process? (2,3,4)
    f. Is there time given to communicate improvements/ideas? (1,2,3,4)
    g. Does my workgroup avoid complacency by constantly questioning "what" and "how" we perform our work? (3,4)

Attachment 3

Safety Culture Evaluation Form Example

SAFETY CULTURE EVALUATION REPORT

Evaluation No.:

Subject:

Evaluation Dates:

Evaluation Lead / Team Members:

Organization / Project / Facility Reviewed:

Personnel Contacted:

Focus Area/CRAD/LOI:

Associated Document(s):

Evaluation Summary:

Comments:

Reviewer (Print & Sign)	Date	Team Lead (Print & Sign)	Date

Appendix C

Good Practices Guidelines

Good Practices Guidelines

The approach used by the team to gather best practices was to gather information on methods, processes, improvement initiatives and leadership actions that define the safety culture of the organization.

Areas that were considered for best practices included:

1. Communication mechanisms
   a. Tailoring of communication regarding safety behavior/culture
   b. Message delivery mechanisms and consistency
   c. Two way communication
   d. Response to requests
   e. Information access

2. Knowledge sharing
   a. Teaching of behavioral/cultural norms
   b. Training tailoring
   c. Training verses knowledge
   d. Knowledge utilization and re-enforcement
   e. Organizational learning methods
   f. Peer-to-Peer knowledge sharing

3. Organizational goals and objectives
   a. Ownership and development sharing
   b. Clarity and non-ambiguous
   c. Goals and objectives integration

4. Resource allocations
   a. Materials, methods, staffing, and time allocation
   b. Balanced priorities mechanisms

5. Monitoring and Oversight
   a. Metrics development and utilization
   b. Safety behavior/culture assessment mechanisms
   c. Critical self-evaluation
   d. Unsafe behavior management

6. Feedback
   a. Using and sharing operating experience
   b. Constant re-enforcement of safety behavior expectations
   c. Feedback integration
   d. Corrective action mechanisms and effectiveness

7. Improvement initiatives
   a. Human Performance Improvement
   b. Voluntary Protection Program
   c. Behavior Based Safety
   d. Conservative Decision Making
   e. International Organization for Standardization (ISO) Standard 9001, Quality Management System
   f. Total Quality Management
   g. Six Sigma quality programs
   h. ISO Standard 14001, Environmental Management System
   i. Other

8. Leadership
   a. Participation of leaders in safety behavior
   b. Leaders create an engaged, thinking organization
   c. Ownership of issues
   d. Personnel motivation
   e. Minority opinion and dissent engagement mechanisms
   f. Approaches to balancing safety, risk, quality and production
   g. Unification of expectations
   h. Responsiveness, flexibility and adaptation
   i. Management and worker relationship development

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-AMSE-0011 MAR 2 1 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 - RICHLAND OPERATIONS OFFICE SURVEILLANCE S-13-AMSE-PRC-003, CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) CORRECTIVE ACTION MANAGEMENT

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits the subject surveillance report. A quality assurance surveillance of CHPRC Corrective Action Management was performed and the activities reviewed were determined to be satisfactory. No formal response to this letter is required. If you have any questions, please contact me, or your staff may contact Steve E. Chalk, RL Quality Assurance Lead, on (509) 372-8589.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

AMSE:EMB

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
H. M. Hassell, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
R. Whitney, NRE

Attachment
13-AMSE-0011

Department of Energy
Richland Operations Office

Division: Assistant Manager for Safety and Environment (AMSE)

Surveillant: EM Bowers

Surveillance Number: S-13-AMSE-PRC-003

Date Completed: January 3, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: N/A

Title: Corrective Action Management

Guide: N/A

Surveillance Scope:
Review and verify that the CHPRC Corrective Action Management system addresses the quality assurance (QA) requirements prescribed in DOE O 414. 1 D Criterion 3 "*Quality Improvement*," and is consistent with internal CHPRC documents, procedure PRC-PRO-QA-052 Revision 5-2, *Issues Management (IM)*, guide PRC-GD-QA-33900 Revision 2-0, *IM Reference Guide*, as well as consistent with the Richland Operations Office (RL) approved QA program requirements contained in program PRC-MP-QA-599, Revision 1-0, *Quality Assurance Program (QAP)*. Emphasis during this review is placed upon the actions of the CHPRC QA organization itself.

Surveillance Summary:
This surveillance, performed to satisfy RL QA Team commitment, Fiscal Year 2013 Integrated Evaluation Plan Item #3994, was initiated in December 2012, but the final interviews were postponed until early January 2013 to accommodate CHPRC staff on annual leave for the holidays. The surveillance activities included a review of CHPRC IM procedure and guide, a random selection of corrective actions documentation, close-outs and close-out verifications, and the CHPRC Condition Reports and Resolution System (CRRS). All activities reviewed were determined to be satisfactory. There were no follow-up actions identified for contractor action and/or completion.

Surveillance Results:
A review of procedure PRC-PRO-QA-052, Revision 5-2, *IM* (published 10-19-12), provided verification that CHPRC has appropriate processes and procedures in place to detect and prevent quality problems; identify, control, and correct items and processes that do not meet established requirements; identify causes of problems, and include recurrence prevention as part of corrective action planning as required; and specifies review of item characteristics, process implementation, and other quality related information to identify items, services, and processes needing improvement in accordance with the requirements of DOE O 414.1D.

In addition, CHPRC has provided their personnel with a guidance document for reference, guide PRC-GD-QA-33900, Revision 2-0, *IM Reference Guide* (dated 07/09/12), easily accessed computer-based training, and a web-based automation system used to manage and document the IM process (CRRS). The IM Administrator screens all Condition Reports (CRs) for completeness, works with the submitter to ensure the CR maintains a high level of professionalism and correctness in problem definition, determines the significance level, involves any necessary subject matter experts when needed and identifies the responsible manager for resolution. A review of the web-based CRRS data system was demonstrated by the IM Administrator, including witnessing current CRs being taken from the initial draft state to the final form, entry of a CR into the CRRS, screening performed and significance levels assigned, responsible manager assigned, tracking and notifications via the electronic system, to actual closure. Both the IM Administrator and his manager were interviewed and displayed a high level of knowledge and competence.

The CRRS system is also used as the tool to manage issues identified by the RL Operational Awareness (OA) reporting system. Findings, observations, or concerns identified in an OA, are immediately entered into the CRRS for disposition.

The procedures, processes, controls and accompanying execution established by CHPRC QA were determined to be appropriate and acceptable in identification of issues, control characterization, establishment of requisite actions addressing the issue, completeness of corrective actions including documentation were noted. No concerns, findings, or observations for contractor actions were identified as a result of this surveillance.

In December 2012 CHPRC solicited the Mission Support Alliance, LLC (MSA) Acquisition Verification Services (AVS) for an independent audit of CHPRC QA Program in accordance with MSA's Independent Assessment Process. Three findings and two observations were identified during the audit.

The audit findings were in the area of commercial grade dedication and software QA. One observation identified a number of QAP implementing procedures as reflected on the "PRC Docs Online" home page had been cancelled. The other observation identified the definition of a "significant condition adverse to quality" versus a "condition adverse to quality" is unclear in CHPRC procedures. All of these issues have been entered into the CRRS for disposition. The corrective action management system was reviewed and found satisfactory.

Good Practice:

1. Use of the CRRS to track issues to closure identified via RL OA system.

2. Use of an independent audit organization (AVS) to audit the CHPRC QA organization.

Contractor Self-Assessment:

The self-assessments done by the CHPRC QA organization were reviewed and found satisfactory. In addition, the independent assessment described above exhibits the acceptable implementation of DOE Order and NQA-1 requirements for independent assessments and continuous quality improvement.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

Steven Chalk, RL
Harold M. Hassell, PRC Performance & Quality Assurance

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0001_RL

APR 01 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – SUBMITTAL OF THE ANNUAL UPDATE TO THE 105-K WEST (KW) BASIN SAFETY BASIS DOCUMENTS

This is in response to the December 13, 2012, letter (CHPRC-1204322 Reissue) requesting approval of the annual updates to the 105-KW Basin Safety Basis, including: (1) annual update of the 105-KW Basin Final Safety Analysis Report (FSAR); (2) annual update of the 105-KW Basin Technical Safety Requirements; (3) annual update of HNF-3960, 105-KW Basin Hazards Analysis, Revisions 8 and 8A consisting of the main body, Addendum A, and Addendum B (Attachment 3); and (4) proposed deletion of DD-41895, Hazards Analyses for 105-KW Basin Annex Demolition and Limited Construction, from the Safety Basis list. In addition, CH2M HILL Plateau Remediation Company (CHPRC) requested that the due date for future annual updates be changed to April 30 from October to facilitate merging the 105-KW Basin FSAR and the Sludge Treatment Project Documented Safety Analysis (DSA) into a single DSA for the final sludge processing.

The Richland Operations office (RL) has reviewed the changes as indicated and pursuant to 10 CFR 830, approval is hereby granted for all four items above with one Condition of Approval as documented in the attached Safety Evaluation Report. Any other material changes or deletions which may be included in the final document but not identified in the CHPRC request are not approved. After discussions with your staff, the next annual update will be due on May 30, 2013, and subsequent annual update due dates of May 30 is approved, recognizing that the annual update now being approved addressed an 18-month period and that the proposed streamline change is an important step toward final sludge processing. The revised safety basis shall be implemented within 90 days of receipt of this letter.

RL notes that you had to resubmit these documents because corruption occurred in the electronic transmittal process to RL. Although RL understands that the corruption may have occurred when another company prepared the correspondence copy, this occurrence indicates the potential for unapproved changes not only in this documentation, but in other documents which have been similarly submitted. CHPRC is requested to review the document control system for the last six months to ensure that the CHPRC record copy is identical to the configuration controlled copy of the submittal. Please ensure that any issues are identified and corrected, and report the result of

your review within 30 days from the date of this letter. This quality control step should also be incorporated into the CHPRC process for issuance of future safety basis documents.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

NSD:GZM

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: February 2013

Safety Evaluation Report
For the Annual Update for
the 105-K West Basin Safety Basis

Safety Evaluation Report
For the Annual Update for
the 105-K West Basin Safety Basis

SIGNATURE PAGE

Prepared By:

Gregory Z. Morgan, Team Leader
Nuclear Safety Division

3/8/2013
Date

Approved By:

Pete J. Garcia, Jr., Director
Nuclear Safety Division

3/11/2013
Date

Safety Evaluation Report
For the Annual Update for
the 105-K West Basin Safety Basis

Executive Summary

This Safety Evaluation Report (SER) documents the Richland Operations Office (RL) approval basis for the annual updates to the 105-K West (KW) Basin Safety Basis, including: (1) annual update of the 105-KW Basin Final Safety Analysis Report (HNF-SD-WM-SAR-062, Revision 19); (2) annual update of the 105-KW Basin Technical Safety Requirements; (3) annual update of HNF-3960, 105-KW Basin Hazards Analysis, Revisions 8 and 8A consisting of the main body, Addendum A, and Addendum B; and (4) proposed deletion of DD-41895, Hazards Analyses for 105-KW Basin Annex Demolition and Limited Construction, from the Safety Basis list. The annual update was submitted by CH2M HILL Plateau Remediation Company (CHPRC) in letter CHPRC-1204322 Reissue, dated December 13, 2012.

Review Process

The CHPRC submittal from John C. Fulton, to Jenise Connerly, RL, CHPRC-1204322 Reissue, dated December 13, 2012, *Submittal of the Annual Update to the 105-K West Basin Safety Basis Documents,* was the subject of this review. The U.S. Department of Energy (DOE) staff from the Safety and Engineering Division, Operations Oversight Division, and the River Corridor Division performed a review of this submittal. Because the programmatic chapters were revised, Subject Matter Experts (SMEs) also reviewed appropriate chapters. This review was performed under the applicable portions of the RL Integrated Management System Authorization Basis review procedure.

Review Summary

The safety basis Review team reviewed the submittal and developed comments and questions. These included:

1. Section 3.3.2.2 states that "The 105 KW Basin hazard classification is based on DOE STD 1027 92." The proper term is "categorization."
2. Section 3.4.1.2, last sentence, states, "The solubility values used for radioactive isotopes in this analysis differ from current practice (see HNF-SD-SNF-TI-059)."

These comments were resolved by proposed revisions to the submittal. This included an explanation that "The analyses based on HNF-SD-SNF-TI-059 base their dose conversion factors on the more conservative assumption that the uranium and plutonium isotopes are soluble, while more recent analyses model them as insoluble." The staff concurs with the basis for this change.

Additionally, the RL Emergency Preparedness SME commented on the revised Emergency Preparedness chapter. Emergency preparedness comments included use of the new name for the Occurrence Notification Center, issues regarding evaluation versus sheltering, and responsibilities within the emergency response organizations.

These comments were accepted and the submittal was revised. All Emergency Preparedness comments were resolved to the satisfaction of the SME.

RL Quality Assurance SMEs also reviewed the submittal, and after due consideration concluded that the Quality Assurance chapter revisions were acceptable as submitted.

CHPRC provided an update of the submittal to resolve all comments, as documented in DD-54545, Revision 0, *RL Comment Closure of the 105-KW Basin Safety Basis Annual Update for 2011*.

Condition of Approval

KW-13NSD0001_RL-1: HNF-SD-WM-SAR-062 Revision 19, *105-KW Basin Final Safety Analysis Report*, will be revised to include the changes made in DD-54545 Revision 0, *RL Comment Closure of the 105-KW Basin Safety Basis Annual Update for 2011*, before being issued.

Conclusion

Based on the above, the Review Team concludes that the 105-KW Basin safety basis update submittal appropriately describes the 105-KW Basin and residual hazards are within RL guidelines. Therefore, the Review Team recommends that the designated RL approval authority for this facility approve the submittal as modified during the review, with one Condition of Approval.

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0003_RL
REISSUE

MAR 1 9 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

REISSUE - CONTRACT NUMBER DE-AC06-08RL14788 – RE-TRANSMITTAL OF THE ANNUAL UPDATE TO THE CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) SAFETY MANAGEMENT PROGRAMS (SMP) DOCUMENTED SAFETY ANALYSIS (DSA)

The purpose of this reissue is to clarify the Condition of Approval contained in the attached Safety Evaluation Report. This is in response to the December 20, 2012, letter, (CHPRC-1203887 R2) requesting approval of the resubmitted annual update to the CHPRC SMP DSA, HNF-11724. During preparations for implementation of the Richland Operations Office (RL) approved HNF-11724, Revision 9, CHPRC identified that the redline strikeout version of HNF-11724, Revision 9, and the clean (comment accepted) version of HNF-11724, Revision 9, were not identical. This created uncertainty as to which version of HNF-11724, Revision 9, was approved by RL resulting in the resubmittal.

RL has reviewed the changes as indicated and pursuant to 10 CFR 830, approval is hereby granted with two conditions of approval described in the attached Safety Evaluation Report. Any other material changes or deletions which may be included in the final document but not identified in the CHPRC requests are not approved. RL concurrence with the list of documents making up the safety basis does not relieve the contractor from any requirement of 10 CFR 830, or establish actions required to conform to said requirements as a change as defined by Clause I.102, FAR 52.243-2, Changes - Cost Reimbursement. Due to the previous approval of HNF-11724, Revision 9, and the presence of Revision 9 and supporting documents in the document control system, to avoid potential configuration management issues the version of HNF-11724 submitted to RL for approval by CHPRC-1203887 R2 is designated HNF-11724, Revision 10. The DSA shall be implemented within 90 days of receipt of this letter.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

NSD:RJS

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: March 2013

CH2M HILL Plateau Remediation Company (CHPRC)
Safety Management Programs (SMPs)
HNF-11724, Revision 10

SIGNATURE PAGE

Prepared By:

for Pete J. Garcia Jr. 3/11/2013

Richard J. Self, Date
Nuclear Safety Division

Approved By:

Pete J. Garcia Jr. 3/11/2013

Pete J. Garcia, Jr. Director Date
Nuclear Safety Division

Executive Summary

This report documents the Richland Operations Office (RL) review of HNF-11724, Revision 10, CH2M HILL Plateau Remediation Company (CHPRC) *Safety Management Programs* (SMPs). During preparations for implementation of HNF-11724, Revision 9, CHPRC identified that the redline strikeout version of HNF-11724, Revision 9, and the clean (comment accepted) version of HNF-11724, Revision 9, both attached to PRC-NS-0034, were not identical. This created uncertainty as to which version of HNF-11724, Revision 9, was approved by RL. CHPRC submitted a corrected version of HNF-11724, Revision 9, to RL for approval by letter, CHPRC-1203887 R2, dated December 20, 2012. Due to the previous approval of HNF-11724, Revision 9, and the presence of Revision 9, and supporting documents in the document control system, to avoid potential configuration management issues, the version of HNF-11724, submitted to RL for approval by CHPRC-1203887 R2 is designated HNF-11724, Revision 10. Implementing this designation change is documented as Condition of Approval (COA) SMP-13NSD0003_RL-1 below.

Based on the review performed and resolution of issues, the Review Team recommends approval of HNF-11724, Revision 10. There are two COAs.

Review Process

Criteria used for the review included requirements from DOE-STD-3009, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*. The RL Review Team was composed of members of the RL Nuclear Safety Division with expertise in radiation protection, fire protection, criticality safety, nuclear safety, waste management, transportation and packaging safety and training. In addition, subject matter experts in specific disciplines such as emergency preparedness and information technology within the Assistant Manager for Mission Support organization reviewed relevant portions of the document. As part of the review process, the RL Review team reviewed the revised and supporting redline strikeout versions document of the revised document. The review was conducted in accordance with the Authorization Basis procedure within the Richland Integrated Management System (RIMS).

Review Results

CHPRC submittal HNF-11724, Revision 10, is comprised of Chapter 1 and Chapters 6 through 17 of a DOE-STD-3009 formatted Documented Safety Analysis. Chapters 2 through 5 are specific to facilities and are not included in this document. Revision 10 updates the existing document to reflect changes to existing requirements, editorial changes, and references and incorporates information pertinent to CHPRC. Editorial changes include updating referenced company procedures, organizational structure, and references to requirements documents.
The chapters submitted for RL approval were:

- Chapter 1, Site Characteristics.
- Chapter 6, Prevention of Inadvertent Criticality.
- Chapter 7, Radiation Protection.
- Chapter 8, Hazardous Material Protection.
- Chapter 9, Radioactive and Hazardous Waste Management.

- Chapter 10, Initial Testing, In-Service Surveillance, and Maintenance.
- Chapter 11 Operational Safety
- Chapter 12, Procedures and Training.
- Chapter 13, Human Factors.
- Chapter 14, Quality Assurance.
- Chapter 15, Emergency Preparedness Program.
- Chapter 16, Provisions for Decontamination and Decommissioning.
- Chapter 17, Management, Organization, and Institutional Safety Provisions.

The submitted chapters did not have substantial revisions, as changes were limited to items such as company name or document reference number, clarifications or editorial changes. The changes were determined to be acceptable, with the exception of some minor changes to Chapter 11 which are the subject of a COA, SMP-13NSD0003_RL-2.

Conditions of Approval

SMP13NSD0003_RL-1: Due to the previous approval of HNF-11724, Revision 9, and the presence of Revision 9 and supporting documents in the document control system, to avoid potential configuration management issues the version of HNF-11724, Revision 9, submitted to RL for approval by CHPRC-1203887 R2 is designated, and will be implemented by CHPRC, as HNF-11724, Revision 10.

SMP13NSD0003_RL-2: Implement recommended changes (1) - (3) to Chapter 11, made by the RL Fire Protection Engineer in RL Operational Awareness Database Entry #46884 dated February 13, 2013, as part of the implementation of HNF-11724, Revision 10.

Conclusion

The Review Team recommends that the RL approval authority approve HNF-11724, Revision 10, as the approved safety basis documentation of the SMPs.

Attachment 1
13-NSD-0003_RL

Operational Awareness: Entry

Report #	Monitors Name:	Division:	Contractor:
46884	Dale West	SED	PRC

Project:	Facility:	Date Observed:
CC	General	2/13/13

Activity / Topic Title: The RL Fire Protection's review of HNF-11724, CHPRC SMP, Revision 9.

Oversight Summary: The RL Fire Protection Engineer has reviewed the CHPRC SMP, HNF-11724, Revision 9. The specific section reviewed by RL Fire Protection was Chapter 11, Operational Safety, sub-section 11-4, Fire Protection. The review produced the following comments.

1. Section 11.1 KA 11-2 "Fire Hazards Analysis" – Suggest rewording this paragraph. Fire hazards cannot meet the requirements of the Supplemental Contractor Requirements Document (SCRD). Suggest "control of fire hazards" or "combustible loading controls" in lieu of "fire hazards."
2. Section 11.1 KA 11-3 "Fire Protection Program," – The CHPRC Fire Protection Program is not defined by National Fire Protection Association (NFPA) 1, but by CRD O 420.1B, Chg.1, supplemented, Revision 0 SCRD. The Order and SCRD pull in the requirements of NFPA 1 and NFPA 101 Life Safety Code.
3. Section 11.1 KA 11-6 "Permits" – These permits are specifically "Hanford Fire Marshal Permits."

Functional Area: FP

Entry Type: Routine Oversight

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0005_RL

MAR 1 8 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF SURVEILLANCE ON ENGINEERING QUALIFICATION AND TRAINING AT 100K FACILITY (S-13-SED-PRC-008)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits Surveillance Report S-13-SED-PRC-008. The attached surveillance documents two findings and four observations. No formal response is required. Please note the Richland Operations Office closure verification has been requested for the identified findings. If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Nuclear Safety Division, on (509) 372-1909.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

NSD:KMR

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Department of Energy
Richland Operations Office (RL)
Surveillance Report

Division: Nuclear Safety Division (NSD)

Surveillant: Kyle Rankin

Surveillance Number: S-13-SED-PRC-008

Date Completed: February 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 100K

Title: Engineering Qualification and Training at 100K

Guide: N/A

Surveillance Scope:

This surveillance covered the Richland Operations Office (RL) evaluation of the CHPRC's engineering qualification and training at 100K in accordance with CHPRC procedure PRC-PRO-EN-20051, *Engineering Selection, Qualification, and Training*.

Surveillance Summary:

The surveillance was conducted from February 7, 2013, through February 21, 2013, by the RL Mechanical Systems Safety System Oversight Engineer.

The surveillance identified two instances where CHPRC procedures were not followed and multiple instances of misplaced and/or missing qualification documentation. The issues identified do not affect the safe operations at 100K.

Findings:

- **S-13-SED-PRC-008-F01:** A 100K Engineering Manager Candidate was appointed to the position even though the requirements of PRC-PRO-EN-20051 were not met.
- **S-13-SED-PRC-008-F02:** Interoffice Memorandum DD-53816 delegated System Engineer (SE) Manager duties to an individual unbeknownst to the SE Program Manager.

Observations:

- **S-13-SED-PRC-008-O01:** The Qualification card for the delegated 100K Engineering Manager was not completed.
- **S-13-SED-PRC-008-O02:** A non-delegated SE Manager signed SE System Health Reports.
- **S-13-SED-PRC-008-O03:** Field qualification folders for the Design Authorities reviewed were incomplete.
- **S-13-SED-PRC-008-O04:** Training records stored with Central Training lacked sufficient documentation supporting qualification.

Surveillance Results:

Finding: S-13-SED-PRC-008-F01: A 100K Engineering Manager Candidate was appointed to the position even though the requirements of PRC-PRO-EN-20051 were not met.

Requirement(s):

PRC-PRO-EN-20051, Revision 2, Change 0, Section 3.5, Step 3 states, "ENSURE the Engineer Manager Candidate has been qualified as a Site Engineer (Course No. 022400)."

Discussion:

The current Engineering Manager was named 100K Engineering Manager on October 8, 2012. At the time of appointment, the Engineering Manager Candidate was not qualified as a Site Engineer (CHPRC course number 022400). This was in procedural violation with CHPRC procedure PRC-PRO-EN-20051, Section 3.5, Step 3, which requires the Project Chief Engineer to "ENSURE" the Engineering Manager Candidate had been qualified as a Site Engineer in accordance with CHPRC course number 022400. The Engineering Manager Candidate completed their Site Engineer qualification on February 25, 2013, and Engineering Manager qualification on March 4, 2013, both after the appointment as the Engineering Manager.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-SED-PRC-008-F02: Interoffice Memorandum DD-53816 delegated SE Manager duties to an individual unbeknownst to the SE Program Manager.

Requirement(s):

PRC-PRO-EN-16331, Revision 3, Change 2, Appendix B, SE Program Manager Responsibilities, states in part, "Approves all personnel assigned to SE Program."

Discussion:

Upon appointment, the 100K Engineering Manager Candidate delegated signature authority for SE Manager to the Project Chief Engineer for Sludge Treatment Project via Interoffice Memorandum DD-53816. This delegation had not been discussed with the SE Program Manager. During an interview, the SE Program Manager was shown a copy of DD-53816 and responded that they had no knowledge of the delegation and did not agree with the delegation. The SE Program Manager thought the understanding was that a qualified SE Manager from the Solid Waste Operations Complex/Central Plateau Surveillance & Maintenance organization was the signature authority for SE at 100K.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-SED-PRC-008-O01: The Qualification card for the delegated 100K Engineering Manager was not completed.

Discussion:

Interoffice Memorandum DD-53816 delegated Engineering Manager's signature authority to a qualified Engineer Manager agreed upon by the CHPRC Chief Engineer. A review of the field qualification record and Training Records found the qualification card required by PRC-PRO-EN-20051 was missing. The most recent change to the procedure added the requirement for a qualification card for Engineering Managers. This was corrected during the surveillance.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-SED-PRC-008-O02: A non-delegated SE Manager signed SE System Health Reports.

Discussion:

Finding 02 discusses the delegation of duties for the SE Manager to an individual not agreed upon by the SE Program Manager. This observation documents a condition identified during the surveillance where a qualified SE Manager, not the individual delegated through DD-53816, was signing the System Health Reports for the K West Basin Transfer Bay Crane.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-SED-PRC-008-O03: Field qualification folders for the Design Authorities reviewed were incomplete.

Discussion:

A review of two Design Authorities field qualification folders identified missing documentation. The missing items were found during the surveillance and placed in the field qualification folders.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-SED-PRC-008-O04: Training records stored with Central Training lacked sufficient documentation supporting qualification.

Discussion:

A review of the Training Records for two Design Authorities, one SE, and one Engineer Manager Candidate identified a lack of supporting documentation showing qualification. For example, in the case of the SE the only objective evidence was a signature on a course completion record. The SE qualification card was not present.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment(s):

During Fiscal Year (FY) 2012, the Nuclear Safety Project Evaluation Board performed a review of the 100K Area twice, once during a look at the Deactivation and Decommissioning and Soil Remediation Project and once at Sludge Treatment Project. In the area of Training and Qualifications, the review identified where qualifications were not completed within specified timeframes, qualification cards lacked specificity, and lack of consistency and formality in completion of training activities existed. In addition, CHPRC Central Training conducted two assessments for FY 12.

Contractor Self-Assessment(s) Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

Marie Bachand, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0013_RL

MAY 21 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – REQUEST FOR CONCURRENCE TO DEFER CHANGE OUT OF THE PLUTONIUM FINISHING PLANT (PFP) FILTERS IN FILTER ROOM (FR) 309

This is in response to the March 22, 2013, letter (CHPRC-1301118) requesting concurrence to defer change out of the filters in PFP FR 309 in accordance with 10 CFR 830, Subpart B. The Richland Operations Office (RL) has reviewed the request and supporting technical evaluation (CHPRC-01919). While the technical evaluation adequately justified the 120 days delay approved by RL letter 13-SED-0013 dated November 15, 2012, and again for an additional 120 days delay approved by RL letter 13-NSD-0009_RL dated March 19, 2013, it does not provide adequate justification to delay the filter change out for an additional three plus years. Therefore, please provide additional technical basis to justify the extension and coordinate the formulation of the technical basis with RL nuclear safety and confinement ventilation Subject Matter Experts. This will help shorten the follow-on DOE review process.

If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Nuclear Safety Division, on (509) 372-1909.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

NSD:MRH

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

MAY 3 1 2013

13-NSD-0015_RL

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – FAILURE TO NOTIFY THE U.S. DEPARTMENT OF ENERGY (DOE) OF CHANGES TO COMMITTED DELIVERABLES TO THE DEFENSE NUCLEAR FACILITIES SAFETY BOARD (DNFSB)

This is in response to the May 2, 2013, letter (CHPRC-1105083A R1.2) which provided written notification of a schedule slippage for a deliverable related to a Departmental commitment to the DNFSB. Your letter states that you have slipped your commitment date for an effectiveness review to September 16, 2013, from the previously committed December 31, 2012.

The Contractor Requirements Document of DOE Manual 140.1-1B, Attachment 1, Item 1.(b)(4), requires the contractor to provide 30-day advance notice to the Departmental point of contact of any schedule slippages in planned deliverables related to Departmental commitments to the DNFSB. The Richland Operations Office (RL) concludes that this requirement was not adequately met. RL requests that CHPRC modify your corrective action management process to ensure that deliverables related to Departmental commitments to the DNFSB are tracked in a manner will result in appropriate advance notification of DOE in accordance with DOE M 140.1-1B, and notify RL within 30 days of the date of this letter of the actions taken. This action should also ensure that RL has closure authority over all such commitments.

If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Nuclear Safety Division, on (509) 372-1909.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

NSD:BEH

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0024_RL

JUL 1 1 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF SURVEILLANCE ON CH2M HILL PLATEAU REMEDIATION COMPANY ELECTRICAL SAFETY PROGRAM (S-13-NSD-PRC-002)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits a copy of the referenced surveillance. The attached surveillance identifies no concerns, findings, or observations. If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Nuclear Safety Division, on (509) 372-1909.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

NSD:JBG

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Department of Energy
Richland Operations Office
Surveillance Report

Division: Nuclear Safety Division (NSD)

Surveillant: Jack George

Surveillance Number: S-13-NSD-PRC-002

Date Completed: May 31, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Company-wide

Title: CHPRC Electrical Safety Program Surveillance

Guide: N/A

Surveillance Scope:

The Richland Operations Office (RL) Electrical Safety Authority Having Jurisdiction (AHJ) performed a surveillance on the CHPRC activities involving their Electrical Safety Program to determine if all the applicable Integrated Safety Management System, Occupational Safety and Health Administration and National Fire Protection Association 70E requirements are implemented.

Surveillance Summary:

The AHJ reviewed work packages, safety and work control procedures, and watched work in the field.

The AHJ found that electrical safety practices were performed in accordance with procedures. The surveillance did not result in the identification of any concerns, findings, or observations.

Surveillance Results:

From conversations with electrical workers, engineers and work control employees, the AHJ initially suspected that maintenance on circuit breakers did not support arc flash calculations. The supposition is that if the circuit breakers are not maintained then they may not perform as designed. Therefore, the arc flash calculations would not predict actual conditions and employees could be at a greater risk than anticipated.

Investigation showed that the circuit breakers are in the maintenance program and the work packages are current. The initial impression came from the expectation that molded case circuit breakers are required to have overcurrent maintenance. The AHJ did not find this as a requirement.

The work packages, safety, and work control procedures used all applicable electrical safety requirements. The employees effectively implemented these requirements while performing work in the field.

Contractor Self-Assessment: EPC-MOP-13-010, CR-2013-1240

Contractor Self-Assessment Adequate: Yes

Management Debriefed:

Theodore Jarecki, CHPRC
Stephen Crow, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0026_RL

AUG 5 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 - TRANSMITTAL OF REVISED REDLINE/STRIKEOUT FILE OF PRC-PRO-NS-062, REVISION 2, UNREVIEWED SAFETY QUESTION (USQ) PROCESS

This is in response to the April 4, 2013, letter (CHPRC-1300461.1) requesting approval of the USQ procedure CHPRC-PRO-NS-062, Revision 2. The Richland Operations Office has reviewed the proposed revision and, pursuant to 10 CFR 830, approval of the submitted document as revised in PRC-NS-00050 to address RL comments is hereby granted with one condition of approval as described in the attached Review Report. Any other material changes or deletions which may be included in the final document but not identified in the CH2M HILL Plateau Remediation Company request are not approved.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

NSD:PJM

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Attachment
13-NSD-0026_RL

Review Report
PRC-PRO-NS-062,
Unreviewed Safety Question (USQ) Process Revision 2

Introduction

This report documents the Richland Operations Office (RL) review of PRC-PRO-NS-062 Revision 2, Unreviewed Safety Question Process, which was submitted by letter dated April 4, 2013 (CHPRC-1300461.1) as an update to the draft submitted on February 22, 2013 (CHPRC-1300461). The USQ process procedure includes the application of the processes, actual procedural steps, and guidance on performing screens, Potential Inadequacy in the Safety Analysis (PISA) evaluations, determinations, and Expert USQ determinations for both Facility Nuclear Safety and Transportation related USQs. This submittal includes an update of roles and responsibilities, clarification of training and qualification requirements, changes to enhance conformance to the Hanford Sitewide Transportation Safety Document (TSD) requirements, and introduction of a new Expert USQ Review process.

The RL Review Team was comprised of members of the RL Nuclear Safety Division, who performed both in-process and final reviews. Review criteria included requirements from 10 CFR 830, Subpart B, the TSD, and guidance from DOE G 424.1-1A, *Implementation Guide for Use in Addressing USQ Requirements*.

The initial in-process review specifically focused on integration of requirements from the Hanford Sitewide TSD, clarifications to the former processes defined in Revision 1 of the procedure, and introduction of the new Expert USQ Review process. Several discussions were held between the Review Team and CH2M Hill Plateau Remediation Company (CHPRC) Nuclear Safety personnel to resolve review comments and clarify how the revised procedure is to be implemented. Final review of the revised procedure as incorporated verbatim in Appendix A of PRC-NS-00050, *RL Comment Closure of the CH2M Hill Plateau Remediation Company Unreviewed Safety Question Process, PRC-PRO-NS-062, Revision 2,* Revision 0, as approved by CHPRC via ECR-13-000692, both dated June 19, 2013, verified acceptability of the resolutions to comments. The Review Team judges the changes to be acceptable and recommends approval of the final version of PRC-PRO-NS-062 Revision 2, as shown in PRC-NS-00050, Revision 0.

Review Results

The document under review, PRC-PRO-NS-062, Revision 2, was changed and updated to reflect current CHPRC policies and practices, to provide additional clarity to the requirements of both the USQ and USQ for Transportation processes, to incorporate a new Expert USQ Review process, and to resolve RL review comments. For the purposes of this revision of PRC-NS-PRO-062, the term transportation is defined to include packaging activities. There was some ambiguity in how the requirements from the TSD were to be addressed while implementing PRC-PRO-NS-062 that has been clarified in the current version.

Revision 2 of CHPRC-PRO-NS-062 is a general update of the CHPRC USQ Process. As part of the general update a new process is being introduced: the Expert USQ Process. This revision also includes the addition of new flow charts to Section 1 and Section 3. The new flowchart in Section 1 is an overview of the USQ Process and is consistent with the CHPRC USQ training material. The other new flowchart documents the flow of the Expert USQ Process.

The remaining flow charts have been updated to be consistent with process steps in the procedure. Other changes/updates include the addition of guidance for the Expert USQ Process (Appendix D) and expansion of Appendix B to include two new tables: Table B-5 and Table B-6. Table B-5 lists the U.S. Department of Energy (DOE) documents used by CHPRC that may be excluded from the USQ Process. Table B-6 provides a listing of administrative procedures specific to a facility or project (e.g., 100K, SWOC, etc.) that do not require further review under the USQ Process. The Appendix B applicability discussion has been consolidated and clarified. The PISA Process in Section 3.4 has been updated to improve the logic of the steps. Guidance on consideration of Important to Safety equipment within the USQ Process was added to Appendix G. The use of the Nonconformance Report process for ensuring that resolutions to issues with specific components are properly subjected to USQ review is also incorporated in this revision of the procedure. Various other editorial changes and text clarifications have been made and process steps have been revised and clarified. References and implementing documents have been updated as appropriate.

Review of the revised final version of Revision 2 of PRC-PRO-NS-062 concluded that this procedure as written, if properly implemented, will be consistent with the requirements of 10CFR830, and will provide a robust USQ review process that meets RL's expectations. However, the review also found weaknesses in the CHPRC USQ training and qualification program that must be resolved to adequately demonstrate compliance with the applicable requirements in DOE O 426.2. Therefore, the following Condition of Approval must be resolved to ensure that personnel responsible for actions in the USQ Process procedure are properly trained and qualified.

Condition of Approval (COA)

USQ-13NSD0026_RL-1: The CHPRC Training and Qualification Program must be updated to include the requirements identified in CHPRC-PRO-NS-062, Revision 2, for personnel assigned responsibilities that could affect nuclear safety, including revising the Training Implementation Matrix and development of a USQ Training Program Description and associated documentation. Closure of any Condition Reporting and Resolution System related action items related to this COA must be approved by RL. Actions resulting from this COA must be completed and closed by RL within 45 days of implementation of PRC-PRO-NS-062, Revision 2.

Conclusion

Review of the submitted procedure resulted in a number of revisions that have been satisfactorily incorporated into the final version of PRC-PRO-NS-062 Revision 2. The procedure is now compliant with 10 CFR 830 and the TSD, and is understandable and implementable. The Review Team judges the final procedure to be acceptable and recommends conditional approval of PRC-PRO-NS-062, Revision 2, as documented in Appendix A of PRC-NS-00050, Revision 0.

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0032_RL

SEP 12 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF SURVEILLANCE OF THE CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) FIRE PROTECTION PROGRAM (S-13-NSD-PRC-001)

The purpose of this letter is to forward the subject surveillance report. The surveillance identified one concern, eight findings, and six observations, which are documented in the attached report. CHPRC is directed to process the enclosed Surveillance Report through the CHPRC established corrective action management system and provide a corrective action plan (CAP) in accordance with SCRD 470.2B (Supplemented Revision 2) within 45 days of receipt of this letter. Additionally, CHPRC is to brief the Nuclear Safety Division and obtain their concurrence before issuance of the CAP. If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Nuclear Safety Division, on (509) 372-1909.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

NSD:DCW

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Department of Energy
Richland Operations Office
Surveillance Report

Division: Nuclear Safety Division (NSD)

Surveillants: Dale West, Richland Operations Office (RL)
Fire Protection Engineer (FPE)
David Evans, Navarro FPE

Surveillance Number: S-13-NSD-PRC-001

Date Completed: July 9, 2013

Contractor: CH2M Hill Plateau Remediation Company (CHPRC)

Title: CHPRC Fire Protection Program Surveillance

Guide: Fire Protection Surveillance (FPS) -12.1 and FPS-12.2

Surveillance Scope:

This Fire Protection Program (FPP) surveillance evaluates CHPRC policies, procedures, and requirements, to determine the extent of compliance with applicable contractual requirements. The FPP surveillance also evaluates the implementation and integration of fire protection requirements into design, construction, operation, and deactivation/decommissioning activities in facilities managed by the CHPRC for the U.S. Department of Energy (DOE).

The objectives of the Surveillance are to:

- Verify that a comprehensive FPP is defined and implemented according to DOE Orders and RL requirements.
- Verify that comprehensive elements are incorporated into the FPP that include fire safety training to employees, life safety provisions in facilities, and fire prevention methods to minimize facility fire risks and fire loss potential.
- Verify that the contractor's FPP commitments are implemented and that an adequate number of technically competent, experienced, and fully qualified personnel are assigned to implement the FPP review process for those decisions.

The performance objectives are based on RL requirements and DOE Orders, notably DOE CRD O 420.1B, Chg.1, Supplemented, Revision 0; the general program requirements of 10 CFR 851, "Worker Safety and Health Program" applicable to fire protection; and key assessment elements specified in DOE G 420.1-3, "Implementation Guide for DOE Fire Protection and Emergency Services Programs for use with DOE O 420.1B, Facility Safety."

The objectives were verified by the assessment team through a programmatic review of the applicable documents associated with implementation of the DOE Orders, personnel interviews with cognizant personnel responsible for program implementation, walk-downs of select CHPRC areas and facilities, and spot checks of associated documentation (e.g., fire permits, fire system inspection, testing and maintenance records and procedures, fire system impairment records, incident plans etc.).

Surveillance Summary:

The review team concluded that CHPRC has a FPP that adequately identifies applicable contractual requirements. However, it was revealed through the findings and observations of this surveillance that several programmatic elements have not been fully executed by CHPRC.

The surveillance resulted in the identification of one Concern, eight Findings, six Observations, and one good practice, listed below:

Concern:

- **S-13-NSD-PRC-001-C01:** CHPRC is not satisfying contractual requirements related to the Fire Protection Program.

Findings:

- **S-13-NSD-PRC-001-F01:** Life Safety Code violations were identified at 105KW and 273W.

- **S-13-NSD-PRC-001-F02:** A Hanford Fire Marshal (HFM) Permit was not processed for the deactivation of the Plutonium Finishing Plant (PFP) complex Fire Hydrant 9-Z.

- **S-13-NSD-PRC-001-F03:** The 1713H Building, valued at over $4 Million, is not protected by an automatic fire sprinkler system.

- **S-13-NSD-PRC-001-F04:** The implementation of the FPP for maintaining and verifying functional fire barriers in CHPRC facilities is inadequate.

- **S-13-NSD-PRC-001-F05:** Accumulations of combustible tumbleweeds adjacent to facilities are not being controlled in a timely manner.

- **S-13-NSD-PRC-001-F06:** A Facility Fire Protection Assessment (FFPA) was not performed for the 273W Building.

- **S-13-NSD-PRC-001-F07:** Fire Hazards Analysis revisions and Fire Hazards Analysis Implementation Plans are not being initiated promptly.

- **S-13-NSD-PRC-001-F08:** A fire extinguisher that was not being tracked, maintained, or inspected was observed on a fork lift in the 189T Facility.

Observations:

- **S-13-NSD-PRC-001-O01:** CHPRC's FFPA schedule has not been kept current.

- **S-13-NSD-PRC-001-O02:** An error was found in the 200 West Pump and Treat procedure 2WPT-PRO-MN-8324, Periodic Inspection of Fire Doors.

- **S-13-NSD-PRC-001-O03:** The 2611E Building Manager along with the FPE must carefully evaluate the commodities stored in the facility and implement the appropriate controls.

- **S-13-NSD-PRC-001-O04:** The Maximum Allowable Quantity (MAQ) controls program for CHPRC needs to be updated.

- **S-13-NSD-PRC-001-O05:** Inspection and Testing Procedures for the 189K Water Treatment Plant Diesel Fire Pump and Fire Water Tank System do not cross reference requirements in PRC-STD-FP-40404.

- **S-13-NSD-PRC-001-O06:** CHPRC did not perform their Triennial FPP Self-Assessment on a 3 year schedule.

Surveillance Results:

Concern:

S-13-NSD-PRC-001-C01: CHPRC is not satisfying contractual requirements related to the Fire Protection Program.

Discussion:

The CHPRC FPP staff is a multifunctional staff that provides both work related support to CHPRC Projects and also performs independent FPP functions. The FPP functions

identified in PRC-STD-FP-40404, *Fire Protection Program,* are intended to ensure compliance with CRD O 420.B, Chg.1, Supplemented, Revision 0.

The findings and observations in this surveillance support the concern that CHPRC is not satisfying the Fire Protection contractual requirements, such as National Fire Protection Association (NFPA) Life Safety Code compliance. The FFPA Schedule was not updated resulting in some FFPAs not being performed (F06, O02). Additionally, some Fire Barrier inspections are not being performed (F04) and the Triennial Fire Protection Program Self-Assessment was not performed on a 3 year cycle (O07). Fire Hazards Analysis (FHA) are not being performed as required and Fire Hazards Analysis Implementation Plans are not being developed (F07). Life Safety Code violations have existed without being identified by FPEs (F01). Additionally, some findings and observations identified in this report were already known by the contractor, but were not resolved.

The recently completed RL Fire Protection Core Surveillance of CHPRC (letter 13-OOD-0044) identified ten findings and eleven observations. Several of the findings in that Surveillance identified Life Safety Code violations (S-13-OOD-LWFS-004-F03; S-13-OOD-PFP-004-F01; S-13-OOD-PFP-004-O01; and S-13-OOD-BOS D&D-004-O02), combustible loading concerns (S-13-OOD-LWFS-004-F02), and the lack of FPE participation in walkdown/inspections (S-13-OOD-BOS D&D-004-F01 and S-13-OOD-BOS D&D-004-F02).

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-F01: Life Safety Code violations were identified at 105KW and 273W.

Requirements:

NFPA 101, Life Safety Code, Section 42.2. 4.1 Number of Means of Egress, states, "All buildings or structures not complying with 42.2.4.1(1) or (2) and used for storage, and every section thereof considered separately, shall have not less than two separate means of egress as remotely located from each other as practicable."

NFPA 101, Life Safety Code, Section 4.5.3.2 Unobstructed Egress, states "In every occupied building or structure, means of egress from all parts of the building shall be maintained free and unobstructed. Means of egress shall be accessible to the extent necessary to ensure reasonable safety for occupants having impaired mobility."

Discussion:

A main exit door/corridor was found blocked in the 105 KW facility. 105 KW Basin exit door 158, off of Discharge Chute Area corridor 7, was found blocked by a weight cart in violation of Occupational Safety and Health Administration and NFPA 101, Life Safety

Code requirements. Also, there was no information on when the last time the exit door had been checked for operability.

The 273W Building does not meet the minimum exiting requirements of NFPA 101. During our walkdown of the 273W Building, we unlocked and entered the west horizontal sliding door. The door was extremely hard to open and move to the open position. Although horizontal sliding doors can be used as a means of egress, NFPA 101 contains specific requirements for operability. The force required to operate the door assembly in the direction of door leaf travel is not more than 30 lbs. to set the door leaf in motion and not more than 15 lbs. to close the door assembly or open it to the minimum required width. The existing horizontal sliding door does not meet the criteria.

The other doors in the building were locked while we entered the 273W Building only giving us one way out, through the open horizontal sliding door. The man door at the other end of the building exited to the fenced storage yard with a locked gate. This is not a qualified exit. The east horizontal sliding door was not evaluated for operability as it was locked. Both sliding doors must meet the minimum requirements of NFPA 101, or new man doors must be cut in at each end of the building.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-F02: A Hanford Fire Marshal (HFM) Permit was not processed for the deactivation of Plutonium Finishing Plant (PFP) complex Fire Hydrant 9-Z.

Requirements:

CRD 420.1B, Chg.1 Supplemented, Revision 0, Section D.12, states, "The Contractor shall have a process in place for the deactivation of fire systems in facilities transitioning from Operations to "Surveillance and Maintenance" or "Deactivation and Decommissioning" that utilizes the guidance of Chapter 4.16 "Transitional Facilities" in DOE G 420.1-3, *Implementation Guide for DOE Fire Protection and Emergency Services Programs for use with DOE O 420.1B, Facility Safety,* and the applicable requirements of NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*. The contractor's process must be in alignment with the Hanford Fire Department requirements and procedures and be coordinated with the Hanford Fire Marshal's Office."

PRC-STD-FP-40404, Section 5.1.2, Deactivation of Fire Systems, states, "A Fire Marshal Permit SHALL be obtained from the HFMO prior to the deactivation of any fire protection feature."

Discussion:

PFP Fire Hydrant 9-Z was permanently removed from service on December 2, 2012. A HFM Permit was not processed for this deactivation in accordance with requirements. CHPRC did coordinate with the Hanford Fire Marshal's Office (HFMO). CHPRC had determined that there was a mechanical failure in this hydrant that could not be fixed and that demolition of 2736-ZB and other facilities in this remote corner of the PFP complex where this hydrant was located had been completed and that the hydrant was no longer needed. Two nearby hydrants (8Z and 10Z) were still in service and adequately covered the remaining facilities in that area as determined by the HFD. PFP performed a deactivation analysis in accordance with MSC-RD-9717 and approval with the HFMO. This was documented by ECR-12-001059, Rev 00, Deactivation Analysis for Hydrant 9-Z at the PFP, CHPRC-01861, Rev 0, dated August 8, 2012. This deactivation analysis was approved by the HFM but a HFM Deactivation Permit was never processed for this fire hydrant.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-F03: The 1713H Building, valued at over $4 Million, is not protected by an automatic fire sprinkler system.

Requirements:

CRD 420.1B, Chg.1, Supplemented, Revision 0, Section D.1, states, "Complete automatic fire suppression system per NFPA standards are required in all structures having a MPFL (defined by DOE-STD-1066-99) in excess of $3 million, when required by a NFPA standard, or when the IBC requires it for construction height, allowable square footage size, construction type or occupancy classification."

PRC-STD-FP-40404, Fire Protection Program, Rev 0-3, Section 2.3.1, states, "Complete automatic fire suppression system per NFPA standards SHALL be required in all structures having a MPFL (defined by DOE-STD-1066-99) in excess of $3 million, when required by a NFPA standard, or when the IBC requires it for construction height, allowable square footage size, construction type, or occupancy classification."

Discussion:

The FFPA performed for the 1713H building on October 29, 2009, identified the building and contents replacement value at $3,919,295. The FFPA stated that "This value would indicate that a sprinkler system is required. A sprinkler system in the building could easily be provided since the required water supply is readily available within fifty (50) feet of Building 1713H. However, when consideration for the projected continued use of the building is evaluated, the installation of a fire suppression system would provide little to no protection."

Approximately 3 years later, a FFPA was performed for 1713H (SHS&Q-2013-WSA-8916) on January 31, 2013. The Assessment determined the value of building and contents replacement value at $4,234,979. This value exceeds the monetary threshold for the installation of an automatic fire sprinkler system. This was known in fiscal year (FY) 2009. A fire sprinkler system was not installed, nor was an exemption or an equivalency request submitted to obtain relief form contract requirements.

RL Lead Assessor Closure Required: YES [x] NO [ ]

S-13-NSD-PRC-001-F04: The implementation of the FP Program for maintaining and verifying functional fire barriers in CHPRC facilities is inadequate.

Requirements:

NFPA 80, Standard for Fire Doors and other Opening Protectives, Section 5.1.3.2, states, "Doors, shutters, and windows shall be kept closed and latched or arranged for automatic closing."

PRC-STD-FP-40404, Fire Protection Program, Rev 0-3, Sections 4.2.2.2, states, "Fire doors shall not be blocked, chocked, or otherwise held open unless compensatory measures are in place and approved by the cognizant FPE."

PRC-PRO-FP-40404, Section 4.2.2.5, states, "Fire walls SHALL be inspected biennially."

Discussion:

The 189K Water Treatment Plant fire doors to the fire pump room and the electrical room were both found blocked open with wooden door wedges. The plant manager stated that electricians had been working in the two rooms and had propped the doors open and left them that way.

The inspection of fire barriers were not included in any 200 West Pump and Treat procedures, nor were the inspections performed. The 289T Building has two fire barriers; the Bio-Process Building has a two-hour rated fire barrier installed to separate the outdoor storage of a class 2 water reactive, oxidizing, and corrosive material (e.g., sulfuric acid). Also, a one-hour rated fire barrier is installed between the H-3 and F-1 occupancies. Both fire barriers require periodic inspections to verify their physical condition.

RL Lead Assessor Closure Required: YES [x] NO [ ]

S-13-NSD-PRC-001-F05: Accumulations of combustible tumbleweeds adjacent to facilities are not being controlled in a timely manner.

Requirements:

NFPA 1, Fire Code, Section 19.1.2, states, "Persons owning or having control of any property shall not allow any combustible waste material to accumulate in any area or in any manner that creates a fire hazard to life or property."

PRC-STD-FP-40404, Section 3.7, states, "Combustible waste either manmade or dry vegetation (tumbleweeds, etc.) SHALL NOT be allowed to accumulate adjacent to buildings."

FP-4-014, 100K Fire Protection Program, Section 3.9.3.5, states, "Combustible waste either manmade or vegetation SHALL NOT be allowed to accumulate adjacent to buildings."

Discussion:

A large pile of tumbleweeds was observed adjacent to the west loading dock of the 1713H facility presenting the potential of an exposure fire. Tumbleweeds had accumulated next to the 1724K Building, at the fence line for the 100K Area Primary Substation, and the east side of 105KW. These are examples of a site wide problem that is not being addressed in a timely manner.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-F06: A Facility Fire Protection Assessment (FFPA) was not performed for the 273W Building.

Requirements:

CRD 420.1B, Chg.1, Revision 0, Chapter II, Section 3.b.14, states, "An acceptable fire protection program must be developed, implemented, and maintained by the contractor, which includes the following elements and requirements. Periodic facility assessments on a schedule as directed by DOE."

PRC-STD-FP-40404, Section 6.2, states "Assessments SHALL be made at least every 5 years for facilities valued between $1 million and $3 million."

Discussion:

The 273W Building has a monetary value for building and contents of $1,039,314.00. This value trips the threshold for the performance of a facility fire protection assessment. No facility fire protection assessment has been performed for this building to date. It is unknown when the building and contents value exceeded the $1 Million threshold requiring a facility fire protection assessment.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-F07: Fire Hazards Analysis revisions and Fire Hazards Analysis Implementation Plans are not being initiated promptly.

Requirements:

CRD O 420.1B, Chg.1, Supplemented, Revision 0, Section B.2.i, states, "Implementation Plans for fire hazard analyses - The results of a FHA may determine that implementation of "recommendations" or corrective actions to address deficiencies are required in order for the facility to demonstrate that the fire protection objectives of DOE O 420.1, CRD O 420.1B, Supplemented, latest revision, and life safety are met. Following completion and approval of the FHA, the contractor shall develop an FHA implementation plan. The FHA implementation plan shall describe each recommendation or deficiency requiring action, and include implementation strategies, funding, and schedules for each item recommended or determined to be deficient by the FHA. The recommendations and corrective actions in the implementation plan shall be developed by a Fire Protection Engineer and reviewed by the HFMO. The FHA implementation plan shall be submitted to the RL Contracting Officer Representative for information only."

PRC-STD-FP-40404, Section 6.1 states, "The results of an FHA may determine that implementation of recommendations or corrective actions to address deficiencies are required in order for the facility to demonstrate that the fire protection objectives of DOE O 420.1, CRD O 420.1B, Supplemented, latest revision, and life safety are met. Following completion, and approval of the FHA, CHPRC SHALL develop an FHA implementation plan. The FHA implementation plan SHALL describe each recommendation or deficiency requiring action, and include implementation strategies, funding, and schedules for each item recommended or determined to be deficient by the FHA. The recommendations and corrective actions in the implementation plan SHALL be developed by a FPE and reviewed by the HFMO. The FHA implementation plan SHALL be submitted to the RL Contracting Officer Representative for information only."

Discussion:

The current 105KW FHA, HNF-SD-SNF-FHA-001, Rev. 2 is outdated and has not been revised. The current revision is dated January 16, 2009. The need to perform a FHA update was identified by the K-Basin FPE in his FFPA (D&D-2012-WSA-10544). CR-2011-2406 was initiated and the FHA revision was started. During that time period, the 100K FPE left the company and work on the FHA revision ceased. CR-2011-2406 was closed and the FHA was never revised. The Safety Analysis Report (SAR) HNF-SD-WM-SAR-062, Revision 19, dated April 25, 2013, references the FHA generically, but does not identify the FHA revision. The current FHA references Revision 13 of the

105 KW SAR, and does not address the new 100K water supply system and other K-Basin operations/projects.

The current FHA for REDOX, CP-45673, rev.0, was issued on July 1, 2010. It was sent to RL Fire Protection for review on July 28, 2010. RL responded on August 8, 2010, with Operational Awareness (OA) report 32486 which identified 33 findings, some of which were significant. The OA did not agree with the FHA's conclusion that the FHA met the objectives of DOE O 420.1B. The OA was sent to the CHPRC FPP Manager on August 18, 2010. A CHPRC FPE started revising the REDOX FHA based on RL comments, but left the company shortly thereafter. The REDOX FHA Implementation Plan, CP-49345, rev.0, was issued on March 31, 2011, without addressing RL FHA comments. RL was contacted again by a CHPRC FPE on March 23, 2012, to rectify RL OA 32486 comments. That FPE left the company a short time later. On June 5 2012, RL was contacted by a third CHPRC FPE about the RL comments addressed in OA 32486. This FPE also left the company a short time later. Occupancy of REDOX was permitted with HFMO permits 2010-690, 2010-778, and 2012-104. To date, RL comments to the 2010 REDOX FHA have not been addressed.

An implementation plan has not been developed for the 200 West Pump and Treat Facility Fire Hazards Analysis (SGW-50419). The FHA was released on April 25, 2012. The FHA identified five recommendations. One of the recommendations was closed before the document was released. The recommendations of the FHA should have been documented in a FHA Implementation Plan and the findings input into the corrective action system (CRRS).

The FHA for U-Plant, CP-43543, Revision 0, was issued on July 29, 2010. The FHA identified multiple recommendations which affected the work activities surrounding the size reduction activities that took place at U-Plant at that time. No implementation plan was issued for this FHA. Without an Implementation Plan it is questionable if facility procedures and work activities reflected the controls listed in the FHA.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-F08: A fire extinguisher that was not being tracked, maintained or inspected was observed on a fork lift in the 289T Facility.

Requirements:

NFPA 10, Standard for Portable Fire Extinguishers, Section 7.2.1.2, states, "Fire extinguishers shall be inspected either manually or by means of an electronic monitoring device/system at a minimum of 30-day intervals."

NFPA 10, Standard for Portable Fire Extinguishers, Section 6.1.3.7, states, "Fire extinguishers installed under conditions where they are subject to physical damage (e.g., from impact, vibration, the environment) shall be adequately protected."

PRC-STD-PRO-40404, Section 3.21.4, states, "Monthly, an extinguishers inspection SHALL be performed and documented in accordance with this standard."

PRC-STD-PRO-40404, Section 3.21.2, states, "Fire System Maintenance tracks locations and periodic service requirements for Hanford Site portable fire extinguishers and SHALL be notified of any fire extinguisher addition, removal, or relocation."

Discussion:

A fire extinguisher was observed attached to the roll bar of the electric fork lift in the chemical storage area of the 289T Building. The fire extinguisher was attached with nylon wire ties which is not an appropriate method of attachment, was not tagged or inspected, and did not have a bar code indicating that it was in the HFD data base. It is assumed that the fire extinguisher came with the leased forklift. Fire extinguishers are only required on forklifts (self-propelled equipment) when used in construction / demolition activities. If the facility makes the decision to keep the extinguisher, it must be tagged and inspected on a monthly/annual frequency.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

Observations:

S-13-NSD-PRC-001-O01: CHPRC's FFPA schedule has not been kept current.

Discussion:

The CHPRC FFPA schedule is out of date and does not identify facilities that have been built or have increased in value exceeding the monetary threshold requiring a FFPA. Each year a new schedule should be generated which would identify each CHPRC building that has a building and contents value of over $1M. A "Building and Contents Replacement Report" is updated each year and is available to each contractor on the Mission Support Alliance, LLC, managed "Crystal Reports." The FFPA schedule should also show the assessment frequency for each building. Buildings of higher value are assessed at a higher frequency. Each year some buildings may be added to the list and others may exceed a threshold value requiring a higher frequency. This schedule should also flag when buildings pass a monetary value requiring the installation of a fire sprinkler system.

The 273W Building was not included on the current FFPA schedule. Therefore, the FFPA was not performed and RL identified Life Safety Code violation was not discovered by the contractor. The building has a monetary value of $1,039,314, which would indicate that it probably crossed the $1M threshold fairly recently.

The 2611E warehouse has a monetary value of building and contents of $3,927,513. This monetary value trips the threshold for the performance of a triennial facility fire protection assessment. Sister buildings 2268E ($3,860,676) and 2269E (3,148,000) also

require triennial facility fire protection assessments. The buildings were not on the current FFPA schedule. The buildings were constructed in FY 2011 and should have been included in the schedule.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-O02: An error was found in the 200 West Pump and Treat procedure 2WPT-PRO-MN-8324, Periodic Inspection of Fire Doors.

Discussion:

2WPT-PRO-MN-8324, Periodic Inspection of Fire Doors, Section 4.2.3 states, IF testing has been performed by Fire Systems Maintenance within the last year, THEN include a copy of the test procedure showing that the doors have successfully closed." The Hanford Fire Department Fire Systems Maintenance does not provide the service of fire door inspection. This procedure should be corrected.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-O03: The 2611E Building Manager along with the FPE must carefully evaluate the commodities stored in the facility and implement the appropriate controls.

Discussion:

The warehouse portion of the building is being used as a general storage building with general commodities stored on racks on pallet or boxes. NFPA 13, Section 5.6.3 identifies the commodity classification of contents stored in the 2611E warehouse as Class III or Class IV. NFPA 13, Section 14.2.3, states that "the protection criteria for storage up to and including 12 feet in height shall be the same as for miscellaneous storage selected in Chapter 13. The protection criteria in Chapter 13 shall be acceptable for storage Class I to Class IV commodities up to and including 12 feet in height see table 13.2.1."

NFPA 13, Table 13.2.1 requires those Class III commodities up to and including 12 feet of storage shall be protected by a fire sprinkler system with a density of .20/1500 square feet with 250 gpm hose stream. For Class IV commodities protected by the same density, the table only allows 10 foot high storage. Class IV commodities cannot be stored to 12' in height with the densities provided by the existing fire sprinkler system.

The Soil and Groundwater FPE stated that the storage in the 2611E Building was limited to 12 feet in height. No signs were observed nor did the occupancy permit state any limitations on storage heights or commodity limitations based on the fire sprinkler system

hydraulic calculations. These controls should be posted and included in the occupancy permit to assure compliance with NFPA 13 requirements.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-O04: The Maximum Allowable Quantity (MAQ) controls program for CHPRC needs to be completed.

Discussion:

The Chemical Inventory Tracking System (CITS) database has not been updated to include fire protection elements used to determine the MAQs of the storage of hazardous materials pertaining to the requirements of the NFPA1, and the International Fire Code (IFC). This observation is a continuation of issues previous identified in S-09-SED-PRC-027 (Sept 23, 2009), which had identified two findings and one observation related to the programs and procedures to identify and control MAQ related materials, and to S-10-SED-PRC-022 (April 19, 2010), CHPRC MAQ Requirements, which identified two similar findings.

Although CITS lists all the chemicals in each facility, it does not specifically reference MAQs. The FPEs must then review the list of chemicals for each facility, determine the type of hazard it presents, compare the method of storage and facility design features, then determine the MAQ for that specific chemical. This is a very time consuming effort, especially for a facility that may have a plethora of chemicals on hand.

It is recognized that there is not a specific program requirement for a chemical management program to identify MAQs, but having access to such a tool would be very helpful to a FPP. It was observed during FP tours and inspections of both the PFP complex and the 100 K Area that CHPRC MAQs appeared to be in compliance with DOE and NFPA requirements.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-O05: Inspection and Testing Procedures for the 189K Water Treatment Plant Diesel Fire Pump and Fire Water Tank System do not cross reference requirements in PRC-STD-FP-40404.

Discussion:

At the 189K Water Treatment Plant the weekly and monthly fire pump test and inspection records for April were reviewed and found to be satisfactory in accordance with DOE and NFPA requirements. The weekly test is performed under SP-24-005, 189K Diesel Fire Pump Weekly Inspection and Testing, Revision 0, Change 7. The monthly inspection test (which also checks the batteries) is done under PMDS 1K-29550, and is performed at the same time as the appropriate weekly for that test period. The fire

pump is operated under 189K Diesel Fire Pump Operation OP-24-004, 189K Diesel Fire Pump Operation, Revision 0, Chg.1. However, none of these procedures for the 189K Water Treatment Plant Diesel Fire Pump and Fire Water Tank System cross reference requirements in PRC-STD-FP-40404, Sections 4.2.3.7 and 4.2.3.8 for system impairments, restrictions, and deficiencies.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

S-13-NSD-PRC-001-O06: The CHPRC did not perform their Triennial FPP Self-Assessment on a 3 year schedule.

Discussion:

CHPRC did not perform a Triennial FPP Assessment within the 3 year period as required by contract. CHPRC's contract with RL started in October 2008. A FPP Self-Assessment was due in October 2011. CHPRC self-discovered this noncompliance in December 2012, and issued a Condition Report Form (CR-2010-3476). CHPRC Fire Protection performed an issued a Triennial FPP Self-Assessment on February 28, 2013.

DOE O 420.1B, Chg. 1, Revision 0, "Facility Safety," Attachment 2, Chapter II, Section 3.B.13, requires that a documented comprehensive fire protection self-assessment be performed by the contractor every 3 years.

PRC-PRO-FP-40420, Section 3.3, adequately addresses the requirements of DOE O 420.1B, Chg. 1, Revision 0, "Facility Safety," Attachment 2, Chapter II, Section 3.B.13, in regard to Triennial FPP Assessments.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

Good Practices:

S-13-NSD-PRC-001-GP01: CHPRC has re-organized portions of the company and moved the FPP under the Central Engineering group. This reorganization has resulted in more management involvement and support.

Contractor Self-Assessment:

SHS&Q-2012-WSA-11767, Triennial Self-Assessment of FPP, was issued on February 28, 2013. Although the scope of the self-assessment included some pertinent elements, it was not sufficiently comprehensive. If the assessment had covered the elements listed in section 1.3.5 of the CHPRC FPP (see Observation 01), many of the findings and observations listed in this surveillance would have already been discovered by the reviewers. As a result, the Self-Assessment did not identify elements of the

program that were not being performed and CHPRC missed the opportunity to implement beneficial corrective actions.

Contractor Self-Assessment Adequate: **YES [ ]** **NO [x]**

Management Debriefed:

Charlie Kronvall, CHPRC
Frank Ataiyan, CHPRC
Neil Hara, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-NSD-0034_RL

AUG 9 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – CONSOLIDATED RECOMMENDATION FOR SITEWIDE IMPLEMENTATION OF THE HANFORD SITE CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM (CBDPP), DOE-0342, REVISION 2

References: (1) CHPRC ltr. to J. C. Connerly, RL, from J. C. Fulton, "Hanford Chronic Beryllium Disease Prevention Program, DOE-0342, Revision 2, and Associated Implementing Procedures," CHPRC-1302275, dtd. June 4, 2013.

(2) CHPRC ltr. to J. C. Connerly, RL, from J. C. Fulton, "Notification of Change, Approval of Hanford Chronic Beryllium Disease Prevention Program, DOE-0342, Revision 2," CHPRC-1302431 R1, dtd. June 19, 2013.

This letter provides approval of the recommendation for implementation of DOE-0342, Revision 2, as transmitted to the Richland Operations Office (RL) for review and approval via Mission Support Alliance, LLC (MSA) letter MSA-1302956A R1, dated July 29, 2013. The changes incorporated into DOE-0342, Revision 2, are intended to address issues with implementation of the requirements in 10 CFR 850, Chronic Beryllium Disease Prevention Program, which were identified in the June 2010 Independent Oversight Inspection of the Hanford Site CBDPP. The proposed approach was prepared based in part on input provided to MSA by CH2M HILL Plateau Remediation Company in accordance with RL letter 13-NSD-0019_RL, dated June 7, 2013.

RL approves the implementation strategy described in MSA-1302956A R1. Please work with the other onsite Hanford contractors and the Beryllium Corrective Action Plan core committee to develop and document a consistent strategy and content for communicating with site workers regarding Revision 2 changes that may affect them.

Additionally, it is the CO's determination that the actions required by DOE-0342 are within current contract scope under Section C.3.2.3, Worker Safety and Health, and 10 CFR 850. Additionally, the specific scope identified in the referenced letters are already required by 10 CFR 850, and therefore within the current scope of the contract.

If you have any questions, please contact us or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Clinton M. Jacobsen
Contracting Officer

NSD:PG

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

12-OOD-0041

OCT 1 1 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – RICHLAND OPERATIONS OFFICE (RL) REJECTION OF THE WASTE AND FUELS MANAGEMENT PROJECT CONDUCT OF OPERATIONS APPLICABILITY MATRIX

This letter is in response to your July 26, 2012, (CHPRC-1106147 R1) letter which submitted the Waste and Fuels Management Project Conduct of Operations (CONOPS) applicability matrix for RL review and approval pursuant to the Contractor Requirements Document of DOE Order 422.1, "Conduct of Operations." RL is rejecting this CONOPS matrix as submitted because it fails to meet contract requirements. In the future, it may be helpful to work with RL to resolve comments and issues prior to submitting the matrix formally for approval.

This rejection notice has been provided to your staff, along with a copy of all RL comments associated with the submitted CONOPS matrix. CHPRC is requested to resolve all comments with RL prior to resubmission.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

OOD:EDM

cc: L. T. Blackford, CHPRC
J. A. Ciucci, CHPRC
J. C. Hoffman, CHPRC
T. D. Jarecki, CHPRC
R. P. Raven, CHPRC
T. L. Vaughn, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-OOD-0001

NOV 0 2 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – OSHA- PERSONAL PROTECTIVE EQUIPMENT (PPE) AND HEAT STRESS CORE SURVEILLANCE OF CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) FACILITIES AND PROJECTS

Pursuant to Section E, Clause E.1, "DOE Inspection and Acceptance," the U.S. Department of Energy Richland Operations Office (RL) Operations Oversight Division performed the subject surveillance at CHPRC facilities and project locations during August 2012. CHPRC implementation of aspects of 29 CFR 1926, Subpart E, "Personal Protective Equipment and Life Saving Equipment" and 29 CFR 1910, Subpart I, "Personal Protective Equipment" was evaluated. Seventeen Findings, twelve Observations and two Good Practices were identified in the six attached surveillance reports. A Roll-up Evaluation of the surveillance results is also included as an attachment to this letter.

You are requested to process the Findings and Observations identified in the reports through the CHPRC Issues Management System and develop corrective actions for deficiencies identified. RL retains closure authority for the issues as designated within the attached surveillance reports.

If you have any questions, please contact me, or your staff may contact Jim Spets, Acting Director, Operations Oversight Division, on (509) 373-0140.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

OOD:EDM

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Attachment 1
13-OOD-0001

Occupational Safety and Health Administration - Core Surveillance
Personal Protective Equipment (PPE) and Heat Stress
Roll-up Evaluation

Surveillance Scope:

The Richland Operations Office Operations Oversight Division (OOD) Facility Representatives evaluated CH2M HILL Plateau Remediation Company's (CHPRC's) implementation of PPE and heat stress control requirements associated with planning, meetings and work practices.

Surveillance Summary:

In general PPE and heat stress control requirements associated with planning, meetings and work practices were performed adequately throughout the CHPRC projects. A majority of the deficiencies noted were related to conduct of operations; specifically processes or procedures not being fully implemented.

Findings:

Balance of Site Decontamination and Decommissioning (BOS D&D)

- **S-12-OOD-BOS D&D-002-F01:** Inappropriate PPE worn by one of the Electricians while working on restoration of power to electrical switchgear in Building 252 AB.

Liquid Waste Fuel Storage (LWFS)

- **S-12-OOD-LWFS-002-F01:** Workplace hazards were not defined or controlled in the job hazard analyses for CSB procedure OP-12-012S.

Plutonium Finishing Plant (PFP)

- **S-12-OOD-PFP-003-F01:** Red Status Tags had not been affixed to three partially assembled scaffold assemblies in the Solid Waste Operations (SWO) waste box loading area.
- **S-12-OOD-PFP-003-F02:** Personnel placement of a temporary work platform to facilitate removal of an off-gas differential pressure assembly mount compromised Room 235B mezzanine railing protection.
- **S-12-OOD-PFP-003-F03:** Noise hazard from radiological air sampler motor.

Soil and Groundwater Project (S&GRP)

- **S-12-OOD-GPP-002-F01:** Corrective actions to address elevated noise levels in sample vans and purge water trucks were not effective.

Spent Nuclear Fuel (SNF)

- **S-12-OOD-SNF-002-F01:** Shearer was not properly grounded consider that personnel were standing next to the excavator.
- **S-12-OOD-SNF-002-F02:** Daily Equipment Safety Logbook was not performed for equipment prior to use.
- **S-12-OOD-SNF-002-F03:** Excavator was moved by D&D personnel with outer cab door open and swinging loosely during equipment movement.
- **S-12-OOD-SNF-002-F04:** Chemical Operator failed to lower his face shield while transferring chemicals.

Solid Waste Operations Complex (SWOC)

- **S-12-OOD-SWOC-002-F01**: SWOC IH Monitoring Data is not being entered into the CHPRC IHS database in a timely manner.
- **S-12-OOD-SWOC-002-F02:** Noise Monitoring in the Air Compressor Rooms is not being completed as required by the WRAP Industrial Hygiene Baseline Hazard Assessment.
- **S-12-OOD-SWOC-002-F03**: Three WRAP NCOs had not taken Heat Stress Training.
- **S-12-OOD-SWOC-002-F04**: SWOC Project IH has not completed CHPRC IHS Training as required by PRC-PRO-SH-409.
- **S-12-OOD-SWOC-002-F05:** Site Form A-6004-079, Industrial Hygiene WBGT Field Log, is not being utilized by the SWOC IH.
- **S-12-OOD-SWOC-002-F06:** Noise Survey Backup Forms were not utilized for WRAP Process HVAC Area.
- **S-12-OOD-SWOC-002-F07:** The Worksite Hazard Analysis (WHA) for Thermal Conditions box for heat hazard was not checked for skill-based work performed in 2706-T performed on August 8 and August 9, 2012.

<u>Observations:</u>

Balance of Site Decontamination and Decommissioning (BOS D&D)

- **S-12-OOD-BOS D&D-002-O01** – Deficiencies noted in equipment alignment following restoration of power to 2200 VAC Switchgear in 252 AB.

Liquid Waste Fuel Storage (LWFS)

- **S-12-OOD-LWFS-002-O01:** Fall protection issues existed on the west end of the MHM Bridge when the MHM was not in its normal staged position full west.

Plutonium Finishing Plant (PFP)

- **S-12-OOD-PFP-003-O01:** An unexpected work condition resulted in exceeding the protection factor for allowed respiratory protection equipment during EF-3 work activities.
- **S-12-OOD-PFP-003-O02:** Heat stress control practices offered opportunities for enhancement.

Soil and Groundwater Project (S&GRP)

- **S-12-OOD-GPP-002-O01:** A SALA lanyard was being utilized with a MSA fall protection harness at the 200 West Pump and Treat.
- **S-12-OOD-GPP-002-O02:** Field observation could not determine if manufacturer requirements were being followed for inspection of fall protection devices in the Rad Building at the 200 West Pump and Treat.

Solid Waste Operations Complex (SWOC)

- **S-12-OOD-SWOC-002-O01:** The FR identified two examples in Procedure PRC-PRO-SH-121, *Heat Stress Control*, where the procedure was not clear in defining heat stress screening criteria.
- **S-12-OOD-SWOC-002-O02:** Pre-start Work Step 5.1.6 in Work Instruction 2T-12-06036 was generic in nature and could have been more specific.
- **S-12-OOD-SWOC-002-O03:** CHPRC IHS Database does not contain fields for WRAP or Central Waste Complex (CWC).
- **S-12-OOD-SWOC-002-O04:** SWOC does not have a process in place to track monitoring required by the IHBAs.
- **S-12-OOD-SWOC-002-O05:** Opportunities for Improvement identified in Heat Stress Planning.
- **S-12-OOD-SWOC-002-O06:** Some IH issues identified during Contractor assessments/reviews were not placed into Condition Reporting and Resolution System (CRRS) or were closed out prematurely.

<u>Good Practices:</u>

Liquid Waste Fuel Storage (LWFS)

- **S-12-OOD-LWFS-002-GP01:** Shift Operations Manager (SOM) demonstrated good commitment to safety.

Solid Waste Operations Complex (SWOC)

- **S-12-OOD-SWOC-002-GP01**: Workers exhibited a good questioning attitude leading to the discovery of exposed 120V contacts in the 291-T Stack Monitoring Instrument Cabinet during a pre-job walk down, and management's response was notable.

Conclusions:

OOD considers CHPRC performance in the areas of PPE and Heat Stress Controls adequate. However in aggregate, the number of deficiencies in one area may provide an opportunity for improvement.

Attachment 2
13-OOD-0001

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: Ron Johnson

Surveillance Number: S-12-OOD-BOS D&D-002

Date Completed: August 31, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: K-Basins Deactivation and Decommissioning (D&D), Waste & Fuels Surveillance & Maintenance organizations (Note: Tracked as BOS D&D)

Title: Occupational Safety and Health Administration Surveillance: Personal Protective Equipment (PPE) and Heat Stress

Guides: OSS - 19.1, 19.8 & 19.8a

Surveillance Scope:

The objective of this surveillance is to evaluate the use of PPE to mitigate hazards that workers encounter in performing their jobs and actions taken by the contractor to protect workers from heat stress. The surveillance activities provide a basis for determining if contractor management is ensuring the appropriate personal protective equipment is used, workers are protected from heat stress, and that the contractor is complying with U.S. Department of Energy (DOE) requirements.

Surveillance Summary:

This surveillance was conducted to verify the contractor has established and implemented an effective program to identify and monitor heat stress conditions and the use of proper PPE for the given work hazard in the workplace as listed under DOE requirements and established implementing procedures.

The following activities were used, as applicable, to evaluate the use of PPE and management of Heat Stress by contractor and DOE employees.

- Conduct a walkthrough of the facility visiting (a) areas with chemical hazards, (b) areas where construction, D&D or overhead work is in progress, (c) areas where respiratory protection is required, and (d) areas with high ambient noise levels (PPE).

- Observe a maintenance project involving work on energized electrical circuits (PPE).

- Review health and safety plan, work package, or other governing documents for work that involves potential for exposure to heat stress.

- Attend pre-job briefings (Heat Stress).

- Observe ongoing work activities at the work site for the administrative documents reviewed in Activity 3 (Heat Stress).

Activities monitored:

- Facility 224T Annual Surveillance. (OAs 44111 & 44070)
- PUREX Electrical Work (OA 43832)
- Surveillance & Maintenance Plan of the Day Meeting (OA 43684)
- K-Basins D&D Work (OAs 43919, 44083, 44177 & 44251)
- FE&C Pre-Job Brief (OA 44112)
- K-West Basin MCO Operations (OAs 43702 & 43778)
- Asbestos abatement and inspection at 200 West Area (OAs 43686 & 44055)

Documents Reviewed:

- 29 CFR 1926, Subpart E, Personal Protective Equipment and Life-Saving Equipment
- 29 CFR 1910, Subpart I, Personal Protective Equipment
- 10 CFR851, Worker Safety and Health Program
- RRD 005, Rev.3, Worker Safety
- PRC-PRO-SH-121, Rev. 0, Heat Stress Control
- OS-4-031, Rev.1, Heat Stress Control when in Impervious Clothing
- Earthworks and Excavating Material Handling plan (Subcontractor 44359)
- 2CP-SOP-A-05017, PUREX Switchgear Power Restoration, Rev. 0
- SM-12-06326/S, 224T Annual Surveillance
- OP-70-043W, KOP Close and Lift MCO (OCRWM)
- 1K-12-05426, D4 Size reduce Concrete Rubble & rebar
- 1K-11-04372, D4 100K Area Asbestos Cleanup
- CP-12-02855, Class 1 Asbestos 200 Area Steam Line

Work activities and issues observed at K-Basins were recorded under surveillance S-12-OOD-SNF-002. Based on the work activity noted in this surveillance, the Surveillance & Maintenance organization showed compliance with DOE requirements, one observation and one finding were captured during this time period.

- **S-12-OOD-BOS D&D-002-F01** – Inappropriate PPE worn by one of the Electricians while working on restoration of power to electrical switchgear in Building 252 AB.

- **S-12-OOD-BOS D&D-002-O01** – Equipment alignment following restoration of power to 2200 VAC Switchgear in 252 AB.

Finding: S-12-OOD-BOS D&D-002-F01:

Inappropriate PPE worn by one of the Electricians while working on restoration of power to electrical switchgear in Building 252 AB. (OA 43832)

Requirements:

Requirements Document PRC-RD-SH-11183, Personal Protection which states in Section 2.3, Step 6 the following:

"Dark tinted glasses may not be worn inside of buildings, offices, facilities or enclosures - except under written medical prescription and in cases where the blockage of visible light does not create a greater hazard by impeding vision."

Discussion:

Both Electricians wore Fire Rated Long Sleeve shirts/jeans with leather footwear. Their PPE included face shields referencing ANSI Z87.1, hard hats Z89.1 with gloves rated for Class 00 electrical and ear plugs. One Electrician was observed to be wearing clear safety glasses underneath his face shield whereas the other Electrician chose to wear dark lens safety glasses. The Electrician was questioned a few times by both his co-worker and a S&M worker about his decision to continue to wear a dark lens style safety glasses. The first time occurred as both Electricians were putting on their electrical safety PPE and the second time was during opening of the breaker front cover to the 2200 Volt AC Tie-breaker. This is an repeat occurrence involving an Electrician wearing dark colored safety glasses, same building, going into an electrical panel to perform work and stating that they can see what they are doing to another worker (Ref. OA 40990).

It should be noted that the exterior doors to the 252 Electrical building were open to allow outside light into the switchgear room due to the absence of room lighting. S&M personnel exhibited good safety practices by switching their own safety glasses from dark to clear lens style when entering the switchgear room.

The FR saw one of the two Electricians wearing PPE inappropriate for working around energized electrical switchgear/breaker compartments in a building without interior lighting available. This increases the level of risk to all workers inside the switchgear building due to deficient lighting and the inability to see electrical work clearly through a dark lens style safety glass.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-12-OOD-BOS D&D-002-O01:

Deficiencies noted in equipment alignment following restoration of power to 2200 VAC Switchgear in 252AB. (OA 43832)

Discussion:
After the Electricians left for the day the FR walked down each breaker cubicle in the main switchgear located in building 252 AB. The walk down was performed with two S&M Electrical engineers and it was discovered that some breakers in the switchgear did not have their Lockout Relays reset (86 devices) even though power was restored to each breaker. Each breaker is 2400 VAC and is identified below by position:

- Breaker cubicle 1B, Primary Feed #1, Lockout Relay 86 is in the Tripped Position.
- Breaker cubicle 3B, Blank, Lockout Relay 86 is in the Tripped Position.
- Breaker cubicle 9B, Alternate Feed #2, Lockout relay 86 is in the Tripped Position.

Leaving some Lockout Relays tripped on the same bus can be confusing and is not a good operator practice for energized switchgear, especially when a worker is required to do some troubleshooting in the event of an electrical fault. This was communicated to both Electrical Engineers who later agreed this was not a good practice to keep.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The CHPRC Integrated Evaluation Plan (IEP) for Fiscal Year (FY) 2010, 2011 and 2012 was reviewed for the contractor self-assessments in the functional area of OSHA Topics for the Surveillance & Maintenance organization. The IEP for FY 2010 and 2011 appeared to be adequate in coverage of the S&M organization through the use of surveillances and assessments.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

Ed McCarthy
Max Edington
Al Farabee
Wade Woolery
Thomas K. Teynor

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: Brian Biro

Surveillance Number: S-12-OOD-GPP-002

Date Completed: August 24, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Soils and Ground Water Project

Title: Occupational Safety and Health Administration Surveillance: Personal Protective Equipment (PPE) and Heat Stress

Guide: OSS-19.1, 19.8 & 19.8a

Surveillance Scope:

The objective of this surveillance is to evaluate the use of PPE to mitigate hazards that workers encounter in performing their jobs and actions taken by the contractor to protect workers from heat stress. The surveillance activities provide a basis for determining if contractor management is ensuring the appropriate PPE is used, workers are protected from heat stress, and that the contractor is complying with U.S. Department of Energy requirements.

Surveillance Summary

The Facility Representative attended pre-job briefings, a Job Hazards Analysis (JHA) sessions, interviewed personnel, and observed field activities to assess implementation of controls to mitigate noise hazards, fall hazards, and heat stress.

Mitigating heat stress was discussed at every Monday morning tailgate meeting for the Project when hot weather was forecast for the week. When the hot weather began, personnel were reminded of the fact it takes time to become acclimated to elevated temperatures. Project safety monitored the number of days and then informed personnel

they should have become acclimated. Personnel were encouraged to notify their supervision of any medications or other conditions that may make them more susceptible to heat stress.

Heat stress controls were discussed at a JHA meeting for work at the 100 DX pump and treat. The activity required personnel to be in impermeable clothing to prevent chemical exposure. Scheduling the work during cooler times of day and monitoring wet bulb temperature was discussed.

Personnel were observed in Tyvek suits and air purifying respirators while loading carbon media into two containers at the 200 West Pump and Treat. A wet bulb thermometer had been set up and qualified personnel were monitoring and recording temperatures. Work rest regimens were applied. Interviews with personnel indicated they were cognizant of the requirements for mitigating heat stress hazards.

Noise surveys were in progress at the 200 West Pump and Treat. The Rad Building was down posted from a general noise hazard area with only the areas in the immediate vicinity of air handlers requiring hearing protection. General area surveys and personal dosimeter surveys were ongoing for the Bio Building. Sound blocking panels had been purchased and were being placed in various locations to determine efficacy. The goal was to remove the requirement for full time hearing protection throughout the building.

Elevated noise levels in sample vans and purge water trucks driving off road resulted in a stop work action. The vehicles did not come with much noise insulation from the manufacturers. Wind noise, engine noise, and, in the case of sample vans, tools banging around in cabinets resulted in noise levels in excess of 85 decibels. It appeared the issue was raised at least as far back as 2010. Efforts to address the issue were ineffective and incomplete. Additional corrective actions were ongoing in August of 2012. A sample van was being outfitted with sound deadening material and was scheduled for testing the week of August 27, 2012. It should be noted the stop work action was related to a question about the legality of wearing hearing protection while operating a vehicle.

A random check of fall protection devices was conducted. A lanyard and harness were inspected. Each had a unique identifying number and brass "dog tag" affixed with a date. However, the manufacturer installed tags for documenting when the devices were placed in service and when inspections took place were blank. Further investigation revealed the Central Rigging Shop was supposed to be performing the competent person inspections required by some manufactures every six months. The dog tags indicated when the six month period expired and another inspection was due. Apparently, the equipment is placed in service upon receipt and is inspected every six months thereafter. It is supposed to be taken out of service when the time specified by the manufacturer expires (e.g., 5-10 years). Normally, this time frame would start from the time the equipment was placed into service (date of first use), not when it was manufactured.

One Finding and two Observations were noted.

- **S-12-OOD-GPP-002-F01:** Corrective actions to address elevated noise levels in sample vans and purge water trucks were not effective.
- **S-12-OOD-GPP-002-O01:** A SALA lanyard was being utilized with a MSA fall protection harness at the 200 West Pump and Treat.
- **S-12-OOD-GPP-002-O02:** Field observation could not determine if manufacturer requirements were being followed for inspection of fall protection devices in the Rad Building at the 200 West Pump and Treat. (OA 44118)

Surveillance Results:

Finding: S-12-OOD-GPP-002-F01

Corrective actions to addressed elevated noise levels in sample vans and purge water trucks were not effective.

Requirement(s):

DOE O 141.1D Attachment 2 Criterion 3 -- Management/Quality Improvement.
a. Establish and implement processes to detect and prevent quality problems.
b. Identify, control, and correct items, services, and processes that do not meet established requirements.
c. Identify the causes of problems, and include prevention of recurrence as a part of corrective action planning.
d. Review item characteristics, process implementation, and other quality related information to identify items, services, and processes needing improvement.

Discussion:

CR-2010-2155 dated June 28, 2010, documented 15 Opportunities for Improvement (OFIs) identified during a meeting between Craft and Management. OFI #11 stated, "Sample van will be evaluated for methods to reduce noise."

Corrective action #12 stated, "Deliver one sample van to 200 East Garage to evaluate methods to reduce noise levels inside vans."

The following closure statement was dated October 28, 2010, "Van # G43-1021H cab area has been insulated with a 1" thick foam type material to reduce the noise levels during vehicle movement. As a result, noise levels have been significantly reduced. The remaining vans will be scheduled for installation of foam material. Attached are the initial and final results of the noise level evaluations provided by IH Safety. (IHSF... 4 files uploaded into CRRS)".

Corrective Action #13 stated, "NCOs will identify materials that samplers can use to reduce noise inside sampling vans."

The follow closure statement was dated September 9, 2010, "NCOs evaluated the materials available for reduction of noise levels inside sampling vans. Material identified was ordered and installed in sample van cab area on vehicle G43-1021H on 7/12/10. Material was proven to be effective and resulted in a significant reduction in noise levels. In addition, ArmaFlex material (rolls) were ordered and received for use to apply on individual equipment to further reduce noise levels if needed."

Concerns about noise levels in sample vans and purge water trucks being driven on gravel roads surfaced again in the July/August 2012 time frame. Project Industrial Hygiene conducted noise surveys and obtained results above action levels indicating corrective actions from the 2010 timeframe were not fully effective.

RL Lead Assessor Closure Required: YES [X] NO [ ]

Observation: S-12-OOD-GPP-002-O01

A SALA lanyard was being utilized with a MSA fall protection harness at the 200 West Pump and Treat.

Discussion:

Online research of various vendors revealed MSA and Miller requirements for their equipment to be utilized as a system (all components manufactured by them unless they have, in writing, confirmed compatibility with other manufacture's components). Specifically:

P/N 10083963 User Instructions MSA Harnesses Section 5.1.1 Compatibility of Components and Subsystems stated, in part, "MSA Harnesses are designed to be used with MSA approved components and connecting subsystems. Use of MSA Harnesses with products made by others that are not approved in writing by MSA may adversely affect the functional compatibility between system parts and the safety and reliability of the complete system. Connecting subsystems must be suitable for use in the application (e.g. fall arrest or restraint). MSA produces a complete line of connecting subsystems for each application."

MFP9720039 1128 Rev 1.0 Miller User Instruction Manual section 2.0 System Compatibility stated, "All Miller fall protection products are designed for use with Miller approved components. Substitution or replacement with non-approved component combinations or subsystems or both may affect or interfere with the safe function of each other and endanger the compatibility within the system. This incompatibility may affect the reliability and safety of the total system."

The dbi SALA website reviewed did not provide user manuals.

The equipment observed at the 200 West Pump and Treat was a SALA lanyard coupled with a MSA harness. There was no way personnel in the field could determine if the two

components were compatible and/or if written approval had been obtained from MSA to utilized that particular SALA lanyard.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-GPP-002-O02

Field observation could not determine if manufacturer requirements were being followed for inspection of fall protection devices in the Rad Building at the 200 West Pump and Treat. (OA 44118)

Discussion:

The lanyard had a manufacturer tag that stated the tag needed to be marked when the device was placed in service and after each six month inspection by a competent person (these were in addition to the pre-use inspections). The tag was blank. The lanyard was marked with a #12 and the fact it belonged to the Soil and Groundwater Project. Additionally, a "dog tag" was attached with an inspection date of September 2012.

Based on the markings, it appeared the lanyard was under the control of an inspection program. However, it was unclear how a person in the field performing a pre-use inspection would be able to verify all the manufacturer requirements were being met since the manufacturer tag was not being utilized and the attached dog tag did not provide the same amount of detail/information.

The fall protection harness was being controlled in the same manner as the harness.

This issue had been entered into the CHPRC Condition Reporting System (CR-2012-2424).

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

Numerous contractor self-assessments documented oversight associated with hearing protection, heat stress, and PPE as part of other oversight activities. The following were conducted specific to areas related to this surveillance:

Heat Stress:
SGRP-2012-WSA-10749 Temperature Extreme Preparations March 26, 2012.

PPE:
SGRP-2012-WSA-10751 Determine if SGRP is compliant with PRC-PRO-SH-17916 MOP 2012 #123 Pre-job safety walkdown.

Noise Monitoring:
MOP 2011 #467 Aquifer Tube Sampling November 16, 2011.

In general, contractor self-assessment in the areas covered by this surveillance appeared adequate. Additional attention to Personal Fall Protection Devices might be warranted depending on what the extent of condition associated with the Observations cited above reveals.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Briefed:

R. B. Barmettlor, CHPRC
D. T. Southerland, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: Larry Earley

Surveillance Number: S-12-OOD-LWFS-002

Date Completed: August 24, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Liquid Waste Fuel Storage (LWFS)

Title: Occupational Safety and Health Administration (OSHA) Surveillance, Personal Protective Equipment (PPE) and Heat Stress

Guide: OSS 19.1, OSS 19.8, and OSS 19.8a

Surveillance Scope: The objective of this surveillance was to evaluate the use of PPE to mitigate hazards that workers encountered and also protective actions taken to mitigate heat stress issues. The surveillance activities provided a basis for determining if contractor management was ensuring the appropriate PPE was used, workers were protected from heat stress, and that the contractor was complying with U.S. Department of Energy requirements.

Surveillance Summary: The FR performed oversight of work activities at the Canister Storage Building (CSB) and at the Effluent Treatment Facility (ETF). The Facility Representative (FR) observed activities on the CSB Multi-Canister Overpack (MCO) Handling Machine (MHM) Bridge, activities to place an MCO in the CSB receiving pit, activities outside on the MCO Transporter, and activities inside the ETF Verification Tank. The FR oversight was documented in Operational Awareness (OA) reports 44329, 44248, 44082 and 44075.

The assessor found that in general, occupational safety and health practices were performed in accordance with procedures. However, the surveillance did result in the identification of the following Findings and Observation as well as one Good Practice.

- **S-12-OOD-LWFS-002-F01:** Workplace hazards were not defined or controlled in the job hazard analyses for CSB procedure OP-12-012S. (OA 44075)
- **S-12-OOD-LWFS-002-O01:** Fall protection issues existed on the west end of the MHM Bridge when the MHM was not in its normal staged position full west. (OA 44329)
- **S-12-OOD-LWFS-002-GP01:** Shift Operations Manager (SOM) demonstrated good commitment to safety.

Surveillance Results:

Finding: S-12-OOD-LWFS-002-F01

Workplace hazards were not defined or controlled in the job hazard analyses for CSB procedure OP-12-012S. (OA 44075)

Requirements:

PRC-PRO-WKM-079, Paragraph 6.1.6 states "Evaluate operations, procedures, and facilities to identify workplace hazards."

PRC-PRO-WKM-079, Paragraph 3.2.2.3 states "BEGIN initial hazard identification SCREENING by identifying site and task specific hazards, exposures, or constraints (include interfacing hazards and co-located work impacts) based on known and expected site conditions, and potential for changing conditions."

PRC-PRO-WKM-079, Paragraph 3.2.2.15 states in part "Based on the work instructions/procedure steps, notes, and comments from the site walk-down, DISCUSS AND ANALYZE hazards identified ..."

Discussion:

Contrary to the requirements above, the Automated Job Hazard Analysis for OP-12-012S did not address heat stress or cold stress conditions. A large portion of the procedure is performed outdoors during cask receipt.

RL Lead Assessor Closure Required: YES [ ] NO [X]

Observation: S-12-OOD-LWFS-002-O01

Fall protection issues existed on the west end of the MHM Bridge when the MHM was not in its normal staged position full west. (OA 44329)

Discussion:

The FR noted two fall potential fall protection issues on the west end of the MHM Bridge when the turret assembly was away from the west wall.

1. When personnel accessed the bridge and more than one person was at the access point, specifically if one person was there to exit the bridge and one person was accessing the bridge, a fall hazard potential existed. The FR observed an individual access the bridge when another was exiting. The person exiting had already disconnected his lanyard, then he stepped back (towards the bridge edge hazard) to allow the other person to access the bridge. It was not clear from the ground if the exiting person was within six feet from the edge therefore a nonconformance to requirements could not be determined.

2. The bucket used to pass materials from the ground to the bridge was tied off on the west side of the access gate. In order to access the bucket, an individual would have to disconnect himself from the safety line and would be exposed to a fall to the deck. When using the bucket, an individual would be within three feet from the bridge edge.

RL Lead Assessor Closure Required: YES [ ] NO [X]

Good Practice: S-12-OOD-LWFS-002-GP01

Shift Operations Manager (SOM) demonstrated good commitment to safety.

Discussion:

During the performance of OP-12-004S, Appendix A Task 2 Step 9.6 one of the riggers was helping to guide the load without gloves. The SOM stopped the individual and requested they wear leather gloves in case there were metal splinters or burrs.

Contractor Self-Assessment:

The FR reviewed the results of several Health and Safety inspections. The issues were appropriately captured in the corrective action management system and adequately tracked to closure. Project Health and Safety inspections are scheduled monthly at a minimum but frequently are performed two to three times per month focused on discrete work locations.

Contractor Self-Assessment Adequate: YES [X] NO [ ]

Contractor Management Briefed:
C. J. Simiele, CHPRC
P. R. Garello, CHPRC
P. T. Saueressig, CHPRC

Department of Energy
Richland Operations Office (RL)
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillance Team: Deanna McCranie, Kerry Schierman and David Thrasher

Surveillance Number: S-12-OOD-PFP-003

Date Completed: August 31, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Plutonium Finishing Plant (PFP)

Title: Occupational Safety and Health Administration (OSHA) Surveillance: Personal Protective Equipment (PPE) and Heat Stress

Guide: Customized Guide for core surveillance. Adapted from OSS 19.1 & 19.8 & 19.8a

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Surveillance Scope:

The objective of this surveillance was to evaluate the use of PPE to mitigate hazards that workers encounter in performing their jobs and actions taken by the contractor to protect workers from heat stress. The surveillance activities provide a basis for determining if contractor management is ensuring the appropriate PPE is used, workers are protected from heat stress, and that the contractor is complying with U.S. Department of Energy requirements.

Surveillance Summary:

The surveillance team observed the listed work and associated pre-job briefings, as well as radiological control technician coverage on backshift, at PFP. Observational emphasis was given to PPE use (including noise protection, chemical hazards, respiratory protection, and overhead work including fall protection) and Heat Stress control implementation during performance of the work. However, the team included any OSHA related item that was identified while observing work for this surveillance. The Facility Representatives (FRs) were unable to evaluate energized electrical work during the surveillance time period.

The following work activities were observed:

- Glovebox HA-23S Separation Mockup (OA's 43973, 43891)
- Waste Shipments (OA's 44175, 44013)
- EF-3 Fan repair (OA's 44249, 43977, 44152)
- Plutonium Reclamation Facility(PRF) Canyon Entry (OA's 44220, 44218, 44184, 44095, 44030)
- PRF Canyon Crane Post Maintenance Test (OA 44138)
- Otis freight Elevator Maintenance (OA 44129)
- Bulk Area Cleanout in Room 235B (OA's 43894, 44276)
- Venting of bulging Aspigel Canisters (OA 43903)
- Removal of E-4 Ducting in Room 228B (OA 43861)
- Operator Rounds (OA 43920)
- Heat Stress Controls (OA 43665)

The surveillance team reviewed the following documents:

- Work Packages for the above activities
- PRC-PRO-SH-095 (Scaffolding)
- 29 CFR 1910.23 (Guarding floor and wall openings and holes)
- PRC-PRO-SH-40479 (Occupational Noise Exposure and Hearing Conservation)
- PRC-PRO-RP-40109 (Radiological Work Planning)

This surveillance identified several instances of non-compliance with respect to the subject areas being reviewed (PPE and Heat Stress). However, given the amount of work reviewed and the unrelated nature of the findings, the Occupational Safety and Health (OS&H) program itself wasn't considered to have a programmatic weakness.

This surveillance resulted in 3 findings and 2 observations in the subject review areas.

- **S-12-OOD-PFP-003-F01:** Red Status Tags had not been affixed to three partially assembled scaffold assemblies in the Solid Waste Operations (SWO) waste box loading area.
- **S-12-OOD-PFP-003-F02:** Personnel placement of a temporary work platform to facilitate removal of an off-gas differential pressure assembly mount compromised Room 235B mezzanine railing protection.
- **S-12-OOD-PFP-003-F03:** Noise hazard from radiological air sampler motor.
- **S-12-OOD-PFP-003-O01:** An unexpected work condition resulted in exceeding the protection factor for allowed respiratory protection equipment during EF-3 work activities.
- **S-12-OOD-PFP-003-O02:** Heat stress control practices offered opportunities for enhancement.

Surveillance Results:

Finding: S-12-OOD-PFP-003-F01

Red Status Tags had not been affixed to three partially assembled scaffold assemblies in the Solid Waste Operations (SWO) waste box loading area. (OA 44175)
Requirements:

PRC-PRO-SH-095, Section 4.4.1.a, states in part, "When directed, then safely dismantle the scaffold: Affix a RED Status Tag at/near the access point during dismantling."

Discussion:

While observing the loading of two Standard Large Box 2s in the SWO waste box loading area, the FR noted three greater than four foot scaffold platform assemblies without status tags around the perimeter of the loading area. The platforms were open (without safety rails) on one side. The assemblies did not have access ladders attached.

The FR questioned one of the iron workers present at the work site, asking if tagging was still a requirement even when access ladders were not attached to the scaffolding. The iron worker replied they affix tags to all scaffold assemblies, went to his truck and obtained Red Status Tags, completed the information on the tags, and affixed them to the scaffolds.

RL Lead Assessor Closure Required: **YES [X] NO [ ]**

Finding: S-12-OOD-PFP-003-F02

Personnel placement of a temporary work platform to facilitate removal of an off-gas differential pressure assembly mount compromised Room 235B mezzanine railing protection. (OA 43894)

Requirements:

29 CFR 1910.23(c)(1), states in part, "Every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing (or the equivalent as specified in paragraph (e)(3) of this section) on all open sides except where there is entrance to a ramp, stairway, or fixed ladder..."

29 CFR 1910.23(e)(3), states in part, "A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42 inches nominal from upper surface of top rail to floor, platform, runway or ramp level..."

Discussion:

On July 25, personnel were assigned to remove an off-gas differential pressure gage assembly and mount from the mezzanine of Room 235B. The mount was fixed against the mezzanine guard rail with the assembly placed facing the mezzanine. The workers placed an approximately 8-inch work platform on the mezzanine in front of the mount assembly to facilitate removal.

Although the mount initially provided a tall barrier between personnel and the safety railing, after the mount was removed that barrier no longer existed. Due to the workers being elevated from the mezzanine floor (approximately 8 inches) the railing alone did not provide adequate fall protection from the mezzanine to the floor below (approximately 9-10 feet). When the FR noticed the discrepancy, he notified the Field Work Supervisor who had the platform moved and stated he would brief personnel later on the potential hazard of using the platform.

RL Lead Assessor Closure Required: **YES [X] NO [ ]**

Finding: S-12-OOD-PFP-003-F03

Noise hazard from radiological air sampler motor. (OA 43920)

Requirements:

PRC-PRO-SH-40479 section 3.1 step 1 states, in part:

"Noise exposures should be maintained at levels below 85 decibels (8-hour TWA)."

Discussion:

A motor attached to a gooseneck monitor in room 234A was observed to be very loud and prevented personnel from hearing the alpha monitor stationed in that room for hand and foot surveys. Surveys performed by the Industrial Hygiene (IH) group at PFP indicated that personnel standing in the vicinity of the motor to perform surveys would be exceeding 85 decibels Time Weighted Average (TWA). There were no warning signs or other such notifications to alert people of the need to wear hearing protection.

RL Lead Assessor Closure Required: **YES [X] NO [ ]**

S-12-OOD-PFP-003-O01

An unexpected work condition resulted in exceeding the protection factor for allowed respiratory protection equipment during EF-3 work activities. (OA 44152)

Discussion:

On August 14, Radiological Controls personnel validated that on August 13, contamination had been present in the breathing zone of a worker performing grinding on Exhaust Fan #3 impellor blades at a level that would exceed 1 Derived Air Concentration (DAC) after applying the protection factor for the Radiological Work Permit (RWP Z-717) allowable level of respiratory protection (powered air purifying respirator). At the time the worker was utilizing a supplied air respirator per his personal preference, and therefore contamination levels in his breathing zone were less than 0.2 DAC after applying the respirator's protection factor. Based upon the results

obtained, Radiological Controls personnel revised the associated As low as reasonably achievable Management Worksheet (AMW) and RWP to require a minimum of supplied air respirator and work was authorized to resume. The FR expressed concern to senior management that an unexpected work condition resulting in exceedance of the protection factor for allowed respiratory protection equipment warranted additional consideration to understand and mitigate the cause of the condition prior to taking actions (AMW and RWP change) to accommodate it. The Work Management Director convened an in-progress as low as reasonably achievable (ALARA) review.

PRC-PRO-RP-40109, Section 3.8 states in part, "In-progress ALARA reviews allow for any additional ALARA considerations to be identified that were NOT originally included in the work planning including incorporation of lessons learned. In-progress ALARA reviews should be performed when conditions change such that the initial radiological hazard controls identified in the planning stage may no longer be adequate to control the work." Although specific thresholds requiring an in-progress ALARA review were not exceeded in this event, encountering radiological conditions exceeding protection factors of protective equipment specified in an ALARA Management Worksheet should have warranted an in-progress ALARA review prior to resuming work.

RL Lead Assessor Closure Required: **YES[ ] NO [X]**

S-12-OOD-PFP-003-O02

Heat Stress control practices offered opportunities for enhancement. (OA 43665)

Discussion:

Heat stress monitoring activities observed on July 10, demonstrated active involvement from the project's IH, and incorporation of the workforce into monitoring and decision making activities. PFP's processes observed were generally active and compliant. Several opportunities for enhancement were identified:

- The IH associated with duct level activities provided one of the duct level work teams with information and a user's package to go with the Extech HT30 Wet Bulb Globe Temperature (WBGT) instrument he provided them on July 10. The package included pages from the Extech HT30 WBGT user's manual, PRC-PRO-SH-121, and the American Conference of Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) guide. However, any document source identifiers had been removed from the pages and the IH did not inform the work team where each of the pages had come from. Not all involved personnel were familiar with the sources and did not recognize they had excerpted and edited copies of PRC-PRO material. Not maintaining configuration identifiers and/or not providing complete source materials to control field activities left personnel susceptible to using out-of-date or incomplete information/direction.

- When the FR observed personnel obtaining WBGT data in duct level they were not recording data, and did not know of a requirement/expectation to do so. When the FR asked the IH what

his data collection expectations had been, he stated he had brought a data sheet with him to the pre-job discussion, but had not discussed it with the work team. Therefore, non-IH personnel involved in duct level temperature monitoring activities were not aware of data taking expectations of PRC-PRO-SH-409, IH, Monitoring, Reporting, and Records Management. Because initial data obtained was significantly below heat stress screening criteria levels, further monitoring or recording in this instance was not critical, but could be in other applications.

- When the FR discussed heat stress work/rest regimes with the IH monitoring the 270Z Heating Ventilation and Air Conditioning repair activity, the IH stated he did not consider the work activities being conducted (soldering pipe and observing the soldering activity from sitting positions) to meet the threshold for light work and therefore was using worker self-monitoring (with his own frequent oversight) to dictate work/rest controls. This appeared to be a good practice, but classification of Light work should be carefully considered for each application. Although the 10 CFR 851 currently mandated version of the ACGIH TLV Guide is the 2005 edition, and its work category table defines Rest as sitting quietly or with moderate arm movements, the 2011 edition of the TLV guide redefines the work categories. Only sitting is used as an example for the Rest category and sitting with light manual work with hands or hands and arms is defined as Light work.

RL Lead Assessor Closure Required: **YES[ ] NO[X]**

Contractor Self-Assessment:

The surveillance team reviewed the contractor's Internal Assessment schedule and found the following reports covering the subject review area within the last year:

- PFP-2012-WSA-10954 Review the effectiveness of the PFP Chemical Management Plan
- PFP-2012-WSA-11659 Review of Fall Protection-Elevated Work
- PFP-2012-WSA-11925 Review of EJTA Process (Quarterly)

The Chemical Management Plan assessment was a document review of the Requirements and the PFP implementation document, and concluded with some recommendations to make the program better. The Fall Protection assessment was looking at the field implementation of the requirements and found no deficiencies. The facility has started a quarterly ongoing assessment of the Employee Job Task Analysis (EJTA) process. These assessments are designed to provide assurance that the facility is adequately maintaining EJTAs for their employees. The one assessment performed on this subject to date did not identify any deficiencies.

The facility contractor has also performed numerous Management Observation Program (MOP) reviews in the areas of OS&H, as listed below:

- 08-2012-053-057 Noise Producing Activities
- 08-2012-050-054 Activity Requiring Safety Shower and Eye Wash
- 08-2012-047-051 Carcinogen Control
- 08-2012-043-047 Signs, Tags, and Barricades
- 08-2012-042-046 Chemical Labeling
- 08-2012-038-042 Walking/Working Surfaces

- 08-2012-037-041 Spotter/Vehicle Operation
- 08-2012-028-031 Foot Protection at PFP
- 02-2012-005-018 Review ZO-100-032
- 12-2011-026-131 Glovebox Electrical Isolation (PPE, Tools, and Procedure)
- 12-2011-016-052 Team Walkdown (PPE, Tools & Equipment)

The listed documentation has identified several opportunities for improvement and resulted in subsequent Condition Reports, providing evidence that the contractor is performing an adequate job of assessing their OS&H program.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

Chris Thursby, CHPRC
Mark Wright, CHPRC
Jerry Long (CHPRC)

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant(s): Joe Waring, Allison Wright

Surveillance Number: S-12-OOD-SWOC-002

Date Completed: September 7, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Solid Waste Operations Complex (SWOC)

Title: Occupational Safety and Health Administration (OSHA) Surveillance: Personal Protective Equipment (PPE) and Heat Stress

Guides: OSS-19.1, 19.8 & 19.8a

Surveillance Scope:

The objective of this surveillance was to evaluate the use of PPE to mitigate hazards that workers encounter in performing their jobs and actions taken by the contractor to protect workers from heat stress. The surveillance activities provide a basis for determining if SWOC management is ensuring the appropriate PPE is used, workers are protected from heat stress, and that the contractor is complying with U.S. Department of Energy requirements.

Surveillance Summary:

During the month of August, the Facility Representatives (FRs) reviewed planning for heat stress, implementation of heat stress controls in the field, electrical maintenance, use of PPE, and observed a demonstration of the CHPRC Industrial Hygiene System (IHS) Database. Use of respirators was not evaluated during the review because the project was not conducting work that required respiratory protection in August. Documentation reviewed included: CHPRC applicable OSHA self-assessments/reviews; technical procedures; administrative procedures; work package instructions; hazards analyses; training records for heat stress and respiratory protection; and IH monitoring data. In

addition, the FRs performed informal interviews of IH personnel during the course of the surveillance.

In general, SWOC's use of PPE in the field was consistent with work documents and hazard analysis. IH use of proper forms, timeliness of entering data into the CHPRC IHS database, conducting monitoring required by IH Baseline Assessments (IHBA), update of IHBA documentation, and record keeping were found deficient. Heat stress planning and training deficiencies were also found in some instances.

Seven Findings and six Observations were documented in this report. One Good Practice was also documented.

- **S-12-OOD-SWOC-002-F01**: SWOC IH Monitoring Data is not being entered into the CHPRC IHS database in a timely manner. [OA 44272]
- **S-12-OOD-SWOC-002-F02:** Noise Monitoring in the Air Compressor Rooms is not being completed as required by the Waste Receiving and Processing Facility (WRAP) Industrial Hygiene Baseline Hazard Assessment. [OA 44272]
- **S-12-OOD-SWOC-002-F03**: Three WRAP Nuclear Chemical Operators (NCOs) had not taken Heat Stress Training. [OA 44439]
- **S-12-OOD-SWOC-002-F04**: SWOC Project IH has not completed CHPRC IHS Training as required by PRC-PRO-SH-409. [OA 44272]
- **S-12-OOD-SWOC-002-F05:** Site Form A-6004-079, Industrial Hygiene Wet Bulb Globe Temperature (WBGT) Field Log, is not being utilized by the SWOC IH. [OA 44272]
- **S-12-OOD-SWOC-002-F06:** Noise Survey Backup Forms were not utilized for WRAP Process Heating, ventilation, and air conditioning (HVAC) Area. [OA 44272]
- **S-12-OOD-SWOC-002-F07:** The Worksite Hazard Analysis (WHA) for Thermal Conditions box for heat hazard was not checked for skill-based work performed in 2706-T performed on August 8, and August 9, 2012. [OA 44091]
- **S-12-OOD-SWOC-002-O01:** The FR identified two examples in Procedure PRC-PRO-SH-121, *Heat Stress Control*, where the procedure was not clear in defining heat stress screening criteria. OA 44103]
- **S-12-OOD-SWOC-002-O02:** Pre-start Work Step 5.1.6 in Work Instruction 2T-12-06036 was generic in nature and could have been more specific. [OA 44091]
- **S-12-OOD-SWOC-002-O03:** CHPRC IHS Database does not contain fields for WRAP or Central Waste Complex (CWC). [OA 44272]
- **S-12-OOD-SWOC-002-O04:** SWOC does not have a process in place to track monitoring required by the IHBAs. [OA 44272]
- **S-12-OOD-SWOC-002-O05:** Opportunities for Improvement identified in Heat Stress Planning. [OA 44272]
- **S-12-OOD-SWOC-002-O06:** Some IH issues identified during Contractor assessments/reviews were not placed into Condition Reporting and Resolution System (CRRS) or were closed out prematurely. [OA 44501]
- **S-12-OOD-SWOC-002-GP01**: Workers exhibited a good questioning attitude leading to the discovery of exposed 120V contacts in the 291-T Stack Monitoring

Instrument Cabinet during a pre-job walk down, and management's response was notable. [OA 44291]

Surveillance Results:

Finding: S-12-OOD-SWOC-002-F01

SWOC IH Monitoring Data is not being entered into the CHPRC IHS database in a timely manner. [OA 44272]

Requirement:

PRC-PRO-SH-409, *Industrial Hygiene Monitoring, Reporting and Records Management*, Revision 1, Change 0, Section 3.2.7, *Heat Stress Monitoring Surveys*, states, "Heat stress monitoring is commonly referred to as Wet Bulb Globe Thermometer (WBGT). The process for documenting Heat Stress Monitoring Surveys using the CHPRC IHS database is described in this section. Section 3.2.8 identifies the process for documenting Heat Stress Monitoring Surveys if the CHPRC IHS database is unavailable for more than 24 hours or it is more convenient to use a hard copy form to collect data in the field.

IH or IHT

1. TRANSCRIBE whatever subset of the data is deemed representative into the database.

1. COMPLETE the survey in the CHPRC IHS database."

Section 3.2.9, *Noise Surveys*, states, "The process for documenting Noise Surveys using the CHPRC IHS database is described in this section. Section 3.2.10 identifies the process for documenting noise if the CHPRC IHS database is unavailable for more than 24 hours.

IH or IHT

2. TRANSCRIBE whatever subset of the data is deemed representative into the database.

3. COMPLETE the survey in the CHPRC IHS database.

4. PREPARE <u>AND</u> DISTRIBUTE personal notification letters, as needed.

5. Email a copy of the Notification Letter to IH Records Management."

Discussion:

FRs requested SWOC noise surveys completed as part of the baseline monitoring program for WRAP HVAC Room and Mechanical Room, and recent heat stress surveys. No noise surveys for WRAP had been input into the database, but one was completed in

November 2011 and a diagram of process HVAC showing readings was provided. Three heat stress surveys had been input into the database (Survey ID 12-20857 from the Mixed Waste Trench in May 15, 2012, Survey ID 12-20858 from MO-281 on May 15, 2012, and Survey ID 12-20668 for CWC General Area on April 23, 2012). SWOC was routinely in work/rest regimen in July and August but no information was input into the CHPRC IHS database. Additionally, data from a departed summer intern took three days to locate indicating an issue with turnover and tracking, plus it has not been put into the database.

PRC-PRO-SH-409, Section 3.2.8 and Section 3.2.10 states if the database in not available within 24 hours then backup forms can be utilized (this is documented as a separate finding). This implies data is being input in a near real-time fashion, not months later. A similar issue was found with Confined Space entry data. Contrary to the requirements in PRC-PRO-SH-409, SWOC IH monitoring data is not being input into the IHS database in a timely manner.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-002-F02

Noise Monitoring in the Air Compressor Rooms is not being completed as required by the Waste Receiving and Processing Facility (WRAP) Industrial Hygiene Baseline Hazard Assessment. [OA 44272]

Requirement(s):

Appendix A to 10 CFR 851 – "*Worker Safety and Health Functional Areas*." This appendix establishes the mandatory requirements for implementing the applicable functional areas required by Section 851.24. 6. Industrial Hygiene, (a) Initial or baseline surveys and periodic resurveys and/or exposure monitoring as appropriate of all work areas or operations to identify and evaluate potential worker health risks.

WRAP IH Baseline Hazard Assessment, dated March 2, 2010 (no document number), page 8, 2336W Compressor Room, Yearly Noise Assessment of Area.

Discussion:

The WRAP Complex IH Baseline Hazard Assessment (no document number) requires annual noise monitoring of the Compressor Room (which is called the Mechanical Room). No results could be provided. The database goes back three years. Contrary to the requirements above, the 2336-W Air Compressor Room (Mechanical Room) is not being monitored on an annual basis.

Subsequent to identifying this, the FR reviewed contractor assessments and found this issue identified in a Management Observation Program report dated April 12, 2012, and

documented in CR-2012-1030. Issue found other noise monitoring was not being completed. Issue was closed on May 18, stating there is a schedule for completing noise monitoring in the IHBA; however, the issue identified is that the monitoring identified in those plans is not being completed. This issue should not have been closed out and would have benefited from an extent of condition review.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-002-F03

Three WRAP Nuclear Chemical Operators (NCOs) had not taken Heat Stress Training. [OA 44439]

Requirement:

PRC-PRO-SH-121, *Heat Stress Control*, Section 3.4 "Employee Awareness and Training, Line Management, 1. ENSURE that employees who are working in or supervising work in hot environments are trained in heat stress recognition, prevention, and control."

Discussion:

FR reviewed a report showing SWOC Operations and Management that had taken Heat Stress Control, Recognition, and Prevention Training (Course 020193). Two NCOs had expired training as of May 6, 2012, and one NCO did not have the course on his Training Plan. Contrary to the requirement above, three workers had not completed heat stress training. Additionally, the WRAP Facility Manager's Training Plan does not include the Heat Stress Course. This should be reviewed since he routinely conducts walk throughs and oversight.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-002-F04

SWOC Project IH has not completed CHPRC IHS Training as required by PRC-PRO-SH-409. [OA 44272]

Requirement:

PRC-PRO-SH-409, *Industrial Hygiene Monitoring, Reporting and Records Management*, Section 2.1 IH, "...Complete CHPRC IHS training from Industrial Hygiene Records Management (IHRM)."

Discussion:

The FR's were provided with a demonstration of the CHPRC IHS database. The Project IH was not fully knowledgeable of where information was contained within the database, thought the database was managed by Mission Support Alliance, LLC, and stated he had not attended the training. Contrary to the requirement above, the SWOC Project IH had not attended the required training. On August 28, FR was provided clarification from the IH and Occupational Safety & Health (OS&H) Manager that only a briefing was provided indicating this training needs to be formalized and tracked to meet the procedural requirements.

FRs did not check whether this training is part of the training plan or whether other project IH's have attended.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-002-F05

Site Form A-6004-079, Industrial Hygiene Wet Bulb Globe Temperature (WBGT) Field Log, is not being utilized by the SWOC IH or a summer intern. [OA 44272]

Requirement(s):

PRC-PRO-SH-409, *Industrial Hygiene Monitoring, Reporting and Records Management*, Section 3.2.8, Heat Stress Monitoring Backup Forms, "Site Form A-6004-079, Industrial WBGT Field Log, may be used if the CHPRC IHS database in unavailable for more than 24 hours or it is more convenient to use a hard copy form to collect field data. The survey number field is left blank until the data is entered into the CHPRC IHS database when the site form is used."

Discussion:

FRs requested to see recent heat stress monitoring survey data. No heat stress information had been entered into the database since May 2012. Project IH provided his note pad, and in one instance a sheet of paper was utilized, which documented WBGT readings and direction to project when work/rest was in effect. FR inquired whether there was a form for the WBGT information but the Project IH was not aware of the form. Contrary to the requirement above, heat stress monitoring is not being documented on the IH WBGT Field Log sheet when not input in CHPRC IHS as required.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-002-F06

Noise Survey Backup Forms were not utilized for WRAP Process Heating, ventilation, and air conditioning (HVAC) Area. [OA 44272]

Requirement(s):

PRC-PRO-SH-409, *IH Monitoring, Reporting and Records Management*, Revision 1, Change 0, Section 3.2.10, Noise Survey Backup Forms, "If the database is unavailable for more than 24 hours, or it is more convenient to use a hard copy form to collect field data, the following site forms may be used (A-6001-762, A-6001-761)."

Discussion:

The Project IH had conducted a noise survey in November 2011, but had not input the information into the CHPRC IHS Database. A diagram was provided with the results, and a narrative had been written. Contrary to the requirement below, the Noise Survey Backup Form was not utilized. IH stated he doesn't use the form or the others in PRC-PRO-SH-409.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-002-F07

The Worksite Hazard Analysis (WHA) for Thermal Conditions box for heat hazard was not checked for skill-based work performed in 2706-T on August 8 and 9, 2012. [OA 44091]

Requirement(s):

Procedure PRC-PRO-WKM-079, *Job Hazard Analysis*, Rev 5, Change 1, Section 3.2.1.4 states in part, "4. WALK-DOWN the job site AND IDENTIFY/EVALUATE the hazards and activities to confirm the skill-based determination (both activities within the defined work scope and adjacent activities) using the WHA form. The WHA will be used when an activity has been determined to be skill-based work. IF a WHA exists for this proposed location, THEN VERIFY whether any new hazards or activities exist AND MARK-UP existing WHA accordingly. CHECK the hazards or activities on the WHA form as they are identified in the field."

Discussion:

The skill-based work (troubleshooting 2706-T record sampler vacuum pump) was performed in the 2706-T ventilation room, which is not air conditioned unless set up with a portable unit. The FR met with the Field Worker Supervisor (FWS) and inquired how

heat stress monitoring/controls was implemented. The FWS stated that work was performed only in the morning and not after lunch since the room heats up during the day. Since this appeared arbitrary, the FR asked if there was ambient temperature monitoring within the work space to at least provide the dry bulb temperature. The FWS stated yes. The FR and FWS then performed a walk down of the work space.

During the walk down the FR noted the thermometer in the room was located just inside the door, which was propped open for ventilation. The sun was shining on the thermometer, so it did not provide a good indication of the work space air temperature. The work area was located in the opposite corner from the room entrance. A portable air conditioner was near the work area within the room, but the FR noted the hot air exhaust from the portable air conditioner was not routed outside the room, so there was a net gain of heat into the room from running the portable air conditioner. The FWS routed the exhaust out of the room after this was pointed out. The FR then reviewed the WHA and noted that the box for Thermal Conditions was not checked.

During the walk down at approximately 0830 on August 9, 2012, the FR noted the room was not excessively warm and there was no immediate concern for heat stress conditions. However, since the work space heats up during the day, thermal conditions (heat) exist at the worksite. Therefore, this hazard should have been checked on the WHA.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-12-OOD-SWOC-002-O01

The FR identified two examples in Procedure PRC-PRO-SH-121, *Heat Stress Control*, where the procedure was not clear in defining heat stress screening criteria. [OA 44103]

Discussion:

In Figure 1 of Procedure PRC-PRO-SH-121, one question in the flow chart is "Are screening criteria in Table 2 exceeded?" However, Table 2 is titled "Work Category Guidelines (Workloads)" and provides Threshold Limit Values example activities for various categories (e.g., light, moderate, heavy, and very heavy) of work. It is not clear how Table 2 fits into Figure 1's yes/no screening question.

Table 3, "Screening Criteria for Heat Stress Exposure," provides WBGT values at various work demands and provides the percent of work/rest allowed based on the work demand and WBGT. However, the table is not clear on whether the work/rest controls are implemented when the WBGT value in that particular row is reached or if the work/rest control is implemented before the WBGT value in that particular row is reached. Providing additional verbiage in the table such as "Below 81.5^0 F" for 100% work when light and unacclimatized and a range such as "81.5^0 F – 84.2^0 F" for 75% work/25% rest when light and unacclimatized, etc., would remove any potential

confusion. Alternatively, an additional note could be added to the table to provide clarification on its use.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-SWOC-002-O02

Pre-Start Work Step 5.1.6 in Work Instruction 2T-12-06036 was generic in nature and could have been more specific. [OA 44091]

Discussion:

Work Instruction 2T-12-06036, Step 5.1.6 states, "Industrial Hygiene will confirm established controls immediately prior to the start of work." This statement was taken directly from Automated Job Hazard Analysis (AJHA) 2T-636, Thermal Stress section of the AJHA, which is apparently a boilerplate statement automatically inserted into the AJHA when thermal stress is selected as a hazard. Although this generic statement makes sense in the context of the AJHA since it is in the thermal stress section of the AJHA, it is generic in nature in the work instruction. One could interpret the statement to mean one of many IH controls needing confirmation prior to starting work, such as confined space monitoring, respiratory controls, noise monitoring, etc., unless the AJHA is reviewed in full. A more specific control statement would read "Industrial Hygiene will confirm established thermal stress controls immediately prior to the start of work."

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-SWOC-002-O03

CHPRC IHS Database does not contain fields for WRAP or Central Waste Complex (CWC). [OA 44272]
Discussion:

The CHPRC IHS Database does not contain fields for WRAP or CWC. Currently, the SWOC Project IH inputs data into the 200 West General Area field making data difficult to retrieve. FRs pointed out that there was a "Solid Waste" field that could be applicable, but the Project IH was not aware of this field. There are fields for T Plant and most of the Low-Level Burial Grounds. Adding WRAP and CWC to the database would be beneficial.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-SWOC-002-O04

SWOC does not have a process in place to track monitoring required by the IHBAs. [OA 44272]

Discussion:

On August 28, 2012, the FR met with the OS&H Manager and the Project IH to go over issues found during this surveillance. FR inquired how they track required monitoring in the industrial hygiene baseline assessments to ensure it is completed. No mechanism was provided.

RL Lead Assessor Closure Required: YES [X] NO [ ]

Observation: S-12-OOD-SWOC-002-O05

Opportunities for Improvement identified in Heat Stress Planning. [OA 44272]

Discussion:

PRC-PRO-SH-121, *Heat Stress Control*, Appendix E - Heat Stress Preparation & Checklist, contains a methodic approach, and describes an integrated team between maintenance, operations, engineering, and IH & Safety to conduct walk downs, etc. FRs requested the list of equipment and diagrams where cooling areas had been set up from Engineering, Operations, and Maintenance. No diagram was provided. The SWOC Maintenance Manager showed the FR where the five misters were staged that had been serviced and were available upon request. FRs interviewed an IH who indicated the walk downs did not take place. Additionally, the procedure requires misting system units to be turned on daily even if no work is being done to prevent algae growth. This was not being done until pointed out by the FR.

It is evident that some planning/preparations were done, however SWOC would benefit from following the checklist and getting the appropriate disciplines involved as described in Appendix E.

RL Lead Assessor Closure Required: YES [ ] NO [X]

Observation: S-12-OOD-SWOC-002-O06

Some IH issues identified during contractor assessments/reviews were not placed into Condition Reporting and Resolution System (CRRS) or were closed out prematurely. [OA 44501]

Discussion:

The FR reviewed the Fiscal Year (FY) 2012 contractor self-assessments/reviews related to heat stress, monitoring, and personal protective equipment. The following items were noted:

Management Observation Program (MOP), titled, "*Document Reviews*," dated April 12, 2012, found noise surveys were not being completed at SWOC facilities. CR-2012-1030 was issued, and closed on May 18, 2012, citing the Nuclear Safety Performance Evaluation Board review. The issue found was noise surveys are not being conducted, but closed out with issuance of document controlled IHBA. This issue should not have been closed out, and would have benefited from an extent of condition review to determine what other baseline monitoring is not being conducted.

MOP titled, "*SWIH Database needs notification process*," dated February 27, 2012, found a backlog of over 150 reports awaiting finalization. CR-2012-0480 was written to address the issue of not receiving an email notification, and required the database point of contact be contacted and have Occupational Safety & IH Managers remind their IH's of the need to track and complete surveys. No objective evidence showing the outcome of discussion with IH Database Committee or follow-up to see if issue was fixed. CR was closed on February 29, 2012. FR contacted the originator to see if email notifications are being sent, who indicated they are not. No objective evidence was provided showing which managers were notified, or follow-up corrective action to see if issue was fixed.

WFMP-2012-WSA-11941, titled "*Industrial Hygiene Baseline Hazard Assessments*," dated May 2012 identified all SWOC IH Baselines as out of date. No CRRS item is listed on the report; however, there is CR-2012-1513 Action 3 to track this deficiency.

SHS&Q-2012-WSA-10989, titled "*IH Monitoring, Recording & Records Management*," dated March 14, 2012, identified issues on timeliness of completing surveys and lack of records in IDMS but no CRRS action was used to track since it was a system issue. Additionally, report provides no information on what was reviewed.

All corrective actions to date have been categorized as Track until Fixed, therefore have not required an extent of condition review or apparent cause analysis. Between contractor identified and FR identified issues there appears to be negative trend and potential for a programmatic issue.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Good Practice: S-12-OOD-SWOC-002-GP01

Workers exhibited a good questioning attitude leading to the discovery of exposed 120V contacts in the 291-T Stack Monitoring Instrument Cabinet during a pre-job walk down, and management's response was notable. [OA 44291]

Discussion:

On August 14, 2012, during a maintenance pre-job walk down, exposed 120V contacts located in the upper left hand corner in the 291-T Stack Monitoring Instrument Cabinet (1-RM-291T-284) were identified. This identification and the question as to why the exposed electrical hazard was not analyzed/controlled led facility management to perform an extent of condition review on who accesses the cabinet. It was determined that this cabinet is routinely accessed by the facility radiological and operations personnel under approved procedures that do not address the exposed electrical hazard. Work within the stated cabinet was stopped and notifications were made.

The positive aspects of the event were the questioning attitude of the Instrument Technicians, stop work by the FWS, notifications to senior management, and recognition by management of the safety issue related to personnel who access the stack monitoring cabinet (i.e., operations and radcon personnel) utilizing work documents that have not analyzed this electrical hazard.

Contractor Self-Assessment:

The FR obtained the CHPRC Integrated Evaluation Plan (IEP) report for FY 12 to determine if self-assessments, surveillances, work site assessments, etc. were performed or planned on heat stress and personnel protective equipment within the SWOC. Additionally, a list of Management Observation Program (MOP) and Senior Supervisory Oversight Reports completed in FY 12 was requested. Performance Assurance staff provided indexes for January to June. No indexes were available prior to January; and July and August were backlogged. Numerous work site analyses and MOPs have been conducted over the past year. No surveillances or Senior Supervisory Oversight were conducted in the areas reviewed.

In FY 12, the CHPRC Functional Area had four planned reviews, of which three were completed at the time of this review. SHS&Q-2012-WSA-10994, titled "*Heat Stress Program Implementation*" had not been completed. Areas reviewed included: OSHA IH training; IH Monitoring, Recording & Records Management; and a comprehensive review by the Nuclear Safety Performance Evaluation Board. Issues identified included: use of the wrong setting during sound level measurement at CWC; not wearing safety glasses; understanding the technical basis for monitoring drum venting operations at T Plant; WRAP IHBA not being updated; timeliness of IH surveys being peer reviewed in the IH database (no CRRS actions), and surveys in the IH database not being placed into IDMS (no CRRS action).

In FY 12, SWOC had completed three planned Worksite Analyses. Area reviewed included arc flash and shock hazards, electrical safety training, and IHBA. Issues identified included: updating arc flash labels on equipment; and need to issue IH Baseline Hazards Assessments as controlled documents. From January to June, seven Management Observation Program Reports were completed, identifying issues with the

IH database not provided notification for data to review (CR-2012-0480); and annual noise monitoring not being completed (CR-2012-1030).

Overall, an adequate number of reviews were planned and scheduled, the reports were of varying quality, not all issues identified were placed into the CRRS, and a couple of the IH issues were closed out prematurely. From the review conducted, the contractor self-assessment program needs improvement in the area of implementation of corrective actions for IH issues. This was documented as O06 in this surveillance.

Contractor Self-Assessment Adequate: YES [ ] NO [X]

Contractors Debriefed:

I. N. Christenson, ETMEC
B. D. Kirk, ETMEC
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Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillants: Dale Splett, Ron Johnson, Elver Robbins

Surveillance Number: S-12-OOD-SNF-002

Date Completed: August 31, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 100K (100K Min Safe and 100K Area Decontamination and Decommissioning (D&D)

Title: Occupational Safety and Health Administration (OSHA) Personal Protective Equipment (PPE) and Heat Stress

Guide: OSS 19.1, OSS 19.8, OSS 19.8a

Surveillance Objective/Scope:

The objective of this surveillance was to evaluate the use of PPE to mitigate hazards that workers encountered in performing their jobs and actions taken by the contractor to protect workers from heat stress. The surveillance activities provided a basis for determining if contractor management ensured the appropriate personal protective equipment was used, workers were protected from heat stress, and that the contractor was complying with U.S. Department of Energy (DOE) requirements.

Surveillance Summary:

This surveillance observed work at the 100K demolition sites and in the 105KW Basin which took place in a high heat high or humidity environments. The surveillance observed the pre-job briefings for this work and discussed heat stress related issues with industrial safety and operations personnel. No negative issues were noted related to management of heat stress. The surveillance also observed work at 100K demolition sites, particularly the K East sedimentation basin area, for compliance to OSHA requirements. Observation of demolition resulted in three findings related to heavy equipment safety. The surveillance observed work with hazardous chemicals at the 189K Water Treatment Facility, which produces and distributes potable water to 100K. One

observation was noted related to proper use of PPE. The surveillance observed construction activities at the site of the new 105KW Sludge Treatment Project annex. No negative issues were observed at the construction area.

This surveillance resulted in four Findings

- **S-12-OOD-SNF-002-F01:** Shearer was not properly grounded consider that personnel standing next to the excavator
- **S-12-OOD-SNF-002-F02:** Daily Equipment Safety Logbook was not performed on equipment prior to use
- **S-12-OOD-SNF-002-F03:** Excavator was moved by D&D personnel with outer cab door open and swinging loosely during equipment movement
- **S-12-OOD-SNF-002-F04:** Chemical Operator failed to lower his face shield while transferring chemicals

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Surveillance Results:

Finding: S-12-OOD-SNF-002-F01

Shearer was not properly grounded consider that personnel standing next to the excavator. [OA 44083]

Requirements:

Work package 1K-11-06935 Section 3.2 and Step 5.2 Warning Note states: "The equipment operator shall place the tool on the ground and equipment in neutral prior to allowing personnel to approach. Use of excavator shears or hydraulic hammer may cause flying debris."

Discussion:

A Crane Operator (CO) was seen cutting/downsizing large diameter pipe with a shearer attachment. At one point during the work evolution a group of personnel approached the excavator on foot. The CO was observed lowering his boom with the shearer attachment in the middle of cutting a metal pipe. As soon as the large diameter pipe touched the ground the excavator was turned off and the CO stepped out of his cab. Ground personnel were seen inspecting the excavator from all sides with the steel pipe still within the jaws of the shearer attachment. Work package 1K-11-06935 states the following in the Precautions and Limitations Section 3.2: "The equipment operator shall place the tool on the ground and equipment in neutral prior to allowing personnel to approach." Task 2 for general demolition lists a warning note under Step 5.2.2 that states: "Use of excavator shears or hydraulic hammer may cause flying debris." The Facility Representative (FR) discussed this issue with the Field Worker Supervisor (FWS) on whether or not a shearer stopped in the process of cutting a metal pipe and lowered until only the debris pipe touches the ground meets the criteria for proper grounding. The FR

discussed the potential of stored mechanical energy (i.e., metal debris such as bolts and coiled metal locked in the jaws of the attachment that could spring out) that could injure the inspectors.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SNF-002-F02

Daily Equipment Safety Logbook was not performed on equipment prior to use. [OA 43919]

Requirements:

Work package 1K-11-01504, 165 KE Water Tunnel Demolition, states the following in the Prerequisites Section: "4.4 Ensure pre-use inspection is completed on equipment to be utilized."

Discussion:

On 7/26/12, the FR observed a forklift being operated in the 105K-East Area to support D&D work. The forklift was used to move heavy spool pieces laying in front of 105K-East. Following completion of the activity the FR and two D&D Safety Professionals inspected the equipment for proper use. A review of the "Daily Equipment Safety Inspection" logbook located inside the cabs interior showed the last recorded inspection was performed on 5/9/12.

Work package 1K-11-01504, 165 KE Water Tunnel Demolition, states the following in the Prerequisites Section: "4.4 Ensure pre-use inspection is completed on equipment to be utilized." The Operator failed to fill out a daily pre-use sheet (the last one was performed on 5/9/12). This also does not meet the requirements set forth under DOE O 414.1D, Quality Assurance, where workers are required to follow approved instructions, in this case 1K-11-01504.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SNF-002-F03

Excavator was moved by D&D personnel with outer cab door open and swinging loosely during equipment movement. [OA 44083]

Requirements:

PRC-PRO-SH-40473, *Motor Vehicle, Heavy Equipment and Bicycles*, Section 4.2.1.1 states, "Inspect heavy equipment newly assigned to CHPRC assignees and subcontractor heavy equipment intended for use on the Hanford Site to perform CHPRC work scope using the manufacturer's Operator Manual or equivalent checklist to assure all functions and controls are operating as intended by the manufacturer."

Operation & Maintenance Manual for Hydraulic Excavator PC600, TEN00118-06 states the following in Chapter 2 – Safety for changing machine directions during operation. "Always lock the door and windows of the operator's compartment in position (open or close)."

Discussion:

FR observed a Crane Operator (CO) get into an excavator with a hammer attachment. After entering the cab of the excavator the CO was seen moving the excavator to a location in the basin in order to have it refueled. During excavator movement the driver's side door was seen swinging on its hinges in greater than a 90° fashion until the CO stopped the equipment to facilitate refueling. After refueling the excavator was moved back to close to its original position, this time the CO had the exterior cab door properly closed.

PRC-PRO-SH-40473, *Motor Vehicle, Heavy Equipment and Bicycles*, Section 4.2.1.1 states, "Inspect heavy equipment newly assigned to CHPRC assignees and subcontractor heavy equipment intended for use on the Hanford Site to perform CHPRC work scope using the manufacturer's Operator Manual or equivalent checklist to assure all functions and controls are operating as intended by the manufacturer."

Operation & Maintenance Manual for Hydraulic Excavator PC600, TEN00118-06 states the following in Chapter 2 – Safety for changing machine directions during operation: "Always lock the door and windows of the operator's compartment in position (open or close)."

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SNF-002-F04

Chemical Operator failed to lower his face shield while transferring chemicals. [OA 44285]

Requirements:

Technical procedure OP-09-008, *Mix Sodium Hypochlorite Solution*, section 3.1, Tools, Equipment and Materials, states: "Personal Protective Equipment (PPE) for handling chemicals including; face shield, splash proof goggles, rubber gloves, rubber boots and chemical resistant apron."

Requirements Document PRC-RD-SH-11183, *Personal Protection*, General Requirement 2.1.6 states, "Where hazards are found to be present, and cannot be mitigated in a reasonable manner through process/material substitution, engineering or administrative controls, appropriate PPE must be worn by affected personnel based on hazard exposure, comfort, and fit."

Discussion:

Technical procedure OP-09-008, *Mix Sodium Hypochlorite Solution*, section 3.1, *Tools, Equipment and Materials*, states: "Personal Protective Equipment (PPE) for handling chemicals including; face shield, splash proof goggles, rubber gloves, rubber boots and chemical resistant apron." All of this PPE was in use by the two operators performing the work and was inspected and verified to be in good order before use. Operators obtained new rubber boots as the old ones were known to have small holes. However, during the actual transfer of bulk sodium hypochlorite using the transfer pump and tygon tubing into the receiving tank, the operator controlling the pump failed to lower his face shield. This was noted by the FR observing the work, who notified a standby operator who then reminded the chemical operator to lower his face shield.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

100K including the D&D project has conducted at least six management oversight type activities and three other assessments in the area of PPE and heat stress since the beginning of the fiscal year (FY). No Adverse conditions were noted in any of the completed reviews. In addition, three other surveillance type activities are scheduled for the remainder of FY 2012 for projects which include 100K and the 100K D&D project.

Management Debriefed:

J.D. Mathews
C.D. Lucas
S.M. Moore
M.A. Green

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

MAR 11 2013

13-OOD-0010

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – WASTE MANAGEMENT CORE SURVEILLANCES OF CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) FACILITIES AND PROJECTS

Pursuant to Section E, Clause E.1, "DOE Inspections and Acceptance," the U.S. Department of Energy Richland Operations Office (RL) Operations Oversight Division performed the subject surveillances at CHPRC facilities and project locations during September 2012. CHPRC implementation of aspects of Resource Conservation and Recovery Act of 1976, Comprehensive Environmental Response, Compensation, and Liability Act of 1980, and site specific waste management requirements were evaluated. One Concern, eight Findings, 16 Observations, and one Good Work Practice were identified in the six attached surveillance reports. A Roll-up Evaluation of the surveillance results is also included as an attachment to this letter. RL would like to acknowledge the positive actions your staff has taken in recent weeks to address the waste inventory at the Soils and Groundwater Project.

You are requested to process the Concern, Findings, and Observations identified in the reports through the CHPRC Issues Management System and develop corrective actions for deficiencies identified. RL retains closure authority for the issues as designated within the attached surveillance reports.

A Corrective Action Plan (CAP) in accordance with Supplemental Contractor Requirements Document 470.2B is requested to address the Concern identified in the attached reports. Part of the CAP development should include an extent of condition review across all CHPRC Projects identifying material and equipment that will not be used.

MAR 1 1 2013

If you have any questions, please contact me, or your staff may contact Edward D. MacAlister, Acting Director, Operations Oversight Division, on (509) 373-0462.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

OOD:EDM

Attachments

1. Roll-up Evaluation
2. Surveillance Report S-12-OOD-BOS D&D-003
3. Surveillance Report S-12-OOD-GPP-003
4. Surveillance Report S-12-OOD-LWFS-003
5. Surveillance Report S-12-OOD-PFP-004
6. Surveillance Report S-12-OOD-SNF-003
7. Surveillance Report S-12-OOD-SWOC-003

cc w/attachs:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
T. E. Bratvold, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Waste Management – Core Surveillance
Roll-up Evaluation

Surveillance Scope:

The Operations Oversight Division Facility Representatives (FRs) evaluated CH2M HILL Plateau Remediation Company's (CHPRC's) implementation of Waste Management control requirements.

Surveillance Summary:

In general, CHPRC appeared to have processes and procedures in place to manage waste. The FRs identified one Concern, eight Findings, and 16 Observations. In addition, the Solid Waste Operations Complex FRs identified one Good Work Practice related to self-assessment activities of the Waste Management Systems.

Significant weaknesses were identified on the Soil and Groundwater Project. A culture of acceptance led to long term accumulation of waste and material that has no foreseeable use and should be considered waste. These practices were contrary to requirements specified in approved Waste Control Plans in some instances.

Two areas of weakness were noted in upkeep of postings and tracking systems information and in timely disposal of waste materials.

The CHPRC self-assessment process as applied to Waste Management was adequate with one exception. Specifically, CHPRC failed to effectively identify and correct conditions associated with accumulation of a significant material and waste inventory at the Soils and Groundwater Project.

Concerns:

- **S-12-OOD-GPP-003-C01:** A long standing culture of acceptance resulted in a significant material and waste inventory at the Soils and Groundwater Project.

Findings:

Balance of Site Deactivation and Decommissioning

- **S-12-OOD-BOS D&D-003-F01:** Weaknesses were observed related to D&D work control implementation. . (OA 44754)

Groundwater

- **S-12-OOD-GPP-003-F01:** Requirements in Waste Management/Control Plans were not being implemented by the Soils and Groundwater Project. (OA 44585, 44656)
- **S-12-OOD-GPP-003-F02:** The CHPRC Issues Management System was not used and/or was not effective at determining the extent of conditions relating to implementation of waste management requirements. (OA 44656)

Plutonium Finishing Plant

- **S-12-OOD-PFP-004-F01:** CHPRC failed to verify that Department of Energy vehicle license plate number G82 00036, operated by Mission Support Alliance, LLC, contained a current copy of its Certificate of Registration issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) as MSA personnel prepared to leave PFP with an onsite waste shipment per PRC-PRO-TP-156. (OA 44575)

Solid Waste Operations Complex

- **S-12-OOD-SWOC-003-F01:** Steps in Procedure WRP1-OP-0502, Receipt and Shipment Operations, were performed out of sequence. (OA 44527)
- **S-12-OOD-SWOC-003-F02:** Location of some containers at T Plant did not match the location in the Solid Waste Information Tracking System (SWITS). (OA 44759)
- **S-12-OOD-SWOC-003-F03:** Personnel identified in the SWOC Dangerous Waste Training Plans (DWTP) had expired training. (OA 44795)
- **S-12-OOD-SWOC-003-F04:** A deficiency identified in WFMP-2012-WSA-10957, *Work Site Assessment on 90-day Accumulation Areas at Central Waste Complex (CWC)/Low-Level Burial Grounds (LLBGs)*, was not entered into CRRS. (OA 44790)

<u>Observations:</u>

Balance of Site Deactivation and Decommissioning

- **S-12-OOD-BOS D&D-003-O01:** ERDF container information was missing on Verification Data Sheet. (OA 44663)

Groundwater

- **S-12-OOD-GPP-003-O01:** Twenty Five (25) active Waste Control/Management Plans were in place for Soils and Groundwater Activities. (OA 44656)
- **S-12-OOD-GPP-003-O02:** The Soils and Groundwater Project was not staffed in accordance with WMP-370, Section 2.35 (OA 44571)
- **S-12-OOD-GPP-003-O03:** The work control system did not include planning or incorporate controls to eliminate or minimize the amount of material left at job sites when equipment is

modified, decommissioned, placed into layup, and when jobs are complete. (OA 44488, 44550, 44564, 44838)

Liquid Waste Fuel Storage

- **S-12-OOD-LWFS-003-O01:** Materials were stored in front of spill kit located in 90 Day Accumulation Area. (OA 44625)
- **S-12-OOD-LWFS-003-O02:** Partially full hazardous waste drums were stored in waste storage area HS-0011 Bay #1 and had not had waste added to them in several years. (OA 44749)

Plutonium Finishing Plant

- **S-12-OOD-PFP-004-O01:** Documentation available was less than optimal to demonstrate clear generation to disposition paths for liquid waste going to Liquid Effluent Retention Facility (LERF)/200 Area Effluent Treatment Facility (ETF). (OA 44394)
- **S-12-OOD-PFP-004-O02:** Form A-6004-849 (CHPRC ERDF Roll-Off Container Queue Shipment Checklist) Section B.3 was not understood by personnel completing the form. (OA 44816)

Spent Nuclear Fuel Project

- **S-12-OOD-SNF-003-O01:** 105KW CERCLA waste area map did not match actual storage location. (OA 44506)
- **S-12-OOD-SNF-003-O02:** Waste storage discrepancies were noted at CERCLA Area 105KE FD-K-003. (OA 44664)

Solid Waste Operations Complex

- **S-12-OOD-SWOC-003-O01:** No documentation was found for items in Container 0076519 being released from radiological controls. (OA 44759)
- **S-12-OOD-SWOC-003-O02:** Discrepancies were found in Waste Inventory Paperwork at T- Plant. (OA 44759)
- **S-12-OOD-SWOC-003-O03:** WMP-370, Section 3.2, "ERDF Waste Profiles, Waste Shipping/Receiving Plans, and Onsite Waste Tracking Forms" does not state it applies to waste destined for treatment/disposal at ERDF under the ERDF Record of Decision (ROD) Amendment for non-Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) waste, although this procedure is used for that purpose. (OA 44722)
- **S-12-OOD-SWOC-003-O04:** Areas of Improvement were identified for SWOC Dangerous Waste Training Plans (DWTPs). (OA 44795)
- **S-12-OOD-SWOC-003-O05:** Opportunities for Improvement were found with CWC/LLBG Weekly Inspection Sheets and Open/Closed List Tracking. (OA 44832)
- **S-12-OOD-SWOC-003-O06:** Lists of SWOC Satellite Accumulation Areas (SAA) and 90 day storage areas are not consistent. (OA 44832)

Good Work Practice

- **S-12-OOD-SWOC-003-GP01:** A comprehensive review of the W&FMP Waste and Transportation Processes was performed at an opportune time, which led to identification of program weaknesses and process improvements. (OA 44790)

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division

Surveillant: Ron Johnson

Surveillance Number: S-12-OOD-BOS D&D-003

Date Completed: September 25, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: K-Basins Deactivation and Decommissioning (D&D), Waste & Fuels Surveillance & Maintenance organizations (Note: Tracked as Balance of Site D&D)

Title: Waste Management

Guides: Waste Management Surveillance 16.1, Rev. 0

Surveillance Scope:

The objective of this surveillance was to evaluate how effectively the contractor is implementing systems and processes to track production, storage, movement and disposal of hazardous, mixed and radioactive wastes. The items to be evaluated include preparation of required reports and documents for tracking waste, documentation of training of personnel involved, and observation of physical storage/disposal areas and waste packing/shipping activities. The Facility Representative (FR) reviews records, performs walkdowns, observes field activities, and interviews personnel to sample implementation of waste requirements. The FR evaluates compliance with applicable U.S. Department of Energy (DOE) and regulatory requirements.

Surveillance Summary:

This surveillance was conducted to verify the contractor has established and implemented an effective program to implementing systems and processes to track production, storage, movement and disposal of hazardous, mixed and radioactive wastes as listed under DOE requirements and established implementing procedures.

The following activities were used, as applicable, to evaluate the use of waste management operations:

Activity 1 – Review Waste Accumulation Areas

Activity 2 – Review waste profiles and manifests for Environmental Restoration Disposal Facility (ERDF) bound shipments.

Activity 3 – Waste and Fuels Management Program Manifests/Transfer Documentation

Activity 4 – Training Records

Activity 5 – Field Observations

Activities monitored:

- Fast Flux Test Facility (FFTF) Weekly Waste Management Unit (WMU) Inspection (OA 44756)
- CHPRC subcontractor Federal Engineers and Constructors (FE&C) work near 105K-East (OA 44663)
- 200 West Area Steam Line Asbestos Abatement (OA 44754)
- K-Basins CERCLA Waste Management Areas for D&D (OA 44664)
- FE&C ERDF Container Loading/Unloading (OA 44662)

Documents Reviewed:

- DOE M 435.1, Radioactive Waste Management Manual
- Procedure FSP-3647, WM-2 Waste Management
- Onsite Waste Tracking Forms (ERDF Containers # 0221, P046, P025, 3063 and 3038)
- PRC ERDF Container Verification Data Sheet (ERDF Containers # 0221, P046, P025, 3063 and 3038)
- Work Package SM-12-06904, 400 Area WMU Weekly Surveillance
- Work Package CP-12-02855, Class 1 Asbestos 200 Area Steam Line
- Automated Job Hazard Analysis (AJHA) FS-1064 Rev.1
- Procedure PRC-PRO-WKM-12115, Work Control.
- Procedure PRC-PRO-WKM-079, Job Hazard Analysis.
- Drawing H-1-80795 Sheets 1 and 2.
- Procedure HNF-EDC-05-24535, Waste Management Plan for K-Basins Interim Remedial Action
- TPA Change Notice Form for Waste Management Plan for K-Basins Interim Remedial Action, TPA-CN-480

- DOE/RL-2005-26, Removal Action Elements Work Plan for 105-KE/KW Reactor Facilities and Ancillary Facilities
- Waste Management Training Records (OA 44634)

Work activities and issues observed at K-Basins for Waste Management Areas (OA 44664) were recorded under surveillance S-12-OOD-SNF-003. Based on the work activity noted in this surveillance, the Deactivation, Decommission, Decontamination, and Demolition (D4) and Surveillance & Maintenance organizations showed compliance with DOE requirements; one Observation and one Finding were captured during this time period.

- **S-12-OOD-BOS D&D-003-F01**: Weaknesses were observed related D&D work control implementation. (OA 44754)

- **S-12-OOD-BOS D&D-003-O01**: ERDF container information was missing on Verification Data Sheet. (OA 44663)

Surveillance Results:

Finding: S-12-OOD-BOS D&D-003-F01:

Weaknesses were observed related to D&D work control implementation. (OA 44754)

Requirements:

PRC-PRO-WKM-12115 Section 3.6.1, states the following in Step 3.6.1.10:

"If the work activity is skill-based, then perform a WHA per PRC-PRO-WKM-079."

Discussion:

The Field Work Supervisor (FWS) chose to conduct a pre-job brief out in the field and told the FR that the brief was completed even though the FR was only a few minutes behind the FWS after he left the Administration Trailer. The FWS stated that he used work package CP-12-02855 as a reference and that the AJHA in that work package allowed him do work as "skill-based." A review of AJHA (FS-1064, Rev. 1) tended to support the decision made by the FWS to perform the cleanup work as skill-based. Some discrepancies noted related to the work package and the determination to perform work as skill-based include the following:

1. A Work Hazard Analysis (WHA) was not performed as required by Procedure PRC-PRO-WKM-079, Job Hazard Analysis.

2. The form used to document the pre-job brief had Wite-Out™ used to remove previous information in the document and task description fields.

3. The form used to capture the pre-job brief referenced work package CP-12-02855 on sheet 1. The workers signed sheet 2 which was attached but referenced work package CP-12-01521.

4. The FWS did not wait for the safety professional to show up as discussed with the D4 Director prior to starting the pre-job brief and work.

Most of the items were discussed with the FWS who chose to use a CHPRC Pre-Job Briefing Checklist in lieu of a WHA. He also acknowledged that line through, date, and initial should be performed instead of using Wite-Out.™

In summary the following requirements were not met:

1. Procedure PRC-PRO-WKM-12115 - Work Management, Section 3.6.1 FWS Work Preparations states in 3.6.1.10:

"If the work activity is skill-based, then perform a WHA per PRC-PRO-WKM-079."

2. Procedure PRC-PRO-WKM-079 - Job Hazard Analysis; Figure 1, after a determination is made that the work is "Skill Based" and an AJHA is not desired.

"Complete Worksite Hazard Analysis and document hazard determination/analysis for Skill-Based activity."

RL Lead Assessor Closure Required: YES [X] NO [ ]

Observation: S-12-OOD-BOS D&D-003-O01:

ERDF container information was missing on Verification Data Sheet. (OA 44663)

Discussion:

The FR performed a review of shipping documents placed on individual ERDF containers 0221, P046, P025, 3063, and 3038. The Plateau Remediation Contract (PRC) ERDF Container Verification Data Sheet for container # 3063 appeared to be filled out appropriately with the exception that the driver missed listing the container identification number in block 3 of the form. This was pointed out to a laborer who was assigned spotter and verifier duties at the work location where full containers were being dropped off. The laborer was observed talking to the original driver once he returned with a second ERDF container. The driver was seen making corrections to the PRC ERDF Container Verification Data Sheet for container # 3063.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The CHPRC Integrated Evaluation Plan (IEP) for Fiscal Year (FY) 2011 and 2012 was reviewed for the contractor self-assessments in the functional area of Waste Management Topics for the Surveillance and Maintenance (S&M) organization. The IEP appeared to be adequate in coverage of the S&M organization through the use of surveillances and assessments.

The FR reviewed management assessments WFMP-2012-MA-11624, D&D-2011-WSA-9360 and SHS&Q-2012-NSPEB-11752 and found issues identified by the contractor in areas such as Waste Management Representative (WMR) Roles and Responsibilities, WMR training, D&D work package with conflicting waste management information and waste container labeling/marking. In all cases the contractor captured each issue with a Condition Report and corrective actions appeared to be managed satisfactorily with no overdue action items.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

E. T. McCarthy, CHPRC
D. M. Boone, CHPRC
E. A. Prichard, CHPRC
C. V. Phillips, CHPRC
M. L. Edington, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division

Surveillant(s): Brian Biro

Surveillance Number: S-12-OOD-GPP-003

Date Completed: September 28, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Soils and Ground Water Project

Title: Waste Management

Guides: Waste Management Surveillance 16.1, Rev. 0

Surveillance Scope:

The objective of this surveillance was to evaluate how effectively the contractor is implementing systems and processes to track production, storage, movement and disposal of general, hazardous, mixed and radioactive wastes. The items to be evaluated include preparation of required reports and documents for tracking waste, documentation of training of personnel involved, and observation of physical storage/disposal areas and waste packing/shipping activities. The Facility Representative (FR) reviews records, performs walkdowns, observes field activities, and interviews personnel to sample implementation of waste requirements. The FR evaluates compliance with applicable U.S. Department of Energy and regulatory requirements.

Surveillance Summary:

Observations of material and waste container inventories were made over the course of normal oversight conducted since June of 2010 and more detailed field observations were made during September of 2012. Results were conveyed to the contractor in approximately 25 Operational Awareness Reports, one Surveillance Report (S-12-OOD-GPP-001), and electronic messages containing pictures.

Technical Procedures governing waste management activities were reviewed as were six of 25 active Waste Control Plans. Interviews were conducted with personnel from the Waste and Fuels Project, CHPRC Environmental Compliance, and Soils and Groundwater organizations.

A long standing culture of acceptance led to large inventories of waste and material that will ultimately be designated as waste. Instances of non-compliances with Waste Control Plans were noted.

Due to the long standing nature of the issue along with its complexity, one Concern supported by two Findings and four Observations were noted.

- **S-12-OOD-GPP-003-C01:** A long standing culture of acceptance resulted in a significant material and waste inventory at the Soils and Groundwater Project. (OA 45652)
- **S-12-OOD-GPP-003-F01:** Requirements in Waste Management/Control Plans were not being implemented by the Soils and Groundwater Project. (OA 44585, 44656)
- **S-12-OOD-GPP-003-F02:** The CHPRC Issues Management Systems was not used and/or was not effective at determining the extent of conditions relating to implementation of waste management requirements. (OA 44656)
- **S-12-OOD-GPP-003-O01:** Twenty Five (25) active Waste Control/Management Plans were in place for Soils and Groundwater Activities. (OA 44656)
- **S-12-OOD-GPP-003-O02:** The Soils and Groundwater Project was not staffed in accordance with WMP-370, Section 2.35 (OA 44571)
- **S-12-OOD-GPP-003-O03:** The work control system did not include planning or incorporate controls to eliminate or minimize the amount of material left at job sites when equipment is modified, decommissioned, placed into layup, and when jobs are complete. (OA 44488, 44550, 44564, 44838)

It should be noted the Project has made significant improvements in certain aspects of waste management based on recent internally and externally identified opportunities for improvement:

- Sample returns used to be brought back to the point of generation. Process improvements have allowed them to be placed in a central location outside the Waste Sampling Facility.
- An inventory of 1,800 plus drums was reduced to approximately 250 drums as of September 2012.
- Large amounts of waste material have been removed from the 100-HR-3 warehouse and surrounding grounds.
- An administrative control was put in place to require management approval to issue drums.
- Environmental Restoration Disposal Facility (ERDF) roll off containers in lieu of drums had been specified for well drilling waste.

- Borehole characterization sample plans were aligned with characterization sample plans to allow characterization samples to occur in parallel/during drilling rather than after drilling was complete.
- PW-1 and Bio Yard laydown areas improved.
- MO-612 was emptied of chemical inventory. There was a substantial amount.
- After September 28, 2012, all resin boxes will have been shipped.
- Priorities for shipping waste/improvements are established quarterly.
- Decommissioning of UP-1.
- Waste and Fuels has had a management change that has resulted in much more positive involvement.
- Waste Management Representatives, Field Work Supervisors and Nuclear Chemical Operators are now under the same management chain.

Other opportunities for improvement being pursued included:

- Changes in the sample plan for determining if waste was within allowable limits were being pursued for Dowex resin. This will lessen the cost of sampling and should ultimately reduce the number of Radioactive Material Areas.
- Establishing one waste control plan for all low and medium risk drilling.

Surveillance Results:

Concern: S-12-OOD-GPP-003-C01

A long standing culture of acceptance resulted in a significant material and waste inventory at the Soils and Groundwater Project. (OA 45652)

This concern in supported by the following Findings and Observations:

RL Lead Assessor Closure Required: YES [X] NO [ ]

Finding: S-12-OOD-GPP-003-F01

Requirements in Waste Management/Control Plans were not being implemented by the Soils and Groundwater Project. (OA 44585 and 44656)

Requirements:

DOE O 414.1D Attachment 2, Criterion 5.a. states, "Perform work consistent with technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements using approved instructions, procedures, or other appropriate means."

Discussion:

Contrary to the cited requirement, the following regulatory requirements established in Waste Management/Control Plans were not implemented as written:

1. *Interim Action Waste Management Plan for the 100-HR-3 and 100-KR-4 Operable Units,* DOE/RL-97-01 Rev. 5, section 6.0 states, in part, "Waste will be managed in accordance with this plan and the substantive container management requirements established at WAC 173-303-630 and WAC 173-303-160. Full containers will be characterized, designated, and prepared for disposal as quickly as economically feasible. If, after characterization and designation of the waste is completed, the waste must be stored for longer than 12 months, concurrence from the Lead Regulatory Agency on the current storage, treatment and disposal options and disposition of the waste will be obtained."

A 4x4x8 box, package identification number (PIN): KW6-09-034, was stored outside of the 100 KW pump-and-treat for a period of time in excess 12 months. Personnel interviewed indicated the boxes had been deemed full and waste inventory sheets were provided to the Waste Management Representative some time prior to October of 2011. When personnel were asked for more specific information about inventory sheets for KW6-09-034, the initial response was the sheets could not be found. After additional research, the FR was told the inventory sheets had been found.

It was unclear why Operations Management continued to tell Operators at the facility the Waste Management Representative was working on shipping the box when it was clear this was not and had not been the case for a period of months or years based on the status of the inventory sheets necessary for officially designating the waste.

Other boxes located above the 100-KR-4 pump-and-treat were also stored in excess of 12 months.

Lead Regulatory Agency concurrence was not received to allow the waste boxes at 100-KW and 100-KR-4 to be stored for longer than 12 months.

This issue was not specific to the 100-KR-4 and 100-HR-3 Operable Units. All Waste Management/Control Plans reviewed had similar language with a six or 12 month time limit before Lead Regulatory concurrence was required for extending storage. There were other instances where material and/or containers were stored in excess of 12 months.

It should be noted the Project's position appeared to be that the waste had not been officially designated and/or the containers had not been officially declared full. As such, there was no need to request Lead Regulatory Agency concurrence in accordance with DOE/RL-97-01, Rev. 5, or other waste management/control plans. In some cases, this may be a technically accurate argument, but it does not demonstrate material and waste was being managed and disposed of in a timely manner.

2. DOE/RL-97-01 Rev. 5, section 6.0 states, in part, "Container tracking and traceability will be controlled through the Hanford Site Solid Waste Information Tracking System." Personnel were asked if all containers at 100-KW and -KR-4 had been entered into the Hanford Site Solid Waste Information Tracking System. The answer was "a couple" had not been.

It should be noted a similar instance occurred in June of 2012. Extremely high river level raised concerns drums or debris from the Hanford Site may have been swept into the river. A search of records indicated not all drums issued to the Soils and Groundwater Project could be accounted for. This necessitated a boat search of the river.

3. *200 West Area Pump-and-Treat Facility Operations and Maintenance Plan,* DOE/RL-2009-124, Rev. 1, section B3.1 states, "All waste generated from drilling activities will be recorded in the geologist's and/or the Buyer's Technical Representative's logbook, with such details as the location and type of waste, depth of sample, date of initial placement into container, date container was sealed, and Package Identification Number." Interviews with well drilling personnel determined the information required by section B3.1 was not recorded in the Geologist's and/or the Buyer's Technical Representative's logbooks. Other forms/means were utilized.

4. *200 West Area Pump-and-Treat Facility Operations and Maintenance Plan,* DOE/RL-2009-124, Rev. 1, section B3.3 states in part, "The IDW waste (e.g., drill cuttings) may be temporarily accumulated near the point of generation, and then moved to the central waste storage location while awaiting analytical laboratory test results (Figure B)-2). If IDW must be stored for longer than 6 months after designation concurrence from the lead regulatory agency will be obtained on storage, treatment, and disposal options of the waste along with the disposition schedule."

Waste generated during the last wells drilled in Fiscal Year (FY) 2012 was placed in ERDF roll-off containers and stayed at the point of generation until shipped. One roll-off box has remained for longer than six months due to issues with liquids leaking when attempts to ship it were made.

5. *Waste Control Plan for the 200-BP-5 Operable Unit,* DOE/RL-2003-30, Rev. 2, states, in part, "Much of the IDW [investigation derived waste] is generated in small quantities on an ongoing basis. The IDW Strategy allows waste to be stored for up to six months, with an extension required for storage beyond 12 months. Section 9.0 of the IDW Strategy states that on a case-by-case basis, the Project managers may negotiate exceptions to the requirements identified in the strategy. Because of the low volumes of waste generated, EPA has agreed that waste associated with the 200-BP-5 Operable Unit may be stored for up to 12 months."

Contrary to the above requirements, a Basin Disposal, Inc., box with waste in it was located at the site in excess of 12 months. Two drums were placed in the box. Due to the

length of time they had been there and uncertainty about their origins and content, the drums had to be reopened and inventoried.

6. *200 West Area Pump-and-Treat Facility Operations and Maintenance Plan,* DOE/RL-2009-124, Rev. 1, section 3.6.1 Extraction and Injection Well Inspection and Rehabilitation states, in part, "Extraction and injection wellhead piping and fittings will be visually inspected to detect leaks. The inspection frequencies will be the same as the above ground conveyance piping. The inspection findings will be documented in a paper or electronic format that will he maintained in the work control system."

TPA-CN-525 stated, in part, "Extraction and injection wellhead piping and fittings will be visually inspected weekly to detect leaks. The inspection findings will be documented in a paper or electronic format that will be maintained in the work control system."

It is acknowledge the inspections were taking place weekly in accordance with the facility rounds procedure, 2WPT-PRO-0P-7245 page 10. However, Operations Procedures were not maintained in the work control system.

7. Electrocoagulation and Polysulfide injection Projects were essentially abandoned in place. Contrary to, procedure PRC-PR-SH-10468, *Chemical Management Process,* which stated, in part, "1. While a hazardous chemical is in storage:
   a. Ensure routine inspections are performed of chemical container condition and manufacturer-specified expiration dates (if provided). Disposition outdated material properly and promptly.
   b. Maintain a list identifying the type and quantity of chemicals stored at each work location. This list shall be accessible to employees. This requirement may be satisfied by maintaining a copy of the facility/Project-specific CITS inventory report."

   And,

   PRC-PR-SH-10468 which stated, in part, "3.4.1 Each Project must maintain a comprehensive and current chemical inventory, and ensure that the data in CITS is accurate. At minimum, a complete inventory of all chemical storage locations must be conducted at least every 12 months. A complete inventory is defined as a check of every item in each storage location within a facility or under the authority of the relevant FCC. This includes fixed and non-fixed inventory items, including those found that are not listed on the inventory."

   A carboy/drum labeled "Aluminum Hydroxy Chloride" was found at the 100 D Area years after equipment had been taken out of service. Said equipment consisted of two connex boxes housing process equipment, tanks, and other equipment.

   It is unclear if the carboy/drum had been tracked in the Chemical Inventory Tracking System (CITS). However, when it was designated as waste, it should have been taken out of the CITS and entered into the Solid Waste Information and Tracking

System (SWITS). It was not entered into SWITS. For some reason, the carboy/drum was not disposed of in a timely manner. As such, it was not being tracked as a chemical nor was it being actively tracked/addressed as waste. It was unclear which Waste Management/Control Plan would govern the Electro-Coagulation Project as it did not appear to be covered in one of the 25 active Plans for the Soil and Groundwater Project. It should be noted other plans such as DOE/RL-97-01, Interim Action Waste Management Plan for the 100-HR-3 and 100-KR-4 Operable Units stated waste should be tracked in SWITS and not remain in storage longer than 12 months.

It also should be noted SGRP-2012-WSA-11027 documented instances where waste control plans were not being implemented as written including Finding #4 that documented Package Identification Numbers on Granulated Activated Carbon containers indicated they had been stored longer than one year.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-GPP-003-F02

The CHPRC Issues Management Systems was not used and/or was not effective at determining the extent of conditions relating to implementation of waste management requirements. (OA 44656)

Requirement:

DOE O 414.1D Attachment 2 section 3 stated,
"a. Establish and implement processes to detect and prevent quality problems.
b. Identify, control, and correct items, services, and processes that do not meet established requirements.
c. Identify the causes of problems, and include prevention of recurrence as a part of corrective action planning.
d. Review item characteristics, process implementation, and other quality related information to identify items, services, and processes needing improvement."

Discussion:

RL personnel made inquiries into the management of Investigation Derived Waste at the 100 B/C and F areas in February of 2012. Contrary to the governing Waste Control/Management Plans, the waste had been stored longer than 12 months. It did not appear the Project fully agreed with the RL individual's interpretation of requirements. However, actions were taken to move the drums. This issue was not entered into the CHPRC Issues Management System. As such, no extent of condition review was conducted to determine if Waste Control/Management Plans were being implemented adequately.

When it was determined all drums issued to the Soils and Groundwater Project could not be accounted for, it did not appear an extent of condition review was conducted to determine if other waste containers had not been entered into the Hanford Site SWITS as indicated by the fact containers at the 100-K area pump-and-treats had not been entered into the SWITS or otherwise tracked.

SGRP-2012-WSA-11027 documented instances where waste control plans were not being implemented as written including Finding #4 that documented Package Identification Numbers on Granulated Activated Carbon containers indicated they had been stored longer than one year. The report stated the Finding and Opportunities for Improvement had been placed into the CHPRC issues management system.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-12-OOD-GPP-003-O01

Twenty Five (25) active Waste Control/Management Plans were in place for Soils and Groundwater Activities. (OA 44656)

Discussion:

A review of six of the 25 active Waste Control/Management plans revealed they contained similar information regarding the management of waste, (i.e., the mechanisms for containerization, characterization, storage, treatment, and disposal). While the requirements were substantively the same, minor nuances in plans created opportunities for errors or omissions in implementation. The large number of plans increased the level of effort required to keep the documents current.

It would appear significant amounts of effort and resources could be saved if waste management plans were consolidated and drafted in a manner that additional ones did not become necessary.

It should be noted this opportunity for improvement had been identified by the Project.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-GPP-003-O02

The Soils and Groundwater Project was not staffed in accordance with WMP-370, Section 2.35. (OA 44571)

Discussion:

The following inquiry was made regarding roles and responsibilities as defined in WMP-370, Section 2.35:

Who fills the following roles?

1. Waste Document Coordinator
2. Waste Manager
3. Waste Lead
4. Waste Management Specialist
5. Waste Designation Specialist
6. Waste Management Representative
7. Waste Shipper
8. Waste Sampling Coordinator

The following response was received:

"At this time the only active positions from the list below are: 2) Waste Manager – [redacted] 6) Waste Management Representative – [redacted] and, 7) Waste Shipper – [redacted]

(b)(6) (b)(6) (b)(6)

Additionally, the Decommissioning, Waste, Fuels & Remediation Services Project, under whose purview is waste management, it is anticipating to pull WMP-370 from service this week. They are revamping their procedures."

A Waste and Fuels representative confirmed WMP-370 was going to be "pulled" and revised or superseded by another procedure.

According to Project personnel, two Condition Reporting and Resolution System (CRRS) were entered 2012-1466 and 2012-1467 on May 30, 2012, self-identifying WMP-370 was not applicable and should be canceled. Portions needed to be incorporated into Project procedures prior to cancellation. These CRRS were closed on September 27, 2012, when the GW procedures were issued.

It was unclear why WMP-370 was not revised prior to changes in roles and responsibilities and or staffing were made. In other words WMP-370 should have been followed until it could be modified or superseded.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-GPP-003-O03

The work control system did not include planning or incorporate controls to eliminate or minimize the amount of material left at job sites when equipment is modified, decommissioned, placed into layup, and when jobs are complete. (OA 44488, 44550, 44564, and 44838)

Discussion:

The following are by no means inclusive:

1. The work package for conversion of UP-1 wells from extraction to monitoring included removal of components necessary to perform flushing to prepare the wells for maintenance personnel so pumps and in-hole piping could be removed. However, it did not include complete removal of the well rack and attached components.

   There appeared to be one electrician and three pipe fitters, one industrial hygienist technician, one radcon technician, and one insulator assigned full time to the task. Two other electricians were onsite for a period of time. These resources could have disassembled the well rack in very little time placing the components in an ERDF roll off container located at the site for the job or taking them back to the 200 West Area to be placed in luggers for recycling or reuse.

2. The FR inquired about what was being done to plan for long term layup of the perched water extraction process in the event FY 13 funding did not allow for continued operations. A draft of GW-11-01146/O WCN #4 to the Deep Vadose, Perched Water Extraction Pilot Test work document was provided. A review of the document and a field walkdown indicated it was not a long term layup plan. It appeared to be a package modification to facilitate water removal from piping for maintenance and/or winterization.

   A dedicated package for long term layup would be more appropriate than a revision to the package used to operate the equipment; a package addressing all aspects of placing equipment and the work area in a condition for long term layup.

3. One of the main 300 kVA breakers for the 200 West Pump-and-Treat required replacement the week of July 17, 2012. It was believed the breaker would be heavy enough to require a lift. A lift was wheeled to the jobsite. Ultimately, the lift was not required because the electricians were able to remove and install the breakers by hand.

   After the job was complete, the lift remained in the work area. The FR made multiple inquiries about why the lift was left at the jobsite. Groundwater Project and Engineering, Projects and Construction personnel made phone calls and could not determine who owned the lift.

The failure to include cleanup of tools and material as part of the work instructions for the task along with an ingrained culture of acceptance led to the lift remaining at the jobsite for weeks with no one taking the initiative to determine ownership and have it moved to a suitable storage location.

4. Empty drums were noted at 100 H and 100 D areas. The drum lids had "RTE" written on them. This indicated the contents had been sampled, declared below release limits, and the contents had been "Returned to Earth." Once this had been accomplished, the drums were left at the operable units for months. Numerous drums showed signs of rust and degradation. If the drums could have been reused, it would seem prudent to place them in a storage location that would prevent degradation. If the drums were not suitable for reuse, it was unclear why work documents would not include disposal immediately after the soil had been dumped.

   It is acknowledged empty drums are considered "Environmentally Controlled Material" for which Project personnel stated a radiological release plan had to be generated and executed prior to releasing the drums for disposal. Once again, it was unclear why the release process was not factored into the up-front job planning and incorporated into appropriate work documents.

5. MO-612 and another trailer near the ZP-1 Pump-and-Treat contained an extensive inventory of chemicals and chemical waste, some of them carcinogens, when the trailers were taken out of service. It was unclear how the trailers could be taken out of service without work documents addressing all aspects of layup/preparation to remove the trailers.

6. A trailer on Army Loop road appeared to have been put in place to support American Recovery and Reinvestment Act remediation activities. Approximately one year after the work activities ended, Project personnel reported the trailer was found to still have power hooked up to it with air conditioners and refrigerators in service. It was unclear why the work control (or some other) system would not recognize the need to remove the trailer in a timely manner; especially a trailer that was costing money via a lease agreement.

7. A drum, some T-posts, and wooden box-like structures were noted by WIDS site 216-T-18. There was no signage indicating ownership.

8. A query to the Waste and Fuels Group resulted in a reply, "The only thing that I could find base(d) [sic] on the CIN number and picture provided in your email is that it was received (new) at the MSA warehouse on 2/20/2008 on purchase order 034543. We do not know who the drum was issued to when it left the MSA warehouse. I assume this is at S&GRP?" Additional investigation on the part of Waste and Fuels revealed the drum did belong to the Soil and Groundwater Project. It was unclear how this determination was made.

9. The FR was unable to determine the precise requirements for tracking waste containers from purchase receipt to disposal. Whatever system that was in place was not effective at ensuring Project personnel maintained an accurate inventory and control of waste containers.

10. A power rack was left at 100 KW for months after a trailer was removed. The Project consistently stated activities associated with material/waste management were not funded in current baselines as the reason the work control system does not address material/waste management. It appeared the Project consistently developed an Operations and Maintenance budget annually to support ongoing activities. It was unclear why material and waste management was not fully accomplished as it is a core function of performing Operations, Maintenance, and other activities specified within the Project's scope/baseline. It was also unclear why existing (craft) resources at jobsites were not being tasked with routine material/waste management as part of routine corrective and planned maintenance activities. This is especially true when divisions of labor specified by bargaining agreements dictate periods of inactivity as one craft waits for the other to finish tasks or for their skills to be required.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The following self- assessments were completed in FY 12:

- SGRP-2011-WSA-10828 Universal Waste Regulations and Applicable S&GRP Procedures September 12, 2011
- SGRP-2012-WSA-11021 Universal Waste Management at S&GRP November 9, 2011
- SGRP-2011-WSA-9607 Mobile Laboratory Waste Management Practices November 22, 2011
- SGRP-2012-WSA-11027 S&GRP CERCLA Waste Container Management December 13, 2011
- SGRP-2012-WSA-11684 Waste Management at P&T facilities March 27, 2012
- SGRP-2012-WSA-11695 Well Sampling Waste Management March 29, 2012
- MOP 2011 #505 Universal Waste Management December 13, 2011
- MOP 2012 #100 Waste Drum Shipments
- MOP 2012 #138 Dumpster and BDI Box Content

The following were planned in the CHPRC FY 13 Integrated Evaluation Plan:

- Waste Management 12132 S&GRP Waste Management Practices and Field Implementation
- EMS EP Waste Management 12042 Review CHPRC Level 1 environmental procedures to verify WM requirements flow down into S&GRP operating procedures

- EMS EP Waste Management 12043 Review S&GRP CERCLA waste control/management plans to verify WM requirements are addressed in operating procedures.

The above list of completed and planed self-assessments indicate Project personnel were assessing various aspects of waste management. However, the self-assessment process did not identify significant weaknesses existing over long periods of time resulting in a large backlog of waste and material that will be designated as waste.

It is acknowledged Condition Report 2012-1976 was initiated July 12, 2012, identifying a negative trend associated with waste management practices at the Soil and Ground Water Project. Corrective actions identified in the associated Corrective Action Plan were designed to address some of the concerns in this report. Once again, the conditions and the organizational culture existing to allow the conditions to develop existed for a period of years prior to July 2012. It should also be noted the amount and intensity of external oversight increased in the second half of FY 12.

Contractor Self-Assessment Adequate: **YES [ ]** **NO [X]**

Management Briefed:

R. B. Barmettlor, CHPRC
D. T. Southerland, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division

Surveillant(s): Larry Earley

Surveillance Number: S-12-OOD-LWFS-003

Date Completed: September 27, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Liquid Waste Fuel Storage (LWFS)

Title: Waste Management

Guides: Waste Management Surveillance 16.1, Rev. 0

Surveillance Scope

The objective of this surveillance was to evaluate how effectively the contractor was implementing systems and processes to track production, storage, movement and disposal of hazardous, mixed and radioactive wastes. The items evaluated included preparation of required reports and documents for tracking waste, documentation of training of personnel involved, and the condition of physical storage/disposal areas and waste packing/shipping activities.

Surveillance Summary

The Facility Representative (FR) performed the following activities to complete this surveillance:

- Reviewed training records for LWFS Waste Transportation Specialists and Waste Designation Specialists
- Performed a document review of completed waste manifests
- Performed a document review of completed waste profiles

- Accompanied a Nuclear Chemical Operator (NCO) on the weekly inspection of the Effluent Treatment Facility Hazardous Waste storage areas

- Observed the weekly 90 Day Waste Pad inspection for storage area HS-0034

- Observed a waste shipment from HS-0034

The surveillance activities resulted in two Observations:

- **S-12-OOD-LWFS-003-O01:** Materials were stored in front of spill kit located in 90 Day Accumulation Area. (OA 44625)
- **S-12-OOD-LWFS-003-O02:** Partially full hazardous waste drums were stored in waste storage area HS-0011 Bay #1 and had not had waste added to them in several years. (OA 44749)

The FR oversight was documented in Operational Awareness reports 44625, 44749, 44819, 44820, and 44826.

Surveillance Results:

Observation: S-12-OOD-LWFS-003-O01

Materials were stored in front of spill kit located in 90 Day Accumulation Area. (OA 44625)

Discussion:

The FR observed the 90 Day Accumulation Area inspection performed by an LWFS NCO at waste storage area HS-0034. The spill kit materials for this waste storage area were located in a stand up cabinet with two doors. Bottled water was also stored adjacent to the spill kit cabinet. The water cases were stacked such that the right door of the cabinet would have only partially opened if cabinet access was needed. The FR asked the NCO if that was a problem and the NCO took the opportunity to relocate several of the water bottle cases so they no longer were an obstruction.

RL Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-LWFS-003-O02

Partially full hazardous waste drums were stored in waste storage area HS-0011 Bay #1 and had not had waste added to them in several years. (OA 44749)

Discussion:

The FR identified two drums stored in HS-0011 Bay #1 that had not had waste added to them in several years. In addition, the NCO stated one of the drums contained oily rags from maintenance activities and nothing is currently added since the oils used now are non-regulated.

Per the waste record, drum 9803644 had not had any material added to it since 2003.

Per the waste record, drum 9512848 had not had any material added to it since 2000.

RL Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The FR reviewed the results of two Waste Management Assessments. The issues were appropriately captured in the corrective action management system and adequately tracked to closure. Future Waste Management Assessments are scheduled for the upcoming year at an appropriate frequency.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Contractor Management Briefed:

C. J. Simiele, CHPRC
P. R. Garello, CHPRC
P. Sauressig, CHPRC

Attachment 5
13-OOD-0010

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division

Surveillant(s): Deanna McCranie, Kerry Schierman, and David Thrasher

Surveillance Number: S-12-OOD-PFP-004

Date Completed: September 24, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Plutonium Finishing Plant (PFP)

Title: Waste Management

Guides: Waste Management Surveillance 16.1, Rev. 0

Surveillance Scope:

The objective of this surveillance was to evaluate how effectively the contractor was implementing systems and processes to track production, storage, movement and disposal of hazardous, mixed and radioactive wastes. The items evaluated included preparation of required reports and documents for tracking waste, documentation of training of personnel involved, and observation of physical storage/disposal areas and waste packing/shipping activities. The Facility Representatives (FRs) reviewed records, performed walkdowns, observed field activities, and interviewed personnel to sample implementation of waste requirements. The FRs evaluated compliance with applicable DOE and regulatory requirements.

Surveillance Summary:

The surveillance consisted of five activities, four of which were applicable to PFP (the fifth activity, Review of Waste Accumulation Areas, was not applicable to PFP, a Comprehensive Environmental Response, Compensation and Liability Act of 1980 facility, and therefore was not performed):

1. Review of Waste Profiles and Manifests for Environmental Remediation Disposal Facility (ERDF) Bound Waste Shipments

Waste profiles have been generated for the expected waste from PFP. The waste streams have clear identification of the types of materials allowed under the profile. The verification of the waste meeting the profile requirements was based on historical data, visual inspection, characterization, NDA and radiological data. The profiles tend to be relatively generic, however; specific profiles can be generated should the need arise. The Waste Management Representative (WMR) completed a Plateau Remediation Contract (PRC) ERDF Container Verification Data Sheet for each ERDF Roll-on/Roll-off (RO/RO) container, with radiological data provided by a radiological control technician. No issues were identified under this portion of the review.

2. Review of Waste and Fuels Management Program Manifests/Transfer Documentation

The following waste shipment files for waste transported to Solid Waste Operations Complex were reviewed:

- Shipment M2053000 of August 30, 2012
  - Standard Large Box 2 (SLB2), package 0087973
- Shipment M2048000 of July 31, 2012
  - SLB2, package 0087975
- Shipment M2046000 of July 24, 2012
  - Standard Waste Box (SWB), package 0080821
  - SWB, package 0080775
  - SWB, package 0080628
- Shipment M2041000 of June 28, 2012
  - 55-gal drum, package 0074278
  - 55-gal drum, package 0082490
  - 55-gal drum, package 0085364
- Shipment M2039000 of May 31, 2012
  - SWB, package 0085702
  - SWB, package 0085716
- Shipment M2037000 of May 15, 2012
  - 55-gal drum, package 0085491
  - 55-gal drum, package 0085586

The following items were verified, via non-record files, for each transport: the waste description was consistent with the Waste Shipment Records, the waste matched the profile description, the packaging was compatible with the waste, approved vents were installed, radiological survey results were provided, internal items were secured to prevent shifting, and waste conformed to the Waste Acceptance Criteria from the disposal facility. The FR verified an exception request to HNF-EP-0063, Appendix G, had been approved to allow managing and storing of PFP contact-handled transuranic (TRU) wastes in SLB2s and 4.4.8 Type-A waste containers at the Central Waste Complex. The FR also discussed the content of the files with a WMR. No issues were identified.

Twelve on-site waste tracking forms (OWTFs) were reviewed. The information requested within this surveillance was adequately met. Some questions did arise during the package review. Because the WMR is detailed to PFP from Waste and Fuels group, they are required to

complete a Form A-6005-661 (RO/RO Container Pre-use Inspection Form) and Data Sheet A from ZO-170-062 (ERDF RO/RO Container Inspection Form). These forms contain the same information and completion of both provided no noted benefit.

Form A-6003-849 (CHPRC ERDF Roll-Off Container Queue Shipment Checklist) was also completed each day, and could be used for multiple shipments. Based on the information verified on the checklist, it appeared that the form should have been completed for waste streams under the same profile only. The use of the form indicated it was typically used in this manner. One Observation was generated related to the verification of Section B.3 of Form A-6003-849.

The last two 200 Area Treated Effluent Disposal Facility (TEDF) Batch Discharge Profile Sheets submitted to TEDF were reviewed and discussed with the PFP Environmental Compliance Officer. Both were from 2010. In each instance HNF-3172, Liquid Waste Processing Facilities Waste Acceptance Criteria Appendix A, forms were completed, submitted, and email responses were obtained from TEDF approving the discharges. Although one of the forms was originally annotated that the effluent was not covered by Hanford Site categorical permit ST 4511, TEDF personnel considered that the described discharge did meet the permit, and the Appendix A form was amended to reflect that acceptance. The TEDF rationale appeared reasonable.

In 2011, PFP made an unplanned discharge to TEDF via 225-WC, Wastewater Sampling Facility, when conducting 2736-Z complex Deactivation and Decommissioning activities. The discharge was identified when alarms were received at 225-WC. Alarm Response Procedure ZAR-019, 225-WC Facility Equipment Outage/Alarm Responses, was consulted and notifications were made to the TEDF Control Room, as required by the procedure. Although TEDF requested characterization information for the liquid discharged, no HNF-3172, Appendix A form was requested or completed.

The last three Waste Profile Sheets for Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility were reviewed. Two were generated (both in 2007) for historical shipments made later by CHPRC. One had been submitted in 2012, but approval was pending. All three were prepared consistent with the guidance provided in HNF-3172, Section 3.2, using the Appendix B form. However, identifying shipments associated with the waste profiles was difficult (see below observation). (OA Report 44394)

3. Review of Training Records

Training records for the Waste Transportation Specialists (Shippers) and the Waste Designation Specialists or WMR were reviewed. The training for the Shippers did not include all the training identified in the surveillance guide. For Course Number 020078, Advanced Mixed Waste Shipper Certification Training, both designated individuals were up to date on this class. The WMRs were verified as trained and up to date for Course Number 035012, Waste Designation Qualification and Course Number 035010, Waste Designation Support. Course Numbers 105975, and 105476 specified in the surveillance guide are Washington Closure specific training courses and were not required for PFP personnel. No issues were identified under this portion of the review.

4. Field Observations

A FR observed:

- A pre-job brief and shipment of recyclable batteries from PFP. (OA 44443)

- Loading of a SWB in Room 264. (OA 44532)

- A FR observed a waste shipment of four burial boxes and one drum. A Finding was documented (see below) for not maintaining a current Certificate of Registration in the transport vehicle. (OA 44575)

- Loading and shipment of 14 drums (13 TRU Waste, and 1 TRU Mixed Waste) to the Central Waste Complex. (OA 44621)

- The activities, progress, and observations the CHPRC Nuclear Safety Performance and Evaluation Board (NSPEB) during the weeks of August 27 and September 3 as they reviewed PFP. One of their areas of emphasis was Environmental/Waste Management. Although the NSPEB final report had not yet been issued, draft results indicated five Findings had been identified in the topical area (see the Contractor Self-Assessment portion of this report, below, for further discussion). (OA 44559)

This surveillance resulted in one Finding and two Observations.

- **S-12-OOD-PFP-004-F01:** CHPRC failed to verify that Department of Energy vehicle license plate number G82 00036, operated by Mission Support Alliance, LLC, contained a current copy of its Certificate of Registration issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) as MSA personnel prepared to leave PFP with an onsite waste shipment per Procedure PRC-PRO-TP-156. (OA 44575)
- **S-12-OOD-PFP-004-O01:** Documentation available was less than optimal to demonstrate clear generation to disposition paths for liquid waste going to Liquid Effluent Retention Facility (LERF)/200 Area Effluent Treatment Facility (ETF). (OA 44394)
- **S-12-OOD-PFP-004-O02:** Form A-6003-849 (CHPRC ERDF Roll-Off Container Queue Shipment Checklist) Section B.3 is not understood by personnel completing the form. (OA 44816)

Surveillance Results:

Finding: S-12-OOD-PFP-004-F01

CHPRC failed to verify that Department of Energy vehicle license plate number G82 00036, operated by Mission Support Alliance, LLC, contained a current copy of its Certificate of Registration issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) as MSA personnel prepared to leave PFP with an onsite waste shipment per Procedure PRC-PRO-TP-156. (OA 44575)

Requirements:

PRC-PRO-TP-156, Section 3.2.18, 3.2.19 and 3.2.33 required completion of the CHPRC Domestic Radioactive Mixed Waste/Material Shipment Checklist (Site Form A-6004-977) by the Authorized Shipper. Site Form A-6004-977, Section E.4. required the Authorized Shipper to verify, "PHMSA Hazardous Materials Registration and current and with Vehicle."

49 CFR Section 107.620(b), states, "After January 1, 1993, each motor carrier subject to the requirements of this subpart must carry a copy of its current Certificate of Registration issued by PHMSA or another document bearing the registration number identified as the 'U.S. DOT Hazmat Reg. No.' on board each truck and truck tractor (not including trailers and semi-trailers) used to transport hazardous materials subject to the requirements of this subpart. The Certificate of Registration or document bearing the registration number must be made available, upon request, to enforcement personnel."

Discussion:

As MSA personnel were preparing to leave PFP with a waste shipment on September 13, the FR requested to see (among other documents) the current MSA PHMSA Certificate of Registration establishing registration with the U.S. Department of Transportation. The driver was not familiar with the document the FR was requesting, but allowed the FR to sort through the documents available in the vehicle. The PHMSA Certificate of Registration present in the vehicle had expired in June 2012. The driver contacted his supervisor and the CHPRC shipper who were familiar with the document. The supervisor obtained a copy of a current PHMSA Certificate of Registration and placed it with the vehicle's other documents. The CHPRC Shipper did not verify the PHMSA Certificate of Registration was in this vehicle prior to completing the checklist on Site Form A-6004-977.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-12-OOD-PFP-004-O01

Documentation available was less than optimal to demonstrate clear generation to disposition paths for liquid waste going to Liquid Effluent Retention Facility (LERF)/200 Area Effluent Treatment Facility (ETF). (OA 44394)

Discussion:

In an attempt to verify completeness of documentation for waste water transfers to LERF/ETF, the FR requested a PFP Waste Management Representative provide associated records. She could not locate complete project records, but was able to provide three Waste Profile Sheets for LERF/ETF:

- Approximately 2300 gallons of liquid from 234-5Z water walls, submitted April 13, 2007. IDMS searches (File 1406.66) produced:
  - contents inventory sheets from 2005, for nine 55-gallon drums of water wall water;
  - documentation (a process memorandum) indicating shipment of one Beall tanker containing approximately 3000 gallons of water wall wastewater to ETF in July 2007, but no shipment record;
  - emails stating an intent to ship one 20-gallon poly drum in December 2008, with sample results, but no documentation of shipment;
  - an Uniform Hazardous Waste Manifest for a 30-gallon carboy from May 2009; and
  - a process memorandum and Customer Wastewater Data Sheets for two 55-gallon drums (drum identification numbers 0039069 and 0039097) for transfer to ETF in June of 2010, with no signatures of completion present on the process memorandum, but a completed radioactive shipment record.

- Approximately 200 gallons of light grout mixture from the 241-ZRB pit, also submitted April 13, 2007. IDMS searches (File 1406.73) produced Customer Wastewater Data Sheets for three 55-gallon drums (drum identification numbers PFP-06-0006, PFP-06-0007, and PFP-06-0008) of grouting bleedwater completed in May 2008, but no shipping documentation.

- 20,000 gallons of 234-5Z water wall water, submitted in May 2012, but had not yet been approved.

Documentation available was less than optimal to demonstrate clear generation to disposition paths for liquid waste going to LERF/ETF.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-PFP-004-O02

Form A-6003-849 Section B.3. was not understood by personnel completing the form. (OA 44816)

Discussion:

Form A-6003-849, CHPRC ERDF Roll-Off Container Queue Shipment Checklist Section B.3 states: "Verify the ERDF Operations Information block has been completed if applicable." The reviewed OWTF packages sometimes had the line marked "yes" and others "no." However, when the Shippers were asked what this line was verifying, they had two different answers. Both Shippers referred back to sections on the OWTF, but there was no section designated as the "ERDF Operations Section." One Shipper reported that he believed the terminology was from an old version of the OWTFs. The applicability of this line needs to be clarified

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The Integrated Evaluation Plan (IEP) yielded, in October 2011, the project performed Worksite Assessment PFP-2012-WSA-10752 to "determine whether CHPRC facilities managing radioactive waste are managing this waste by federal/state regulations and as required by CRD O 435.1 by comparing a cross section sample of CRD O 435.1 requirements and actual field conditions or the facility configuration as specified in field verified drawings."

In a review of the PFP Management Oversight Program and Senior Supervisory Oversight database, the FR identified approximately eight entries for waste management related activities from June 2012 through mid-September 2012. The Environmental, Waste and Characterization Director provided a FR two files documenting reviews the project self-performed to prepare themselves for August/September 2012, PFP NSPEB assessment. In one file, personnel reviewed whether the project had vulnerabilities in areas the NSPEB had identified non-compliances at other projects. In the second file, the project identified and assessed areas where they considered they may have vulnerabilities, without relation to NSPEB reviews at other projects. The Director also provided the FR with a crosswalk to Condition Reports (CR-2012-2397 through CR-2012-2403) generated from the reviews. The results demonstrated rigor in the reviews.

As discussed previously, CHPRC also performed a NSPEB assessment at PFP August 27 through September 7. One of the ten functional areas reviewed was Environmental/Waste Management. Five Findings were documented in the draft report.

Due to the NSPEB review and PFP self-assessment activities related to preparation for the NSPEB review the FRs considered contractor self-assessment activities were adequate. However, considering waste was/is PFP's primary product, it would appear additional formal oversight activities should be considered (than are currently included in the IEP) for periods when NSPEB reviews are not planned.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

R. Clinton, CHPRC
J. W. Long, CHPRC
M. A. Wright, CHPRC

Attachment 6
13-OOD-0010

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division

Surveillant(s): Ron Johnson, Elver Robbins, Dale Splett

Surveillance Number: S-12-OOD-SNF-003

Date Completed: September 27, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 100K (100K Min Safe and 100K Area Deactivation and Decommissioning (D&D))

Title: Waste Management

Guides: Waste Management Surveillance 16.1, Rev. 0

Surveillance Objective/Scope:

The objective of this surveillance was to evaluate the effectiveness of contractor implemented systems and processes to track production, storage, movement and disposal of hazardous, mixed and radioactive wastes. The areas that were evaluated included preparation of required reports and documents for tracking waste, documentation of training of personnel involved, and observation of physical storage/disposal areas and waste packing/shipping activities.

Surveillance Summary:

This surveillance inspected Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and chemical waste storage sites at 100K, including the 105KW reactor, 105KE reactor and 189K water plant areas. The surveillance reviewed training records for key waste management personnel at 100K. The surveillance also reviewed waste container data sheets and waste profiles for waste containers holding contaminated soil from the Sludge Treatment Project Annex construction site, and interviewed key waste management and transportation personnel involved with shipping the containers.

This surveillance resulted in two observations;

- **S-12-OOD-SNF-003-O01:** 105KW CERCLA waste area map did not match actual storage location. (OA 44506)
- **S-12-OOD-SNF-003-O02:** Waste storage discrepancies at CERCLA Area 105KE FD-K-003 were noted. (OA 44664)

Surveillance Results:

Observation: S-12-OOD-SNF-003-O01

105KW CERCLA waste area map did not match actual storage location (OA 44506)

Discussion:

The 105KW CERCLA Waste Management Areas map in the CERCLA Waste Area log book located in the 105KW shift office showed storage area KW-CW-006 as being located adjacent to the northeast corner of the 105KW fuel storage basin. During walkdown of the storage areas it was found that waste management area KW-CW-006 was actually located outside the west wall of the 105KW reactor building. The map in the logbook was dated July 5, 2012. Discussion with shift office personnel indicated that waste management area KW-CW-006 may have been moved due to construction activities related to the Sludge Treatment Project annex on the north side of the 105KW complex.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-SNF-003-O02

Waste storage discrepancies at CERCLA Area 105KE FD-K-003 were noted. (OA 44664)

Discussion:

During a walkdown of the CERCLA waste management location 105KE FD-K-003 several discrepant conditions were noted.

Many items were found with faded or illegible writing on Radioactive Material Area (RMA) stickers and were missing information as to the container contents. Items included five liquid totes (approx. 450 gallon in size), used oil containers, rail road ties and hazardous material stored in 55 gallon drums.

One railroad tie on an RMA load was found lying across the RMA boundary outside the designated CERCLA area.

A container labeled as "209-E Burial Box" was found inside the K-Basins CERCLA Area. This box did have a RMA tag attached to the outside of the box. When asked, K-Basins Waste Management personnel did not know the contents inside the box or why waste from 209-E was stored at K-Basins.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

100K including the D&D project has conducted at six management oversight type activities and five other assessments in the area of waste management since the beginning of the fiscal year. Those oversight activities identified numerous Opportunities for Improvement and one Noteworthy Practice. One Waste Management Surveillance is still ongoing. Four assessment/surveillance activities are scheduled in fiscal year 2013 for projects which include 100K and the 100K D& D project.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

D. M. Boone, CHPRC
C. D. Lucas, CHPRC
J. D. Mathews, CHPRC
E. A. Prichard, CHPRC
J. M. Swartz, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant(s): Joseph J. Waring, Allison K. Wright

Surveillance Number: S-12-OOD-SWOC-003

Date Completed: September 28, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Solid Waste Operations Complex (SWOC)

Title: Waste Management

Guides: Waste Management Surveillance 16.1, Rev. 0

Surveillance Scope:

The objective of this surveillance was to evaluate the contractor's effectiveness in implementing systems and processes to track generation, storage, movement and disposal of hazardous, mixed and radioactive wastes. The items evaluated included preparation of required reports and documents for tracking waste, documentation of training of personnel involved, and observation of physical storage/disposal areas and waste packing/shipping activities. In addition, closing out an issue related to container management was evaluated.

Surveillance Summary:

During the month of September, the Facility Representatives (FRs) performed the following to sample implementation of waste management requirements:

- Walkdown of waste storage areas;
- Reviewed waste profiles and manifests for shipments to the Environmental Restoration Disposal Facility (ERDF);
- Reviewed training reports and SWOC Dangerous Waste Training Plans (DWTPs);
- Reviewed Waste and Fuel Management Project (W&FMP) Waste Management Self-Assessments and Management Observation Program (MOP) Reports;

- Reviewed Condition Reporting and Resolution System (CRRS) items associated with contractor self-assessments;
- Reviewed daily and weekly waste storage inspection round sheets;
- Observed preparations for overpacking and labeling of waste;
- Observed shipment preparations and waste shipments;
- Interviewed waste management personnel during the course of the surveillance; and
- Evaluated close out of a container management issue.

In general, SWOC's implementation of waste management program requirements was satisfactory with the noted exceptions identified below. One Good Practice related to a Management Assessment conducted leading to positive improvements in the Waste Management Program is also documented.

Container Management has been listed as a FR issue in the SWOC Master Oversight Plan since 2010. The remaining contractor corrective action in CR-2010-4063 was to complete an effectiveness review. In July (2012), concurrence was received to suspend CR-2010-4063 without conducting a partial effectiveness review, because of resources and less work. Suspending the condition report was appropriate; however, conducting a partial effectiveness review would have been beneficial. In June/July (2012) there was a considerable amount of waste movements at Waste Receiving and Processing Facility (WRAP), and a few at T Plant that could have been reviewed to determine if corrective actions taken will prevent recurrence. Finding 01 documented a procedure noncompliance during a shipment from WRAP indicating issues remain. Container management will continue to be tracked as an issue.

The following four Findings, six Observations, and a Good Practice were identified:

- **S-12-OOD-SWOC-003-F01:** Steps in Procedure WRP1-OP-0502, *Receipt and Shipment Operations*, were performed out of sequence. (OA 44527)
- **S-12-OOD-SWOC-003-F02:** Location of some containers at T Plant did not match the location in the Solid Waste Information Tracking System (SWITS). (OA 44759)
- **S-12-OOD-SWOC-003-F03:** Personnel identified in the SWOC DWTPs had expired training. (OA 44795)
- **S-12-OOD-SWOC-003-F04:** A deficiency identified in WFMP-2012-WSA-10957, *Work Site Assessment on 90-day Accumulation Areas at Central Waste Complex (CWC)/Low-Level Burial Grounds (LLBGs)*, was not entered into CRRS. (OA 44790)
- **S-12-OOD-SWOC-003-O01:** No documentation was found for items in Container 0076519 being released from radiological controls. (OA 44759)
- **S-12-OOD-SWOC-003-O02:** Discrepancies were found in Waste Inventory Paperwork at T Plant. (OA 44759)
- **S-12-OOD-SWOC-003-O03:** WMP-370, Section 3.2, "ERDF Waste Profiles, Waste Shipping/Receiving Plans, and Onsite Waste Tracking Forms" does not state it applies to waste destined for treatment/disposal at ERDF under the ERDF Record of Decision (ROD) Amendment for non-Comprehensive Environmental Response,

Compensation, and Liability Act of 1980 (CERCLA) waste, although this procedure is used for that purpose. (OA 44722)

- **S-12-OOD-SWOC-003-O04:** Areas of Improvement were identified for SWOC DWTPs. (OA 44795)
- **S-12-OOD-SWOC-003-O05:** Opportunities for Improvement were found with CWC/LLBG Weekly Inspection Sheets and Open/Closed List Tracking. (OA 44832)
- **S-12-OOD-SWOC-003-O06:** Lists of SWOC Satellite Accumulation Areas (SAA) and 90 day storage areas are not consistent. (OA 44832)
- **S-12-OOD-SWOC-003-GP01:** A comprehensive review of the W&FMP Waste and Transportation Processes was performed at an opportune time, which led to identification of program weaknesses and process improvements. (OA 44790)

Surveillance Results:

Finding: S-12-OOD-SWOC-003-F01

Steps in Procedure WRP1-OP-0502, *Receipt and Shipment Operations*, were performed out of sequence. (OA 44527)

Requirement(s):

Procedure PRC-PRO-MS-589, *CH2M HILL Plateau Remediation Company Procedure*, Rev 1, Change 8, Step 3.15.2 states in part: "IF Reference Use,
THEN:

The procedure must be followed as written.

Re-sequencing of steps or sections is not permitted unless authorized by the procedure. (Steps are defined as those actions identified in the performance section of the document.)"

Discussion:

Section 4.6 of Procedure WRP1-OP-0502, *Receipt and Shipment Operations*, was used to perform the work steps to ship waste containers from Building 2404-WC to ERDF. Section 4.6 contains numbered steps within this section. After the workers had placed the shipment in "transit" per Step 4.6.22 and while the workers were performing Step 4.6.23, which is a verification that the containers to be shipped have a "transit" location in SWITS, the FR asked the Duty Operations Supervisor (DOS) why this step was being performed before Steps 4.6.20 and 4.6.21, which loads and secures the waste onto the conveyance. The DOS discussed the out of sequence work execution with the workers, and then Steps 4.6.20 and 4.6.21 were initiated.

Placing the shipment in transit removes the radioactive waste inventory from the facility zone. This reflected an erroneous zone inventory since the waste had not been moved out of Building 2404-WC. Should something happen at that point whereby the shipment could not be made, the facility zone would not reflect an accurate radiological inventory.

Previous corrective actions in 2010 and 2011 related to container management issues (OA 34596) should have mitigated deficiencies such as this.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-003-F02

Location of some containers at T Plant did not match the location in SWITS. (OA 44759)

Requirement:

WMP-340, Section 2.1, *T Plant Waste Management*, Revision 14, Change 4, Item 3.6.4, SWITS Update, "SWITS is updated at various points throughout the 'life' of a container. When a new waste container is created and a Package Identification Number is assigned, the new container is entered into SWITS. New or used RCRA empty containers awaiting use should also be tracked in SWITS."

Discussion:

During the walk through at T Plant, several containers found in the field did not match the location provided in SWITS. Most were for empty containers; however some contained waste. Examples include but are not limited to:

- Container 0077115 was located in the 221-T Pipe Gallery Gage and accumulating waste, but SWITS indicated the location as Building 210-T.
- A Package Identification Number (PIN) File was created for container 221T-12-000002 but was not in SWITS inventory and was not located. This container was not used but log was not updated.
- Empty container numbers 0044625, 0077129, 0083401, 0044568, 0044624, 0044567, 0083406, 0077132, 0077133, 0083405, 0083402 were located in Building 277-T, but SWITS specified Building 210-T.
- Empty Container number 0029053 was located in Building 2706-TA, but the container number was not in SWITS.

Contrary to the requirement above, some containers are not being tracked in SWITS and SWITS is not always updated when containers are relocated within the facility.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-003-F03

Personnel identified in the SWOC DWTPs had expired training. (OA 44795)

Requirement:

PRC-STD-TQ-40227, *LLBG DWTP*, Revision 1, Change 0, Section 2.0, "Hanford Facility personnel cannot perform a task for which they are not properly trained. Hanford Facility Personnel must be trained within six months after their employment at or assignment to the Hanford Facility, or to a new job title/position at the Hanford Facility, whichever is later." Similar statements are contained in the other SWOC DWTPs.

Discussion:

A copy of the training report for those individuals assigned to SWOC Facilities that implement jobs in the DWTPs was requested and reviewed. Several individuals had expired or incomplete training including: Environmental Compliance Officer (ECO) and Operation Supervisor (Integrated Disposal Facility); Waste Service Provider (All facilities); Nuclear Chemical Operators (WRAP); CWC Operations Supervisor; and WRAP Operations Supervisor. Soil and Groundwater Training point of contact provided a status stating there was no record of their personnel taking course number 301740, *Solid Waste Storage and Disposal Project Facility Emergency Hazard Information Checklist (FEHIC)*.

Additionally, the report showed that several required courses were not on individuals Training Plan or Employee Job Task Analysis. SWOC Training Point of Contact sent an email stating the expired training at the IDF had been completed.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-12-OOD-SWOC-003-F04

A deficiency identified in WFMP-2012-WSA-10957, *Work Site Assessment on 90-day Accumulation Areas at CWC/LLBG*, was not entered into CRRS. (OA 44790)

Requirement(s):

10 CFR 830.122 (c) states: "Criterion 3—Management/Quality Improvement. (1) Establish and implement processes to detect and prevent quality problems. (2) Identify, control, and correct items, services, and processes that do not meet established requirements. (3) Identify the causes of problems and work to prevent recurrence as a part of correcting the problem. (4) Review item characteristics, process implementation, and other quality related information to identify items, services, and processes needing improvement."

Procedure PRC-PRO-QA-052, *Issues Management*, Rev 5, Change 0, Section 4.1 states in part: "A CR should be initiated for issues (as well as noteworthy practices) that may require evaluation, trending, cause determination, or identification and tracking of

actions. The process then allows for appropriate management of the subsequent action items via the web-based automation system, CRRS."

Procedure PRC-PRO-EP-15333, *Environmental Protection Processes*, Rev 1, Change 3, Section 5.67, Step 10.c states: "If the 90-day accumulation area is listed as 'suspended,' insert documentation into the weekly inspection record log indicating the time period of suspended activities to ensure continuity of the inspection record."

Discussion:

Work Site Assessment WFMP-2012-WSA-10957 performed a thorough review of CWC/LLBG 90-day Accumulation Areas (AAs). Two Procedure PRC-PRO-EP-15333 requirements were identified as not fully complied with, one of which was already addressed in CRRS. The second noncompliance (documentation of the time 90-day AAs are suspended) was not entered into CRRS with the justification the noncompliance was administrative in nature and did not affect regulatory requirements. However, a procedure noncompliance existed and the item should have been entered into CRRS.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-12-OOD-SWOC-003-O01

No documentation was found for items in Container 0076519 being released from radiological controls. (OA 44759)

Discussion:

On the T Plant Complex Waste Container Request (WCR) for Container 0076519, the Waste Management Representative specified that bulbs must be released from radiological controls (free released) before placement into the drum. The container file was reviewed but did not have any objective evidence of items being released from radiological controls or not having originated from a radiological area. FR asked the requestor of the WCR how this was being documented, but no documentation was provided.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-SWOC-003-O02

Discrepancies were found in Waste Inventory Paperwork at T Plant. (OA 44759)

Discussion:

During the walk through of waste storage areas and review of the Package Identification Number (PIN) File, several discrepancies were noted (and most fixed):

- Container Inventory Sheets for Containers 0063747 and 0079705 stated closed on January 25, 2012, and January 12, 2012, respectively, but are listed on the Daily Report as not closed. Containers are not closed and paperwork is being updated.
- Container Inventory Sheet for Container 221T-12-000004 incorrectly listed 221T-12-00000. This was corrected on the spot.
- No Container PIN File was created for Container 221T-12-000003. This container was placed into ERDF Roll-on/Roll-off Container P082. However, the PIN number book did not state a location and it was not input into SWITS, therefore tracking of the container is problematic.
- Three of the four containers listed in the PIN Number Book did not have locations specified on the form; and one did not specify container type.
- The completed (part 2 was blank) T Plant Complex WCR Form for Container 007196 was not in the Container PIN File or on the container. The completed version was found on email and placed into the Container PIN file during the review.
- The incorrect continuation sheet was used for Container 221T-12-000004. The information was in the process of being transferred to the appropriate form during review.
- T Plant Complex WCR for 0079701 was filled out after the accumulation date.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-SWOC-003-O03

WMP-370, Section 3.2, "ERDF Waste Profiles, Waste Shipping/Receiving Plans (WSRP), and Onsite Waste Tracking Forms (OWTF)" does not state it applies to waste destined for treatment/disposal at ERDF under the ERDF ROD Amendment for non-CERCLA waste, although this procedure is used for that purpose. (OA 44722)

Discussion:

PRC-PRO-WM-40223, Rev. 4, Chg. 0, *Environmental Restoration Disposal Facility Waste Process*, covers the processes for scheduling and shipping waste from Plateau Remediation Contract (PRC) Projects to ERDF. The Waste Profile, OWTF, and WSRP processes cited in this procedure are covered in WMP-370, Section 3.2, *ERDF Waste Profiles, WSRPs, and OWTFs*.

Procedure WMP-370, Section 3.2, applies when CHPRC Waste and Transportation Services (WTS) has the responsibility for performing activities that are associated with

radioactive and/or mixed CERCLA waste destined for treatment and/or disposal at the ERDF. This procedure does not state it applies to waste destined for treatment/disposal at ERDF under the ERDF ROD Amendment for non-CERCLA waste. However, there is no other procedure that would apply to CHPRC for non-CERCLA waste destined for ERDF, so WMP-370, Section 3.2 is used, although it does not technically apply.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-12-OOD-SWOC-003-O04

Areas of Improvement were identified for SWOC DWTPs. (OA 44795)

Discussion:

A full compliance review was not performed on the SWOC DWTPs; however, several areas for improvement were noted. The list of personnel assigned under some of the categories appears incomplete. Examples include:

- An individual (name provided in OA report) who routinely performs waste moves and applies labels is not listed as an NCO at CWC but is listed for the burial grounds.
- One Shift Duty Officer and the Operations Manager are not listed as Operations Supervisors for Low-level burial ground (LLBG) or CWC but routinely review and approve NCO inspection reports, approve waste to be received into the facilities; and function as the Building Emergency Director (BED) at CWC which are all assigned functions of the Operations Supervisor.
- The new ECO should be listed since she is going through qualifications and assigned to the facility, and performing ECO functions, such as signing spill reports.
- The WRAP, LLBG, and CWC DWTPs list the Waste Service Provider as the position for "Approve incoming TSD unit waste acceptance review." This function is performed by the NCO at CWC and LLBG. The training matrix provided has the SWOC WMR providing all of the Waste Service Provider functions; however, some jobs are performed by the Technical Services and Transportation Services Organizations. It is noted that a training needs analysis has been drafted for preparing qualification cards for WMRs, Waste Verifiers, and others, that may clarify this issue.
- PRC-STD-TQ-40227, *LLBG DWTP*, Table 3-1, *Job Titles/Positions at the LLBGs*, Item 9, states "Waste Support Services" organization, but this does not exist in the new organization.
- For the BEDs, the list provided does not cover all the BEDs who cover the On-Call Function or who are listed on the BED list.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-12-OOD-SWOC-002-O05

Opportunities for Improvement were found with CWC/LLBG Weekly Inspection Sheets and Open/Closed List Tracking.

Discussion:

FR reviewed completed operator round sheets for weeks of September 3, 10, and 17, 2012. Rounds are completed in accordance with Procedure SW-040-043, *Inspect CWC & Miscellaneous Buildings*, and Procedure SW-040-041, *Inspect Low-Level Burial Grounds*. Rounds are being conducted, and data sheets are being reviewed and approved by the Shift Duty Officer (SDO) or Operations Manager.

The following were noted:

- Two items on the CWC weekly rounds sheets were not checked off related to aisle spacing (Procedure SW-040-043 Data sheet dated September 4, 2012 for Building 2402-WF and on September 21, 2012 for Building 2403-WB), and FR advised the SDO.
- Comments on the Open/Closed List:
    - On September 7, a comment was made for corroding drums in Trench 34 which specifies Operations and Engineering are evaluating. FR followed up with Operations Manager who was not sure of the status of the evaluation, but stated Radcon had completed surveys. A Radcon Supervisor provided Radiological Survey Report SW-1201736 dated July 23, 2012. Several drums are corroding and one appears to have a hole in the top. Drums are grouted drums returned from PermaFix Northwest. No contamination has been found. This issue was found on July 23, 2012, but the RCRA open list does not have an open issue and two months later the evaluation is on-going.
    - On September 7, 2012, a comment was made on Procedure SW-040-041 Data Sheet for 218-W-12B that "Trench 48 has many possible subsidences. SDO notified." No item is listed on the Open item list or any statement of resolution.
    - The Closed list does not state when the item was closed out or how it was closed out.

Previous reviews have noted that items on the open list are not resolved in a timely manner. This still remains an issue.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-12-OOD-SWOC-002-O06

Lists of SWOC Satellite Accumulation Areas (SAA) and 90 day storage areas are not consistent. (OA 44832)

Discussion:

A centralized list of the SAA and 90 day storage areas is maintained on the CHPRC website. SWOC has two Operator Aids (WRP-OPA-001, Revision 12 and CWC/LLBG-OPA-001, Revision 8) which provides the designated locations for tracking 90-day and SAA. The centralized list and WRP-OPA-001 are not consistent. For example, WRP-OPA-001 lists three SAAs at 218-E-12B as suspended, but they are not listed on the centralized list.

It is noted that WRP-OPA-001, Revision 12 contains reference to Procedure SW-100-185, *Process, Manage & Ship Waste (218-E-12B),* which is currently on Administrative Hold.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Good Practice: S-12-OOD-SWOC-003-GP01

A comprehensive review of the W&FMP Waste and Transportation Processes was performed at an opportune time, which led to identification of program weaknesses and process improvements. (OA 44790)

Discussion:

The WTS organizations were combined under a single director in the fiscal year (FY) 2012 reorganization. W&FMP took this opportunity in the first and second quarters of FY 2012 to complete a performance-based review of the WTS organization under the new structure. The results of the assessment were used as feedback to identify areas needing improvement. Additional Level 1 & 2 Waste Management procedures are being developed to clarify roles and responsibilities, improve standardization across the projects, and formalize some waste management practices.

Contractor Self-Assessment:

The FR obtained the CHPRC Integrated Evaluation Plan (IEP) report for FY 12 to determine if management assessments, surveillances, work site assessments (WSAs), etc., were performed or planned on the waste management program within the W&FMP. Additionally, a list of MOP Reports completed in January through July 2012 in the Waste Management and Environmental Protection functional areas was obtained.

The FR reviewed the following:

- Management Assessment WFMP-2012-MA-11624, *W&FMP Waste and Transportation Processes*, which was completed in February 2012.

- Three completed WSAs: WFMP-2012-WSA-10957, *Work Site Assessment on 90-day Accumulation Areas at CWC/LLBG*; WFMP-2012-WSA-11947, *Flow Down of Permit Requirements to W&FMP Dangerous Waste Training Plans*; and WFMP-2012-WSA-11769, *SMP Assessment of Radioactive Waste Storage*.
- Twelve completed MOPs within the area of waste management and environmental compliance at SWOC.
- Multiple CRRS items associated with the aforementioned management assessment, WSAs, and MOPs.

Overall, an adequate number of reviews were planned and scheduled, the reports were of high quality, and issues identified were placed into CRRS with one exception (see Finding 04 above). One Good Practice was also documented.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Contractors Debriefed:

N. F. Croft, CHPRC
B. J. Dixon, CHPRC
J. B. Estey, ENREP
D. A. Gilles, ETMEC
S. M. Kelley, CHPRC
E. T. McCarthy, CHPRC
A. S. Mortensen, CHPRC
D. R. Pyzel, ETMEC
D. G. Sauceda, ETMEC
K. R. Shupe, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

APR 16 2013

13-OOD-0021

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – MAINTENANCE MANAGEMENT CORE SURVEILLANCE OF CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) FACILITIES AND PROJECTS

Pursuant to Section E, Clause E.1, "DOE Inspection and Acceptance," the U.S. Department of Energy Richland Operations Office (RL) Operations Oversight Division performed the subject surveillance at CHPRC facilities and project locations during November and December 2012. The Report identifies 15 Findings, 17 Observations, and 2 Good Practices in the 6 attached surveillance reports. A Roll-up Evaluation of the surveillances concluded no programmatic weaknesses were identified, and is included as an attachment to this letter.

You are requested to process the Findings and Observations identified in the reports through the CHPRC Issues Management System and develop corrective actions for deficiencies identified. RL retains closure authority for the issues as designated within the attached surveillance reports.

If you have any questions, please contact me, or your staff may contact Ed MacAlister, Acting Director, Operations Oversight Division, on (509) 373-0462.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

OOD:EDM

Attachments

cc w/attachs: See Page 2

1. Roll-up Evaluation
2. Surveillance Report S-13-OOD-BOS D&D-001
3. Surveillance Report S-13-OOD-LWFS-001
4. Surveillance Report S-13-OOD-PFP-001
5. Surveillance Report S-13-OOD-GPP-001
6. Surveillance Report S-13-OOD-SNF-001
7. Surveillance Report S-13-OOD-SWOC-001

cc w/attachs:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
R. G. Whitney, CASI

Attachment 1
13-OOD-0021

Maintenance Management – Core Surveillance
Roll-up Evaluation

Surveillance Scope

The Richland Operations Office Operations Oversight Division (OOD) Facility Representatives evaluated CH2M HILL Plateau Remediation Company's (CHPRC's) management of maintenance programs at hazard category 2 and 3 nuclear facilities and for other equipment providing critical site functions.

Surveillance Summary

The surveillances identified 15 Findings, 18 Observations and 2 Good Practices at the CHPRC facilities. In general the issues identified did not indicate lack of programmatic control of management of maintenance although one Finding, S-13-OOD-SNF-001-F02, Maintenance was not performed on equipment included on 105KW Safety Equipment List, did result in generation of an occurrence report. Occurrence report EM-RL--CPRC-SNF-2012-0013 was written under category 3A(3) "Any violation or noncompliance of a credited hazard control specified in a Hazard Category 1, 2, or 3 nuclear facility's DOE approved Documented Safety Analysis," as a result of this surveillance.

Findings:

Balance of Site Decontamination and Decommissioning (BOS D&D)

- **S-13-OOD-BOS D&D-001-F01:** Information was not properly recorded into the main body (Data Sheet for each fan) of the work package as required by Step 6 of the work instruction.
- **S-13-OOD-BOS D&D-001-F02:** Configuration Control of electrical wiring was inadequate.

Liquid Waste Fuel Storage (LWFS)

- **S-13-OOD-LWFS-001-F01:** Steps were performed out of sequence when performing work package EL-12-06827/W WCN-2 on 10/28/2012.
- **S-13-OOD-LWFS-001-F02:** Electrical Ground Fault Circuit Interrupter (GFCI) was reset two times.

Plutonium Finishing plant (PFP)

- **S-13-OOD-PFP-001-F01:** A work step to perform an Industrial Hygiene explosive atmosphere test was not completed prior to proceeding in work package 2Z-11-09154, *TS&R Lift Station 2607-Z1 Pumps.*
- **S-13-OOD-PFP-001-F02:** Multiple discrepancies were identified in completed work packages.

Soil and Groundwater Project (S&GRP)

- No Findings.

Spent Nuclear Fuel (SNF)

- **S-13-OOD-SNF-001-F01:** Personnel performing work on Cold Vacuum Drying Facility equipment had not received required safety training.
- **S-13-OOD-SNF-001-F02:** Maintenance was not performed on equipment included on 105KW Safety Equipment List.

Solid Waste Operations Complex (SWOC)

- **S-13-OOD-SWOC-001-F01:** There was no Field Work Supervisor (FWS) on record for HFD testing and inspection of CWC dry fire risers.
- **S-13-OOD-SWOC-001-F02:** A step in Procedure FS0019, *Test/Inspection of Dry Fire Riser*, Rev 2, Change 0, was not completed.
- **S-13-OOD-SWOC-001-F03:** Preventive Maintenance/Surveillance (PM/S) Data Sheet FT-12-07514 FT-24415 did not clearly correlate with Procedure FS0019.
- **S-13-OOD-SWOC-001-F04:** Work record logs were not utilized for multiple Hanford Fire Testing work packages.
- **S-13-OOD-SWOC-001-F05:** Fire Protection System (FPS) Discrepancy Evaluation Checklist/Logs were not being completed for the CWC.
- **S-13-OOD-SWOC-001-F06:** Partial Release Sheet for Work Package 2X-12-05447/Y, *CWC/IDF/LLBG - Electrician Repetitive,* was not specific to component/equipment.
- **S-13-OOD-SWOC-001-F07:** Vital Safety System (VSS) Notebooks T-C-HV and CW-01A did not contain reviews of operations data sheets.

<u>Observations:</u>

Balance of Site Decontamination and Decommissioning (BOS D&D)

- **S-13-OOD-BOS D&D-001-O01:** Minor issues discovered following a review of a Preventive Maintenance work package.

Liquid Waste Fuel Storage (LWFS)

- **S-13-OOD-LWFS-001-O01:** Procedure step could not be performed as written on 11/07/12.
- **S-13-OOD-LWFS-001-O02:** Portions of procedure EL-12-06827/W WCN-2 could not be performed as written on 10/28/12.
- **S-13-OOD-LWFS-001-O03:** Radiological Control Technician (RCT) reached into contamination area (CA) to adjust an extension cord.

Plutonium Finishing plant (PFP)

- **S-13-OOD-PFP-001-O01:** Failure to adequately plan and schedule led to missing Technical Safety Requirements surveillance due dates, requiring utilization of extensions.
- **S-13-OOD-PFP-001-O02:** Maintenance History Records lacked the benefit of a defined program and were difficult to access.
- **S-13-OOD-PFP-001-O03:** PFP had not defined criteria for Hold Point use other than Health Physicist (HP) and Quality Assurance (QA) Hold Points.
- **S-13-OOD-PFP-001-O04:** The filter room inspection work package did not allow enough flexibility in the order of the filter room entry to best coordinate with the fire department heat detector inspection.

Soil and Groundwater Project (S&GRP)

- **S-13-OOD-GPP-001-O01:** The Worksite Hazard Analysis in work package G2-12-8338/Y *200 West P&T Mechanical Maintenance, Rev. 1*, did not reflect hazards for one of the tasks to be conducted.
- **S-13-OOD-GPP-001-O02:** The Partial Release Form for G2-12-03822/Y *Repair (limited hazard) Chemical System Leaks*, was not up-to-date.
- **S-13-OOD-GPP-001-O03:** Implementation of the five core functions of Integrated Safety Management (ISM) for each activity stated on the Partial Release Form for G2-12-03822/Y, *Repair (limited hazard) Chemical System Leaks,* was not evident based on documents in the work package.

Spent Nuclear Fuel (SNF)

- **S-13-OOD-SNF-001-O01:** Signature missing in completed Work Package.
- **S-13-OOD-SNF-001-O02:** Note to observe direction of pump rotation not included in work instruction.

Solid Waste Operations Complex (SWOC)

- **S-13-OOD-SWOC-001-O01:** HNF-4618, Rev. 1, *Interface Control Document between CH2M HILL Plateau Remediation Company and Mission Support Alliance, LLC for Water System Services,* contained some outdated information.
- **S-13-OOD-SWOC-001-O02:** The incorrect revision to HNF-15280, *Technical Safety Requirements for the Solid Waste Operations Complex (SWOC),* was referred to in PM/S Data Sheet W1-12-07400 W1-16898.
- **S-13-OOD-SWOC-001-O03:** Some maintenance issues from contractor reviews are not being placed in the Condition Reporting and Resolution System (CRRS) Database.
- **S-13-OOD-SWOC-001-O04:** Some information in VSS Notebooks CW-01A and T-C-HV was outdated.

Good Practices:

Balance of Site Decontamination and Decommissioning (BOS D&D)

- **S-13-OOD-BOS D&D-001-GP01:** Excellent control of the working steps demonstrated by the lead Nuclear Chemical Operator (NCO).

Liquid Waste Fuel Storage (LWFS)

- **S-13-OOD-LWFS-001-GP01:** Radcon Manager identified an RCT "turbo-frisking" an individual exiting the CA and counseled him on the spot.

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: R. V. Johnson

Surveillance Number: S-13-OOD-BOS D&D-001

Date Completed: November 30, 2012

Contractor: CH2M HILL Plateau Remediation Contractor (CHPRC)

Facility: K-Basins Deactivation and Decommissioning (D&D), Waste & Fuels Surveillance & Maintenance organizations (Note: Tracked as Balance of Site (BOS) D&D)

Title: Maintenance Management

Guide: Maintenance Surveillance (MAS 10.5)

Surveillance Scope:

The objective of this surveillance was to evaluate the effectiveness of contractor equipment maintenance including adherence to requirements at the higher maintenance program level as well as maintenance work instructions and maintenance work activities. In addition to maintenance of Safety Systems Structures and Components at hazard category 2 and 3 nuclear facilities the surveillance also considered maintaining operability and reliability of other equipment across Hanford which were used to perform critical site functions.

Surveillance Summary:

This surveillance was conducted to verify the contractor had established and implemented an effective program associated with maintenance work activities for hazard category 2 and 3 facilities in accordance with U.S. Department of Energy (DOE) requirements and established implementing procedures.

Activities monitored:

- PUREX Exhaust Fan Resistance Temperature Detector (RTD) Replacement (OA 45634)
- B Filter Setup Work Activity (OA 45496)
- 105K-East Work (OA 45692)
- REDOX Facility Exhaust Fan Preventive Maintenance (PM) (OA 45405)
- PUREX Acid Line Drain (OA 45728)

Documents Reviewed:

- 48 CFR 970.5223-1, *Integration of Environment, Safety and Health Into Work Planning and Execution*
- Order DOE O 433.1B, *Maintenance Management Program For DOE Nuclear Facilities*
- Procedure PRC-PRO-MN-19304, *Periodic Maintenance Process*
- Procedure PRC-MP-MN-40443, *Nuclear Maintenance Management Program (NMMP) Description Document*
- Procedure PRC-PRO-WKM-12115, *Work Control*
- Procedure PRC-PRO-WKM-079, *Job Hazard Analysis*
- Work Package SM-12-08746, *Drain liquid from PUREX Piping*
- Work Package SM-12-07754, *Inspect & Lube 291S-EF-1&2*
- Work Package 1K-12-02935, *105-KE Structural Concrete pour back*
- Work Package SM-12-08471, *Replace PUREX 291A-EF-V11-1 Pillow Block Bearing RTD Assembly*
- Work Package SM-11-06793, *B-Plant ACT Pre-Filter Change Out*

Surveillance Results:

Based on the work activity noted in this surveillance, the Deactivation, Decommission, Decontamination, and Demolition and Surveillance & Maintenance organizations showed compliance with DOE requirements; two Findings, one Observation and one Good Work Practice were identified during the review.

- **S-13-OOD-BOS D&D-001-F01:** Information was not properly recorded into the main body (Data Sheet for each fan) of the work package as required by Step 6 of the work instruction.
- **S-13-OOD-BOS D&D-001-F02:** Configuration Control of electrical wiring was inadequate.
- **S-13-OOD-BOS D&D-001-O01:** Minor issues discovered following a review of a Preventive Maintenance work package.
- **S-13-OOD-BOS D&D-001-GP01:** Excellent control of the working steps demonstrated by the lead Nuclear Chemical Operator (NCO).

Finding: S-13-OOD-BOS D&D-001-F01

Information was not properly recorded into the main body (Data Sheet for each fan) of the work package as required by Step 6 of the work instruction. (OA 45405)

Requirement(s):

DOE O 414.1D, "*Quality Assurance Criteria*" lists Performance/Work Process criterion under Attachment 2 and states in Step 5.a: "Perform work consistent with technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements using approved instructions, procedures, or other appropriate means."

Discussion:

Procedure Step 6 required that the millwright record the amount of grease used for both the inboard and outboard bearing in units of ounce. No numerical value was observed for the space reserved for recording data, instead the word "OK" was used in the field next to ounces. The step was written as follows for each exhaust fan:

"6. Using SEE Pen®, CHECK the fan bearing grease level AND LUBRICATE as needed with Mobilith SHC 100 synthetic grease, or other TA-approved equivalent , THEN RECORD quantity of grease added:

Inboard bearing _____oz. Outboard bearing _____oz."

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-BOS D&D-001-F02

Configuration Control of electrical wiring was inadequate. (OA 45634)

Requirement(s):

DOE O 414.1D, "*Quality Assurance Criteria*" listed Performance/Work Process criterion under Attachment 2 and states in Step 5.a: "Perform work consistent with technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements using approved instructions, procedures, or other appropriate means."

Discussion:

The surveillant reviewed the CHPRC Lifted/Landed Lead Record form which was incorporated with work package SM-12-08471. The form captured location of three wires and identified them but did not list when the three Resistance Temperature Detector (RTD) wires were disconnected (i.e., opened or lifted) and by whom. This particular form was discussed between the Instrument and Control (IC) technician and the Field Work Supervisor (FWS) during the pre-job brief.

Three wires were observed to be disconnected out in the field on 11/19/12, by the IC technician and a discussion was held about bagging and/or taping the lifted leads with the FWS upon discovery of a bent RTD probe tip.

This issue discovered on 11/20/12, was discussed with the Surveillance and Maintenance Work Control Lead who acknowledged that nothing in the work package steps stated that the CHPRC Lifted/Landed Lead Record form needed to be filled out after the wires were lifted. However, since the form was included in the work package it still needed to be filled out to account for the current configuration of the electrical wiring associated with the RTD.

RL Lead Assessor Closure Required: YES [X] NO [ ]

Observation: S-13-OOD-BOS D&D-001-O01

Minor issues discovered following a review of a Preventive Maintenance work package. (OA 45405)

Discussion:

During the review of work package SM-12-07754 the surveillant noticed the following discrepant items which were shared with the Surveillance and Maintenance Preventive Maintenance Coordinator:

The Cover/Release sheet showed a section that listed a "Post Work Review." This section asked the following question with a box next to it; "Work record feedback exists?" This section was not checked off as being performed or "N/A" as being not applicable.

The data sheet for each exhaust fan had a section incorporated into the work package for listing Measurement and Test Equipment. One data sheet was listed as "N/A," initialed and dated whereas the other data sheet was not marked or blank.

The main work document did not mention Attachment 1, yet an Attachment 1 for the work package listed additional work instructions for the "MEMOLUB" auto lubricators. Usually something is written into the main body of the work package instructions that would send the worker to an attachment if that was needed.

RL Lead Assessor Closure Required: YES [ ] NO [X]

Good Practice: S-13-OOD-BOS D&D-001-GP01

Excellent control of the working steps demonstrated by the lead Nuclear Chemical Operator (NCO). (OA 45728)

Discussion:

The surveillant observed one NCO designated as the lead (lead NCO) be assigned a working field copy of SM-12-08746 to ensure steps were performed as written. When performing work out in the field a second NCO involved with the glove bag set up did not like a step in the work package to install a containment device under the leaky acid line fitting, and he wanted to deviate from what was written in the procedure. The NCO was told by the lead NCO that the procedure steps needed to be performed as written. The lead NCO was persistent and repeated the step to the other NCO several times until the steps were performed as written in the work package.

The surveillant also observed the lead NCO mark each step for place keeping purposes. When the job was halted due to weather conditions the NCO collaborated with the FWS on how to capture work completed on the Work Record.

The lead NCO demonstrated excellent command and control of the work package in the areas of step by step compliance, ensuring workers understand the step that they are working to, being persistent enough to ensure workers complete the required step, place keeping and in discussing information needed for the Work Record.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The CHPRC Integrated Evaluation Plan (IEP) for fiscal years 2011 and 2012 was reviewed for the contractor self-assessments in the functional area of Maintenance Topics for the Surveillance & Maintenance organization. The IEP included an adequate number of contractor self-assessments in Maintenance Management. A sample review of completed maintenance self-assessments found the reviews to be properly scoped and completed.

The surveillant reviewed contractor assessments D&D-2011-WSA-050, WFMP-2012-MA-10997, SHS&Q-2012-NSPEB-11752 and Management Observations (i.e., PUREX Ventilation Flow Test – April 2012 and 224-T Annual Surveillance – August 2012) found issues identified by the contractor in areas such as training for personnel who supervise maintenance activities, standardizing week/day schedules, incorporating management expectations into Performance Indicators, workability reviews, reviewing maintenance procedures for Human Performance Improvement and post maintenance reviews.

WFMP-2012-MA-10997 was conducted on 12/8/2011, and the assessment was very thorough in looking at all phases that would encompass the Work Control /Integrated Safety Management Systems model and in identifying many of the issues described earlier. Each maintenance issue found by the contractor was captured by a condition report and corrective actions seemed to be managed satisfactorily.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:
D. R. Corriell, CHPRC
M. L. Edington, CHPRC
C. V. Phillips, CHPRC
E. A. Prichard, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: L. D. Earley

Surveillance Number: S-13-OOD-LWFS-001

Date Completed: November 29, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Liquid Waste and Fuels Storage (LWFS)

Title: Maintenance Management

Guide: Maintenance Surveillance (MAS 10.5)

Surveillance Scope:

The objective of this surveillance was to evaluate the effectiveness of contractor equipment maintenance including adherence to requirements at the higher maintenance program level as well as maintenance work instructions and maintenance work activities. In addition to maintenance of Safety Systems Structures and Components at hazard category 2 and 3 nuclear facilities this surveillance also considered maintaining operability and reliability of other equipment that provided critical functions.

Surveillance Summary

The Facility Representative (FR) performed the following activities to complete this surveillance:

- Verified Maintenance activities were conducted in accordance with an approved Nuclear Maintenance Management Program. (NMMP)
- Verified the NMMP was current.

- Ensured maintenance of Safety Systems, Structures and Components were conducted in accordance with the NMMP.
- Reviewed system engineer processes and documents.
- Reviewed the maintenance processes as they relate to hazard analyses.
- Observed planning meetings and maintenance priority setting as they pertain to scheduling maintenance to best support mission needs.
- Reviewed maintenance work packages and procedures.
- Observed maintenance work activities.

The assessor found that in general, maintenance practices were performed in accordance with procedures. However, the surveillance did result in the identification of the following issues:

- **S-13-OOD-LWFS-001-F01:** Steps were performed out of sequence when performing EL-12-06827/W WCN-2 on 10/28/2012.
- **S-13-OOD-LWFS-001-F02:** Electrical Ground Fault Circuit Interrupter (GFCI) was reset two times.
- **S-13-OOD-LWFS-001-O01:** Procedure step could not be performed as written on 11/07/12.
- **S-13-OOD-LWFS-001-O02:** Portions of procedure EL-12-06827/W WCN-2 could not be performed as written on 10/28/12.
- **S-13-OOD-LWFS-001-O03:** Radiological Control Technician (RCT) reached into contamination area (CA) to adjust an extension cord.
- **S-13-OOD-LWFS-001-GP01:** Radcon Manager identified an RCT "turbo-frisking" an individual exiting the CA and counseled him on the spot.

The FR oversight was documented in Operational Awareness (OA) reports 45577, 45576, 45480, 45446, 45445, 45355, 45301, 45286 and 45285.

Surveillance Results:

Finding: S-13-OOD-LWFS-001-F01

Steps were performed out of sequence when performing procedure EL-12-06827/W WCN-2 on 10/28/2012. (OA 45286)

Requirements:

Procedure PRC-PRO-MS-589, *CH2M HILL Plateau Remediation Company Procedures*, Paragraph 3.15.2 states in part, "USE the procedure based on the use type shown on the title page. IF Continuous Use, THEN: The procedure must be followed as written."

PRC-PRO-MS-589, Paragraph 3.15.2 states in part, "Re-sequencing of steps or sections is not permitted unless authorized by the procedure. (Steps are defined as those actions identified in the performance section of the document.)"

Discussion:

The surveillant observed the procedure performance to remove water pools from the Liquid Effluent Retention Facility Basin 42 cover using procedure EL-12-06827/W WCN-2. The operator appeared to be performing valve line-up verifications/positioning prior to placement of the chain ball and pump into the water pool. The procedure sequences the placement of the chain ball first in step 5.6.6.1, then placement of the pump in step 5.6.6.2, then alignment of the filter valves in 5.6.6.3. After the chain ball and pump were placed in the water pool, the surveillant asked the Field Work Supervisor (FWS) if the valves were going to be positioned/verified now and the FWS stated the valves were already checked and were primarily all already in the correct position.

Later during the procedure performance the FWS made pen and ink changes to better clarify which steps were to be performed and in which sequence. In addition a post-job was going to be conducted to talk through procedure issues and performance.

RL Lead Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-LWFS-001-F02

Electrical Ground Fault Circuit Interrupter (GFCI) was reset two times. (OA 45286)

Requirements:

DOE-0359, *Hanford Site Electrical Safety Program*, Paragraph 5.3.12 states in part, "120-volt GFCI receptacles/in-line GFCI devices that trip during use may be reset one time. IF the GFCI trips a second time, THEN DO NOT reset it. CONTACT management."

Discussion:

Contrary to the requirements above, during performance of EL-12-06827/W WCN-2, the GFCI that was installed on the extension cord powering the air samplers tripped and was reset. Approximately 10 minutes later the same GFCI tripped again and was again reset.

RL FR Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-LWFS-001-O01

Procedure step could not be performed as written on 11/07/12. (OA 45446)

Discussion:

The "Decanting Totes into Filter Housing" valve lineup step 5.7.16.1 of procedure EL-12-06827/W WCN-3 could not be performed as written. The step reads:

"CLOSE the following valves:
- 60B-221
- 60B-222
- 60B-223
- 60B-224
- 60B-225
- V-1
- V-2
- V-3
- V-4
- V-6
- V-7"

The surveillant did not see the performance of 60B-221; however, 60B-223, 60B-224, 60B-225, V-1, V-2, V-3, V-4, V-6 and V-7 were already closed and were verified closed by the operator. The procedure step would have been more accurate had it read CLOSE OR CHECK CLOSED ... or ENSURE CLOSED ...

RL Lead Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-001-O02

Portions of procedure EL-12-06827/W WCN-2 could not be performed as written on 10/28/12. (OA 45286)

Discussion:

The surveillant observed performance of procedure EL-12-06827/W WCN-2 on 10/28/12, and identified instances where the procedure cannot be performed as written. For example:

1. Step 5.6.6.4.2 stated, "WHEN ready to resume pumping, THEN GO TO Step 5.6.6.2." Step 5.6.6.2 places the pump but it is after step 5.6.6.1 which places the chain ball into the water pool.

2. Step 5.6.6.2.1 states, "CLOSE the following valves ..." however several times when this step is performed the valves are already in the closed position therefore more appropriate wording would be ENSURE CLOSED.

The FWS discussed some of these issues with the surveillant and made pen and ink changes and also stated the procedure would be discussed and improvements made for future use at Basin 44.

RL Lead Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-001-O03

Radiological Control Technician (RCT) reached into contamination area (CA) to adjust an extension cord. (OA 45285)

Discussion:

The surveillant observed a RCT reach his hand (wearing a work glove) into the CA to adjust an extension cord length that was zip-tied to a stantion. The RCT then appeared to put his gloved hand either under his jacket or in his pocket. The surveillant asked the Radcon Manager who was also observing if the RCT should perform a survey of his hand and the Radcon Manager stated that he should have. The Radcon Manager counseled the RCT regarding the event and the RCT surveyed his hand.

RL Lead Closure Required: **YES [ ]** **NO [X]**

Good Practice: S-13-OOD-LWFS-001-GP01

Radcon Manager identified an RCT "turbo-frisking" an individual exiting the CA and counseled him on the spot. (OA 45285)

Discussion:

The surveillant observed personnel exiting the CA and surveys performed. One of the RCTs performed extremely fast surveys of an individual's shoes. The Radcon Manager also identified the deficiency and immediately counseled the RCT regarding frisking speed and the surveys were re-performed.

RL Lead Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The FR reviewed the results of two Maintenance Assessments. The issues identified were appropriately captured in the corrective action management system and adequately tracked to closure. Future Waste Management Assessments were scheduled for the upcoming year at an appropriate frequency.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

C. J. Simiele, CHPRC
P. T. Saueressig, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: Deanna McCranie, Kerry Schierman, and David Thrasher

Surveillance Number: S-13-OOD-PFP-001

Date Completed: November 30, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Plutonium Finishing Plant (PFP)

Title: Maintenance Management

Guide: Maintenance Surveillance (MAS 10.5)

Surveillance Scope:

The objective of this Facility Representative (FR) core surveillance was to evaluate the effectiveness of contractor equipment maintenance including adherence to requirements at the higher maintenance program level as well as maintenance work instructions and maintenance work activities. In addition to maintenance of Safety Systems Structures and Components at hazard category 2 and 3 nuclear facilities this surveillance also considered maintaining operability and reliability of other equipment across Hanford which provides critical site functions.

Surveillance Summary:

The FRs verified PFP performed maintenance work in accordance with a Nuclear Maintenance Management Program (NMMP) that had been approved by the Richland Operations Office (RL) within the past three years (Letter 12-SED-0038, dated March 2012). This included review of System Engineer notebooks for Vital Safety System equipment, maintenance history records (particularly for equipment listed on the Safety Equipment List), hazard analyses and review processes, and maintenance backlog management.

The FRs verified CHPRC had conducted an assessment (SHS&Q-WKM-WSA-10-05, dated June 30, 2010) of implementation of the NMMP within the past three years and that PFP had been specifically included in the activity.

The FRs reviewed completed maintenance work packages, focusing on maintenance of safety systems, structures, or components. Maintenance procedures within work packages were evaluated. Utilization of feedback processes such as post-job reviews was also reviewed.

Finally, the FRs observed pre-job briefings and/or observed work associated with the following work packages:

- 2Z-12-04432, *Wire Rope Inspection- Monthly for the P&H Canyon Crane* (OA 45066);
- 2Z-11-08068, *Crack Repairs on 291-Z Exhaust Fan (EF) #3 Impeller* (OA 45079);
- 2Z-11-09154, *Troubleshoot and Repair of Lift Station 2607-Z1 Pumps* (OA 45152);
- 2Z-12-06911, *ZSE-25A-109, Inspect Filter Rooms 312, 313, 314, 315 & 318* (OA 45196, 45277, 45278);
- 2Z-12-06914, *(PM-M, C) 1/2/4-Year Fire/Smoke Barrier Inspect ZSR-26D-001 10/12 - 4 Year* (OA 45280);
- 2Z-12-04456, *TS&R Misc Comp/Fittings –Pipefitters* (OA 45290);
- 2Z-12-01756, *Tension Adjustment on the Exhaust Fan (EF)-3 Fan Belt* (OA 45328);
- 2Z-12-07052, *Aerosol Testing of Filter Room 314* (OA 45515);
- 2Z-12-04447, *PM/S RMA Conveyor Hood* (OA 45518); and
- 2Z-12-06975, *Filter Room Heat Detector Testing* (OA 45578).

The FRs found that in general PFP's Maintenance Program was compliant with the NMMP and procedures. The results of the reviews were documented in Operational Awareness (OA) reports in more detail than is provided here, and provided to contractor project management as they were completed. The Findings and Observations recorded in those OA reports have been consolidated and edited, and are documented below. The compilation resulted in the documentation of two Findings and four Observations.

- **S-13-OOD-PFP-001-F01:** A work step to perform an Industrial Hygiene explosive atmosphere test was not completed prior to proceeding in work package 2Z-11-09154, *TS&R Lift Station 2607-Z1 Pumps*.
- **S-13-OOD-PFP-001-F02:** Multiple discrepancies were identified in completed work packages.
- **S-13-OOD-PFP-001-O01:** Failure to adequately plan and schedule led to missing Technical Safety Requirements surveillance due dates, requiring utilization of extensions.
- **S-13-OOD-PFP-001-O02:** Maintenance History Records lacked the benefit of a defined program and were difficult to access.
- **S-13-OOD-PFP-001-O03:** PFP had not defined criteria for Hold Point use other than Health Physicist (HP) and Quality Assurance (QA) Hold Points.
- **S-13-OOD-PFP-001-O04:** The filter room inspection work package did not allow enough flexibility in the order of the filter room entry to best coordinate with the fire department heat detector inspection.

Surveillance Results:

Finding: S-13-OOD-PFP-001-F01

A work step to perform an Industrial Hygiene explosive atmosphere test was not completed prior to proceeding in work package 2Z-11-09154, *TS&R Lift Station 2607-Z1 Pumps*. (OA 45152)

Requirement(s):

Procedure PRC-PRO-WKM-12115, *Work Management*, Section 3.6.2.2, states, "Perform authorized work as specified in the work instructions, facility and site policies, and per the contractual requirements of SOWs [Statement of Work]."

Discussion:

While performing work package 2Z-11-09154, Step 5.2.17, to "Verify pump is operating by manually operating the pump switch," it was determined a lift station pump was not operating. The Field Work Supervisor (FWS) paused the work activity to contact an electrical FWS and request his assistance in troubleshooting the pump. During the delay, the FR reviewed the work package and identified that Step 5.2.13, to monitor the vault to ensure explosive levels were below the Lower Explosive Limit, had not been completed prior to proceeding on in the work package. The FR identified the discrepancy to the FWS. In response, the FWS requested an Industrial Hygienist perform the monitoring and annotate and sign for results in the work package. When it did not appear the work activity would be suspended or further notifications made, the FR informed the Work Management Director what had occurred. The Work Management Director contacted the FWS, directed he suspend the work package, and commenced an event investigation.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-PFP-001-F02

Multiple discrepancies were identified in completed work packages. (OA 45290, 45624, 45648)

Requirement(s):

PRC-PRO-WKM-12115, Section 3.6.2.2, states, "Perform authorized work as specified in the work instructions, facility and site policies, and per the contractual requirements of SOWs."

Discussion:

FRs reviewed completed work packages against the maintenance program FR core surveillance Activity 2 evaluation criteria. The criteria included:

- A clearly defined scope of work.
- Hazards identified and analyzed.
- Precautions and Limitations adequate.
- Notes and/or Warnings where hazards exist.
- Included documents are the latest revision.
- Directions that ensure maintenance is performed safely and efficiently.
- Post Job critiques and reports are utilized effectively.

The following work packages were reviewed:

- 2Z-12-04424/S, *3M/6M/12M Riser 9 Inspect/Test*;
- 2Z-12-03054/S, *ZSR-99A-014 Replace CAP-Z6 Batteries*;
- 2Z-12-02491/I, *(PM/S) Temperature Elements FC 1&2*;
- 2Z-12-06874/S, *ZSE-99E-001 10/08/12 1M Crit Safety Feature Insp*;
- 2Z-12-02551/W, *Rebuild/Replace Damper Motor DM-90-1-25A*;
- 2Z-12-04447/I, *(PM/S) RMA Conveyor Hood Room 320 08/12*;
- 2Z-12-06912/S, *CAS Battery Inspection 10/12*; and
- 2Z-12-06973/S, *3M Riser 8 Inspection/Test.*

Each work package met the attributes of the surveillance guide with the exception of the issues noted below:

- PRC-PRO-WKM-12115, Section 3.8.4, states in part, "CONDUCT work package closeout activities and post-review...IF the work package contains unused forms or data sheets, THEN REMOVE unused forms or data sheets AND UPDATE the References. ENSURE all required fields in the WD are complete, lined out or marked N/A (e.g., data entry fields, signature fields, or other fields that could give a perception of missing data if left blank)."

  A number of blank data fields were identified in work packages reviewed. Examples included:
  - Most Worksite Hazard Analyses included in work packages did not include "Locations" of the work sites;
  - In work package 2Z-12-03054/S, attached Preventive Maintenance Procedure 2Z22169, *Criticality Alarm Panel Battery Performance Capacity Testing,* Data Sheet 4 was left blank; and in attached Operating Procedure ZO-100-401, *Criticality Alarm System Non-Routine Surveillance*, Data Sheet 1 columns were left blank;
  - In work package 2Z-12-02491/I, PM/S Data Sheets 2Z-04056, 2Z-04057, 2Z-04060, 2Z-04061, and 2Z-04062 spaces for "M&TE Tol" and "Units" were left blank;
  - In the 2Z-12-06973, PM/S Data Sheet FT-12-06966, FT-29517, the Component Operating Section (page 2 of 5) was not completed nor marked as N/A; and
  - In work package 2Z-12-06912/S, Data Sheet 2 was not performed and each page was marked N/A, but Data Sheet 3 was left entirely blank.

- In work package 2Z-12-04424/S, PM/S Data Sheet FT-12-05048 FT-26871 provided acceptance parameters of a "low limit" of 81 and "up limit" of 99 for AL02 "Inp Value."

The "As Left" condition was 100. There was no explanation provided for leaving the "Inp Value" outside provided specification tolerances.

- In work package 2Z-12-03054/S, an ambiguous (double negative) call for data evaluation on Preventive Maintenance Procedure 2Z22169, Data Sheet 3, signoff for Step 4.6.11, led individuals conducting the procedure to check "No" when the data recorded in the table should have caused a "Yes" response.

- A note prior to Sub-section 7.1 in Appendix 1 of ZO-170-161, *Fire Alarm Control Panels (FACP)* did not contain adequate reference information. This procedure was in both work package 2Z-12-04424/S and 2Z-12-06973/S.

- As 2Z-12-04447/I work package was initially written, the instruction required the isolation of a transmitter and then required the pressure to be zero; however, on an isolated system the pressure could not bleed off to allow the pressure to reach zero. The work package was changed to allow an air bleed cap to be removed and the pressure to drop to near zero. This change was confirmed to be in procedure 1-ZM-078, *RMA Conveyor Hood Pressure Recorder And Transmitter Calibration*, as a direct change in the procedure included in the work package as well in the Job Control System (JCS). Of note, this procedure had been performed in the past and the changes required to allow the package to be worked as written had not been previously identified, indicating a "make it work attitude" which appears to be shifting based on field observations by the FR.

- 2Z-12-06912/S, the Precautions and Limitations section 2.1.2, stated, "Work performed on a battery in service shall use methods to preclude circuit interruption or arcing in vicinity of the battery." A work task should not have been included in this section. This did not meet the expectations identified in PRC-PRO-WKM-12115.

- In 2Z-12-06912/S, the Waste Packaging and Labeling Instruction PFP-G-011-01 for Recycled Batteries - Note 4, stated, "Do not use masking tape to tape battery terminals." However, in the task portion for "Inspect Battery – c. Ensure the terminals for all batteries are taped," there was no reference back to note 4. In the Weigh the Battery Box, there was no reference to note 5 which stated the weight must be in pounds.

- In 2Z-12-06912/S, Section 4.2.1, the Inspect the battery section 4.2.1, there was a list of conditions to inspect against, but there was no clear identification if the condition was SAT or UNSAT.

- In the 2Z-12-06973/M, PM/S Data Sheet FT-12-06966 FT-29517, page 4 of 5, the data completed for 7.4 were messy and confusing due to corrections. Because a check was used for the selected condition (SAT/UNSAT/NA) and a slash was used for the condition not selected, there were marks on each possible condition, with slashes and initials, which did not provide a clear designation of the identified condition.

- In 2Z-12-06973/M, ZSE-26A-002, page 17 of 17, Data Sheet 1 had the Shift Operations Manager (SOM) sign acknowledgement of two previous bullets, for which the

status/condition of the fire system was SAT/UNSAT or NA. The SOM signed the acknowledgement but neither of the two bullets had the condition documented.

One additional issue was identified in an active work package, 2Z-12-04456, *TS&R Misc Comp/Fittings-Pipefitters*, where work had already been completed. While reviewing the work record the FR identified that the entries all described the work that was accomplished, but did not appear to describe the "workability walkdowns" as described in step 5.1.1.5 of the package, which stated "DOCUMENT the initial; and subsequent workability walk downs in the Work Package Work Record and sign for the same." This step occurred in the package after the pre-job briefing and two steps after the walk down itself. The instruction appeared to be out of order in the beginning section, and not reflective of what the teams were doing in the field.

RL Lead Assessor Closure Required: YES [X] NO [ ]

Observation: S-13-OOD-PFP-001-O01

Failure to adequately plan and schedule led to missing Technical Safety Requirements surveillance due dates, requiring utilization of extensions. (OA 45278, 45280)

Discussion:

The work activity (work package 2Z-12-06911) to perform inspections of the filter rooms was a five-year surveillance. The work package was approved and provided to the FWS to perform on October 22, with a required completion date of October 24. The initial reports of the room entries took 40 minutes for each side of a room; therefore the best likely scenario would have been 1 ½ rooms per 2-hour dive. With 2 dives per day and 3 days of work, constrained by a 2-hour time limit for respiratory equipment utilization, the activity could only succeed if absolutely nothing went wrong. With work package changes required and issues encountered obtaining the appropriate personnel, the due date for the surveillance was exceeded and the utilization of an extension was required.

With five years to prepare for the next inspection, waiting until the week the surveillance was due to initiate work was a poor practice indicating poor planning and scheduling. The changes to the work package should have been flushed out prior to releasing the work package, as several members of the work team identified the wording of statements requiring the area be posted as Airborne Radioactivity Areas (ARA). Only the filter rooms themselves required ARA postings but the procedure indicated the entire corridor 34 also required posting. Additionally, the planners should have screened the Fire Department's work package (2Z-12-06975) to the changes in 2Z-12-06911 to ensure the controls matched up appropriately. Had this been done on Monday, with the changes made to 2Z-12-06911, the delays on Tuesday would not have occurred, and another filter room would have been completed on time and the fire department likely would have finished their surveillance on the heat detectors.

Procedure ZSR-26D-001 (Fire and Smoke Damper Inspections) was a four-year requirement; the due date was October 31. With fire department support typically limited to Tuesday (in this case

being October 30), one day was left to perform the PFP portion of the surveillance that required Fire Department support. Without making special arrangements, Tuesday was the only available day to do the work. With the added issues identified with the confined space in room 304 requiring procedure changes, the completion of the surveillance was pushed to within mere days of the due date.

Having years to plan, schedule, and perform the work, pushing the time requirements or needing to use an extension period was an unacceptable practice. While it may not have been directly related to operational convenience, delaying the surveillance activity or placing it at a low priority could have been construed as such. Observation S-13-OOD-PFP-001-O04 further elaborates on the attempted last minute coordination between the two activities listed above.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-PFP-001-O02

Maintenance History Records lacked the benefit of a defined program and were difficult to access. (OA 45689)

Discussion:

DOE-STD-1051-93, Appendix A.9.D, provided guidance that "Maintenance history records are readily available for use." Also, DOE-STD-1068-94, section 3.3, recommended that "...all users clearly understand this program and fully implement its intent," when talking about the Maintenance History Program.

While it was possible to find the information discussed in the standards, it was not very well organized and was difficult to obtain. This may have primarily been due to not having a governing program. For example, one of the complaints from personnel trying to use the information in Job Control System (JCS) to plan activities was that there was no guidance for populating the fields in JCS. Therefore a search on a Vital Safety System component ID number may or may not return all the applicable historical work packages for that component. This caused planners interviewed to have to do secondary and sometimes tertiary searches in JCS to obtain the entire data history for a component.

As a whole, the systems being used to track component history, as described in the referenced standards, had some weaknesses. Specifically, information was kept in multiple locations/databases and not all users were familiar with how to add to or access this history. These weaknesses may be resolved through a more comprehensive program implemented as described by the DOE standards listed above.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-PFP-001-O03

PFP had not defined criteria for Hold Point use other than Health Physicist (HP) and Quality Assurance (QA) Hold Points. (OA 45152)

Discussion:

Work package 2Z-11-09154, Step 5.2.13, contained a signoff (see Finding F01 above) that appeared to the FR to meet the characteristics for an Industrial Hygiene (IH) Hold Point, but was not formatted consistent with PRC-GD-WKM-12116, Appendix G, examples. The FR discussed the signoff with the project's cognizant IH. He stated when the signoff was inserted into the work instruction it was intended to be a Hold Point, but when confined space program requirements were revised, there had been an intention/attempt to remove the Hold Point from the work instruction. It was removed from another location in the instruction, but inadvertently, not in Step 5.2.13. He therefore concluded, although the signoff had the appearance of a Hold Point, it no longer was one. In discussions with the Work Management Director and the Work Control Manager they also concluded the signoff was not a Hold Point.

PRC-PRO-QA-5432, Section 2.1.1, states the Responsible Functional Organization or Facility shall, "If not previously defined, define criteria for Hold Point use." PRC-PRO-QA-5432 defined Hold Point threshold criteria for Health Physicist Hold Points and Quality Assurance Hold Points, but not for other types (such as IH). PFP had not defined Hold Point criteria for other types of Hold Points (such as IH).

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-PFP-001-O04

The filter room inspection work package did not allow enough flexibility in the order of the filter room entry to best coordinate with the fire department heat detector inspection. (OA 45277)

Discussion:

The work team identified that work package 2Z-12-06911, which referenced ZSE-25A-109, *Inspect Filter Rooms 312, 313, 314, 315, 318*, did not allow enough flexibility in the order of the filter room entry to best coordinate with the fire department. The fire department was generally available on Tuesday and Thursday at PFP for maintenance activities. With the due date for the filter room inspection being on a Wednesday, Tuesday was the only day the fire department could conduct their work activity in conjunction with the inspection team, in order to meet the due date.

In addition, the filter room work package specifically required the inlet side of the room be inspected prior to the outlet side. Since the heat detectors were located on the outlet side, this prevented the crew from immediately accessing the areas requiring fire department work access to allow them to complete their work in the timeliest manner. As a result, the fire department

had to return to complete their package. Further, the likelihood for contamination to exceed the Radiological Work Permit action levels was much less on the outlet side of the filters and the work would not have had to be stopped prior to completion of the heat detector testing.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

DOE 433.1B Contract Requirement Document (CRD) required an assessment of implementation of the NMMP at least once every three years. Safety Management Program Key Attribute 10-4 Line of Inquiry 10-4-1 required verification that CHPRC facilities have a maintenance implementation plan that implements CRD O 433.1B, and provides a high degree of confidence that facility equipment degradation is appropriately identified and corrected, by reviewing the facility maintenance implementation plan. The CHPRC central program issued Work Site Assessment (WSA) SHS&Q-WKM-WSA-10-05 on June 30, 2010, to document a contract-wide (including PFP) review of the CHPRC NMMP implementation. Management assessment SHS&Q-2013-MA-12302, scheduled to complete on June 30, 2013, will again perform the same verification.

In addition, CHPRC central programs performed a WSA (EPC-2012-WSA-11815) in March 2012, on compliance of system engineering notebooks to PRC-PRO-EN-16331, and a WSA (EPC-2012-WSA-12002) on facility testing, surveillance, and maintenance procedures, in August 2012. Both included reviews of PFP. PFP performed WSA PFP-2012-WSA-12116 in the fourth quarter of 2012 to evaluate PFP Qualified Workers understanding of proper techniques to conduct safe-to-work checks; WSA PFP-2011-WSA-9263 in the second quarter of 2011 to assess vehicle safety practices; and management assessment PFP-IS-11-MA-003 in the first quarter of 2011 to review implementation and compliance with scaffold use procedures. Each activity reviewed aspects of the maintenance program. PFP has scheduled a High Efficiency Particulate Air filter service life Work Site Assessment (PFP-2013-WSA-12024) for September 2013.

Finally, PFP conducted a significant number of Senior Supervisory Oversight and Management Oversight Program reviews during maintenance activities and in maintenance topical areas. The FR reviewed the database, which was extensive. Some of the contractor reviews were conducted in preparation for the CHPRC Nuclear Safety Performance and Evaluation Board (NSPEB) review of the project. The NSPEB reviewed the PFP Closure Project, with Maintenance as a specific area of review, in August/September 2012.

Review of the documentation indicated the reviews were self-critical and issues were being identified. Because the FRs identified a trend of minor in nature, but frequent in number, issues in completed work packages during their reviews, a FR attempted to identify specific completed package oversight activities performed by the contractor to determine if the project was also identifying similar issues. The FR did not identify specific completed work package review oversight activities.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

J. R. Brack, CHPRC
R. L. Garcia, CHPRC
J. W. Long, CHPRC
T. C. Oten, CHPRC
M. A. Wright, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: B. A. Biro

Surveillance Number: S-13-OOD-GPP-001

Date Completed: November 30, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Soils and Ground Water Project

Title: Maintenance Management

Guide: Maintenance Surveillance (MAS 10.5)

Surveillance Scope:

The objective of this surveillance was to evaluate the effectiveness of contractor equipment maintenance including adherence to requirements at the higher maintenance program level as well as maintenance work instructions and maintenance work activities. In addition to maintenance of Safety Systems Structures and Components at hazard category 2 and 3 nuclear facilities this surveillance also considered maintaining operability and reliability of other equipment across Hanford which provided critical site functions.

Surveillance Summary:

Various aspects of Maintenance Program were reviewed. This included reviewing work packages associated with maintenance, Procedure PRC-PRO-WKM-12115, *Work Management*, attending pre-job briefings, attending scheduling meetings, and observation of maintenance activities in the field. (Operational Awareness (OA) reports 45337, 45399, 45644, 45699, 45704, 45705, and 45738)

The Soil and Groundwater Project appeared to have implemented a program necessary to maintain facilities and equipment under its cognizance. Routine planned maintenance

activities such as instrument calibrations, Ground Fault Circuit Interruptor (GFCI) inspections, eye wash station inspections etc. were in a recall program and routinely discussed during scheduling meetings. Corrective maintenance activities were generally input into the system via work requests. This process was reinforced at daily scheduling meetings based on inquires made by the lead scheduler.

Due to the nature of activities associated with startup, repetitive work packages were relied upon heavily at the 200 West Pump and Treat. It is acknowledged use of repetitive work packages can increase efficiency. However, it creates the potential for scope creep beyond the original intent of the work package and/or leads to less than rigorous implementation of the five core functions of Integrated Safety Management.

The following Observations resulted:

- **S-13-OOD-GPP-001-O01:** The Worksite Hazard Analysis in work package G2-12-8338/Y, *200 West P&T Mechanical Maintenance*, Rev. 1 did not reflect hazards for one of the tasks to be conducted.
- **S-13-OOD-GPP-001-O02:** The Partial Release Sheet for G2-12-03822/Y, *Repair (limited hazard) Chemical System Leaks* was not up-to-date.
- **S-13-OOD-GPP-001-O03:** Implementation of the five core functions of Integrated Safety Management (ISM) for each activity stated on the Partial Release Sheet for work package G2-12-03822/Y, *Repair (limited hazard) Chemical System Leaks,* was not evident based on documents in the work package.

Surveillance Results:

Observation: S-13-OOD-GPP-001-O01

The Worksite Hazard Analysis in work package G2-12-8338/Y, *200 West P&T Mechanical Maintenance*, Rev. 1 did not reflect hazards for one of the tasks to be conducted. (OA 45704)

Discussion:

Based on a Data Sheet in the work package, it appeared the package was going to be utilized to remove and inspect a sump pump in the Bio Building. The data sheet stated, "LOTO MS-Y98A2 motor starter for BPDP-Y98A." This statement indicated an electrical hazard had been identified. Additionally, the sump was considered to be a permit required confined space. The Worksite Hazard Analysis in the work package did not reflect electrical hazards or confined space hazards as being present/involved with work scope in the package.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-GPP-001-O02

The Partial Release Form for G2-12-03822/Y, *Repair (limited hazard) Chemical System Leaks*, was not up-to-date. (OA 45699)

Discussion:

A "sodium hydroxide leak at fitting near tote" was released to be worked on 8/21/2012. Field work was signed as being complete on 8/24/2012. As of 11/26/2012, "Ops. Acceptance" had not been signed.

A "phosphoric acid leak at valve" was released to be worked on 8/23/2012. Field work complete was signed on 8/24/2012. As of 11/26/2012, "Ops. Acceptance" had not been signed.

A "Tighten Sodium Hypochloride flange at MBR skid B" was released on 10/24/2012. This activity had not been suspended or completed as of 11/26/2012.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-GPP-001-O03

Implementation of the five core functions of Integrated Safety Management (ISM) for each activity stated on the Partial Release Form for work package G2-12-03822/Y, *Repair (limited hazard) Chemical System Leaks*, was not evident based on documents in the work package. (OA45699)

Discussion:

An attempt was made to locate Data Sheets for each of the five work activities listed on the partial release sheet. The purpose of the data sheets was to identify the scope of the task, document a walk down of the work area, document hazards and controls etc. The work package in the field only contained two data sheets. It is acknowledged some of the data sheets/documents may have been moved to a "book 2" after they had been completed. However, with only five tasks associated with the work document (based on the release sheet), it did not seem like the package would be unwieldy necessitating removal of some completed documents/forms.

The work record (most likely place for feedback to be documented) did not contain entries related to each of the five tasks.

The work package contained a completed Automated Job Hazard Analysis (AJHA) form. If the intent of ISM was to identify hazards and associated controls at the task level, it was unclear why an AJHA tool was utilized. A repetitive use package appeared to be designed to allow for multiple similar tasks to be performed under a single work package.

It is acknowledged similar tasks would likely have similar hazards, but this may or may not be true depending on other activities or plant/environmental conditions that could not be anticipated at the time the AJHA was developed.

Based on the documents available, it would seem the following would be easily identifiable for each task:

1. Line item on Partial Release Sheet (work authorization by responsible manager).
2. Data sheet (identify scope and any special conditions).
3. Work Site Hazards Analysis (to document identified hazards and associated controls for the specific task to be worked).
4. Work resolution/instructions, drawings etc as necessary to perform work.
5. Work record entries (to provide feedback based on what occurred with each of the released activities).

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

Two Surveillances, 4 Worksite Self-Assessments, and 32 completed CHPRC Management Observation Reports were reviewed. The reports documented oversight of various aspects of maintenance and work control including Idustrial Hygiene support, Radiological Control support, procedure use, and procurement of material. The oversight activity appeared to be substantive. Over 50% of the reports cited opportunities for improvement that were entered into the CHPRC Issues Management System.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Briefed:

R. B. Barmettlor, CHPRC
W. F. Barrett, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillants: E. D. Robbins, D. H. Splett

Surveillance Number: S-13-OOD-SNF-001

Date Completed: November 30, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 100K (100K Min Safe and 100K Area Deactivation and Decommissioning (D&D))

Title: Maintenance Management

Guide: Maintenance Surveillance (MAS 10.5)

Surveillance Scope:

The objective of this surveillance was to evaluate the effectiveness of contractor equipment maintenance, particularly maintenance of Safety Systems Structures and Components at a hazard category 2 nuclear facility. This included adherence to requirements at the maintenance program level as well as maintenance work instructions and maintenance work activities.

Surveillance Summary:

This surveillance reviewed level one and level two procedures and polices for management of the maintenance program at 100K. The surveillance reviewed completed maintenance work packages at the Cold Vacuum Drying Facility and observed ongoing maintenance at 105KW. The surveillance also reviewed the maintenance status of operating plant equipment.

This surveillance resulted in two Findings and two Observations.

- **S-13-OOD-SNF-001-F01:** Personnel performing work on Cold Vacuum Drying Facility equipment had not received required safety training.
- **S-13-OOD-SNF-001-F02:** Maintenance was not performed on equipment included on 105KW Safety Equipment List.

- **S-13-OOD-SNF-001-O01:** Signature missing in completed Work Package.
- **S-13-OOD-SNF-001-O02:** Note to observe direction of pump rotation not included in work instruction.

Surveillance Results:

Finding: S-13-OOD-001-F01

Personnel performing work on Cold Vacuum Drying Facility equipment had not received required safety training. (OA 45664)

Requirement(s):

DOE O 426.2, "*Personnel Selection, Training, Qualification, and Certification Requirements For DOE Nuclear Facilities*," section 4.b.(3), *Technician and Maintenance Personnel Training*, paragraph (b) states, "Personnel who perform work on engineered safety features as identified in the facility Documented Safety Analysis must be trained on those system/components. Included in this category are systems having a direct impact on the safe operation of the facility. System training must, at a minimum, include the following elements: 1 Purpose of the system; 2 General description of the system including major components, relationship to other systems, and all safety implications associated with working on the system; and 3 Related industry and facility-specific experience."

Discussion:

Work for work package 1C-12-07046/3, *CVD A Pressure Transmitter Calibration PT-1536 and 1508 TSR/OCRWM*, was conducted on November 7, 2012. The work involved calibration of safety basis related equipment, pressure transmitters PT-1508 and PT-1536 at the Cold Vacuum Drying Facility. At least one of the Instrument and Control (IC) technicians who performed the work, whose name was on the data sheets and other work records, had not received training related to the Documented Safety Analysis. Training course 228004 provides safety basis training for the Cold Vacuum Drying Facility and was intended for personnel who perform work on safety related equipment. This course had not been completed by the IC technician performing that work.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-001-F02

Maintenance was not performed on equipment included on 105KW Safety Equipment List. (OA 45687)

Requirement(s):

10 CFR 830, "*Nuclear Safety Management, Subpart A, Quality Assurance Requirements*," "Criterion 5, *Performance/Work Processes*, sentence (4) states, "Calibrate and maintain equipment used for process monitoring or data collection."

Discussion:

Document HNF-SD-SNF-SEL-001 Revision 23, "*Safety Equipment List For The 105KW Basin*," released April 26, 2012, showed the Integrated Water Treatment System (IWTS) Annular Filter Radiation Detectors as being Defense In Depth. The Safety Equipment List listed the safety function as "Identifies filter loading and the need for backwashing to reduce radiological exposure from hydrogen deflagrations and spray releases."

One of the three IWTS radiation detectors display units appeared inoperable in that the indicator dial was pegged low. The two other units had calibration labels which indicated calibration had been due in February 2012. It did not appear that maintenance or calibration activities had been adequately performed on this equipment.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-SNF-001-O01

Signature missing in completed Work Package. (OA 45567)

Discussion:

During review of completed work package 1K-12-04685, *105KW remove/replace IXM-4*, it was noted that Part E of the Radiological Hazard Screening Form #1K-3983 identified the work as a medium radiological hazard and stated that the Radiological Controls manager must approve the work. The radiological work planner had signed and dated the form, but the signature and date blocks for the radiological controls manager were blank. The work package had been completed and reviewed for completeness and was to be entered into the records system when the oversight was found.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SNF-001-O02

Note to observe direction of pump rotation not included in work instruction. (OA 45673)

Discussion:

During the pre-job briefing prior to work for the removal and replacement of Ion Exchange Module (IXM) 4 in the 105KE basin, operations personnel stated that it was important to note the direction of rotation of the peristaltic pump used during draining of the IXM. The peristaltic pump was to be used by technical procedure OP-07-129W, *Isolate and Drain IXM-4 at 105-KW*, in conjunction with draining the IXM. If the pump was run in the wrong direction water may be pumped from the basin back into the IXM. Other maintenance and operations personnel at the meeting also agreed that it was important to visually check the direction of pump rotation. Section 4.0 of the procedure operated the pump but did not mention the importance of checking pump rotation during the process. A note or similar type statement should be included in the procedure to visually ensure the pump is running in the correct direction once it is started.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

During the last 12 months, 6 assessments and 20 Management Oversight Program (MOP) activities were performed against the maintenance program and related activities on the 100K project under the CHPRC D&D/Decommissioning, Waste, Fuels, and Remediation Services organizations. Three additional 100K project maintenance related assessments are planned by CHPRC for 2013.

The MOPs resulted in three condition reports (CRs) being issued. The three CRs resulted in a trend-only issue as well as two Track-until-Fixed (TUF) issues. The six assessments identified nine findings. Forty CRs were generated and categorized as TUF, Trend Only, or Opportunities-for-Improvement. A review of the assessments and lines of inquiry revealed that the Plateau Remediation Contract (PRC) oversight covered the breadth of maintenance related activities performed on the 100K project. The number and types of CRs generated also indicate that the reviews evaluated the maintenance programs' effectiveness and compliance with the PRC governing documents and the applicable U.S. Department of Energy orders and regulations.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

M. T. Bachand, CHPRC
C. D. Lucas, CHPRC
J. D. Mathews, CHPRC
M. J. Welling, CHPRC

Department of Energy
Richland Operations Office (RL)
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillants: J. J. Waring, A. K. Wright

Surveillance Number: S-13-OOD-SWOC-001

Date Completed: December 10, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facilities: Solid Waste Operations Complex (SWOC)

Title: Maintenance Management

Guide: Maintenance Surveillance (MAS 10.5)

Surveillance Scope:

The objective of this surveillance was to evaluate the effectiveness of contractor equipment maintenance including adherence to requirements at the higher maintenance program level as well as maintenance work instructions and maintenance work activities. The focus of this surveillance was maintenance of safety system, structures, and components at hazard category 2 and 3 nuclear facilities; however, a limited review of SWOC nonnuclear facilities was performed.

Surveillance Summary:

The Nuclear Maintenance Management Program (NMMP) required by DOE O 433.1B, "*Maintenance Management for Nuclear Facilities*," was approved by the Richland Operations Office letter 12-SED-0038, dated March 27, 2012, and implemented in Management Plan PRC-MP-MN-40443, *Nuclear Maintenance Management Program (NMMP) Description Document*. This surveillance included a review of: selected System Engineer notebooks for Vital Safety System (VSS) equipment; maintenance history records (particularly for equipment listed on the Safety Equipment List); maintenance backlog management; completed maintenance work packages, focusing on maintenance of safety systems, structures, and components; and observing maintenance activities.

The results of the reviews were documented in Operational Awareness (OA) reports in more detail than is provided here, and reports with issues provided to contractor project management as they were completed. The Facility Representatives (FRs) found that in general SWOC's Maintenance Program was compliant with the aspects of the NMMP that were reviewed. Positive attributes found: SWOC Preventive Maintenance (PM) Coordinators were very knowledgeable; SWOC Maintenance has attributes of a learning organization; and work observed was conducted in a safe manner. A weakness was noted related to the interface with Hanford Fire Department (HFD) maintenance work packages completed at Central Waste Complex (CWC).

The following seven Findings and five Observations resulted from this review:

- **S-13-OOD-SWOC-001-F01:** There was no Field Work Supervisor (FWS) on record for HFD testing and inspection of CWC dry fire risers.
- **S-13-OOD-SWOC-001-F02:** A step in Procedure FS0019, *Test/Inspection of Dry Fire Riser*, Rev 2, Change 0, was not completed.
- **S-13-OOD-SWOC-001-F03:** Preventive Maintenance/Surveillance (PM/S) Data Sheet FT-12-07514 FT-24415 did not clearly correlate with Procedure FS0019.
- **S-13-OOD-SWOC-001-F04:** Work record logs were not utilized for multiple Hanford Fire Testing work packages.
- **S-13-OOD-SWOC-001-F05:** Fire Protection System (FPS) Discrepancy Evaluation Checklist/Logs were not being completed for the CWC.
- **S-13-OOD-SWOC-001-F06:** Partial Release Sheet for Work Package 2X-12-05447/Y, *CWC/IDF/LLBG - Electrician Repetitive*, was not specific to component/equipment.
- **S-13-OOD-SWOC-001-F07:** Vital Safety System (VSS) Notebooks T-C-HV and CW-01A did not contain reviews of operations data sheets.
- **S-13-OOD-SWOC-001-O01:** HNF-4618, Rev. 1, *Interface Control Document between CH2M HILL Plateau Remediation Company and Mission Support Alliance, LLC for Water System Services*, contained some outdated information.
- **S-13-OOD-SWOC-001-O02:** The incorrect revision to HNF-15280, *Technical Safety Requirements for the Solid Waste Operations Complex (SWOC)*, was referred to in PM/S Data Sheet W1-12-07400 W1-16898.
- **S-13-OOD-SWOC-001-O03:** Some maintenance issues from contractor reviews were not being placed in the Condition Reporting and Resolution System (CRRS) Database.
- **S-13-OOD-SWOC-001-O04:** Some information in VSS Notebooks CW-01A and T-C-HV was outdated.

Surveillance Results:

Finding: S-13-OOD-SWOC-001-F01

There was no Field Work Supervisor (FWS) on record for HFD testing and inspection of CWC dry fire risers. (OA 45770)

Requirement(s):

Procedure PRC-PRO-WKM-12115, *Work Management*, Rev 2, Change 0, Section 3.6 states in part: "Work teams from other DOE prime contractors, or Other Hanford Contractors (OHC), such as MSA, that are performing their normal Directed Services work on CHPRC property but being supervised by their management team (e.g., Refrigeration Services, Fire Systems Maintenance, Hanford Fire Testing, Vent & Balance) will conduct work according to their companies' policies and procedures. These work teams are required to check in with and obtain work authorization from the facility/project where the work will occur. Generally speaking, the OHC provides the FWS for the work, and the CHPRC project/facility provides an escort, if appropriate."

Procedure MSC-MP-47124, Rev. 0, *Inter-Contractor Work Control*, Section 4.2.2 states in part: "Assign Field Work Supervisor (Nuclear / Radiological Facilities). For supervision of work to be performed by the MSA within the safety basis of an OHC nuclear or radiological facility, each of the following options are acceptable. In each of these options, MSA FWS refers to an MSA individual qualified to be a FWS by completion of training required by their Management. For work involving significant and/or complicated impacts to the safety basis, options 1 or 2 are appropriate. For narrower scopes of work, with clearly understood safety basis impacts and defined boundaries for work performance, option 3 is appropriate....3) An MSA FWS is responsible for conduct of the pre-job brief, supervision of the MSA workers, and conduct of the post-job brief. The MSA work team is briefed by the facility Release Authority on current hazards relating to other work scheduled that may impact or interface with the planned activity or limitations imposed on the work being performed, as part of the Work Release activity (see 4.2.3), utilizing the approved work documents. (MSA FWS + OHC Work Release Briefing)."

Discussion:

Contrary to the requirements above, there was no FWS on record for the following work packages:

- FT-12-07510, *2402-WB HFD Testing and Inspections [TSR]*
- FT-12-07511, *2402-WC HFD Testing and Inspections [TSR]*
- FT-12-07512, *2402-WD HFD Testing and Inspections [TSR]*
- FT-12-07513, *2402-WE HFD Testing and Inspections [TSR]*
- FT-12-07514, *2402-WF HFD Testing and Inspections [TSR]*
- FT-12-07556, *2404-WA HFD Testing and Inspections [TSR]*
- FT-12-07565, *2402-W HFD Testing and Inspections [TSR]*

The block on the first page of each of the aforementioned work documents where it states "Person in Charge/Field Work Supervisor name/phone" was blank. In addition, there was no pre-job briefing form in any of the completed work packages, nor was there anything filled out in the work record logs to indicate who was the FWS.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-SWOC-001-F02

A step in Procedure FS0019, *Test/Inspection of Dry Fire Riser*, Rev 2, Change 0, was not completed. (OA 45770)

Requirement(s):

Procedure PRC-PRO-WKM-12115, Work Management, Rev. 2, Chg. 0, Step 3.6.2.2 states, "PERFORM authorized work as specified in the work instructions, facility and site policies, and per the contractual requirements for SOWs."

Procedure PRC-PRO-WKM-12115, Work Management, Rev. 2, Chg. 0, Step 3.6.2.21 states, "VERIFY all required data, signatures, and required work document entries are complete and filled in."

Procedure FS0019, Rev 2, Change 0, Step 7.5.7 states in part: "NOTE any significant differences (i.e., Pressure drop greater than 10%) in Comment section. INVESTIGATE system water supply valve line up if current residual pressure drop is greater than 10% from past residual pressure. NOTIFY PIC or Team Leader if discrepancy cannot be corrected."

Discussion:

PM/S Data Sheet FT-12-07514 FT-24415 contained data that was outside of the acceptance parameters in Step 7.5, but this was not noted in the Comments Section of the data sheet as required, nor was there documentation in the work package that follow-on steps within Step 7.5.7 of Procedure FS0019, Rev 2, Change 0, were completed.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-SWOC-001-F03

PM/S Data Sheet FT-12-07514 FT-24415 did not clearly correlate with Procedure FS0019. (OA 45770)

Requirement(s):

DOE O 422.1, "*Conduct of Operations*," Attachment 2, Appendix A, Paragraph 2.p.(3)j. states, "Procedures are technically and administratively accurate: instructions and information are correct; referenced documents are correctly identified; and instructions for transferring between procedures are clear."

Discussion:

Contrary to the requirement above, the following deficiencies were noted in PM/S Data Sheet FT-12-07514 FT-24415:

- FS0019, Step 6.4 states to initial Data Sheet/Work Document when functions are bypassed, but there was no specific place to initial the PM/S Data Sheet FT-12-07514 FT-24415 for this step.
- PM/S Data Sheet FT-12-07514 FT-24415 contained no step numbers for recording data specified by Steps 7.1.2 and 7.1.3 of FS0019.
- PM/S Data Sheet FT-12-07514 FT-24415 contained no "pass or fail" recording requirements for FS0019, Step 7.1.1; and Step 7.1 on PM/S Data Sheet FT-12-07514 FT-24415 incorrectly followed Steps 7.1.2 and 7.1.3.
- The step sequence in PM/S Data Sheet FT-12-07514 FT-24415 for recording data specified in Step 7.3 of FS0019 has not aligned with FS0019 and was confusing (e.g., Data for Step 7.3.4(a) was recorded before data for Step 7.3.2(a)). Also, there was no acceptable range provided in the data sheet or procedure for the data recorded.
- There was no step in PM/S Data Sheet FT-12-07514 FT-24415 to record data specified in Step 7.5.2 of FS0019.
- The step sequence in PM/S Data Sheet FT-12-07514 FT-24415 for recording data specified in Step 7.5 of FS0019 was not aligned with FS0019 and was confusing (e.g., recording of data for Step 7.5.4(b) followed recording of data for Step 7.5.6).
- Recording of Step 7.6 data was not separated out into specifically numbered sub-steps (typical for most all of the data recording in PM/S Data Sheet FT-12-07514 FT-24415), and one data point labeled "DS Recording: TTA" did not relate back to any of the sub-steps in FS0019, Step 7.6.
- The restoration steps in PM/S Data Sheet FT-12-07514 FT-24415 (Section 8) were not consistent with the restoration steps in FS0019, but there was no direction stating to use the data sheet restoration steps rather than FS0019 steps.
- On the first page of PM/S Data Sheet FT-12-07514 FT-24415, a note exists in the "Resolution/Retest" block that was better suited for the Precautions and Limitations Section. The note stated: "If at any time during the performance of this work the fire sprinkler system will be, or could become, inoperable (no water available to the sprinklers) then contact the facility Shift Duty Officer to implement the requirements of LCO 3.2.1."

The above are examples and not intended to include all issues that may be present in PM/S Data Sheet FT-12-07514 FT-24415.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-SWOC-001-F04

Work record logs were not utilized for multiple Hanford Fire Testing work packages. (OA 45770)

Requirement(s):

Procedure PRC-PRO-WKM-12115, *Work Management*, Rev. 2, Chg. 0, Step 3.6.2.16 states, "FWS/Worker RECORD the following in the work record:
• Significant activities
• Issues that arose during the work
• Items requiring follow-up, such as procedure or data sheet changes
• Facility equipment that was worked on but not listed in the component field
• Points that should be discussed during the post-job review meeting"

Discussion:

Contrary to the requirements above, work record logs in the work packages listed below did not contain documented activities performed:

- FT-12-07510, *2402-WB HFD Testing and Inspections [TSR]*
- FT-12-07511, *2402-WC HFD Testing and Inspections [TSR]*
- FT-12-07512, *2402-WD HFD Testing and Inspections [TSR]*
- FT-12-07513, *2402-WE HFD Testing and Inspections [TSR]*
- FT-12-07514, *2402-WF HFD Testing and Inspections [TSR]*
- FT-12-07556, *2404-WA HFD Testing and Inspections [TSR]*
- FT-12-07565, *2402-W HFD Testing and Inspections [TSR]*

RL Lead Assessor Closure Required: YES [X] NO [ ]

Finding: S-13-OOD-SWOC-001-F05

Fire Protection Systems (FPS) Discrepancy Evaluation Checklist/Logs were not being completed for the CWC. (OA 43998)

Requirement:

Procedure WMP-342, Section 2.2, *Fire Protection Systems*, Revision 1, Change 0, Section 3.1.3, states, "(SPOC) Tracks discrepancies using the Fire Protection System Discrepancy Evaluation Checklist/Log (Appendix A), and ensures that Facility Management/Operations complete the corrective actions."

Discussion:

SWOC Administrative Procedure WMP-342, Section 2.2 *Fire Protection Systems*, requires the completion of FPS Discrepancy Evaluation Checklist/Log. In the past quarter, CWC has experienced numerous discrepancies. FR asked the CWC Fire Protection Design Authority (DA)

where these checklist/logs are kept in order to review. On August 2, the SWOC Operations Manager stated that the reason the DA had not responded was those checklists have not been completed since October 2011.

Contrary to the requirement above, the FPS evaluation checklist/logs were not being completed for the CWC. OA 43998 was written in August 2012. During this Maintenance Surveillance the VSS Notebook for CWC FPS (CW-01A) was reviewed which identified no OAs. Upon reviewing CRRS, this OA was not placed into the system back in August. This was brought to the attention of SWOC Management and subsequently added to CRRS, and is being included in this surveillance.

RL Lead Assessor Closure Required: YES [X] NO [ ]

Finding: S-13-OOD-SWOC-001-F06

Partial Release Sheet for Work Package 2X-12-05447/Y, *CWC/IDF/LLBG – Electrician Repetitive*, was not specific to component/equipment. (OA 45659)

Requirement:

Work Package 2X-12-05447/Y *CWC/IDF/LLBG – Electrician Repetitive*, Section 4.0 Prerequisite's, Step 4.2 stated, "The Release Authority shall identify on the partial release sheet the system, structure, or component for which the activity is released."

Discussion:

The partial release sheet is located in the front of the work package and entries were being made for each activity; however, contrary to the requirements above, the information in most of the entries was not specific to the system, structure, or component. For example, on October 30, line 7 states, "Rotate motor," on October 31, line 8 states, "relamping," item 11, "HVAC power supply verification."

RL Lead Assessor Closure Required: YES [X] NO [ ]

Finding: S-13-OOD-SWOC-001-F07

Vital Safety System (VSS) Notebooks T-C-HV and CW-01A did not contain reviews of operations data sheets. (OA 45883)

Requirement:

Procedure PRC-PRO-EN-16331, *System Engineer Program*, Section 3.1.4, Review of Operating Data Sheets, stated, "Many VSS Components and equipment are monitored by operations personnel during periodic rounds conducted by plant personnel, where operating data is recorded

on data sheets. It is expected that all SE's review these types of data sheets on a periodic basis: quarterly at a minimum and a self-determined higher frequencies where prudent. These reviews, and any action items resulting from them, shall be documented in a log-type fashion and maintained in the Operations & Maintenance Section of the System Notebook."

Discussion:

Contrary to requirement above, VSS Notebooks T-C-HV and CW-01A did not contain review of operations data sheets. CW-01A had a link to the data sheets in the Integrated Document Management System but no log-type entries documenting reviews or actions taken.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-SWOC-001-O01

HNF-4618, Rev. 1, *Interface Control Document between CH2M HILL Plateau Remediation Company and Mission Support Alliance, LLC for Water System Services*, contained some outdated information. (OA 45655)

Discussion:

The facility emergency notification points of contact for CWC and Waste Receiving and Processing (WRAP) in Section 6.1 of HNF-46148, Rev 1, were outdated and incorrect. The technical points of contact listed in Section 6.2 for CWC, T Plant, and WRAP were also incorrect.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-001-O02

The incorrect revision to HNF-15280, *Technical Safety Requirements for the Solid Waste Operations Complex (SWOC)*, was referred to in PM/S Data Sheet W1-12-07400 W1-16898. (OA 45613)

Discussion:

PM/S Data Sheet W1-12-07400 W1-16898 states: "These instructions fulfill requirements of SR 4.3.1.4 in HNF-15280, Rev 1." The current revision of HNF-15280 is Revision 8.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-001-O03

Some maintenance issues from contractor reviews were not being placed in the CRRS Database. (OAs 45432, 45532, 45883)

Discussion:

During review of contractor self-assessments related to Maintenance and VSS Notebooks, some issues found were not being placed into the CRRS Database for tracking, trending, etc. Examples included: T Plant work package for 271-T Elevator Third Party Inspections were not adequate and had to be changed and USQ screened; WRAP air compressor inspection significantly delayed due to lack of resources, and craft not having facility training and requiring escort; WRAP air compressor maintenance frequency to be evaluated by the DA for trends and review if PM frequency should be reduced; and Engineering Director conducted a review of T Plant water line project identifying an engineering concern with location of overflow from tank with a proximity to electrical switchgear resulting in elevation of work on the priority list. Additionally, VSS Notebook CW-01A identified housekeeping issues at the CWC air compressors rooms for 3 quarters, specifying Operations was notified.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-001-O04

Some information in VSS Notebooks CW-01A and T-C-HV was outdated. (OA 45883)

Discussion:

VSS Notebooks CW-01A and T-C-HV contained out of date information or references:

- System Boundary description referenced outdated versions of HNF-14741 and HNF-15280. T-C-HV references Revision 4A of HNF-14741 and Revision 4B of HNF-15280.
- CW-01A contained graphs of Fire Hydrant Residual Pressure for various hydrants. Most data was from 1998-2005. Graphs contained comments such as: "Bad data in 1999?" for Hydrants 9382, -9550, -9558, and Hydrant 9564 graphs comments stated "Need to watch." For the latter, no follow-up was indicated.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

Recent contractor self-assessments reports related to Maintenance Management were reviewed. This review consisted of fiscal year 2012 Integrated Evaluation Program (IEP) Management Assessments (MA), surveillances or Work Site Analysis (WSA); and Management Observation Program (MOP) Reports and Senior Supervisory Oversight (SSO) reports completed from January through August 2012. At the time of this review, MOPs/SSO reports for September and

October 2012 had not been scanned/indexed.

Four IEP reviews were conducted:

- WFMP-2012-MA-10797, *Performance Based Assumptions of WFMP Maintenance Program*, was a comprehensive baselines review of the WFMP Maintenance Program; training and qualification, corrective/preventative maintenance; Maintenance and Test Equipment; material control; post maintenance activities, and other areas. Review resulted in over 20 Condition Reports; most of which have been closed out. A portion of the closure documentation was reviewed, and most found to be satisfactory. Two closure files, one requiring management expectations for work record content (CR-2011-3674) and another for conducting an annual review of open work packages and materials purchased (CR-2011-3677) were communicated via email which can be problematic for institutionalizing these corrective actions.
- EPC-2012-WSA-10801, *CWC/T Plant/WRAP Vital Safety System Documentation Compliance*, reviewed four VSS notebooks. The report contained four observations related to the feedback, recent health reports, HFD generalized procedures; and a recommendation that WFMP Vice President be briefed by System Engineers regarding health reports. No CRRS items were submitted. FR requested the Engineering Manager to provide feedback on whether these items have been acted upon, and status.
- EPC-2012-WSA-10806, focused on system walk down quality review versus program reviews.
- SHS&Q-2012-NSPEB-1175, *WFMP Nuclear Safety Performance Evaluation Board (NSPEB)*, April 23 through May 4, 2012, found an issue with fire protection systems and maintenance. Specifically, inconsistencies between the SWOC Master Documented Safety Analysis and configuration management structures, systems, and component listing.

A total of 18 MOP/SSO reports were generated. Of the reports, six were on T Plant (mainly related to 291-T Stack Maintenance), seven on WRAP (majority related to required SSO oversight of Air Handling Units), one on CWC, none on the Low-level Burial Grounds/Mixed Waste Trenches; and four were cross-cutting related to training, pre-jobs, and planning. Reviewers included: Maintenance Managers; First Line Manager; Directors; Engineering Managers and Staff (Functional Area and Facility); Environmental Compliance Officer; and a Radiation Control Technician Team Lead. Issues found and documented in Condition Reports included head bump hazard at T Plant (documented as fixed) and training reports needed improvements. Several reports identified issues and/or opportunities for improvements that were corrected during the evolution or were going to be evaluated, but no Condition Reports were generated. These included: T Plant work package for 271-T Elevator Third Party Inspections were not adequate and had to be changed and unreviewed safety question screened; WRAP air compressor inspection significantly delayed due to lack of resources, and craft not having Facility Emergency Hazards Identification Checklist and requiring escort; WRAP air compressor maintenance frequency to be evaluated by the DA for trends and review if PM frequency should be reduced; and Engineering Director conducted a review of T Plant water line project identifying an engineering concern with location of overflow from tank with a proximity to electrical switchgear resulting in elevation of work on the priority list.

Overall, the contractor self-assessments were adequate. Observation 03 was written to address issues found during reviews that were not input into the CRRS Database.

Contractor Self-Assessment Adequate: YES [X] NO [ ]

Management Debriefed:

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A. S. Mortensen, CHPRC
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13-OOD-0037

JUN 0 3 2013

Mr. John C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-05RL14655 – TRANSMITTAL OF EM-42 ASSESSMENT REPORT FOR THE HANFORD SITE, RICHLAND OPERATIONS OFFICE (RL)

Pursuant to Section E, Clause E.1 "DOE Inspections and Acceptance," the U.S. Department of Energy, EM-42 Operational Safety, performed the subject assessment at CH2M HILL Plateau Remediation Company (CHPRC) facilities and project locations during February and March 2013.

You are requested to process the findings and observations identified in the report through the CHPRC Issues Management System and develop corrective actions for deficiencies identified. RL retains closure authority for the issues as designated within the attached assessment report.

In addition, your Nuclear Safety Evaluation Board final report titled, "Evaluation of The Soil and Groundwater Remediation Project," dated March of 2012 documented a concern, "Management of activities and work performance at the S&GRP lack the rigor and formality required by a number of DOE and CHPRC requirement documents and CHPRC ISMS expectations..." The attached EM-42 Assessment Report documented similar issues at the 200 West Pump and Treat in February and March of 2013. As such, you are requested to provide a Corrective Action Plan in accordance with Supplement Contractor Requirements Document DOE 227.1 (Supp. Rev 0), "Independent Oversight Program," addressing why actions taken as a result of your internal assessment were not fully effective across the Soil and Groundwater Remediation Project.

If you have any questions, please contact me, or your staff may contact Jim E. Spets, Acting Director, Operations Oversight Division, on (509) 373-0140.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

OOD:BAB

Attachment

cc: See page 2

JUN 05 2013

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-OOD-0044

JUL 1 5 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – FIRE SAFETY CORE SURVEILLANCE OF CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) FACILITIES AND PROJECTS

Pursuant to Section E, Clause E.1, "DOE Inspection and Acceptance," the U.S. Department of Energy Richland Operations Office (RL) Operations Oversight Division performed the subject surveillance at CHPRC facilities and project locations, except the Solid Waste Operations Complex, during May 2013. CHPRC implementation of the requirements of the National Fire Protection Association Codes was evaluated. Ten findings, 11 observations, and 1 good practice were identified during the review and are documented in the attached surveillance reports. A Roll-up Evaluation of the surveillance results is also included as an attachment to this letter. This activity was performed complementary to RL's triennial assessment of the CHPRC Fire Safety Program. Results of that review will be provided to you in a separate correspondence.

You are requested to process the findings and observations identified in the reports through the CHPRC Issues Management System and develop corrective actions for deficiencies identified. RL retains closure authority for the issues as designated within the attached surveillance reports.

If you have any questions, please contact me, or your staff may contact Jim E. Spets, Director, Operations Oversight Division, on (509) 373-0140.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

OOD:JJW

Attachments

cc: See page 2

cc w/attachs:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

1. Roll-up Evaluation
2. Surveillance Report S-13-OOD-BOS D&D-004
3. Surveillance Report S-13-OOD-GPP-004
4. Surveillance Report S-13-OOD-LWFS-004
5. Surveillance Report S-13-OOD-PFP-004
6. Surveillance Report S-13-OOD-SNF-004

Fire Safety Core Surveillance
Roll-up Evaluation

Surveillance Scope:

The Operations Oversight Division (OOD) Facility Representatives (FRs) objective for this core surveillance was to assess CH2M HILL Plateau Remediation Company (CHPRC) implementation of an effective program to minimize potential for fires that could threaten the health and safety of the public and/or onsite workers, or produce significant losses; examine the effectiveness of steps taken to mitigate any fires that may occur; and verify the condition and configuration of facilities provide appropriate levels of life safety protection. Compliance with the U.S. Department of Energy requirements and standards was evaluated. This activity was performed complementary to the Richland Operations Office triennial assessment of the CHPRC Fire Safety Program.

Surveillance Summary:

Throughout May 2013, FRs performed facility walkdowns, observed work related to fire safety systems, and reviewed documentation related to Fire Hazard Analyses (FHAs), fire protection facility assessments, fire protection system and equipment inspection, testing and maintenance, and where available observed fire drills. Oversight activities were conducted at Balance of Site (BOS) Deactivation and Decommissioning (D&D), Soil and Groundwater Remediation Project (identified as GPP in OOD surveillance numbering convention), Liquids Waste and Fuels Storage (LWFS), Plutonium Finishing Plant Closure Project (PFP), and 100K Project (identified as SNF in OOD surveillance numbering convention). Solid Waste Operations Complex was not evaluated during this activity.

In addition, CHPRC management and independent assessment activities, issues management processes, and Contractor Assurance System documentation were reviewed. The Occurrence Reporting and Processing System database was reviewed for [keyword] "fire" related events at CHPRC in 2012 through 2013 to date. Five occurrences were identified:

- EM-RL—CPRC-GPP-2013-0001: Broken Hexane Container Discovered Inside of Flammables Cabinet
- EM-RL—CPRC-PFP-2012-0004: Unexpected Shutdown of Exhaust Fan Motor EM-7 in Building 291-Z
- EM-RL—CPRC-PFP-2012-0006: Positive Potential Inaccuracy of a Safety Analysis Associated With Filter Box FB-25 (PISA)
- EM-RL—CPRC-PFP-2012-0010: Some Work Performed on Exhaust Fan EF-6 Without Authorized Worker Locks Hung Over Established Controlling Lockout/Tagout
- EM-RL—CPRC-SNF-2013-0003: Employee Injury to Finger During Maintenance Activity
- EM-RL—CPRC-SOLIDWASTE-2013-0001: Performance Degradation of 2402WG Fire Suppression System (Unreviewed Safety Question).

Ten findings, eleven observations, and one good practice were documented in five surveillance reports.

Findings:

- **S-13-OOD-BOS D&D-004-F01**: Review of FHA failed to include a walkdown/inspection of the facilities to verify accuracy was maintained.
- **S-13-OOD-BOS D&D-004-F02**: A Fire Protection Engineer (FPE) was absent from the annual surveillance walkdown.
- **S-13-OOD-GPP-004-F01**: Deficiencies identified in Worksite Self Assessments (WSA) were not entered into the CHPRC Condition Reporting and Resolution System (CRRS).
- **S-13-OOD-GPP-004-F02**: Extension cords were daisy-chained at the 100 Area HX Pump and Treat Facility.
- **S-13-OOD-LWFS-004-F01**: Documentation was not completed that verified a 200 Area Effluent Treatment Facility (ETF) fire protection system was properly restored to service following maintenance and testing.
- **S-13-OOD-LWFS-004-F02**: Combustible material control in the Canister Storage Building (CSB) Mechanical Equipment Room was less than adequate.
- **S-13-OOD-LWFS-004-F03**: An emergency exit from building 2025E room 137 did not have an unobstructed egress path.
- **S-13-OOD-PFP-004-F01**: Completed emergency (egress) light testing work packages did not adequately demonstrate requirements of National Fire Protection Association (NFPA) 101, Section 7.9.3, were being met.
- **S-13-OOD-PFP-004-F02**: The current revision of the facility's Fire Hazard Analysis was not signed by the Hanford Fire Marshal's Office.
- **S-13-OOD-SNF-004-F01**: The actions to address Condition Report CR-2011-2406, *Fire Hazards Analysis is Outdated at the 105-KW Basin*, were not performed in a timely manner and did not address the requirements identified in the applicable DOE Directives.

Observations:

- **S-13-OOD-BOS D&D-004-O01**: Support trailers used by the Surveillance and Maintenance (S&M) organization were missing portable fire extinguishers.
- **S-13-OOD-BOS D&D-004-O02**: Emergency exits were not clearly demarcated at building 242-B/BL.
- **S-13-OOD-GPP-004-O01**: Fire Protection system deficiencies were not always entered in the CHPRC CRRS.
- **S-13-OOD-LWFS-004-O01**: Section 7.11 of data sheet FP-27262 for work package FT-12-02275 was not completed with the proper yes, no, or N/A notation.
- **S-13-OOD-LWFS-004-O02**: Portions of the data sheets for work package FT-12-07546 lacked attention to detail.
- **S-13-OOD-LWFS-004-O03**: The description of operations in the CSB FHA primarily focused on Multi-Canister Overpack (MCO) welding which was essentially complete.
- **S-13-OOD-LWFS-004-O04**: Tumbleweed accumulations partially blocked Waste Encapsulation and Storage Facility (WESF) emergency exit egress paths and access to WESF emergency equipment.
- **S-13-OOD-LWFS-004-O05**: Minor issues were identified with the control of WESF fire extinguisher "Keep Area Clear" zones.

- **S-13-OOD-LWFS-004-O06**: Two electrical clear zones were obstructed or were not kept clear of material in building 2025E.
- **S-13-OOD-LWFS-004-O07**: Several areas of tumbleweed accumulation near exit doors from building 2025E were identified.
- **S-13-OOD-PFP-004-O01**: Facility life safety code configuration issues were identified during facility walkdowns.

Good Practices:

- **S-13-OOD-LWFS-004-GP01**: A Radiological Control Technician (RCT) took the extra step for safety by taking the Automated External Defibrillator (AED) to the staging area during evacuation for a fire drill.

Conclusions:

OOD considered CHPRC performance in the area of Fire Safety was adequate based upon the core surveillance oversight conducted. Although a number of discrepancies were identified, none of the issues were considered pervasive, and none were considered of high significance/impact. None of the related occurrences warranted further evaluation from a fire safety perspective.

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: Ronald V. Johnson

Surveillance Number: S-13-OOD-BOS D&D-004

Date Completed: May 27, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: K-Basins Deactivation and Decommissioning (D&D) and Surveillance and Maintenance (S&M) organizations

Note: Tracked as Balance of Site (BOS) D&D project

Title: Fire Protection

Guide: Fire Protection Surveillances 12.1, Revision 2 and 12.2, Revision 2

Surveillance Scope:

The objective of this core surveillance was to verify contractors were adequately implementing a program to minimize potential for fires that could threaten the health and safety of the public and/or workers, or produce significant losses and provide appropriate levels of life safety protection. The Facility Representative (FR) used the Fire Protection (FP) and Life Safety Code (LSC) requirements for work activities and facilities within assigned areas and the information in the surveillance guide to complete the core surveillance.

Surveillance Summary:

The following activities were conducted as applicable to evaluate the use of FP and LSC activities as related to the contractor's FP and LSC program.

Activity 1 – Verify implementation of selected FP and LSC elements through facility walkdowns.
Activity 2 – Review Fire Hazard Analysis (FHA) for selected facilities.
Activity 3 – Review program for portable fire extinguishers.

Activity 4 – Walk down of emergency exits.

Activities monitored:

- S&M Emergency Equipment Inspection (OA 48425).
- Miscellaneous, Industrial and Radiological Facilities Surveillance - Annual (OA 48398).
- S&M Plutonium Uranium Extraction Plant (PUREX) acid line drain work activity (OA 48279).
- Surveillance and Maintenance PUREX acid line drain work activity (OA 48317).
- Review of Fast Flux Test Facility (FFTF) and miscellaneous facility surveillance and FHA (OA 48464).
- Review of fire protection assessments for S&M facilities (OA 48541).

Documents Reviewed:

- Procedure PRC-STD-FP-40404, *Fire Protection Program*, Revision 0 Change 3
- Procedure CP-42774, *Fire Hazards Analysis For The Fast flux Test Facility*, Revision 0
- Procedure CP-23563, *224-T Fire Hazards Analysis*, Revision 0
- Procedure 2CP-SUR-F-05022, *FFTF Plant Annual Surveillance*, Revision 0 Change 11
- Procedure 2CP-SUR-O-04021, *Miscellaneous, Industrial and Radiological Facilities Surveillance*, Revision 1, Change 1
- Work Package SM-13-02817, *Emergency Equipment Inspection (M)*
- Work Package SM-12-08746, *Drain Liquid from PUREX Piping*
- Work Package SM-13-01498, *FFTF Nuclear Plant Surveillance*
- Work Package SM-12-03254, *Misc. Facility Surveillance (A)*
- Work Package SM-13-02829, *Misc. Facility Surveillance (A)*
- Work Package SM-11-02492, *Misc., Survl: 231Z, 222T, 242B/BL, Hot Semi & Indust. Fac. (A)*
- Assessment SHS&Q-2012-MA-7492, *Management Assessment of the Safety Management Program for D&D, PFP, and W&FM Projects.*
- Assessment SHS&Q-2013-WSA-10548, *Triennial Review of PUREX FHA*
- Assessment SHS&Q-2013-WSA-10549, *Triennial Review of 224-B FHA*
- Assessment SHS&Q-2012-NSPEB-11752, *Nuclear Safety And Performance Evaluation Of The Waste And Fuels Management Project*
- Assessment SHS&Q-2011-MA-7491, *Management Assessment of the Safety Management Program For the D&D, PFP, and W&FM Projects*
- Assessment D&D-2011-WSA-9027, *Triennial Fire Protection Assessment of the 405 Building.*

The surveillant found in general, FP and LSC requirements were being adequately implemented. However, the surveillance did result in the identification of two findings and two observations.

- **S-13-OOD-BOS D&D-004-F01:** Review of FHAs failed to include a walkdown/inspection of the facilities to verify accuracy was maintained.

- **S-13-OOD-BOS D&D-004-F02:** A Fire Protection Engineer (FPE) was absent from the annual surveillance walkdown.
- **S-13-OOD-BOS D&D-004-O01:** Support trailers used by the S&M organization were missing portable fire extinguishers.
- **S-13-OOD-BOS D&D-004-O02:** Emergency exits were not clearly demarcated at building 242-B/BL.

Surveillance Results:

Finding: S-13-OOD-BOS D&D-004-F01

Review of FHAs failed to include a walkdown/inspection of the facilities to verify accuracy was maintained. (OA 48541)

Requirements:

Contractor Requirements Document (CRD) 420.1B, Change 1 (Supplement Revision 0), *Facility Safety*, Section B.2) j. states the following, "Maintenance of fire hazard analyses. Fire hazard analyses shall be maintained at the frequency required by DOE O 420.1B to ensure that facility, operations, and hazards are accurately depicted in the FHA."

Discussion:

Contrary to the above requirements, the surveillant conducted a review of two recently performed Work Site Assessments (WSAs) associated with PUREX (SHS&Q-2013-WSA-10548) and 224-B (SHS&Q-2013-WSA-10549) facilities and did not see any form of a walkdown performed by the FPE at the local facilities to help validate and possibly update assumptions made in the FHAs. Both assessments were part of a triennial review of the FHAs covering both facilities. Description of the assessment method as listed in each WSA was a meeting held with the responsible facility engineer to go over possible changes to each facility.

The surveillant has seen other triennial inspections that included comprehensive walkdowns of facilities, verification of facility assumptions used in the FHA, and local verifications and reviews of maintenance work used to support fire protective systems for each facility.

CRD O 420.1B Change 1, *Facility Safety*, states in Section B Step 2.j the following, "Maintenance of fire hazard analyses. Fire hazard analyses shall be maintained at the frequency required by DOE O 420.1B to ensure that facility, operations, and hazards are accurately depicted in the FHA."

An accurate description is difficult to defend when an FPE chooses not to include a comprehensive walk down of the facility in order to validate assumptions made in the FHA.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

/Finding: S-13-OOD-BOS D&D-004-F02

An FPE was absent from the annual surveillance walkdown. (OA 48398)

Requirements:

- Procedure SM-12-03254 Step 1.3.2 which states the following, "Fire Protection Engineer walk-through surveillance of the exterior and interior will be conducted and documented-Annually."

- Procedure SM-12-03254 Step 2.2 which states the following, "Personnel performing surveillance activities are qualified (e.g., S&M FEHIC, Surveillance qualified, etc., as applicable) or will be under direct supervision of qualified personnel."

Discussion:

Contrary to the above requirements the surveillant observed the pre-job briefing for SM-13-02829 and during the meeting the Field Work Supervisor mentioned that a Nuclear Chemical Operator (NCO) would be signing for the FPE since he was not available. One member attending the pre-job brief mentioned that the FPE has not shown up for any of the annual surveillances.

While observing work at building 242-B/BL an FPE was not seen taking part with the surveillance tour group.

The surveillant reviewed procedure 2CP-SUR-O-04021 and it states the following:

• Section 1.3 – Applicability, Step 1.3.2:
"Fire Protection Engineer walk-though surveillance of the exterior and interior will be conducted and documented-Annually."

• Step 2.2 – Limitations, fourth bullet:
"Personnel performing surveillance activities are qualified (e.g., S&M FEHIC, Surveillance qualified, etc., as applicable) or will be under direct supervision of qualified personnel."

• Step 3.2 – Special Personnel Requirements, second bullet:
"Fire Protection Engineer (FPE)"

The surveillant performed a review of the previous surveillance (SM-12-03254) conducted in the May through June 2012 time frame. The Work Record for May 10, 2012, states, "Fire Protection Engineer cannot attend the walkdown has delegated NCOs to cover for him." A review of 12 Surveillance Data Sheets (representing the 12 different facilities) shows a performed by signature block listing an FPE name and signature. This block was signed by an NCO who referenced an FPE contact. The FPE did not perform the actions as required by the surveillance on any of the data sheets.

Though an NCO may be adequate in performing some of the surveillance functions that would be required of an FPE, he/she still does not have the requisite unique training. CRD (Supplement) 420.1B, Change 1 (Supplement Revision 0), states the following in Section B Step 3.a, "Chapter II, Section 3.b.7 of the HQ CRD specifies the need for access to, 'Qualified and trained fire protection staff, including a fire protection engineer(s).' The following clarifications are provided:

a. A qualified fire protection engineer is an engineer that is a graduate of an accredited university or college with a Bachelor of Science in an engineering or related technical field and meets the qualifications for Professional Member Grade in the Society of Fire Protection Engineers, or an engineer that has a member grade in the Society of Fire Protection Engineers, or an engineer that is a Registered Professional Fire Protection Engineer."

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-BOS D&D-004-O01

Support trailers used by the S&M organization were missing portable fire extinguishers. (OA 48279)

Discussion:

The S&M organization utilizes two large Haulmark® trailers to supply workers with Personal Protective Equipment and to provide a cool down place for workers coming from the field. Each trailer is equipped with a permanently installed portable generator capable of supplying electricity to the trailers' electrical system (i.e., lighting and air conditioning). With one of the trailers in service providing a comfort station to the workers, the Safety Representative (SR) was asked as to where the portable fire extinguisher was located. The SR inspected the outer perimeter of the trailer and then searched inside for some form of fire safety equipment but no equipment could be found. A NCO in the trailer commented that the portable fire extinguishers equipped in the government trucks nearby would satisfy the requirement.

The surveillant communicated later in the day with the other assigned SR on whether or not a service trailer with a gasoline powered electrical generator needed a portable fire extinguisher.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-BOS D&D-004-O02

Emergency exits were not clearly demarcated at building 242-B/BL. (OA 48398)

During performance of the walkdown at building 242-B/BL the surveillant did not see workers demonstrate where the emergency exits were located when entering the building from three separate locations.

The first location facing the north side allowed access onto an upper floor that had no exit points other than the way the workers entered the building. The second entry into the main portion of building 242-B was made without a clear understanding of where the emergency exits were located for all parties entering the building. The third entry made by the surveillance team into the basin area of building 242-BL showed one pathway to enter or exit the room.

The surveillant observed other items related to LSC during performance of the surveillance activity that included individual flashlights, radio communications, outside support personnel and the two man rule.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The CHPRC Integrated Evaluation Plan (IEP) for Fiscal Years 2011, 2012 and 2013 was reviewed for the contractor self-assessments in the functional areas of fire protection and life safety code. The IEP appears to be adequate in coverage of the S&M and D&D organizations through the use of assessments.

The surveillant reviewed WSA D&D-2011-WSA-9027, SHS&Q-2013-WSA-10549, SHS&Q-2013-WSA-10548, Management Assessments (MA) SHS&Q-2011-MA-7491, SHS&Q-2012-MA-7492 and Nuclear Safety Performance Evaluation Board review of the Project SHS&Q-2012-NSPEB-11752 reports to see what issues were identified by the contractor. All reports reviewed had no findings or observations with the exception of SHS&Q-2012-MA-7492 and SHS&Q-2012-NSPEB-11752.

Three observations were self-identified by the contractor in SHS&Q-2012-MA-7492 that involved other facilities not assigned to the S&M organization. One issue was captured by the NSPEP assessment that identified implementation plan for three S&M facilities as being incomplete. The facilities impacted by the assessment included REDOX, U-Plant and 209-E.

Condition Report (CR-2012-1542) lists five corrective actions associated with the one finding identified in SHS&Q-2012-NSPEB-11752. Three actions were closed out involving implementation matrix for procedure CP-45673 with the remaining two scheduled for closure on July 31, 2013. The last two corrective actions involve updating the FHAs for REDOX and U-Plant.

Two WSAs associated with triennial inspections for 224-B and PUREX were found performed without walking down the respective facilities and was noted earlier in this surveillance report (OA 48541).

Contractor Self-Assessment Adequate: **YES [X]** **NO [X]**

Management Debriefed:

D. R. Corriell, CHPRC
E. A. Prichard, CHPRC
C. V. Phillips, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant(s): Brian Biro

Surveillance Number: S-13-OOD-GPP-004

Date Completed: May 29, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Soil and Ground Water Remediation Project (S&GRP)

Title: Fire Protection Core Surveillance

Guide: Fire Protection Surveillance-12.1 Rev 2, *Life Safety*, and Fire Protection Surveillance-12.2 Rev 2, *Fire Protection and Prevention*

Surveillance Scope:

The objective of this surveillance was to assess the contractor implementation of an effective program to minimize potential for fires that could threaten the health and safety of the public and/or onsite workers, or produce significant losses; examine the effectiveness of steps taken to mitigate any fires that may occur; and verify condition and configuration of facilities provide appropriate levels of life safety protection. Compliance with the U.S. Department of Energy requirements and standards was evaluated.

Surveillance Summary:

The Facility Representative (FR) accompanied the Richland Operations Office (RL) Fire Protection Engineer (FPE) and his CHPRC counterpart on a walkdown the 200 West Pump and Treat facility to assess various aspects of fire prevention and control. This included fire riser room design, Fire Hazards Analysis assumptions, placement of sprinkler heads, facility conditions relative to combustible materials, placement of portable extinguishers, and location of hydrants. The RL FPE and his CHPRC counterpart also performed walkdowns of the 273W warehouse, 1713 H warehouse, and

facility 2611E. (OA#s 47923, 47933, 47939, 48001) The results of these walkdowns were to be documented in a separate report issued by the RL Nuclear Safety Division (NSD).

The FR reviewed the program for conducting inspections of portable fire extinguishers. This included the Operations procedure for monthly inspections as well as annual inspections performed by the Hanford Fire Department (HFD). (OA#s 47938, 48434, 48547) The results of OA 47938 were to be included in the separate report issued by NSD.

The FR reviewed aspects of Life Safety including egress pathways, exit signs, and use of extension cords. (OA#s 48368, 48331)

The FR observed the response to a building (2268E) losing fire protection. Appropriate personnel were contacted and a required fire watch was established. (OA# 48519)

Hot work permits were utilized as demonstrated by a self-reported failure to follow a hot work permit associated with drilling well C7303 in the 200 West Area. (OA# 47878)

A fire drill was not directly observed as part of the surveillance activities associated with this report. A fire drill was conducted for the 2753E building on April 30, 2013. The drill report appeared thorough and concluded the objectives for the scenario were not met. The individuals who discovered smoke did not immediately pull a fire alarm. This delayed notification of other building occupants and a delay in exiting the building. Once outside, it appeared the primary staging area was downwind of the building based on weather conditions at the time. The building warden moved people upwind, but apparently no secondary staging area had been identified which contributed to difficulties in establishing accountability in a timely manner. The report included other minor opportunities for improvement. Condition Report CR-2013-1186 documented the lack of an alternative staging area for the 2753E building. (OA# 48619)

Deficiencies and opportunities for improvement associated with aspects of Fire Prevention and Protection were identified and were to be transmitted in a separate surveillance report issued by the RL NSD.

This report documented two findings and one observation:

- **S-13-OOD-GPP-004-F01:** Deficiencies identified in Worksite Self Assessments (WSA) were not entered into the CHPRC Condition Reporting and Resolution System (CRRS).
- **S-13-OOD-GPP-004-F02:** Extension cords were daisy-chained at the 100 Area HX Pump and Treat Facility.
- **S-13-OOD-GPP-004-O01:** Fire Protection system deficiencies were not always entered in the CHPRC CRRS.

It should be noted the observation may point to an interpretation that could extend

beyond the S&GRP.
Surveillance Results:

Finding: S-13-OOD-GPP-004-F01

Deficiencies identified in Worksite Self Assessments (WSA) were not entered into the CHPRC Condition Reporting and Resolution System (CRRS).

Requirement:

Procedure PRC-PRO-QA-40090 *Work Site Assessment,* Revision. 2, Change 2, Section 3.3 8. stated in part, [Team Lead/Assessor] "PREPARE AND SUBMIT Condition Reports (CRs) in accordance with PRC-PRO-QA-052, Issues Management, for Findings, Opportunities for Improvement, and Noteworthy practices identified."

Discussion:

Contrary to Procedure PRC-PRO-QA-40090 *Work Site Assessment,* Revision. 2, Change. 2, WSA-8948 and WSA-8916 identified findings that had not been entered into the CHPRC CRRS. Discussion with Project Operations Assurance personnel revealed the individuals conducting the assessments were not aware they were responsible for entering results into the CRRS.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-GPP-004-F02

Extension cords were daisy-chained at the 100 Area HX Pump and Treat Facility.

Requirement:

DOE-0359 *Hanford Site Electrical Safety Program (HSESP)* Revision 2
5.6 Use of Extension Cords and Multiple Outlet Power Strips
"1. To meet the requirements for use, manufactured extension cords and multi-tap adapters (splitters) shall:

- Be inspected for damage prior to use. Damaged equipment shall not be used.
- Be listed or labeled by an OSHA-recognized NRTL.
- Be used in accordance with manufacturer listing and labeling. Have a current rating that is greater than the connected load.
- Not be connected in series (daisy-chained), unless specifically designed and approved for this use (See Appendix D, Acceptable and Unacceptable Combinations of Extension Cords and Power Strips)."

Discussion:

A strainer had been removed to provide a drain path in preparation for caustic line repairs at the 100 Area HX Pump and Treat. It appeared extension cords were needed to run a sump pump and possibly hand tools. Contrary to the above requirement, one extension cord was daisy chained with another cord. It was unclear why this was done as the longer of the two extension cords was sufficient to reach the power source by itself. Once pointed out, the issue was resolved on the spot.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-GPP-004-O01

Fire Protection system deficiencies were not always entered in the CHPRC CRRS.

Discussion:

The FR reviewed examples of Fire Protection Deficiencies provided by the HFD. A subsequent search of the CRRS did not reveal Condition Reports associated with the identified deficiencies. Discussions with an Operations Supervisor and S&GRP Operations Assurance personnel revealed the understanding these deficiencies were being tracked by the Hanford Fire Department (HFD). In essence, the deficiency reports were provided to the Facility manager (generally by email) and the Facility manager would send an email back stated what the corrective actions taken were and when they had been completed.

Requirements document MSC-RD-7899, Revision 6, *Fire Protection System Testing/Inspection/Maintenance/Deficiencies*, Section 3.1.4 stated in part, "Any fire protection system discrepancies identified shall require the following:
a. Immediately notify the Fire Department.
b. Inform the facility FPE.
c. As necessary, brief the building occupants affected by the discrepancy.
d. Ensure the discrepancies are tracked and proper corrective actions and compensatory measures are implemented."

Requirements Document MSC-RD-7899, Revision 6, *Fire Protection System Testing/Inspection/Maintenance/Deficiencies*, Section 3.2.2 stated in part, "System Restrictions and Emergency Impairments shall be tracked on a fire protection deficiency tracking system. The facility FPE will assist the HFD with the priority designation, and shall approve corrective action plans and closeout of each item. Deficiencies shall be tracked, documented, and evaluated by the effected facility as required by MSC-PRO-052, *Corrective Action Management*."

It was not clear the statement in Section 3.2.2 was intended to refer to only system Restrictions and Emergency Impairments or deficiencies in general. However, it

appeared the intent would be for System Restrictions and Impairments to be tracked separately/in parallel by the HFD as these would constitute relatively significant issues with fire protection systems/equipment; knowledge of which would be required for shift briefings, compensatory measures etc. for HFD crews.

Since the responsibility for correcting system Restrictions and Emergency Impairments AND less significant issues falls on facility management, it would seem all fire protection and life safety related deficiencies would be processed in accordance with Procedure PRC-PRO-QA-052, *Issues Management,* as indicated in Sections 3.1.4.d and 3.2.2 of requirements document MSC-RD-7899, Revision 6, *Fire Protection System Testing/Inspection/Maintenance/Deficiencies.*

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

Five WSA had been performed in the 12 months preceding this report: SHS&Q-2013-WSA-8948, 8904, 8905, and 8916. These assessments were performed by a CHPRC FPE supporting the Project. The assessments appeared thorough relative to their scope. Three findings had been identified. The findings had not been entered into the CHPRC CRRS as required.

A review of the CHPRC CRRS revealed several CRs associated with Life Safety and Fire Protection and Prevention on the S&GRP. CR-2012-3385 dealt with 200 West Pump and Treat Fire System drawings that were provided by the construction contractor and Engineering, Projects, and Construction via the submittal process and were accepted based on the drawings being stamped and as-built by the vendor with noted discrepancies by CHPRC Engineering. CR-2013-0471 noted five fire extinguishers had been observed adjacent to the "RO/RO storage area" at the 200 West Pump and Treat. The fire extinguisher on the pedestal did not have an inspection sticker, although it was charged for use. Two fire extinguishers were lying on the ground, and two others were in an open wood box standing vertically. Inspection stickers for these showed they were last inspected in July 2012. The fire extinguisher in use needed to be inspected, and the others needed to be stored properly or dispositioned. Other CRs entered pertained to Operational Awareness reports associated with this surveillance report or with a parallel assessment performed by the RL FPE.

CRs associated with deficiencies identified by the HFD were not always entered into the CHPRC CRRS.

In general, it appeared the self-assessment process adequately addressed Fire Protection and Prevention and Life Safety functional areas.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Briefed:

R. B. Barmettlor, CHPRC
D. A. Southerland, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: Larry D. Earley

Surveillance Number: S-13-OOD-LWFS-004

Date Completed: May 24, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Liquid Waste and Fuels Storage (LWFS)

Title: Life Safety/Fire Protection and Prevention

Guides: Fire Protection Surveillances 12.1, Revision 2, and 12.2, Revision 2

Surveillance Scope:

The objective of this surveillance was to assess the contractor implementation of an effective program to minimize potential for fires that could threaten the health and safety of the public and/or onsite workers, or produce significant losses; examine the effectiveness of steps taken to mitigate any fires that may occur; and verify condition and configuration of facilities provide appropriate levels of life safety protection. Compliance with the U.S. Department of Energy (DOE) requirements and standards was evaluated.

Surveillance Summary:

The surveillant performed the following activities to complete this surveillance:

- Walked down facilities to verify adequacy of emergency exits, emergency lighting, and fire extinguishers.
- Reviewed documents and records for testing, maintenance and inspections of fire protection equipment and fire protection systems.

- Reviewed Fire Hazard Analyses (FHA) and Fire Protection Facility Assessment.
- Observed a facility fire drill.

The surveillant found that in general, the fire protection and life safety systems and processes were adequately implemented. However, the surveillance did result in the identification of the following issues (three findings, seven observations, and one good practice):

- **S-13-OOD-LWFS-004-F01:** Documentation was not completed that verified a 200 Area Effluent Treatment Facility (ETF) fire protection system was properly restored to service following maintenance and testing.
- **S-13-OOD-LWFS-004-F02:** Combustible material control in the Canister Storage Building (CSB) Mechanical Equipment Room was less than adequate.
- **S-13-OOD-LWFS-004-F03:** An emergency exit from building 2025E room 137 did not have an unobstructed egress path.
- **S-13-OOD-LWFS-004-O01:** Section 7.11 of data sheet FP-27262 for work package FT-12-02275 was not completed with the proper yes, no, or N/A notation.
- **S-13-OOD-LWFS-004-O02:** Portions of the data sheets for work package FT-12-07546 lacked attention to detail.
- **S-13-OOD-LWFS-004-O03:** The description of operations in the Canister Storage Building (CSB) FHA primarily focused on Multi-Canister Overpack (MCO) welding which was essentially complete.
- **S-13-OOD-LWFS-004-O04:** Tumbleweed accumulations partially blocked the Waste Encapsulation and Storage Facility (WESF) emergency exit egress paths and access to WESF emergency equipment.
- **S-13-OOD-LWFS-004-O05:** Minor issues were identified with the control of WESF fire extinguisher "Keep Area Clear" zones.
- **S-13-OOD-LWFS-004-O06:** Two electrical clear zones were obstructed or were not kept clear of material in 2025E.
- **S-13-OOD-LWFS-004-O07:** Several areas of tumbleweed accumulation near exit doors from building 2025E were identified.
- **S-13-OOD-LWFS-004-GP01:** A Radiological Control Technician (RCT) took the extra step for safety by taking the Automated External Defibrillator (AED) to the staging area during evacuation for a fire drill.

The surveillance oversight was documented in Operational Awareness (OA) Reports

48254, 48429, 48440, 48466, 48467, 48476, 48477, 48501, 48502, 48503, 48516, and 48518.

Surveillance Results:

Finding: S-13-OOD-LWFS-004-F01

Documentation was not completed that verified a 200 Area Effluent Treatment Facility (ETF) fire protection system was properly restored to service following maintenance and testing. (OA 48516)

Requirements:

National Fire Alarm and Signaling Code, Paragraph 7.6.6, *Record of Inspection and Testing*, stated in part, "The record of all inspections, testing, and maintenance ... shall be documented using either the record of inspection and testing forms Figure 7.8.2(g) through Figure 7.8.2(l) or an alternative record that includes all the applicable information shown in Figure 7.8.2(g) through Figure 7.8.2(l)."

National Fire Alarm and Signaling Code, Paragraph 7.8.2, *Forms for Record of Completion, Record of Inspection and Testing, and Risk Analysis*, stated in Section 8 of the System Record of Inspection and Testing form "System Restored to Normal Operation Date: Time:"

Discussion:

Contrary to the requirements above, the documentation was not completed to indicate on Work Package FT-12-07546 Data Sheet FT-26676 the Bells for 2025E-T3 Wet Riser #1 were restored after being bypassed. Specifically, Data Sheet FT-26676 paragraph 6.0 was initialed with "TP" that the Bells were placed in Bypass however the initial space for "Restored" was blank.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-LWFS-004-F02

Combustible material control in the Canister Storage Building (CSB) Mechanical Equipment Room was less than adequate. (OA 48466)

Requirements:

National Fire Protection Association (NFPA) 1, Fire Code, Paragraph 10.19.5.1 states, "Combustible material shall not be stored in boiler rooms, mechanical rooms, or electrical equipment rooms."

NFPA 1, Fire Code, Paragraph 10.19.5.2 states, "Materials and supplies for the operation and maintenance of the equipment in the room shall be permitted."

DOE-STD-1066-2012, Paragraph 1.5 states the definition of a combustible material as, "Combustible – Any material that, in the form in which it is used and under the conditions anticipated will ignite and burn, or will add appreciable heat to an ambient fire."

DOE-STD-1066-2012, Paragraph 1.5 states the definition of a noncombustible material as, "Noncombustible – A material that, in the form in which it is used and under the conditions anticipated, will not ignite, support combustion, burn, or release flammable vapors when subjected to fire or heat."

Discussion:

Contrary to the requirements above, the facility posting cited above and the DOE Standard definitions, combustible material control in the CSB Mechanical Equipment Room was less than adequate. CSB posted area in the Mechanical Equipment Room with paint and red striping on the deck stated "non-combustible area." The FR identified six plastic bottles, one rag, two rolls of tape, a plastic cart, two plastic caution stands, and a straw broom with a wooden handle located in the area posted "non-combustible area."

While some of the combustibles could be considered "materials and supplies for the operation and maintenance of the equipment in the room" the water bottles could not be and furthermore materials for the operation and maintenance of the room should not have been in the area posted "non-combustible area."

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-LWFS-004-F03

An emergency exit from building 2025E room 137 did not have an unobstructed egress path. (OA 48440)

Requirements:

NFPA 101, Life Safety Code, Paragraph 4.5.3.2 states, "In every occupied building or structure, means of egress from all parts of the building shall be maintained free and unobstructed. Means of egress shall be accessible to the extent necessary to ensure reasonable safety for occupants having impaired mobility."

NFPA 101, Life Safety Code, Paragraph 7.1.10.2.1 states, "No furnishings, decorations, or other objects shall obstruct exits or their access thereto, egress therefrom, or visibility thereof."

Discussion:

Contrary to the requirements above, the emergency exit from building 2025E room 137 had a caution sign/three-legged stand directly in front of the exit door.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-LWFS-004-O01

Section 7.11 of data sheet FP-27262 for work package FT-12-02275 was not completed with the proper yes, no, or N/A notation. (OA 48518)

Discussion:

The data sheet FP-27262 for work package FT-12-02275 was not completed properly in Section 7.11.

Section 7.11.1 of data sheet FP-27262 for work package FT-12-02275 stated, "RESTORE auxiliary functions bypassed in Step 7.1.9 and RECORD. * Aux. Switch Functions restored? Yes/No/NA"

Section 7.1.9 of data sheet FP-27262 for work package FT-12-02275 recorded various systems as bypassed, not bypassed or not applicable. Step 7.1.9 also had a section which confirmed any bypassed step was also restored and this restoration confirmation was properly completed for the one system that was bypassed.

Step 7.11.1 appeared to be duplicative of the restoration section of step 7.1.9; however, it was still left blank rather than completed as required.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-004-O02

Portions of the data sheets for work package FT-12-07546 lacked attention to detail. (OA 48516)

Discussion:

Portions of the data sheets for work package FT-12-07546 lacked attention to detail. Examples were as follows:

- Data sheet FT-26670 did not have the date completed for the "Data Sheet Complete" signature verification block.

- Data sheet FT-26676 did not have any information entered into the step 7.8 "24 Month External Sprinkler System Inspection" block.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-004-O03

The description of operations in the CSB FHA primarily focuses on Multi-Canister Overpack (MCO) welding which is essentially complete. (OA 48476)

Discussion:

The FR reviewed the FHA assumptions and facility operations descriptions in the CSB FHA (HNF-SD-SNF-FHA-002 Rev. 8). The operations description primarily focused on MCO welding. MCO welding is essentially complete except for the MCOs in the sampling program and current operations primarily consist of MCO sampling and MCO movements via the MCO Handling Machine.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-004-O04

Tumbleweed accumulations partially blocked Waste Encapsulation and Storage Facility (WESF) emergency exit egress paths and access to WESF emergency equipment. (OA 48467)

Discussion:

The FR identified several areas of tumbleweeds accumulated outside the WESF. In addition, some of the accumulations partially blocked egress paths and access to emergency equipment. For example, tumbleweed piles partially blocked emergency exit door 123 from the pool cell, exit door 130 (not normally used) and the stairs from emergency exit door 208.

In addition, tumbleweeds were also blocking the emergency water addition fill pipe.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-004-O05

Minor issues were identified with the control of WESF fire extinguisher "Keep Area Clear" zones. (OA 48467)

Discussion:

The FR identified the WESF Manipulator Repair Shop fire extinguisher station W19 "Keep Area Clear" zone had a pry bar, three approximately 6 foot plastic tubes, two approximately 5 foot aluminum tubes and two approximately 6 foot lengths of metal leaning in the corner of the "Keep Area Clear" zone. There was still clear access to the fire extinguisher, but the Keep Area Clear zone was not entirely clear.

In addition, the Truck Port fire extinguisher station W15 had no keep area clear zone posting around the fire extinguisher.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-004-O06

Two electrical clear zones were obstructed or were not kept clear of material in 2025E. (OA 48440)

Discussion:

The following two examples were identified in the process area of 2025E:

- The clear zone around electrical disconnect DS-25B-001 was technically clear but blocked on all sides by equipment.
- The clear zone around IDP-3 1 Phase 120 Volt DP-3 had a partially coiled extension cord and a 1 inch black hose passing through it.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-004-O07

Several areas of tumbleweed accumulation near exit doors from building 2025E were identified. (OA 48440)

Discussion:

Outside of building 2025E, there were tumbleweed accumulations near door 9, near the rollup door west of door 8, backside of building 2025E north of cooling tower 95C-E-1 partially blocking an exit door from room 137 and outside the door 3 exit from the electrical equipment room.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Good Practice: S-13-OOD-LWFS-004-GP01

A Radiological Control Technician (RCT) took the extra step for safety by taking the Automated External Defibrillator (AED) to the staging area during evacuation for a fire drill. (OA 48254)

Discussion:

The FR identified one notable practice taken by the RCT during the 2025E fire drill conducted. The RCT took the AED to the staging area as a precaution. She stated after the drill that even though no report was made that anyone needed the AED, drills/events are stressful and you never know if you are going to need it.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The surveillant reviewed the results of one Facility Fire Protection Assessment. The issues identified were appropriately captured in the corrective action management system and adequately tracked to closure. Future Fire Protection and Safety Assessments were scheduled at an appropriate frequency.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Contractor Management Briefed:

J. J. Badden, CHPRC
P. R. Garello, CHPRC
P. T. Saueressig, CHPRC
C. J. Simiele, CHPRC
S. J. Turner, CHPRC
C. J Wolfe, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant(s): Deanna C. McCranie, Kerry M. Schierman, and David M. Thrasher

Surveillance Number: S-13-OOD-PFP-004

Date Completed: May 30, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Plutonium Finishing Plant (PFP)

Title: Fire Safety

Guide: Fire Protection Surveillances 12.1, Revision 2, and 12.2, Revision 2

Surveillance Scope:

The objective of this surveillance was to assess the contractor implementation of an effective program to minimize potential for fires that could threaten the health and safety of the public and/or on-site workers, or produce significant losses; examine the effectiveness of steps taken to mitigate any fires that may occur; and verify condition and configuration of facilities provide appropriate levels of life safety protection. Compliance with the U.S. Department of Energy requirements and standards was evaluated.

Surveillance Summary:

Per the above surveillance guides the surveillants performed the following activities:

- Fire protection and life safety equipment walkdowns (OA 48219, 48342, 48357);
- Fire extinguisher inspections (OA 48315);
- Documentation reviews for testing of life safety/fire protection equipment (OA 48332);
- A review of the facility's Fire Hazard Analysis (OA 48535); and
- Causal analysis meetings and Corrective Action Review Board meetings for unplanned entries into Specific Administrative Controls for fire sprinkler coverage and combustible material controls (OA 47823, 48370, 48494).

A review of the PFP fire protection facility assessment was conducted by the Richland Operations Office (RL) Fire Safety Program Manager as part of an assessment of CHPRC fire safety in April 2013, but the surveillants reviewed the facility's management and self-assessment program activities for the surveillance subject areas.

No facility fire drill was conducted during the evaluation period and therefore was not evaluated as part of this activity.

The surveillants found in general, fire safety program requirements were being adequately implemented at PFP. However, the surveillance did result in the identification of two findings and one observation:

- **S-13-OOD-PFP-004-F01:** Completed emergency (egress) light testing work packages did not adequately demonstrate requirements of National Fire Protection Association (NFPA) 101, Section 7.9.3, were being met.
- **S-13-OOD-PFP-004-F02:** The current revision of the facility's Fire Hazard Analysis was not signed by the Hanford Fire Marshal's Office.
- **S-13-OOD-PFP-004-O01:** Facility life safety code configuration issues were identified during facility walkdowns.

Surveillance Results:

Finding: S-13-OOD-PFP-004-F01

Completed emergency (egress) light testing work packages did not adequately demonstrate requirements of National Fire Protection Association (NFPA) 101, Section 7.9.3, were being met. (OA 48332)

Requirement(s):

NFPA 101, Section 7.9.3.1.1(1), states, "Functional testing shall be conducted monthly, with a minimum of 3 weeks and a maximum of 5 weeks between tests, for not less than 30 seconds, except as otherwise permitted by 7.9.3.1.1(2)."

Section 7.9.3.1.1(2), states, "The test interval shall be permitted to be extended beyond 30 days with the approval of the authority having jurisdiction."

Section 7.9.3.1.1(3), states, "Functional testing shall be conducted annually for a minimum of 1 1/2 hours if the emergency lighting system is battery powered."

Discussion:

Contrary to the above requirements, completed emergency (egress) light testing work packages did not provide adequate information to demonstrate requirements of NFPA 101, Section 7.9.3, were being met in several areas.

The following completed/closed maintenance work packages were reviewed for this activity:

- 2Z-12-10000, *(PM-E) ZSR-12N-001 1M EGRESS LIGHTS 03/13*, monthly test for March 2013;
- 2Z-12-09813, *(PM-E) ZSR-12N-001 1M EGRESS LIGHTS 02/13*, monthly test for February 2013;
- 2Z-12-09203, *(PM-E) ZSR-12N-001 1M EGRESS LIGHTS 01/13*, monthly test for January 2013;
- 2Z-12-07820, *(PM-E) ZSR-12N-001 1M EGRESS LIGHTS 12/12*, monthly test for December 2012;
- 2Z-12-07746, *(PM-E) ZSR-12N-001 1M EGRESS LIGHTS 11/12*, monthly test for November 2012;
- 2Z-12-06928, *(PM-E) ZSR-12N-001 1M EGRESS LIGHTS 10/12*, monthly test for October 2012;
- 2Z-12-02077, *(PM-E) ZSR-12N-001 1M EGRESS LIGHTS 05/12*, monthly test for May 2012; and
- 2Z-12-01927, *(PM-E) ZSR-12N-001 1M/12M EGRESS LIGHTS 04/12*, monthly/annual test for April 2012.

- Surveillance requirements procedure ZSR-12N-001 (PRC-PRO-MN-52148), *Emergency (Egress) Lights Monthly Inspection and Annual Testing System 12 N*, adequately contained requirements from NFPA 101, Section 7.9.3. ZSR-12N-001 contained a table (in Section 4.3.10) that provided a quarterly implementation schedule for annual testing of PFP's egress lights. However, maintenance work packages that invoked ZSR-12N-001 were called monthly tests, except those conducted in April of each year, which were called monthly and annual tests.

- Work packages directed the use of data sheets 2Z-06878 and 2Z-06658 to document performance of egress light testing. The data sheets contained a field for comments and a field to check-off test completion for each light. The test completion check mark did not identify whether the testing completed was for the monthly test, the annual test, or both, and neither the comment fields nor the Work Record identified this either. Therefore, it could not be concluded based upon data available when and if the annual test had been performed for each light, and whether periodicity requirements were being met.

- Multiple instances were identified where tests could not be completed for specific egress lights. Examples included:
  - Egress Light (EL)-117, EL-058, EL-056, EL-057, EL094, EL-095, EL-034, EL-099, EL-240, EL-346, EL-345, EL347, EL-119, and EL-242 for work package 2Z-12-01927, conducted in April 2012 (which incidentally was a work package identified as an annual test);
  - EL-130 and EL-132 for work package 2Z-12-02077 in May 2012;
  - EL-241 for work package 2Z-12-09203 in January 2013;
  - EL-241 for work package 2Z-12-09813 in February 2013; and
  - The light at the top of the Plutonium Reclamation Facility (PRF) elevator for work package 2Z-12-10000 in March 2013.

In each of the instances the work package comment fields contained notes indicating the light was "bad" or could not be checked due to room conditions and often stated the light would be checked the following month. Regardless, each work package was closed out/completed anyway. In none of the instances was there ever documentation that the authority having jurisdiction had approved extending testing beyond 30 days.

The surveillant discussed the deficiencies with the Work Control Operations Specialist and the Work Control Manager. The surveillant did not attempt to perform an extent of condition review.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-PFP-004-F02

The current revision of the facility's FHA was not signed by the Hanford Fire Marshal's Office. (OA 48535)

Requirement(s):

Contractor Requirements Document (Supplement) 420.1B, Change 1 (Supplement Revision 0), Section B, Item 2).h, states, "The completed FHA shall be reviewed and concurred by the Hanford Fire Marshal's Office (HFMO) before transmittal to DOE."

Procedure PRC-PRO-FR-40420, *Fire Protection Analysis*, Section 3.1, step 10, states, "During the FHA review and approval process, ENSURE that the new or revised FHA is transmitted to the Hanford Fire Marshal's Office (HFMO). Coordinate HFMOs review and approval of the FHA."

Discussion:

Contrary to the above requirements, the surveillant was unable to find documentation that the current revision of the FHA had been approved by the HMFO. Engineering Document Change form #ECR-12-000194 contains the approval signatures for the current revision. While the Deputy Fire Marshal assigned to PFP approved the document, approving the FHA is not listed as one of the responsibilities of the Deputy Fire Marshal in PRC-STD-FP-40404, *Fire Protection Program*.

The surveillant found that the HFMO had concurred on the implementation plan for the FHA, but was unable to locate concurrence on the FHA document itself.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-PFP-004-O01

Facility life safety code configuration issues were identified during facility walkdowns. (OA 48342, 48357)

Discussion:

While performing Activity 1 (facility walkdowns) of the Fire Protections and Prevention Surveillance (FPS-12.2) and Activity 1 (fire extinguisher walkdowns) of the Life Safety Surveillance (FPS-12.1) on May 13 and 14, 2013, the surveillant identified the following items:

- Some tumbleweeds had accumulated near the propane attached to a gas grill near door 38 and near a temporary power panel (PPL-5) near door 299.
- Dirt and debris were on the stairs to the basement near door 49 presenting an egress hazard.
- In room 198A, a double door which exited to an airlock and then outside had two exit signs over the doorways. A red sign was over the functional door and a green sign was over the non-functional door, which also had materials blocking the doorway. If the doorway under the green exit sign was not to be used as an exit, the sign should have been removed or obscured.
- Door 466 in the PFP lunchroom had a sign on the lunchroom side identifying it as an Emergency Exit, Do Not Block. However, the other side of the door in room 306A had no postings as an emergency exit. According to casualty response procedure ZCR-009, *Evacuations*, Figure 4, Door 466 was not an Emergency Egress Door and should not be marked as such as a method to control furniture placement.
- An exit sign on the third floor of Plutonium Reclamation Facility (PRF), which has a temporary light, was partially obscuring the sign above the door to Stairwell 1. Although in most conditions the emergency exit route is apparent, the exit sign was installed and should not have been obscured.
- Door 402B in the PFP lunch room was marked as a fire door on the interior of the door; however, the fire door sign had fallen from the exterior of the door.
- Door 402B was a fire door that automatically latched upon exit. There was no access from the exterior of the door. If an individual were to exit into the stairwell and there was an issue within the stairwell, the individual would be trapped.
- Typically, green doors in PFP indicated exit routes. Door 404 was painted green but was not a direct exit or marked as an exit. While there was no documented requirement for the designated of green doors as exit routes, facility personnel had frequently briefed occupants and visitors that in an emergency they were to follow the green doors to exit the facility.
- Oil had dripped and accumulated under the elevator hydraulic oil pump. The Fire Safety Officer did not have an answer for when the dripped oil would be considered a combustible issue and require cleanup. Follow up information indicated that this may have been a housekeeping concern rather than a combustible concern.
- An information tag was hanging from the fire line on the third floor of the PRF, just north and west of the north canyon window. The writing, including the tag number, was illegible. Another tag, which has visible writing but was illegible from the floor, was hanging in the same position on the second floor. Without legible tags, the information that was significant enough to require placement of the tags was no longer available to ensure the information was transmitted to personnel relying on those fire systems.

RL Lead Assessor Closure Required: YES [ ] NO [X]

Contractor Self-Assessment:

A surveillant performed a review of PFP's management and independent assessment processes performed and scheduled in the topical area of Fire Safety between January 2012 and October 2013, and concluded they were adequate. The following activities were the basis for the conclusion:

- PFP's triennial Fire Protection Assessment was performed in 2012. The RL Fire Safety Program Manager reviewed and evaluated performance data as part of a RL program assessment in April 2013.

- Safety Management Program (SMP) Key Attribute Lines of Inquiry (LOI) 11-2 through 11-7 covered fire safety and protection program elements. Per SMP requirements (Hanford document HNF-22632, *Process Description for Safety Management Program Implementation Verification*, Revision 7, references are quoted in parentheses below) they were being evaluated by the contractor every three years:

  - LOI 11-2-1 ("Evaluate whether the fire hazards for CHPRC nuclear facilities have been defined in facility specific fire hazards analyses (FHA), which meet the requirements of SCRD O 420.1B, Rev. 4, Facility Safety by verifying that required facilities have a facility specific FHA and assessing a cross section sample of these FHA to verify they meet the requirements of SCRD O 420.1B, Rev. 4.") was last evaluated December 29, 2011.

  - LOIs 11-3-1 ("Evaluate whether the CHPRC fire protection program implements the elements of fire prevention as follows: 1. Compliance with applicable nationally recognized codes and standards, DOE directives and guidance and CHPRC procedures. 2. Completion of fire protection assessments and project driven facility inspections where applicable. 3. Employee education."); 11-6-1 ("Verify by review of CHPRC procedures that permits are required for all conditions specified in the attribute."); and 11-7-2 ("Verify that the criteria used during the performance of combustible loading and ignition source inspections are below levels specified in the safety basis or FHA and are quantitative. If the quantities were specified in the safety basis or FHA as important parameters by: a) comparing inspection criteria with fire accident parameters evaluated the accident analyses in the safety basis and FHA, and b) by comparing inspection criteria with combustible control loading requirements specified in the safety basis (TSR) or FHA.") were last evaluated in June 2010. They were scheduled for periodic evaluation in June 2013.

  - LOIs 11-4-1 ("Evaluate whether fire protection engineering staff are qualified by a review of education and certification records in comparison to DOE qualification requirements."); 11-4-2 ("Verify that fire protection system testing and maintenance is

performed by a qualified and trained maintenance organization in support of the CHPRC contract and that adequate work agreements are in place."); and11-4-3 ("Verify that the fire department is providing trained, equipped and staffed organization in support of the CHPRC contract and that adequate support agreements are in place.") were last evaluated April 26, 2011.

- LOI 11-5-1 ("Verify that Hanford Site fire alarm and suppression systems are functionally tested, inspected, and maintained to meet NFPA and DOE standards and requirements by assessing a cross section sample of fire alarm and suppressions system maintenance records and compare them to NFPA standards for these types of systems.") was last evaluated in September 2010. It was scheduled for periodic evaluation in September 2013.

- LOI 11-7-1 ("Verify that nuclear facilities perform periodic inspections of combustible material loading and ignition sources by: a) determining that these inspections are scheduled on a periodicity that is consistent with that specified in the facility safety basis or FHA, and, b) by evaluating the results of these inspections to determine if the intent of the inspection was satisfied.") was last evaluated July 12, 2011.

- An alarm and suppression system evaluation Work Site Assessment (WSA) was scheduled for performance in July 2013.

- The triennial review of the Fire Hazards Analysis was scheduled to be completed via WSA in August 2013.

- A chemical management WSA, with fire protection elements, was in progress.

- A PFP Fire Safety Officer (FSO) performed daily fire protection inspections within the facility in accordance with a recommendation in standard PRC-STD-FP-40404, *Fire Protection Program*. The FSO issued a daily report documenting his observations. Observations considered to be deficiencies were being entered into the Condition Reporting and Resolution System.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

J. A. Ciucci, CHPRC
J. M. Swartz, CHPRC
M. R. Koch, CHPRC
J. R. Brack, CHPRC

Attachment 6
13-OOD-0044

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillants: Elver D. Robbins, Dale H. Splett

Surveillance Number: S-13-OOD-SNF-004

Date Completed: June 5, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 100K (100K Min Safe, 105KW Basin and Cold Vacuum Drying Facility/142K)

Title: Fire Safety

Guide: Fire Protection Surveillances 12.1, Revision 2, and 12.2, Revision 2

Surveillance Scope:

The objective of this surveillance was to assess the contractor's implementation of an effective program to minimize potential for fires that could threaten the health and safety of the public and/or onsite workers, or produce significant losses; examine the effectiveness of steps taken to mitigate any fires that may occur; and verify condition and configuration of facilities provide appropriate levels of life safety protection. Compliance with the U.S. Department of Energy (DOE) requirements and standards were evaluated.

Surveillance Summary:

The surveillants reviewed the following documents:

- HNF-SD-SNF-FHA-001 Revision 2, *Fire Hazards Analysis for The 105-KW Basin Facility*
- PRC-STP-00499 Revision 2, *Sludge Treatment Project Engineered Container Retrieval and Transfer System Preliminary Design Fire Hazards Analysis*
- HNF-SD-WM-SAR-062, Revision 18, *105-KW Basin Final Safety Analysis Report (SAR)*
- HNF-SD-WM-SAR-062, Revision 19, *105-KW Basin Final Safety Analysis Report (SAR)*

- CHPRC Condition Reporting and Resolution System (CRRS) Condition Report Number CR-2011-2406, *Fire Hazards Analysis (FHA) is Outdated at the 105-KW Basin*
- CHPRC Work Site Assessment Report No. SHS&Q-2013-WSA-8980 and SHS&Q-2013-WSA-8982, *Triennial Fire Protection Assessment (Bldg. 142 and142KA)*, dated March 27, 2013
- CHPRC Work Site Assessment Report No. DWF&RS-2013-WSA-12847, *Scheduling of Fire Department system surveillances*, dated November 30, 2012.

The 100K project facilities were walked down with the CHPRC Fire Protection Engineer to assess how fire safety and life safety requirements were being addressed.

This surveillance resulted in one finding:

- **S-13-OOD-SNF-004-F01:** The actions to address Condition Report CR-2011-2406, *Fire Hazards Analysis is Outdated at the 105-KW Basin*, were not performed in a timely manner and did not address the requirements identified in the applicable DOE Directives.

Surveillance Results:

Finding: S-13-OOD-SNF-004-F01

The actions to address Condition Report CR-2011-2406, *Fire Hazards Analysis is Outdated at the 105-KW Basin*, were not performed in a timely manner and did not address the requirements identified in the applicable DOE Directives. (OA 48548)

Requirements:

Contractor Requirements Document (Supplemented) CRD O 420.1B, Change 1 (Supplement Revision 0), *Facility Safety*, Section B.2) j. states, "Maintenance of fire hazard analyses. Fire hazard analyses shall be maintained at the frequency required by DOE O 420.1B to ensure that facility, operations, and hazards are accurately depicted in the FHA."

DOE Order 420.1B, *Facility Safety*, Chapter II., *Fire Protection*, Section 3.b. (5) states in part, "Fire hazard analyses (FHAs) using a graded approach conducted for hazard category 1, 2 and 3 nuclear facilities, significant new facilities, and facilities that represent unique fire safety risks. The FHAs must be –

(c) revised when –

1 changes to the annual DSA updates impact the contents in the FHA,

2 a modification to an associated facility or process adds a significant new fire safety risk, or

3 the 3 year review identifies the need for changes."

Discussion:

The 105-KW Basin Fire Hazards Analysis (FHA) was not revised in order to remain current with changing conditions at the 100K Project. This had been identified in the Condition Reporting and Resolution System (CRRS), but corrective actions were not performed.

CRRS Condition Report (CR) number CR-2011-2406 was initiated on August 1, 2011, and identified the fact that the FHA for the 105-KW Basin was outdated and did not reflect the current conditions at the 100K area. In addition, documentation provided with the CR showed that the corrective action to address the issue was extended on numerous occasions (December 19, 2011, February 28, 2012, March 29, 2012, and October 1, 2012).

On December 20, 2012, the Responsible Manager (RM) stated that he "Reviewed the condition described in this CR and determined that it is not necessary or advisable to revise the 105KW FHA (Including Appendix M). The FHA currently reflects the Safety Basis documentation and shall not be changed until the Safety Basis is updated." The CR was then closed on January 7, 2013.

In addition, HNF-SD-WM-SAR-062, Revision. 19, *105-KW Basin Final Safety Analysis Report,* described as the 2011 Annual Update, which had been approved but not implemented, referenced the outdated FHA as well as the current service water subsystem in operation at 100K in Sections 2.9.1.2, *Service Water Subsystem,* and 11.4.2, *Fire Protection Program and Organization.* The service water subsystem provides the emergency makeup water to the 105-KW fuel storage basin as described in the current safety basis.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Contractor Self-Assessment:

Two assessments in the area of Fire Protection and one worksite assessment on Scheduling of Fire Department System Surveillances were conducted at the 100K Project during fiscal year 2013. The two fire protection surveillances performed addressed the down grade of the Cold Vacuum Drying Facility to a less than Hazard Category 3 facility during 2013. The assessments identified five recommendations. The 100K work site assessment identified one finding against 100K regarding the pre-work review and sign-off of Fire Department system surveillance work packages. One additional Fire Protection assessment is scheduled for later this fiscal year, and at least one Fire Protection assessment has been scheduled for fiscal year 2014.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

F. Ataiyan, CHPRC
D. B. Engelman, CHPRC
J. D. Mathews, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

AUG 20 2013

13-OOD-0048

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 - FACILITY SAFETY BASIS CORE SURVEILLANCE OF CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) FACILITIES AND PROJECTS

Pursuant to Section E, Clause E.1, "DOE Inspection and Acceptance," the U.S. Department of Energy Richland Operations Office (RL) Operations Oversight Division performed the subject surveillance at CHPRC facilities and project locations during April 2013. CHPRC implementation of the requirements of 10 CFR 830, "Nuclear Safety Management Subpart B – Safety Basis Requirements" was evaluated. The Report identifies 10 findings, 23 observations and 1 good practice in the 6 attached surveillance reports. A Roll-up Evaluation of the surveillances concluded no programmatic weaknesses were identified, and is included as an attachment to this letter.

You are requested to process the findings and observations identified in the reports through the CHPRC Issues Management System and develop corrective actions for the deficiencies identified. RL retains closure authority for the issues as designated within the attached surveillance reports.

If you have any questions, please contact me, or your staff may contact Jim E. Spets, Acting Director, Operations Oversight Division, on (509) 373-0140.

Sincerely,

Clinton M. Jacobsen
Contracting Officer

OOD:JJW

Attachments

cc w/attachs: See page 2

cc w/attachs:
B. B. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

1. Roll-up Evaluation
2. Surveillance Report S-13-OOD-BOS D&D-003
3. Surveillance Report S-13-OOD-GPP-003
4. Surveillance Report S-13-OOD-LWFS-003
5. Surveillance Report S-13-OOD-PFP-003
6. Surveillance Report S-13-OOD-SNF-003
7. Surveillance Report S-13-OOD-SWOC-003

Nuclear Safety Core Surveillance
Roll-up Evaluation

Surveillance Scope:

The Operational Oversight Division (OOD) Facility Representatives' (FRs) objective for this core surveillance was to assess CH2M HILL Plateau Remediation Company's (CHPRC) implementation of Documented Safety Analysis (DSAs), Facility Hazard Categorizations (FHCs) and Technical Safety Requirements (TSRs) at facilities and work activities. Compliance with U.S. Department of Energy requirements and standards was evaluated.

Surveillance Summary:

Throughout April 2013, FRs performed facility walkdowns, observed work, and reviewed documentation related to the implementation of DSAs, FHCs and TSRs. Oversight activities were conducted at K-Basins Deactivation and Decommissioning (D&D) and Surveillance and Maintenance (S&M) organizations (identified as BOS D&D in OOD surveillance numbering convention), Soil and Groundwater Remediation Project (identified as GPP in OOD surveillance numbering convention), Liquids Waste and Fuels Storage (LWFS), Plutonium Finishing Plant Closure Project (PFP), 100K Project (identified as SNF in OOD surveillance numbering convention) and Solid Waste Operations Complex (SWOC).

In addition, CHPRC management and independent assessment activities, issues management processes, and Contractor Assurance System documentation were reviewed. The Occurrence Reporting and Processing System (ORPS) database was reviewed for nuclear safety related events at CHPRC in 2012 through April 30, 2013. Eight occurrences were identified:

- EM-RL—CPRC-CSB-2012-0001: *Failure of Multi-Canister Overpack Cask Seal*
- EM-RL-- CPRC-PFP-2012-0004: *Unexpected Shutdown of Exhaust Fan Motor EM-7 in Building 291-Z*
- EM-RL—CPRC-SNF-2012-0006: *Discrepancy in Revision to Cold Vacuum Drying Facility Safety Basis Document*
- EM-RL—CPRC- SNF-2012-0007: *Negative Unreviewed Safety Question – K West (KW) Basin Technical Safety Requirement Administrative Control Documentation*
- EM-RL—CPRC-SNF-2012-0011: *Multi-Canister Overpack Cask System Shipped Without Vent Plug Installed*
- EM-RL—CPRC-SNF-2012-0013: *Operation of Integrated Water Treatment System With Radiation Monitoring Instrumentation Out of Calibration*
- EM-RL—CPRC-SNF-2013-0001: *Excavation at 105K East Reactor Without Prior Performance of Structural Analysis*
- EM-RL—CPRC-TPLANT-2013-0001: *Missed Surveillance Frequency due to Administrative Error Found on Technical Safety Requirement Surveillance*

Ten findings, 26 observations, and 1 good practice were documented (see below) in 6 surveillance reports (attached):

Findings:

- **S-13-OOD-PFP-003-F01:** A Mission Support Alliance, LLC (MSA)/CHPRC Interface Control Document implementing a TSR Administrative Control (AC) at PFP was out-of-date.
- **S-13-OOD-PFP-003-F02:** Notification requirements of an Interface Control Document for Water System Services were not being enforced.
- **S-13-OOD-PFP-003-F03:** The controls within ZSE-26-001, *Non-Sprinklered Area Fire Protection Inspection* and/or in the documents it referenced, did not contain adequate controls to ensure specified directions would be implemented.
- **S-13-OOD-PFP-003-F04:** Records generated during the performance of ZSP-008, *Criticality Safety Internal Inspection*, were not being handled in accordance with CHPRC administrative procedure PRC-PRO-IRM-10588, *Records Management Processes*.
- **S-13-OOD-SNF-003-F01:** TSR was not included in the implementing document as stated in the safety basis document implementing matrix.
- **S-13-OOD-SWOC-003-F01:** The data recorded in work package *2T-12-06340, 2706T 1 Yr Cal I-PDIT-2706-343 & I-PDIC-2706-343 (TSR)*, for I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, was not within the output limits specified.
- **S-13-OOD-SWOC-003-F02:** The aerosol generator model used for testing Air Cleaning Train (ACT) -1 high efficiency particulate air (HEPA) filters was not listed in Technical Procedure 2T99042, *In-Place Testing of HEPA Filter Systems*.
- **S-13-OOD-SWOC-003-F03:** Work Site Assessment (WSA) Report WFMP-2012-WSA-11690 was not distributed to the appropriate individuals and corrective actions were not entered into the Condition Reporting and Resolution System (CRRS).
- **S-13-OOD-SWOC-003-F04:** Deficiencies identified in two monthly Abnormal Container Management Program (ACMP) surveillances were not tracked and one did not state any resolution.
- **S-13-OOD-SWOC-003-F05:** Two Specific Administrative Control (SAC) Surveillance Requirements (SRs) were not properly documented.

Observations:

- **S-13-OOD-BOS D&D-003-O01:** Flow down of nuclear safety requirements appeared weak in the B-Plant annual surveillance.
- **S-13-OOD-BOS D&D-003-O02:** B-Plant annual surveillance did not cover inspections of the Operations Gallery at B-Plant.
- **S-13-OOD-BOS D&D-003-O03:** CHPRC Nuclear Safety Engineering review of work packages for 105K-East appeared weak.
- **S-13-OOD-LWFS-003-O01:** An error was identified in the WMP-331-NS-4-005C, *CSB/Interim Storage Area (ISA) Compliance Matrix*, regarding an implementation document section.
- **S-13-OOD-LWFS-003-O02:** The CSB/ISA DSA implementing documents lacked specificity to address a DSA commitment.
- **S-13-OOD-LWFS-003-O03:** Flow down for TSRs from the CSB/ISA Safety Basis Compliance Matrix to the implementing procedure contained errors.

- **S-13-OOD-LWFS-003-O04:** The Waste Encapsulation and Storage Facility (WESF) DSA implementing document revisions were different from those identified in WMP-331, *WESF Safety Basis Compliance Matrix*, Section 3.25.
- **S-13-OOD-LWFS-003-O05:** The WESF TSR implementation process contained a flow down error from the compliance matrix to the implementing document and the document revisions were not in agreement with the compliance matrix.
- **S-13-OOD-PFP-003-O01:** Editorial/referencing errors were identified in PFP Safety Basis documents.
- **S-13-OOD-PFP-003-O02:** ZSP-008, *Criticality Safety Internal Inspection* Internal Inspection Checklists were not being consistently filled out.
- **S-13-OOD-PFP-003-O03:** Safety Significant item was not listed in CPS-Z-165-80010, *Criticality Prevention Specification: General Limits,* yet was inspected monthly per ZSE-99E-001, *Criticality Safety Features Inspection.*
- **S-13-OOD-PFP-003-O04:** Actions required for LCO 3.1.1 condition were not known about clearly outlined in ZSE-99E-001, *Criticality Safety Features Inspection.*
- **S-13-OOD-PFP-003-O05:** The terminology used for TSR SR 3.2.1.4.1., per PFP operations procedure ZO-060-300, *Switching Filter Rooms 309 through 318,* was inconsistent with field postings.
- **S-13-OOD-SNF-003-O01:** Reference in the TSRs verification procedure that TSRs will be highlighted in shaded text was not followed.
- **S-13-OOD-SNF-003-O02:** Inconsistent inclusion of surveillance requirements on the surveillance sheet for activities no longer performed by operations.
- **S-13-OOD-SWOC-003-O01:** There were three missed review opportunities to discover that data recorded in work package 2T-12-06340, *2706T 1 Yr Cal I-PDIT-2706-343 & I-PDIC-2706-343 (TSR)*, for I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, was not within the output limits specified.
- **S-13-OOD-SWOC-003-O02:** The recorded elapsed time for the 2706-T Bay low differential pressure (DP) alarm time delay was lower than allowed per HNF-15280, Revision 9, *TSRs for SWOC.*
- **S-13-OOD-SWOC-003-O03:** Three separate requirements identified in the SWOC Compliance Matrix (CM) for Limiting Condition for Operation (LCO) 3.3.1, *Ventilation Systems*, did not cite an implementing document other than the TSR document itself, HNF-15280, Revision 9, *TSRs for SWOC.*
- **S-13-OOD-SWOC-003-O04:** One checklist item in work package 2T-13-01390/P, *2706T & TA 1YR ACT 1&2 HEPA Filter Test*, Appendix A, Table 2, was ambiguous.
- **S-13-OOD-SWOC-003-O05:** Evaluating and documenting a process that would eliminate the need to remove the 2706-T ACT-1 pre-filters for the annual efficiency test of the credited HEPA filters would likely improve project efficiency.
- **S-13-OOD-SWOC-003-O06:** Based on the verbiage in LCO 3.3.1 in the Ventilation Systems Bases; and in Procedure WMP-340, Section 1.15, it was not clear whether drum venting operations performed in 2706-T or 2706-TA were intrusive operations or if it fell under the LCO 3.3.1 exception for 2706-T whereby the ventilation system was not required to be operating.
- **S-13-OOD-SWOC-003-O07:** The technical basis for the methodology for container headspace sampling to demonstrate it is non-flammable needs to be documented.

- **S-13-OOD-SWOC-003-O08**: Responsible ACMP evaluator for each container was not being maintained/updated.
- **S-13-OOD-SWOC-003-O09:** Opportunities for improvement were identified for the ACMP monthly surveillance work package.
- **S-13-OOD-SWOC-003-O10:** Inspection frequency for ACMP container number 0024644 was changed without concurrence from the evaluator.
- **S-13-OOD-SWOC-003-O11:** No implementing procedure was found that addresses non-sealed sources or nondestructive assay/nondestructive examination.

Good Practices:

- **S-13-OOD-SWOC-003-GP01:** The Safety Management Program (SMP) Assessment Tracking was a commendable tool.

Conclusions:

OOD considered CHPRC performance in the area of nuclear safety documentation implementation adequate based upon the core surveillance oversight conducted. Although a number of non-compliances and opportunities for improvement were identified, none of the issues were considered pervasive, and none were considered to have a high significance or impact. The related occurrences did not identify nuclear safety implementation issues that warranted further evaluation.

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: R. V. Johnson

Surveillance Number: S-13-OOD-BOS D&D-003

Date Completed: April 22, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: K-Basins Deactivation and Decommissioning (D&D) and Surveillance & Maintenance (S&M) organizations

Note: Tracked as Balance of Site (BOS) D&D project

Title: Documented Safety Analysis (DSA), Final Hazard Categorization (FHC) and Technical Safety Requirement (TSR) Implementation Review

Guide: Nuclear Safety Surveillance 18.5, Revision 0

Surveillance Scope:

The objective of this core surveillance was to verify contractors were adequately implementing DSAs, FHCs and TSRs at facilities and work activities. Individual Facility Representatives (FRs) used the DSAs, FHCs and TSRs for work activities and facilities within assigned areas and the information in the surveillance guide to complete the core surveillance.

Surveillance Summary:

The following activities were conducted as applicable to evaluate the use of DSA, FHC and TSR activities as related to the contractor's nuclear safety program.

Activity 1 – Verify implementation of selected DSA and FHC elements.

Activity 2 – Verify implementation of selected TSR elements.

Activities monitored:

- Walkdown verification of the 105K-East Reactor for Final Hazard Categorization (OA 45560).
- Final Hazard Categorization for 105K East - Core Surveillance (OA 47758).
- Fast Flux Test Facility Annual Surveillance (OA 47333).
- B-Plant Annual Surveillance (OA 47747).
- Documented Safety Analysis for B-Plant (OA 47731).
- Cause Evaluation Meeting for 105K-East Excavation (OA 48032)

Documents Reviewed:

- Procedure 2CP-SUR-B-04008, *B Plant Annual Facility and Grounds Surveillance*, Revision 2 Change 1
- Administration procedure FSP-3647, NS-4, *Surveillance & Maintenance Safety Basis Implementation Matrix*, Revision 24 Change 4
- Procedure CP-WMO-MW-003, *Packaging and Storage of Low Level Mixed Waste (MW)*, Revision 2 Change 0
- Procedure CP-WMO-LLW-002, *Packaging and Storage of Low Level Waste (LLW)*, Revision 2 Change 8
- Procedure 2CP-SUR-B-04008, *B Plant Annual Facility and Grounds Surveillance*, Revision 2 Change 1
- Procedure 2CP-SUR-F-05022, *FFTF Plant Annual Surveillance*, Revision 0 Change 11
- CHPRC procedure PRC-STD-FP-40404, *Fire Protection Program*, Revision 0 Change 3
- CHPRC procedure PRC-PRO-NS-8366, *Facility Hazard Categorization*
- Work Package SM-13-02210, *B-Plant Annual Surveillance*
- Work Package SM-13-01498, *FFTF Nuclear Plant Surveillance*
- Automatic Job Hazard Analysis - AJHA FS-1068, Revision 0
- Hanford Confined Space Hazard Identification Form, *FFTF B.G. 0004*, Dated March 12, 2013
- Safety Document DD-49580, *Comment Closure for DD-49580, Final Hazard Categorization for Interim Safe Storage of 105-KE Reactor Building*
- Safety Document DD-52095, Comment Closure for DD-49580, *Final Hazard Categorization for Interim Safe Storage of 105-KE Reactor Building*
- Safety Document KBC-41925 , *105-KE Reactor Final Hazard Categorization*
- Safety Document KBC-39834, *105-KE Basin Lower Walls and Substructure Demolition Documented Safety Analysis Report*

The surveillant found in general, nuclear safety basis requirements were being adequately implemented. However, the surveillance did result in the identification of three observations.

- **S-13-OOD-BOS D&D-003-O01:** Flow down of nuclear safety requirements appeared weak in the B-Plant annual surveillance.

- **S-13-OOD-BOS D&D-003-O02:** B-Plant annual surveillance did not cover inspections of the Operations Gallery at B-Plant.
- **S-13-OOD-BOS D&D-003-O03:** CHPRC Nuclear Safety Engineering review of work packages for 105K-East appeared weak.

Surveillance Results:

Observation: S-13-OOD-BOS D&D-003-O01

Flow down of nuclear safety requirements appeared weak in the B-Plant annual surveillance. (OA 47731)

Discussion:

Surveillant reviewed the flow down of nuclear safety requirements to working level procedures and found the packaging and storage of waste (low level and mixed) per procedures CP-WMO-LLW-002 and CP-WMO-MW-003 were both adequate in capturing the TSR requirements as stated in the S&M Safety Basis Implementation Matrix (FSP-3647, NS-4).

The same type of review was performed on surveillance 2CP-SUR-B-04008 which was conducted by the S&M organization on a yearly basis and was the main procedure used that would initially capture deficiencies in the nuclear safety area. The surveillance required the operators to perform thorough inspections of B-Plant focusing on fourteen specific areas such as structural integrity, ground subsidence, water intrusion, containers, fire hazard analysis controls etc. Only one TSR requirement was found in the surveillance which involves plant inventory control at the facility and it was scheduled to be removed at the next procedure revision.

Requirements listed in the Safety Basis Implementation Matrix included equipment important to safety (ACT ventilation system), building structure and retired filter structures which were all part of the nuclear safety envelope for B-Plant. The annual surveillance performed inspections of these critical areas but no TSR requirements related to the above were currently written into the procedure. Operators could have found issues during their inspections but not have been aware of any potential TSR entries due to the procedures not adequately reflecting the requirements in the S&M Safety Basis Implementation Matrix.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-BOS D&D-003-O02

B-Plant annual surveillance did not cover inspections of the Operations Gallery at B-Plant. (OA 47747)

Discussion:

During the B-Plant annual surveillance, the surveillant questioned workers on the tour path performed at 224-B and found that the walkdown covered both the Electrical and Piping Galleries but not the Operations Gallery. The Operations Gallery would include control equipment for each individual cell, process piping and multiple instrumentation panels; in addition, any leaks on the floor of the operations gallery could be detected prior to reaching the next lower level (Piping Gallery). The response back from the workers was that it was not included in the walkdown and they did not have a clear understanding as to why it wasn't performed.

Addtionally, one of the purposes for performing the B-Plant annual surveillance was to ensure the integrity of the building and property to minimize risk to human health and to the environment. Therefore, accessible areas should be included in the surveillance pathway in order to detect early signs of potential degradation and or new hazards (i.e., roof leakage, structural problems etc).

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-BOS D&D-003-O03

CHPRC Nuclear Safety Engineering review of work packages for 105K-East appeared weak. (OA 47758)

The surveillant observed a causal analysis meeting associated with problems in implementing the 105K-East FHC, safety document DD-52095. Problems were identified after the FHC was approved by DOE, which included no safety documentation for excavations along the building structure of 105K-East, other than the north side. During the meeting a Nuclear Safety Engineer (NSE) mentioned work packages used for D&D and/or excavation work did not provide enough information to the NSE responsible for performing the required work package review. The NSE mentioned some work packages were written very loosely (e.g., go dig) and excavation permits were either hard to locate or were not mentioned in the work package. A member from the work control organization mentioned excavation permits were provided within the Job Control System (JCS) for the specific work package and that you would have to know how to maneuver within the JCS system.

The surveillant then met with a Work Control Planner (WCP) to discuss the work package review process currently employed at K-Basins. The WCP mentioned Subject Matter Experts (SMEs) are brought into the initial hazards categorization process through development of the Automatic Job Hazard Analysis (AJHA) for the proposed work activity. The WCP then stated that once the AJHA is approved and the work package is assembled with all required documentation, the Responsible Manager (RM) determines who will be the final SME reviewers for the soon to be released work package. The

WCP then demonstrated the screening tool used for developing a part of the AJHA specifically in the area of excavation hazards. The surveillant did not identify anything in the screening tool that would trigger impacts to facilities or buildings that were in close proximity to where the excavations would take place.

The contractor self-identified weaknesses in the excavation permit process and plans on attending the next Hanford site meeting to propose recommended changes. The review section for the excavation permit lists multiple SMEs but there is not a block for a Nuclear Safety reviewer.

There appears to be a weakness in the review process related to work packages and what information (i.e., all documents that encompass the work package) is provided to the reviewers given the responsibility to do a subject matter expert review. Most of the work planning reviews were performed electronically through JCS and therefore not all documents would be available as would be the case with hand delivering a completed work package (ready for release) to an SME for his review and signature.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The CHPRC Integrated Evaluation Plan (IEP) for Fiscal Year (FY) 2011, 2012, and 2013 was reviewed for the contractor self-assessments in the functional area of nuclear safety. The IEP appeared to be adequate in coverage of the S&M and D&D organizations through the use of surveillances and assessments.

The surveillant reviewed Worksite Assessment Reports WFMP-2013-WSA-12266, WFMP-2012-WSA-11023, Management Assessment Reports SHS&Q-2011-MA-9655 and SHS&Q-2012-MA-11916 to see what issues were identified by the contractor.

The contractor identified issues related to TSR controls, TSR implementation, DSA configuration control, etc., and in all cases the contractor captured each issue with a Condition Report and corrective actions appeared to be managed satisfactorily. However, after performing a review of the implementing procedures for the S&M annual surveillances the Surveillant found improvements could still be made by the contractor in those specific areas for each S&M facility. (OA 47731).

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

D. R. Corriell, CHPRC
E. A. Prichard, CHPRC
C. V. Phillips, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division

Surveillant(s): Brian Biro

Surveillance Number: S-13-OOD-GPP-003

Date Completed: April 12, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Soil and Ground Water Remediation Project (S&GRP)

Title: Documented Safety Analysis (DSA), Final Hazard Categorization (FHC) and Technical Safety Requirement (TSR) Implementation Review

Guide: Nuclear Safety Surveillance 18.5, Revision 0

Surveillance Scope:

The objective of this core surveillance was to verify contractors were adequately Implementing Documented Safety Analysis (DSAs), Facility Hazard Categorizations (FHCs), and Technical Safety Requirements (TSRs) at facilities and work activities.

Surveillance Summary:

The Soil and Groundwater Remediation Project (S&GRP) did not have any hazard category or radiological facilities as defined by 10 CFR 830 *Nuclear Safety Management Subpart B – Safety Basis Requirements* and DOE-STD-1027-92 *Hazardous Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports.* However, the S&GRP conducted work activities within the boundaries of hazard category facilities.

SGW-40032, Revision 4, *Soil and Ground Water Remediation Project Facility Hazard Categorization* was reviewed. Two specific examples were identified where S&GRP was required to have implementing procedures to ensure the activities their personnel

conducted within the boundaries of other hazard category facilities were compliant with those facility's DSA; PRC-PRO-CM-40297, *Configuration Control 200 West Pump and Treat System Injection Line,* and CHPRC-00424, Rev. 0, *Vehicle Control Plan for the 216-Z-9 Crib.* Additionally, three wells in the 100 K West Area were located within the 100 K Area Authorization Basis. Procedures associated with operating and maintaining these wells required Unreviewed Safety Question (USQ) screening. Twelve USQ screenings had been conducted by the Solid Waste Operations Complex (SWOC) as required by procedure PRC-PRO-CM-40297, *Configuration Control 200 West Pump and Treat System Injection Line.*

On March 18, 2013, a Repetitive Use work package (GW-13-00031) was used by the S&GRP for troubleshooting of the level transducer at well 199-K-137 (WE08) inside the 100K West Area. A failed transducer was identified through electrical testing performed; no further issues were encountered. After the evolution, CHPRC personnel discovered a USQ screening was required to categorically exclude the maintenance activity and was to be located in the work package prior to "work being performed" in this area. The required screening for the activity had not been completed and was not in the work package prior to troubleshooting taking place. A critique meeting was held and Condition Report CR-2013-0628, *USQ Screening not Received Prior to Troubleshooting in K-West Area* was entered into the CHPRC Condition Reporting and Resolution System. An extent of condition review was being conducted to determine if other wells (e.g., those near a tank farm) would require screenings against categorical exclusions.

Surveillance Results:

No deficiencies beyond the self-identified issue with USQ screenings were identified as a result of this surveillance.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

One instance of a contractor performed self-assessment was identified; Worksite Self-Assessment BS-2012-WSA-9116 dated June 12, 2012. The assessment report did not identify any deficiencies or opportunities for improvement associated with implementation of Facility Safety Basis. Three opportunities for improvement associated with procedure format were identified. Condition Report CR-2012-1859 S&GRP, Procedure Opportunities for Improvement, had been entered into the CHPRC Condition Reporting and Resolution System.

It is understandable only infrequent self-assessment of facility hazard categorization and safety basis implementation would be scheduled and conducted for a less than hazard

category 3 Project. However, in light of the fact S&GRP personnel perform work within DSA boundaries at other facilities and have equipment (piping) that could impact the assumptions of the SWOC DSA, additional self-assessment may be warranted pending the outcome of the Condition Report CR-2013-0628, *USQ Screening not Received Prior to Troubleshooting in K-West Area.*

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Briefed:

R. B. Barmettlor, CHPRC
J. T. Southerland, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant: Larry Earley

Surveillance Number: S-13-OOD-LWFS-003

Date Completed: April 25, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Liquid Waste and Fuels Storage (LWFS)

Title: Documented Safety Analysis (DSA), Final Hazard Categorization (FHC) and Technical Safety Requirement (TSR) Implementation Review

Guide: Nuclear Safety Surveillance 18.5, Revision 0

Surveillance Scope

The objective of this core surveillance was to verify the contractor was adequately implementing the Documented Safety Analyses (DSA), Final Hazard Categorization (FHC) and the Technical Safety Requirements (TSR) at the LWFS facilities.

Surveillance Summary

The surveillant performed the following activities to complete this surveillance:

- Reviewed the implementation of the 200 Area Effluent Treatment Facility FHC
- Reviewed the implementation of the Canister Storage Building (CSB) DSA
- Reviewed the implementation of the CSB TSRs
- Reviewed the implementation of the Waste Encapsulation and Storage Facility (WESF) DSA
- Reviewed the implementation of the WESF TSRs

The surveillant found that in general, the DSAs, TSRs and the FHC were adequately implemented. However, the surveillance did result in the identification of the following issues:

- **S-13-OOD-LWFS-003-O01:** An error was identified in the WMP-331-NS-4-005C, *CSB/Interim Storage Area (ISA) Compliance Matrix*, regarding an implementation document section.

- **S-13-OOD-LWFS-003-O02:** The CSB/ISA DSA implementing documents lacked specificity to address a DSA commitment.

- **S-13-OOD-LWFS-003-O03:** Flow down for TSRs from the CSB/ISA Safety Basis Compliance Matrix to the implementing procedure contained errors.

- **S-13-OOD-LWFS-003-O04:** The Waste Encapsulation and Storage Facility (WESF) DSA implementing document revisions were different from those identified in WMP-331, *WESF Safety Basis Compliance Matrix*,Section 3.25.

- **S-13-OOD-LWFS-003-O05:** The WESF TSR implementation process contained a flow down error from the compliance matrix to the implementing document and the document revisions were not in agreement with the compliance matrix.

The surveillant's oversight was documented in Operational Awareness (OA) reports 48064, 48070, 48076, 48082 and 48088.

Surveillance Results:

Observation: S-13-OOD-LWFS-003-O01

An error was identified in the WMP-331-NS-4-005C, *CSB/Interim Storage Area (ISA) Compliance Matrix*, regarding an implementation document section.

Discussion:

The CSB/ISA Safety Basis Compliance Matrix section numbered KA 6-01 stated, "Operations are conducted such that at least two unlikely, independent, and concurrent changes (contingencies) in processing and/or operating conditions must occur before a criticality accident is possible." The CSB/ISA Safety Basis Compliance Matrix further stated the section KA 6-01 information was implemented via HNF-7098, *Criticality Safety Program*, Revision 18, Section 4.5.3.1 and WMP-200-4.4, *Criticality Safety*, Revision13-1. The FR reviewed the cited reference document sections and identified the citation for HNF-7098 was not correctly listed. Section 4.5.3.1 did not exist, however the double contingency safeguard was identified in HNF-7098 but was listed in section 4.3.2.1.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-003-O02

The CSB/ISA DSA implementing documents lacked specificity to address a DSA commitment. (OA 48070)

Discussion:

The CSB/ISA Safety Basis Compliance Matrix section numbered CSB-7-01 stated, "With the transportation cask lid removed for servicing in the MCO service station, exposure levels at the top of the MCO are higher than desired. Permanent or temporary shielding has been incorporated; however, some operations may require hands-on access in radiation fields estimated at 10 to 30 mrem/h. For these operations, strict administrative controls, including personal protective equipment, will be applied to maintain exposures to ALARA levels."

The CSB/ISA Safety Basis Compliance Matrix further stated CSB-7-01 was implemented via operating procedure OP-12-004S, *Receive Cask*, Rev 3-4, Steps 2.2.4 and 3.4.4. The FR reviewed the applicable document sections and they appeared to vaguely address the DSA requirement however they lacked specificity.

Section 2.2.4 of operating procedure OP-12-004S stated:

"The following describe the DOT shipping radiological limitations:
[SAR A7.4] [SARP A4.3.3] [Fuel (F) SPA Table I.6-1]

- ≤ 1000 mrem/hr on the external surface of the package
- ≤ 200 mrem/hr at any point on the vertical planes projected from the outer edges of the vehicle, on the upper surface of the load, and on the lower external surface of the vehicle
- ≤ 10 mrem/hr at any point 2 m (6.6 ft) from the vertical planes projected by the outer edges of the vehicle
- ≤ 2 mrem/hr in the cab of the transporter except that this provision does not apply for Site drivers who wear radiation dosimetry devices under the control of the Site Radiation Protection Program
- External contamination limits are as follows:
  - < 22,000 dpm/100 cm^2 Beta-Gamma
  - < 2,200 dpm/100 cm^2 Alpha
- Internal contamination limits are as follows:
  - < 220,000 dpm/100 cm^2 Beta-Gamma
  - < 22,000 dpm/100 cm^2 Alpha

If surveys exceed above limits, the Shift Operations Manager (SOM) must be notified"

Section 3.4.4 of OP-12-004S stated "Applicable radiological work permit(s) (RWP) have been reviewed. **[SAR A7.4]**"

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-003-O03

Flow-down for TSRs from the CSB/ISA Safety Basis Compliance Matrix to the implementing procedure contained errors. (OA 48076)

Discussion:

The FR reviewed section CSB-LCO-3.1.1, in the CSB/ISA Safety Basis Compliance Matrix and the implementing document for this section and identified flow-down errors.

The Limiting Condition for Operations (LCO) stated "The MHM interlock instrumentation for each channel of the interlocks listed in Table 3.1.1-1 shall be OPERABLE. Condition A – Either X channel or Y channel inoperable. Response - A.1 Shut down MHM operation immediately not to exceed 12 hours AND A.2 Restore the channel(s) to OPERABLE status prior to resuming MHM operations."

The CSB/ISA Safety Basis Compliance Matrix stated this LCO was implemented via operating procedure OP-15-001S, *Normal MHM Operation*, Rev 3-4, steps 4.5.5.f.5 and 4.6.9.f.3.

The FR reviewed the implementing document and identified the procedure revision was 3-10 vice 3-4 as stated in the compliance matrix. In addition, one procedure step was different than that called out in the compliance matrix (compliance matrix stated the commitment was met in step as 4.5.5.f.5 and was actually met in the procedure in step 4.5.4.f.5).

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-003-O04

The Waste Encapsulation and Storage Facility (WESF) DSA implementing document revisions were different from those identified in WMP-331, *WESF Safety Basis Compliance Matrix*, Section 3.25. (OA 48082)

Discussion:

The FR reviewed the implementation of two DSA commitments by reviewing the WMP-331, Section 3.25 (WESF Safety Basis Compliance Matrix) and then reviewing the

implementing documents to assess if the requirements were adequately captured. The requirements were captured in the instances reviewed, however the implementing documents were a different revision in all of the instances.

The first commitment reviewed was listed in WMP-331, Section 3.25 (WESF Safety Basis Compliance Matrix) in the SMP section of the matrix numbered 7.8 (DSA). The Compliance matrix stated the commitment was implemented via Procedure EO-040-001, *Pool Cell Surveillance,* Revision 10-0 Section 4.1; WESF-AR-0400, *Respond to High Area Radiation (ARM) Alarms*, Revision A-4 Section 3.3.2; and WESF-AR-0300, *Respond to Loss of Capsule Integrity*, Revision 0-5 entire procedure. The FR identified the document revisions were all later than those listed in the compliance matrix (10-8 vice 10-0, 0-7 vice A-4, and 0-9 vice 0-5) respectively.

The second commitment reviewed was listed in WMP-331, Section 3.25 (WESF Safety Basis Compliance Matrix) in the SMP section of the matrix numbered 9.4.2.1 (DSA). The Compliance matrix stated the commitment was implemented via Procedure EO-902-003, *Prepare and Package A Cell,* Waste Revision H-4. The FR identified the document revision was actually 7-6 vice H-4.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-LWFS-003-O05

The WESF TSR implementation process contained a flow down error from the compliance matrix to the implementing document and the document revisions were not in agreement with the compliance matrix. (OA 48070)

Discussion:

The FR reviewed two WESF TSR sections and identified minor issues with each.

First, the FR identified an implementing document for TSR 3.1, Pool Cell Water Level LCO had an error in the document flow down through the compliance matrix. The WMP-331, Section 3.25 (WESF Safety Basis Compliance Matrix) stated this LCO was implemented via Procedure WESF-AR-0100, *Respond to Pool Cell Alarms*, Revision A-5 Appendix H, Section 3.1.5; and EO-040-001, *Pool Cell Surveillance*, Revision 10-0 Section 4.2.4. The FR reviewed the implementing documents and identified a flow-down deficiency with WESF-AR-0100 which was WESF-AR-0100 did not have an Appendix H. It appeared to the FR the correct citation for the requirement was in paragraph 8.3.1.g.1 of WESF-AR-0100.

In addition, both implementing documents were a later revision that that listed in the compliance matrix. WESF-AR-0100 was revision 2-4 vice A-5 and EO-040-001 was revision 10-8 vice 10-0.

Second, the FR identified Appendix B, Section 5.3 of the WESF Safety Basis Compliance Matrix stated, "The Facility Manager is responsible for ensuring that the requirements of the WESF TSRs are met." The WESF Safety Basis Compliance Matrix stated this LCO was implemented via WMP-331, Section 1.2, Staffing Plan (Revision 5 Sections 4.1.1 and 4.3.1). The FR reviewed the implementing document and identified the requirements were adequately met however the implementing document was a later revision that that listed in the compliance matrix.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

The surveillant reviewed the results of one Nuclear Safety Assessment. The issues identified were appropriately captured in the corrective action management system and adequately tracked to closure. Future Nuclear safety Assessments were scheduled for the upcoming year at an appropriate frequency.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Contractor Management Briefed:

J. J. Badden, CHPRC
P. R. Garello, CHPRC
P. T. Saueressig, CHPRC
C. J. Simiele, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillant(s): D. C. McCranie, K. M. Schierman, and D. M. Thrasher

Surveillance Number: S-13-OOD-PFP-003

Date Completed: April 23, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: Plutonium Finishing Plant (PFP)

Title: Documented Safety Analysis (DSA), Final Hazard Categorization (FHC) and Technical Safety Requirement (TSR) Implementation Review

Guide: Nuclear Safety Surveillance 18.5, Revision 0

Surveillance Scope:

The objective of this surveillance was to verify contractors were adequately implementing DSAs, FHCs, and TSRs at facilities and work activities. Individual Facility Representatives (FR) used the DSAs, FHCs, and TSRs for work activities and facilities within their assigned areas and the information in this surveillance guide to complete the core surveillance.

Surveillance Summary:

The surveillants verified implementation of the following selected DSA, FHC, and TSR elements:

- Assumptions associated with Hanford analysis document HNF-15500, *Plutonium Finishing Plant Deactivation and Decommissioning Documented Safety Analysis*, Rev 8, Section 4.5.2.1.1 Scenario C, Facility Wide Fire. (OA 47571)
- HNF-15500, Section 5.1.2 and Section 5.2.2.5, as implemented by Hanford analysis document HNF-15502, *Plutonium Finishing Plant Deactivation and Decommissioning Technical Safety Requirements* (TSR) Administrative Control (AC) 5.20.2.d; PFP administrative document FSP-PFP-5-8, 3.7, Fire Protection Systems, and the HNF-46148 *Interface Control Documen between CH2M HILL Plateau Remediation Company and*

Mission Support Alliance, LLC for Water System Services. Two findings were documented below, identifying deficiencies with configuration management of HNF-46148, and compliance with a requirement of the same document. (OA 47571)

- Assumptions/statements in HNF-15500, Section 4.5.2.1.1, Scenario A, Waste Staging and Storage Area Fire. One observation was documented below, identifying referencing and editorial errors in Safety Basis documents. (OA 47749)
- HNF-15502, Specific Administrative Control (SAC) 5.12.1, as implemented by PFP technical procedure ZSE-26-001, *Non-Sprinklered Area Fire Protection Inspection.* One finding was documented below, identifying procedure interface weaknesses in ZSE-26-001 and/or the documents it referenced. (OA 47760)
- HNF-15502, Limiting Condition of Operation (LCO) 3.1.1, as implemented by CPS-Z-165-80010, *Criticality Prevention Specification: General Limits.* Two observations were documented below, identifying issues with the field inspection procedure ZSE-99E-00 1, *Criticality Safety Features Inspection.* (OA 47813)
- Field observation of portions of ZSE-99E-001 was performed. (OA 47824)
- HNF-15500, section 3.2, as implemented through CHPRC administrative procedure HNF-11724, *CH2M HILL Plateau Remediation Company Safety Management Programs.* One finding was documented below identifying a record keeping deficiency. One observation was documented below for issues relating to PFP technical procedure ZSP-008, *Criticality Safety Internal Inspection.* (OA 47920)
- HNF-15502, LCO 3.2.1.3 and 3.2.1.41, as implemented by PFP technical procedure ZO-060-117, *Power and Ventilation Equipment Surveillance*, and PFP technical procedure ZO-060-300, *Switching Filter Rooms 309 through 318.* One observation identified inconsistent terminology within the surveillance documentation. (OA 47877/47680)
- HNF-15502, SAC 5.17. as implemented by ZO-060-117, and PFP technical procedure ZSE-25-101, *Ventilation Zone Pressure Surveillance.* (OA 48041)
- HNF-15500, Section 5.2.8, *Confinement Boundary Door Controls*, and HNF-15502, SAC 5.17, *Confinement Boundary Door Controls.* (OA 48044)

The surveillants found in general, nuclear safety basis requirements were being adequately implemented at PFP. However, the surveillance did result in the identification of four findings and five observations.

- **S-13-OOD-PFP-003-F01:** A Mission Support Alliance, LLC (MSA)/CHPRC Interface Control Document implementing a TSR Administrative Control (AC) at PFP was out-of-date.
- **S-13-OOD-PFP-003-F02:** Notification requirements of an Interface Control Document for Water System Services were not being enforced.
- **S-13-OOD-PFP-003-F03:** The controls within ZSE-26-001, *Non-Sprinklered Area Fire Protection Inspection* and/or in the documents it referenced, did not contain adequate controls to ensure specified directions would be implemented.
- **S-13-OOD-PFP-003-F04:** Records generated during the performance of ZSP-008, *Criticality Safety Internal Inspection*, were not being handled in accordance with CHPRC administrative procedure PRC-PRO-IRM-10588, *Records Management Processes.*
- **S-13-OOD-PFP-003-O01:** Editorial/referencing errors were identified in PFP Safety Basis documents.

- **S-13-OOD-PFP-003-O02:** ZSP-008, *Criticality Safety Internal Inspection*, Internal Inspection Checklists were not being consistently filled out.
- **S-13-OOD-PFP-003-O03:** Safety Significant item was not listed in CPS-Z-165-80010, *Criticality Prevention Specification: General Limits,* yet was inspected monthly per ZSE-99E-001, *Criticality Safety Features Inspection.*
- **S-13-OOD-PFP-003-O04:** Actions required for LCO 3.1.1 condition were not known about clearly outlined in ZSE-99E-001, *Criticality Safety Features Inspection.*
- **S-13-OOD-PFP-003-O05:** The terminology used for TSR SR 3.2.1.4.1., per PFP operations procedure ZO-060-300, *Switching Filter Rooms 309 through 318,* was inconsistent with field postings.

Surveillance Results:

Finding: S-13-OOD-PFP-003-F01

A Mission Support Alliance, LLC (MSA)/CHPRC Interface Control Document implementing a TSR AC at PFP was out-of-date. (OA 47571)

Requirement(s):

CHPRC management procedure PRC-PRO-MS-10472, *Interface Management*, Section 3.4, stated in part, "Existing interface management documents are reviewed annually. The review is coordinated by the Manager, Interface Management who updates the CHPRC Interface Matrix as a result of the review. The review should include determination of the following:

- The Interface Management Documentation is Relevant
- Have conditions changed such that the interface will no longer be required?
- Is this interface documentation superseded by other documentation or agreements?
- Have conditions changed that affect the accuracy of the interface management documentation?
- Are assumptions utilized in the documentation invalid?

If it is determined that the interface management documentation is relevant, but needs to be updated due to inaccuracies, it is modified per the process described in Section 3.3.1 or 3.3.2 as appropriate."

PFP administrative procedure FSP-PFP-5-8, 13.3 Appendix A, HNF-15502 Compliance Matrix, identified HNF-46148 *Interface Control Documen between CH2M HILL Plateau Remediation Company and Mission Support Alliance, LLC for Water System Services*, as an implementing document for the HNF-15502, *Plutonium Finishing Plant Deactivation and Decommissioning Technical Safety Requirements*, AC 5.20.2.d requirement. The current revision (1) of HNF-46148, Section 5.0, stated, "This ICD will be issued using the Engineering Document Control Process. The ICD will be valid for two years from approval or until modified or cancelled by either MSA or CHPRC in writing with 60 days advance notice."

Discussion:

Contrary to the above requirements, HNF-46148, Revision 1, was issued and released on November 2, 2010, making it more than two years old, and still active.

Additionally, review of the content of the ICD yielded the following issues:

- The PFP Technical Point of Contact listed in Section 6.2 had not been employed by PFP/CHPRC for several years.
- Section 2.0 stated Water Utilities will make notifications to CHPRC of affected facilities listed in Section 2. Section 2 did not list facilities.
- Section 3.2.2 stated PFP credits both sprinkler system demand and minimum required static pressure as a TSR requirement. HNF-15502, Section B.3.4.1, stated in part, "The memorandum of agreement with the 200-West Area water system operator (AC 5.20.2 d.) includes notification to the PFP when the site water system cannot supply minimum required flows and reserve capacity to ensure sprinkler system function should a fire occur." Although HNF-46148, Section 3.2.2, stated PFP Fire Water requires approximately 240,000 gallons of water to be available, the basis/requirement for that minimum was unclear (neither the mentioned 4-hour firefighting supply including 250 gallons per minute (gpm) hose stream demand, nor the 850 gpm at 88 pounds per square inch gauge (psig) sprinkler system demand appeared to correlate, nor was a minimum supply value specified in the TSR or Hanford analysis document HNF-18451, *Plutonium Finishing Plant Water Delivery System Evaluation*).
- Revisions of PFP documents listed in Section 7.0 were outdated.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-PFP-003-F02

Notification requirements of an Interface Control Document for Water System Services were not being enforced. (OA 47571)

Requirement(s):

HNF-46148, Rev 1, *Interface Control Document between CH2M HILL Plateau Remediation Company and Mission Support Alliance, LLC for Water System Services*, Section 2.0, stated in part, "...Water Utilities will notify CHPRC of the affected facilities listed in Section 2: At least 48 hours in advance for single feed or planned outages..."

Discussion:

Contrary to the above requirement, CHPRC was not enforcing 48-hour advance notice requirements of HNF-46148, as evidenced by the following example:

At 5:14 PM on March 25, a representative of Water Utilities notified CHPRC Points of Contact via email that an outage that would take all 200W emergency raw and potable water fire pumps

out of service would be initiated Wednesday, March 27, 2013, starting first thing that morning.

Note: Due to redundant supplies normal water delivery systems were not expected to be affected.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-PFP-003-F03

The controls within ZSE-26-001, *Non-Sprinklered Area Fire Protection Inspection*, and/or in the documents it referenced, did not contain adequate controls to ensure specified directions would be implemented. (OA 47760)

Requirement(s):

DOE O 422.1, *Conduct of Operations*, Attachment 2, Paragraph 2.p(3)j, stated, "Procedures are technically and administratively accurate: instructions and information are correct; referenced documents are correctly identified; and instructions for transferring between procedures are clear."

Discussion:

Contrary to the above requirement, ZSE-26-001, the implementing document for TSR SAC 5.12.1 and 5.12.2, and interfacing documents contained inaccuracies and less than adequate cross-referencing, as evidenced by the following examples:

- ZSE-26-001, Section 3.4.2, stated, "Review the Shift Operation 'Surveillance Turnover Checklist' and daily 'Plant Status Report' and identify any currently existing facility temporary sprinkler deactivation or temporary sprinkler deviation areas. Identified areas require monthly inspection to satisfy SR 5.12.4.2." The Fire Protection Engineer (FPE) designee utilized the prescribed documents to prepare Data Sheets 2 for his inspection. As far as the surveillant was aware all existing temporary sprinkler deactivations/deviations were listed on the Surveillance Turnover Checklist/Plant Status Report, and two Shift Operations Managers demonstrated an awareness of the need to list deactivations/deviations and how the list impacted ZSE-26-001 content/performance, but no one the surveillant contacted could specify a requirement base to list deactivations/deviations on the Surveillance Turnover Checklist or Plant Status Report.

- ZSE-26-001 (Attachment 2) included an implementation strategy for SAC 5.12. Management expectations for implementation of SAC 5.12.a, Item 1, stated, "When a work group has need to establish vault or vault-like storage of fissile material sources or standards, or pipe over-pack containers within in [sic] non-sprinklered area, the responsible manager or work supervisor contacts the PFP Waste Operations Material Balance Area (MBA) custodian and requests that a designated staging and storage area be authorized and logged in accordance with the FSP-PFP-5-8, Section 1.30 process for establishing a TRU Waste

staging/storage area." Item 3 stated, "The Waste Operations MBA Custodian contacts the PFP FPE and notifies the FPE of the need to perform the SR 5.12.4.1 'Once before' inspection of the storage area." Since FSP-PFP-5-8, Section 1.30, did not require the Waste Operations MBA custodian to contact the FPE for performance of a "Once before" inspection when establishing a vault or vault-like TRU storage area and MBA custodians did not have much familiarity with the content of ZSE-26-001, it was not clear how the MBA custodian would know he/she was expected to make the notification.

- ZSE-26-001, Attachment 2, management expectations for implementation of SAC 5.12.b, Item 2, stated, "The work instruction includes notification to the SOM and a SOM authorization signature to create the sprinkler deactivation or deviation area that prompts the SOM to record the deactivation or deviation area in the 'Surveillance Turnover Checklist' and daily 'Plant Status Report.'" The FR reviewed work package 2Z-13-02190, *Erect, Disassemble, Modify, Inspect Scaffolds*, for implementation. Neither the approved Work Change Notice (WCN) 1, nor the partially approved WCN 2, included a notification to the Shift Operations Manager (SOM) or a SOM authorization signature to create a deviation. An SOM signature was not required until a scaffold was constructed and in compliance with SAC 5.12. Item 4, stated, "The work instruction includes a notification to the work control administrator that a temporary sprinkler deactivation or deviation area has been established and the date of the establishment so that the next due SR 5.12.4.2 can be scheduled." Neither version of 2Z-13-02190 included a notification to the work control administrator for sprinkler deactivations/deviations.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-PFP-003-F04

Records generated during the performance of ZSP-008, *Criticality Safety Internal Inspection*, were not being handled in accordance with CHPRC administrative procedure PRC-PRO-IRM-10588, *Records Management Processes*. (OA 47920)

Requirement(s):

PRC-PRO-IRM-10588, section 3.2.1 stated, "CREATE OR RECEIVE documents in accordance with procedures governing the preparation or submittal of each specific document type."

PRC-PRO-IRM-10588, section 3.2.7 stated in part, "ELIMINATE and misperception of missing data or incomplete records by marking the blank fields of the record form(s) with: Not applicable (NA), or A line drawn through the block, or...."

PRC-PRO-IRM-10588, section 3.3.6 stated, "SUMBIT record material to the one of the following for file management.

- Document Service Center (DSC) or internal IDMS POC for processing into IDMS.
- Approved Record Storage Area (RSA)"

Discussion:

Contrary to the above requirements:

CHPRC was not creating documents in accordance with the governing procedure, in this case ZSP-008. As evidenced by several instances of the person performing the inspection writing their names in the Radiological Controls (RADCON) reviewer block.

CHPRC was not ensuring all blocks of the checklist were marked. Many of the checklists had blank spaces that had not been N/A'd or lined out. The FR also observed instances where the RADCON review was signed for an area on the first checklist, but that signature did not appear on subsequent checklists for the same area. For example, in February of 2013 the RADCON review was signed for on Checklist 17, *A-Line including 235A-3*, but was then N/A'd for Checklist 18, *A-Line including 235A-1&2*.

CHPRC did not have evidence that the record material was submitted for file management. The files obtained from the criticality safety group were the original completed checklists. Section 6.0 of ZSP-008 identified the "Responsible FWS" as having retention responsibility for these records. When questioned, the Criticality Safety Representative indicated that his group is not required to keep the checklists, but they do so to be able to provide copies to the Field Work Supervisor (FWS) when they ask for a copy. The FR also questioned several FWS. They indicated that they give the originals to the criticality safety group who then keeps and maintains them. Only one of the FWS indicated that he kept more than the previous month's checklist in his files. None of the FWS indicated that they forwarded the records on for processing or storage.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-PFP-003-O01

Editorial/referencing errors were identified in PFP Safety Basis documents. (OA 47571, 47749)

Discussion:

During the course of their reviews the surveillants identified several editorial and/or referencing errors in Safety Basis documents and provided them to the cognizant Nuclear Safety Engineers and Operations Specialist:

- HNF-15500, Section 4.5.2.1.1, Material at Risk, discussion, stated in part, "The FHA provides tables of drum damage for exposure to small, medium, and large fires. Table 8-8 indicates that for a densely packed (no aisles) three tier array of drums a large (i.e., 10 MW) fire exposure could potentially cause 43 lid seal failures and 2 lid losses." The basis was found in Table 8-10, not Table 8-8, as stated in HNF-15500;
- HNF-15500, Section 4.5.2.1.1, Scenario A, Waste Staging and Storage Area Fire, Scenario, stated Cases A-4 and A-6 were not used. Table 5-16, Equipment Important to Safety,

Portions of the Sanitary Water System supplying safety significant fire risers discussion, still referenced Case A-4.

- HNF-15500, Section 4.5.2.1.1, Scenario C, Facility Wide Fire, Scenario, stated Case C-3 was not used. Section 5.1.2, Fire Sprinkler Systems, stated in part, "Cases C-1/2/3 Facility Fires credit the room fire sprinkler system for a frequency bin reduction in the likelihood of a large fire event;" still referencing Case C-3.
- HNF-15500, Table 5-16, Equipment Important to Safety, still referenced Case C-3.
- HNF-15500, Section 5.2.2.6, Permanent Fire Barrier Deviation Controls, stated in part, "Permanent fire barrier deviation controls are found in TSR AC 5.20.2 f." Permanent fire barrier deviation controls were actually found in TSR AC 5.20.2.e.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-PFP-003-O02

ZSP-008, *Criticality Safety Internal Inspection*, Internal Inspection Checklists were not being consistently filled out. (OA 47920)

Discussion:

ZSP-008 contained instructions for performing criticality safety internal inspections. The checklists used in the field to do this had several different signature blocks on the checklist that were not discussed in the instructions. The personnel performing these inspections, and reviewing the checklists, were using these blocks inconsistently. Examples included:

- A checklist where the person signing for responsible manager also appeared to have performed the inspection. While this may or may not be a requirement it is generally a good business practice to have paperwork reviewed independent of the performance of that work.
- There were spaces on the checklist for both an "INSPECTOR" and an "Observer" to sign. ZSP-008 did not mention the role of an Observer and as such there was no way to know who would be signing that block. There were checklists where one, both, or none of those two spaces were signed.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-PFP-003-O03

Safety Significant item was not listed in CPS-Z-165-80010, *Criticality Prevention Specification: General Limits*, yet was inspected monthly per ZSE-99E-001, *Criticality Safety Features Inspection*. (OA 47813)

Discussion:

There were features specifically listed in PFP administrative procedure HNF-SD-CP-TI-108, *Plutonium Finishing Plant Safety Systems and Equipment List*, which were not mentioned in either PFP technical procedures HNF-32363, *CSER 07-001: Criticality Safety Evaluation Report for the Plutonium Finishing Plant General Limits*, or CPS-Z-165-80010. Specifically HNF-SD-CP-TI-108 listed "Glove Box HA-9A Drain Passage or Elevator Shaft" as a safety significant design feature. This same feature was not found in HNF-15502, HNF-32363, or the implementing document CPS-Z-165-80010. The drains and elevator shaft were, however, listed in ZSE-99E-001 and inspected on a monthly basis.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-PFP-003-O04

Actions required for LCO 3.1.1 condition were not know about clearly outlined in ZSE-99E-001, *Criticality Safety Features Inspection*.. (OA 47813)

Discussion:

ZSE-99E-001 did not clearly provide actions to be taken in the event of an issue with the sump disk in glovebox HA-9A. The glovebox sump disk was listed in CPS-Z-165-80010 as a criticality safety feature. The following comments relate to the glovebox sump disk:

- Step 4.1.4 of the procedure provided the following directions to suspend activities in the glovebox; "IF criticality drain is found inoperable (obstructed), OR a safety feature is not present." It was not clear that this was referring to the glovebox sump disk as well as the criticality drain.
- Data Sheet #1 discussed the criticality drain and had a note to notify the SOM if the operator Circles "NO." However, the sump disk was discussed below that section and had no such note. As this datasheet was the only piece of paper required to be brought into the field, an individual performing the inspection may have been led to believe SOM notification (and LCO action) was not required for a discrepancy noted during performance of step 4.1.2.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-PFP-003-O05

The terminology used for TSR SR 3.2.1.4.1., per PFP operations procedure ZO-060-300, *Switching Filter Rooms 309 through 318*,was inconsistent with field postings. (OA 47680)

Discussion:

During the performance of ZO-060-300, the data sheet used to document the surveillance did not contain the same terminology as the equipment being surveilled. There were two terms used on the Surveillance data sheet, In-Service or Out of Service. However, the switches to be monitored in the field could be In-Service, Out of Service or In-Standby depending on the operational status of the filter room. Therefore, the terminology defines the operational condition of an LCO requirement, clear and consistent terminology is expected.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

A surveillant reviewed the past 15 months (January 2012 through March 2013) of CHPRC and PFP's management and independent assessment activities for the topical area of Nuclear Safety. The following Work Site Assessments (WSA) and Management Assessments were identified and reviewed:

- PFP-2013-WSA-12006, *Safety Management Program (SMP) implementation for the criticality alarm system*;
- PFP-2013-WSA-12007, *Annual review of periodic criticality inspections*;
- PFP-2012-WSA-10773, *SMP verification for implementation of Limiting Control for Operation (LCO) 3.04, 3.05, and 3.06*;
- EPC-2012-WSA-10806, *Vital Safety System review*;
- PFP-2012-WSA-10808, *SMP verification for LCO 3.07 and SRs 3.01 and 3.02*;
- PFP-2012-WSA-10817, *SMP verification for SR 3.03, 3.04 and Administrative Control (AC) 5.1*;
- PFP-2012-WSA-10819, *Unreviewed Safety Question (USQ) Process Management Assessment*;
- PFP-2012-WSA-12204, *Extent of Conditions Review, "Single Point Failures" in TSR SR reviews*;
- PFP-2013-WSA-12832, *SMP verification for AC 5.6, SAC 5.7, SAC 5.8, AC 5.9, and SAC 5.18*;
- PFP-2013-WSA-12875, *Review of Hot Work performance authorization document changes necessary to implement SAC 5.19.2.a*;
- PFP-2013-WSA-12882, *Implementation review for SAC 5.24.2.d*;
- PFP-2013-WSA-12893, *Implementation review for SAC 5.24.2.c*;
- PFP-2013-WSA-12942, *Extent of condition review to determine whether there was a loss of configuration control at PFP regarding the safety basis*;
- PFP-2013-WSA-11943, *Review of Non-Destructive Assay program*;
- PFP-2013-WSA-12005, *Implementation of SAC 5.17*;
- PFP-2013-WSA-12021, *Implementation of LCO 3.4.1, AC 5.20, and Design Feature 6.1.3*;
- SHS&Q-2013-MA-12222, *Hazard Identification and Hazard Analysis process performance*;
- SHS&Q-2012-MA-11916, *DSA configuration control*; and
- SHS&Q-2012-MA-11791, *Special Packaging Authorization implementation and associated tie down.*

The surveillant considered the number, scope, and rigor of assessment activities reviewed was adequate.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

J. R. Brack, CHPRC
J. W. Long, CHPRC
M. Swartz, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillants: D. H. Splett, E. D. Robbins

Surveillance Number: S-13-OOD-SNF-003

Date Completed: April 30, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 100K (100K Min Safe, 105KW Basin and Cold Vacuum Drying Facility)

Title: Documented Safety Analysis (DSA), Final Hazard Categorization (FHC) and Technical Safety Requirement (TSR) Implementation Review

Guide: Nuclear Safety Surveillance 18.5, Revision 0

Surveillance Scope:

The objective of this core surveillance was to verify that the prime contractor adequately implemented the DSA, FHC and TSRs at 100K facilities and work activities.

Surveillance Summary:

The surveillants reviewed the following documents:

- Administrative Procedure CP-07-002, Rev. 4, Change 5, *TSR/PS Requirements Verification*
- Administrative Procedure NS-4-005A, Rev. 16, Change 5, *SB Document Implementation Matrix K Basin*
- Administrative Procedure PS-306, *Protection of The 105-KW Basin Structure*
- HNF-SD-SNF-TSR-001, Rev. 14, *105-KW Basin Technical Safety Requirements*
- HNF-SD-SNF-FHA-001, *K Basin Fire Hazard Analyses*, Rev. 2B, Appendix M, Fire Hazards Analysis For: Use And Operation of Fuel Truck And Other Vehicles or Equipment Containing Fuels or Other Flammable And Combustible Liquids And Fire Separation Requirements For CERCLA Waste Staging Areas in The 100 K Area

- Report DD-53484, Rev. 0, *Cold Vacuum Drying Facility Post-Operational Hazards Categorization*
- Management Assessment SHS&Q-2012-MA-10771, *100K Technical Safety Requirements Safety Management Program Key Attribute 17-11*

This surveillance resulted in one finding and two observations:

- **S-13-OOD-SNF-003-F01:** TSR was not included in the implementing document as stated in the safety basis document implementation matrix.
- **S-13-OOD-SNF-003-O01:** Reference in the TSRs verification procedure that TSRs will be highlighted in shaded text was not followed.
- **S-13-OOD-SNF-003-O02:** Inconsistent inclusion of surveillance requirements on the surveillance sheet for activities no longer performed by operations.

Surveillance Results:

Finding: S-13-OOD-SNF-003-F01

TSR was not included in the implementing document as stated in the safety basis document implementation matrix. (OA 48177)

Requirement:

Code of Federal Regulations 10 CFR 830 Subpart B, *Safety Basis Requirements*, Part 830.201, "Performance of work," stated, "A contractor must perform work in accordance with the safety basis for a hazard category 1,2, or 3 DOE nuclear facility and , in particular, with the hazard controls that ensure adequate protection of workers, the public, and the environment."

Discussion:

Administrative procedure NS-4-005A, *SB Document Implementation Matrix – K Basin*, listed Technical Safety Requirement (TSR) 5.9.2.9.b as being implemented by Process Standard PS-306, *Protection of the 105-KW Basin Structure*. Review of Process Standard PS-306 found that TSR 5.9.2.9.b was not discussed or referenced in that document.

TSR 5.9.2.9.b provided requirements for cranes not lifting loads over the 105-KW Basin.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-SNF-003-O01

Reference in the TSRs verification procedure that TSRs will be highlighted in shaded text was not followed. (OA 48177)

Discussion:

Administrative procedure CP-07-002, *TSR/PS Requirements Verification*, Section 3.0 Process, stated, "Shaded text refers to Technical Safety Requirements (TSR) limits and controls. IF a limit and/or a control is NOT in compliance, THEN Management Notification is required IMMEDIATELY. Refer to the applicable TSR for appropriate actions."

Appendix A of Procedure CP-07-002 was the K-West Technical Safety Requirement (TSR) and Process Standard (PS) Surveillance Sheet. Appendix A listed the various surveillance requirements from the TSRs, Process Standards or the Fire Hazards Assessment which operations personnel will verify at any given periodicity. Entries in Appendix A which listed TSR limits or controls were not shaded in the Appendix, as stated that they would be in the main body section 3 of the procedure.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SNF-003-O02

Inconsistent inclusion of surveillance requirements on the surveillance sheet for activities no longer performed by operations. (OA 48177)

Discussion:

Administrative procedure CP-07-002, *TSR/PS Requirements Verification*, Appendix A, K-West TSR/PS Surveillance Sheet, listed TSR surveillance requirements 3.4.1.1 and 3.4.1.2 which were from a Limiting Condition for Operation (LCO) which only applied when performing Multi-Canister Overpack (MCO) basket insert loading operations. MCO basket loading operations were completed with the end of Knockout Pot MCO operations in September 2012.

LCO 3.2 also dealt with MCO activities which were no longer performed due to the completion of Knockout Pot MCO operations. LCO 3.2 was not listed in CP-07-002 Appendix A. This indicated an inconsistent approach to the inclusion of TSR requirements for work which operations no longer conducts.

Even though MCO operations in the 105KW Basin were complete LCO 3.2 and LCO 3.4 remained in effect in the current revision of the 105-KW Basin Technical Safety Requirements document.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Contractor Self-Assessment:

A management assessment was conducted in August 2012 which evaluated whether the Deactivation and Decommissioning Project at 100K implemented the hazard controls specified

in the safety bases for the 105-KW Basin and the Cold Vacuum Drying Facility (CVDF). This assessment identified five findings and one opportunity for improvement. One finding identified the fact that verification of TSR implementation every three years had not been completed for all CVDF TSR Limiting Conditions for Operation or Specific Administrative Controls. The assessment also identified the fact that the K Basin and CVDF compliance matrices did not list all the documents necessary to adequately implement the cited commitments. Although these indicate areas of weakness they were self identified by the contractor during performance of a management assessment.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

D. B. Engleman, CHPRC
G. R. Franz, CHPRC
J. D. Mathews, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Operations Oversight Division (OOD)

Surveillants: P. J. Macbeth, J. J. Waring, A. K. Wright

Surveillance Number: S-13-OOD-SWOC-003

Date Completed: May 1, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facilities: Solid Waste Operations Complex (SWOC)

Title: Documented Safety Analysis (DSA), Final Hazard Categorization, and Technical Safety Requirement (TSR) Implementation Review

Guide: Nuclear Safety Surveillance 18.5, Revision 0

Surveillance Scope:

The objective of this surveillance was to verify the contractor was adequately implementing selected requirements in the SWOC Master DSA (HNF-14741, Revision 9) and associated TSRs (HNF-15280, Revision 9).

Surveillance Summary:

CHPRC was working to HNF-14741, Revision 9, *Master Documented Safety Analysis (MDSA) for SWOC* and HNF-15280, Revision 9, *TSRs for SWOC*. A compliance matrix (CM) was maintained which tracked the implementing documents and procedures. This surveillance reviewed SWOC's implementation of a limited scope of those documents.

The SWOC Facility Representatives (FRs) and a member of the Richland Operations Office (RL) Nuclear Safety Division (NSD) reviewed the implementation of the following items: Limiting Condition of Operation (LCO) 3.3.1 for T Plant Ventilation; Radiological Protection Safety Management Program (SMP); Administrative Controls and Specific Administrative Control (SAC) applicable to the Abnormal Container Management Program (ACMP); and contractor assessments. In addition, drum venting proficiency testing, the annual efficiency

testing of 2706-T High Efficiency Particulate Air (HEPA) filters, and removal of 2706-T Air Cleaning Train (ACT) 1 pre-filters were observed.

The results of the reviews and oversight were documented in Operations Awareness (OA) reports. OA reports with issues were provided to SWOC Management as they were completed. Additional details on the summary of oversight activities performed by the surveillants may be found in the OA reports.

The surveillants found in general, the nuclear safety basis requirements were being adequately implemented at SWOC for the areas reviewed. However, this review documents the need for additional rigor when conducting and closing out safety basis related work packages. Issues found were proactively investigated during this surveillance. The majority of contractor self-assessments reviewed were thorough. The following 5 findings, 11 observations, and one good practice resulted from this review:

- **S-13-OOD-SWOC-003-F01:** The data recorded in work package *2T-12-06340, 2706T 1 Yr Cal I-PDIT-2706-343 & I-PDIC-2706-343 (TSR)*, for I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, was not within the output limits specified.
- **S-13-OOD-SWOC-003-F02:** The aerosol generator model used for testing Air Cleaning Train(ACT)-1 high efficinecy particulate air (HEPA) filters was not listed in Technical Procedure 2T99042, *In-Place Testing of HEPA Filter Systems*.
- **S-13-OOD-SWOC-003-F03:** Work Site Assessment (WSA) Report WFMP-2012-WSA-11690 was not distributed to the appropriate individuals and corrective actions were not entered into the Condition Reporting & Resolution System (CRRS).
- **S-13-OOD-SWOC-003-F04:** Deficiencies identified in two monthly Abnormal Container Management Program (ACMP) surveillances were not tracked and one did not state any resolution.
- **S-13-OOD-SWOC-003-F05:** Two Specific Administrative Control (SAC) Surveillance Requirements (SRs) were not properly documented.
- **S-13-OOD-SWOC-003-O01:** There were three missed review opportunities to discover that data recorded in work package 2T-12-06340, *2706T 1 Yr Cal I-PDIT-2706-343 & I-PDIC-2706-343 (TSR)*, for I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, was not within the output limits specified.
- **S-13-OOD-SWOC-003-O02:** The recorded elapsed time for the 2706-T Bay low differential pressure (DP) alarm time delay was lower than allowed per HNF-15280, Revision 9, *TSRs for SWOC*.
- **S-13-OOD-SWOC-003-O03:** Three separate requirements identified in the SWOC Compliance Matrix (CM) for Limiting Condition for Operation (LCO) 3.3.1, *Ventilation Systems*, did not cite an implementing document other than the TSR document itself, HNF-15280, Revision 9, *TSRs for SWOC*.
- **S-13-OOD-SWOC-003-O04:** One checklist item in work package 2T-13-01390/P, *2706T & TA 1YR ACT 1&2 HEPA Filter Test*, Appendix A, Table 2, was ambiguous.
- **S-13-OOD-SWOC-003-O05:** Evaluating and documenting a process that would eliminate the need to remove the 2706-T ACT-1 pre-filters for the annual efficiency test of the credited HEPA filters would likely improve project efficiency.

- **S-13-OOD-SWOC-003-O06:** Based on the verbiage in LCO 3.3.1; in the Ventilation Systems Bases; and in Procedure WMP-340, Section 1.15, it was not clear whether drum venting operations performed in 2706-T or 2706-TA were intrusive operations or if it fell under LCO 3.3.1 exception for 2706-T whereby the ventilation system was not required to be operating.
- **S-13-OOD-SWOC-003-O07:** The technical basis for the methodology for container headspace sampling to demonstrate it is non-flammable needs to be documented.
- **S-13-OOD-SWOC-003-O08:** Responsible ACMP evaluator for each container was not being maintained/updated.
- **S-13-OOD-SWOC-003-O09:** Opportunities for improvement were identified for the ACMP monthly surveillance work package.
- **S-13-OOD-SWOC-003-O10:** Inspection frequency for ACMP container number 0024644 was changed without concurrence from the evaluator.
- **S-13-OOD-SWOC-003-O11:** No implementing procedure was found that addresses non-sealed sources or nondestructive assay/nondestructive examination.
- **S-13-OOD-SWOC-003-GP01:** The Safety Management Program (SMP) Assessment Tracking was a commendable tool.

Surveillance Results:

Finding: S-13-OOD-SWOC-003-F01

The data recorded in work package 2T-12-06340, *2706T 1 Yr Cal I-PDIT-2706-343 & I-PDIC-2706-343 (TSR)*, for I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, was not within the output limits specified. (OA 48049)

Requirement(s):

Work Package 2T-12-06340, *2706T 1 Yr Cal I-PDIT-2706-343 & I-PDIC-2706-343 (TSR).*

HNF-15280, Revision 9, SR 4.3.1.2 stated in part, "Verify calibration is current for the dP indicator and transmitter...ANNUALLY."

Discussion:

Recording of the "as-found" and "as-left" inches of water gauge for four of the output values for calibration of I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, was not within the datasheet specified output limits. The following output limits and the recorded as-found and as-left values that were out of tolerance are provided below:

Output	- Limit	+ Limit	As-Found	As-Left
0.080	0.075	0.085	7.8	7.8
0.160	0.155	0.165	161	161
0.240	0.235	0.245	240	240

0.320	0.315	0.325	321	321

The date the calibration was performed was August 13, 2012, and the work package was signed off in the "Work Acceptance" on August 14, 2012.

Note: CHPRC reported this in Occurrence Report EM-RL-CPRC-TPLANT-2013-0001 on April 25, 2013, under DOE O 232.2 reporting criteria Group 3, *Nuclear Safety Basis*.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-SWOC-003-F02

The aerosol generator model used for testing Air Cleaning Train (ACT)-1 high efficiency particulate air (HEPA) filters was not listed in Technical Procedure 2T99042, *In-Place Testing of HEPA Filter Systems*. (OA 48026)

Requirement(s):

Technical Procedure 2T99042, *In-Place Testing of HEPA Filter Systems*.

Discussion:

Technical Procedure 2T99042, *In-Place Testing of HEPA Filter Systems*, Step 4.1.5, provided a table with operating ranges for listed aerosol generators. The aerosol generator model used for testing ACT-1 HEPA filters was TDA-6C, which was not listed in Technical Procedure 2T99042. On the work package datasheet, Appendix A, Table 5, Step 16, "20 PSI" was recorded for the aerosol generator pressure used on ACT-1. Since aerosol generator model TDA-6C was not listed in Technical Procedure 2T99042, there was no operating pressure range listed for this type generator in the procedure.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-SWOC-003-F03

Work Site Assessment (WSA) Report WFMP-2012-WSA-11690 was not distributed to the appropriate individuals and corrective actions were not entered into the Condition Reporting and Resolution System (CRRS). (OA 47967)

Requirement(s):

HNF-15280, Revision 8, Section 5.5 SMP, 5.5.1.c stated, "For those SMPs identified above by an asterisk, the resulting data will be provided to the appropriate program manager for tracking and trending, and corrective action management required by PRC-PRO-QA-052, Issues Management, or successor document." Note: Operational Safety contains an "*."

Discussion:

WFMP-2012-WSA-11690, *Critical Lifts and Compliance with DOE/RL-92-36*, dated September 27, 2012, reviewed supplemental key attributes for the SMP on Operational Safety. The Report contained two opportunities for improvement and one good practice. No Condition Report was listed on the report, and "Field 15. Distribution" was blank. A review of the database confirmed a condition report was not issued. Contrary to the requirement above, the data was not provided to the program manager or placed into CRRS.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-SWOC-003-F04

Deficiencies identified in two monthly Abnormal Container Management Program (ACMP) surveillances were not tracked and one did not state any resolution. (OA 48042)

Requirement(s):

Administrative Procedure WMP-200-4.12, *SWOC Abnormal Container Management Program*, Section 3.2 Tracking of ACMP Containers, Step 3.a stated. "TAKE appropriate action to correct any deficiencies."

Work Packages (WP) 2X-12-08419/S and 2X-13-00479/S, *CWC 1M (ACMP) Surveillance (TSR-R)*, Instructions, Step 2, bullet three stated, "Notify Management of any deficiencies and take appropriate action to correct."

Discussion:

Monthly ACMP surveillances were reviewed. Contrary to the requirements above, two instances were found where deficiencies were not being tracked or resolution of issues was not provided as noted below.

- WP 2X-12-08419/S completed in December 2012, Container W4BT11-0048 was marked as "Unsat -no cover yet." The CHPRC Work Record was left blank. Work Acceptance Approval was dated December 28, 2012. No resolution of the issue was documented.
- WP 2X-13-00479/S numerous issues were identified with labels not being on container or coming off; or degradation of covers. An entry was made in the Work Record stating "All unsat entries have been corrected on 2/22/13 by Monthly Surveillance NCO, and updated data sheets to reflect new ACMP labels have been installed." Work Acceptance Approval was dated February 25, 2013. On February 27, 2013, the ACMP Manager made an entry onto the Work Record stating, "Containers 021009W4BT-7 & 0210094BT7-1, have covers that are degrading and should be put on the schedule for new covers. Current condition is satisfactory. Unsatisfactory conditions have been resolved." The FR asked for the list of boxes to be covered to verify they had been added. Neither of these boxes was on the list, and the Field Work Supervisor (FWS) was not aware of the entry made by the ACMP Manager after work had been accepted by the Responsible Manager.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding: S-13-OOD-SWOC-003-F05

Two Specific Administrative Control (SAC) Surveillance Requirements (SRs) were not properly documented. (OA 48042)

Requirement(s):

HNF-15280, Revision 8, SAC 5.6.3.f Vehicle Setback Distances, Acceptance Criterion stated in part: "Verify the engineering analysis has been provided to RL SED and the Facility Representative....Minimum documentation for SR includes...AND b) a listing of engineering analysis that has been provided to RL SED and Facility Representative."

HNF-15280, SAC 5.6.4.c., stated in part: "SR documentation shall include at a minimum...) listing of exemption white papers that have been forwarded to RL, OR d) a definitive statement that no white papers were generated."

Discussion:

The most recent annual SAC Surveillance was reviewed for WRAP (WI-12-08438/S), T Plant (2T-12-08207/S), and CWC/LLBG (2X-12-08192). Two examples were found in the surveillances where the minimum SR documentation was not provided. The examples are provided below.

- Contrary to the requirement above,WRAP WP WI-12-08438/S, page 15 of 21, SAC 5.6.4.c, above Item c was marked "N/A." There was no listing of exemption white papers that had been forwarded to RL or a definitive statement that no white papers were generated. It was noted that Item c. in the table stated "or non-applicability" which is contrary to the SR documentation requirements.
- SWSD WP 2X-12-08192, page 16 of 40, SAC 5.6.3.f contained a requirement to verify engineering analysis had been provided to RL Safey and Enginerring Division (SED) and the Facility Representative. Item 1 stated, "HNF-36426 Revision 3, John Trevino on copy." Contrary to the SR documentation requirements, this did not verify RL SED was provided a copy.

On May 1, the NS&L Director stated SWOC had initiated actions to restore the SAC 5.6.3.f by providing RL NSD (previously SED) staff a copy of the engineering analysis; and restored SAC 5.6.4.c by updating the annual SAC SR documentation.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Observation: S-13-OOD-SWOC-003-O01

There were three missed review opportunities to discover that data recorded in work package 2T-12-06340, *2706T 1 Yr Cal I-PDIT-2706-343 & I-PDIC-2706-343 (TSR)*, for I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, was not within the output limits specified. (OA 48049)

Discussion:

After calibration of I-PDIT-2706-343, *T Bay DP Indicator/Transmitter*, per work package 2T-12-06340, there was a required sign off in the work package by the Duty Operations Supervisor (DOS) to update WMP-200, Section 4.15, *SWOC Surveillance Program*, to document completion of the calibration. This work package signoff was performed via telephone so the field work supervisor (FWS) would not have to bring the work package to the DOS, and therefore the FWS could continue working on the post maintenance test after recording the DOS's signature in the work package per telecom. Since the DOS's signature was for recording completion of the TSR related calibration in WMP-200, Section 4.15, and completion of the calibration, should have meant the data was within tolerance, signing per telecom should have been discouraged since the data could not be personally verified.

The second and third opportunities to discover that data recorded in work package 2T-12-06340 was out of tolerance were when the FWS signed off the work package for "Field Work Complete" and the DOS signed off the work package for "Work Acceptance" the day after the calibration was performed.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O02

The recorded elapsed time for the 2706-T Bay low differential pressure (DP) alarm time delay was much lower than allowed per HNF-15280, *TSRs for SWOC*. (OA 48049)

Discussion:

In WP 2T-12-06340, the recorded elapsed time for the T-Bay low DP alarm time delay was 6.20 seconds. This was recorded on August 14, 2012. HNF-15280, SR 4.3.1.10 stated in part, "Acceptance Criteria: The differential pressure alarm SHALL actuate at a set time less than 5 minutes for the 221-T Canyon, or approximately 4 minutes (256 seconds) for the 2706-T facility, when experiencing a low dP (< 0.08 in. WC) condition."

The recorded data was not an issue with respect to the TSR requirements since up to 256 seconds based on instrument capability and engineering judgment was allowed to prevent nuisance alarms from momentary fluctuations in building DP (ref. HNF-15280, Rev. 9, Surveillance Requirements Bases, Ventilation Systems). Work package 2T-12-06340 stated, "Notify DOS

and System Engineer if time delay is NOT less than 4 minutes." Since the recorded time was less than four minutes, the DOS and the System Engineer did not require notification.

Since the TSR allowance of up to 256 seconds time delay was allowed for operational efficiency, it may be beneficial to provide a minimum elapsed time in the work instructions, or to provide a step to notify the DOS regardless of the elapsed time recorded. If done, this should also apply to 2706-TA Bay work instructions so they are consistent. (Note: 2706-TA Bay low DP alarm elapsed time was recorded as 2 minutes and 4 seconds on August 20, 2012, in work package 2T-12-6341, which appears reasonable).

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O03

Three separate requirements identified in the SWOC Compliance Matrix (CM) for Limiting Condition for Operation (LCO) 3.3.1, *Ventilation Systems*, did not cite an implementing document other than the TSR document itself, HNF-15280, Revision 9, *TSRs for SWOC*. (OA 48061)

Discussion:

Three separate requirements identified in the SWOC CM for LCO 3.3.1, which were not LCO Required Action Statement requirements, did not cite an implementing document other than the TSR document itself, HNF-15280. These were CM Identification Numbers (CMID) 18065aa, 18065bb, and 18065bc. DWF&RS Nuclear Safety and Licensing (NS&L) staff stated alarm response procedures should be listed for these CMIDs. These will be included during the next update to the SWOC CM.

As a follow-up by DWF&RS NS&L, an extent of condition review on the SWOC CM was performed during performance of this surveillance. Based on the review, approximately 15-20 additional CMIDs will have additional implementing document references added to them at the next update to the SWOC CM.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O04

One checklist item in work package 2T-13-01390/P, *2706T & TA 1YR ACT 1&2 HEPA Filter Test*, Appendix A, Table 2, was ambiguous. (OA 48026)

Discussion:

A checklist item in work package 2T-13-01390/P, *2706T & TA 1YR ACT 1&2 HEPA Filter Test*, Appendix A, Table 2, stated, "Air-tight seals for conduits, elect. connections, plumbing, drains, etc. possible resulting in bypass leakage?"

For ACT-1 pre-test inspection, this item was checked "Yes." For ACT-2 pre-test inspection, this item was initially checked "No," then lined out, initialed, dated, and "Yes" was checked instead. Based on the wording of this checklist item, it is unclear to the FR whether the acceptable inspection result should be "Yes" or "No."

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O05

Evaluating and documenting a process that would eliminate the need to remove the 2706-T ACT-1 pre-filters for the annual efficiency test of the credited HEPA filters would likely improve project efficiency. (OA47940)

Discussion:

The test ports for injection of the aerosol to perform the annual efficiency test of the ACT-1 HEPA filters are located upstream of the pre-filters and the pre-filters are not credited in the SWOC safety basis consequently, the pre-filters must be removed each time the annual efficiency test is performed to demonstrate the credited HEPA filters meet the TSR efficiency requirements.

In the past removal of the 12 pre-filters consisted of setting up a Contamination Area, dressing out in one set of personal protective equipment, and using three millwrights, three nuclear chemical operators, two radiological control technicians, one stationary operating engineer, and one FWS. The pre-filters were bagged out and some of the work was cumbersome since removal of the upper pre-filters necessitated the use of two step ladders and a lift table. Industrial and radiological hazards are involved with the work activity.

The FR discussed this with the RL Ventilation System Safety Oversight (SSO) and the T Plant Design Authority (DA). The DA had data that may support Option 1 and has had discussion, on the matter with the RL Ventilation SSO.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O06

Based on the verbiage in LCO 3.3.1, in the Ventilation Systems Bases, and in Procedure WMP-340, Section 1.15, it was not clear whether drum venting operations performed in 2706-T or 2706-TA were intrusive operations or if it fell under LCO 3.3.1 exception for 2706-T whereby the ventilation system was not required to be operating. (OA 47874)

Discussion:

Performance of venting drums in 2706-T and 2706-TA was controlled by procedures DO-100-055 and DO-100-056. Pre-start items contained in both procedures stated, "The confinement ventilation system is in service in accordance with DO-060-014, *Operate the 2706-T ACT-1 Ventilation System*, or DO-060-015, *Operate the 2706-T ACT-2 Ventilation System*." Also, "The DP alarm for the associated confinement ventilation system has been set to "bypass" and the DOS has been informed in compliance with WMP-340, Section 1.15, *Confinement Ventilation Operational Controls*."

Procedure WMP-340, Section 1.15, Paragraph 2 stated in part, "The ACT 1 and ACT 2 systems are only required to meet the LCO 3.3.1 limits when being used for intrusive operations." Step 3.1.2 stated, "When 2706-T and/or 2706-TA is in OPERATIONS MODE, non-intrusive operations are in progress and the ACT 1 and/or ACT 2 confinement ventilation systems are to be in operation, ensure the following:
a. The DP alarm bypass switch for the applicable system(s), (ACT 1 and/or ACT 2), are in the BYPASS position.
b. An entry has been placed in the T Plant Operation Logbook.
c. NO intrusive operations are allowed.
d. At the end of the operating day, the DP bypass switch has been reset to NORMAL and an entry has been placed in the T Plant Operation Logbook."

There was no verbiage in LCO 3.3.1, or in the Ventilation Systems Bases, or in Procedure WMP-340, Section 1.15, that defined intrusive or non-intrusive operations.

The FR discussed this with the T Plant DA, who stated that drum venting was a non-intrusive operation and found documentation in HNF-15280 within the Bases section for TSR SAC 5.6.4, which stated, "Non-intrusive operations with drums include HSGS (septum), removal of vented lids for Pipe Overpack Container HSGS, nondestructive assay (NDA), nondestructive examination (NDE), removal of lids from vented overpack drums, torquing of locking ring bolts, venting of containers in accordance with TSR SAC 5.6.1, replacement of Nucfil filters, drum bungs, etc." This same verbiage was also found in HNF-14741, SWOC MDSA, Table 5.5.1.3-1.

It may be advantageous to provide additional verbiage in LCO 3.3.1 and Procedure WMP-340, Section 1.15 to define intrusive and non-intrusive operations. This could be done by referencing TSR SAC 5.6.4 Bases section that discusses intrusive and non-intrusive operations and/or by providing the definitions directly into the documents.

NS&L planned to address this observation by inserting verbiage in HNF-15280, LCO 3.3.1, Revision 10, to refer to the Bases section of TSR SAC 5.6.4.c where intrusive/non-intrusive operations were defined. This was also discussed with the Technical Authority for Procedure WMP-340-1.15. NS&L personnel also stated clarifying verbiage consistent with the Bases section of TSR SAC 5.6.4.c will be considered for insertion into Procedure WMP-340-1.15.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O07

The technical basis for the methodology for container headspace sampling to demonstrate it is non-flammable needed to be documented. (OA 48131)

Discussion:

HNF-15280, Revision 9, Section 5.6.1a, Vented Container Movement stated, "Newly vented containers cannot be moved, except for a move to a staging area or for resampling, or processed until the flammable gas hazard(s) has been determined to be abated (less than 5 percent hydrogen and less than flammable levels for other flammable gases) per approved SWOC procedure." SWOC procedure DO-100-056, Step 2.1.3 contained criteria for drum headspace monitoring which required being less than 25% of the Lower Explosive Limit (LEL) for any combustible gas before a filter could be installed, and not released from abatement until both photo ionization detectors were less than 1000 ppm.

The Venting Technical Authority provided a paper (informal), which documented the use of the current strategy (less than 25% of the LEL) and Unreviewed Safety Question T-07-069, which reviewed the change against Revision 4 of the SWOC MDSA and TSRs. Documents HNF-25634 and HNF-23134 were also provided. This strategy/methodology for demonstrating how this approach met the SAC 5.6.1a needed to be formally documented. It was noted that this issue was previously identified in WFMP-NS-11-WSA-10331 and closed in CR-2010-3448 without action because it did not require further explanation.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O08

Responsible ACMP evaluator for each container was not being maintained/updated. (OA 48042)

Discussion:

When a container entered the ACMP program, an ACMP evaluator was assigned. The ACMP Evaluator had responsibilities to develop an action plan, track the actions, etc. The person

identified as being the responsible ACMP evaluator for a container was not being maintained as individuals left the organization.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O09

Opportunities for improvement were identified for the ACMP monthly surveillance work package. (OA 48042)

Discussion:

Administrative Procedure WMP-200-4.12, *SWOC ACMP*, Section 3.2, Step 3, required each container to be monitored at least monthly or on a frequency required by the Action Plan. A review of recent ACMP Monthly surveillances conducted under PM/S Data Sheet 2X-22900 showed the work package could be better aligned to WMP-200-4.12. The following examples are provided:

- PM/S 2X-22900, PM/S Activity Information Section, the "Requirements, Driver, Document & Section" were blank but should have listed WMP-200-4.12, Section 3.2, Step 3.
- PM/S 2X-22900, Instructions, Step 1 stated, "Obtain most recent weekly CWC ACMP Container Report from the SWOC ACMP Manager." The weekly report was no longer provided. Section should have listed the SWITS report, and the additional report obtained.
- WMP-200-4.12, Section 3.2 Step 3.c. stated, "NOTIFY the Responsible ACMP Evaluator of each completed action." There was no corresponding step in the PM/S data sheet.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O10

Inspection frequency for ACMP container number 0024644 was changed without concurrence from the evaluator. (OA 48042)

Discussion:

The ACMP action plan for container 0024644 had a stated frequency of weekly inspection for change in condition. A hand written change was made on August 16, 2011 to state, "CWC inspections are performed monthly." This change should have been approved by the ACMP evaluator for the container.

RL Lead Assessor Closure Required: **YES [ ]** **NO [X]**

Observation: S-13-OOD-SWOC-003-O11

No implementing procedure was found that addresses non-sealed sources or nondestructive assay/nondestructive examination. (OA 48042)

Discussion:

TSR 5.7.8 ACMP (AC), Location Applicability, stated it was applicable where waste containers (or non-sealed sources) were present. Implementing procedures listed in the SWOC MDSA CM were reviewed but were not found to address non-sealed sources. Administrative procedure WMP-200-4.12, ACMP, Step 1.3 Applicability stated, "The requirements of this procedure are applicable in all modes where waste containers are managed in SWOC facilities, expect in the reactor compartment trench (Trench 94)." This could be made consistent with TSR 5.7.8 ACMP (AC), which stated "applicable where waste containers (or non-sealed sources)..."

Similarly, TSR 5.7.9 Waste Acceptance Program implementing procedures were reviewed but none were found to address non destructive assay/non-destructive examination.

RL Lead Assessor Closure Required: YES [ ] NO [X]

Good Practice: S-13-OOD-SWOC-003-GP01

The Safety Management Program (SMP) Assessment Tracking was a commendable tool. (OA 48028)

Discussion:

The development and maintenance of the Integrated Evaluation Program database SMP Assessment Tracking Tool which documented the assessment activities undertaken to verify compliance with the Key Attributes in the CHPRC SMPs was a commendable tool. It provided a valuable asset for projects, an effective method to facilitate oversight reviews, and assurance of comprehensive implementing documentation and assessments for meeting established requirements.

Contractor Self-Assessment:

Recent contractor assessments in the area of nuclear safety were reviewed. Information consisted of WSA and Management Assessments (MA) listed on the Integrated Evaluation Plan (IEP), as well as Management Observation Program (MOPs) and Senior Supervisory Oversight (SSOs). The timeframe reviewed was March 2012 to March 2013. The following documents were within the scope of this surveillance:

- DWF&RS-2013-WSA-12256, *Waste & Fuels Management Technical Surveillance Requirement (TSR) Data Validation Extent of Condition Assessment*, dated October 10, 2012.

No issues at SWOC were identified. Report was well-written and provided a good detail on what aspects were reviewed at each facility.

- DWF&RS-2013-WSA-12226, *Quarterly Criticality Safety Assessment*, dated December 12, 2012 reviewed LLBG/CWC. CR-2012-3352 was written to clarify a limit associated with mixed waste trench and CSER-03-014.
- DWF&RS-2013-WSA-12267, *Evaluate the Unreviewed Safety Question Process at SWOC Facilities*, dated March 4, 2013. This review identified four findings and five opportunities for improvement. This review was notable in terms of its depth, amount of data reviewed, binning issues into programmatic versus implementation in the field, clarity of assessment criteria, and quality of the report.
- DWF&RS-2013-MA-12904, *SWOC MDSA/TSR Revision 9 Implementation*, dated February 27, 2013. This review identified 52 issues, of which most were resolved during the review. One finding and six Opportunities for Improvement were entered into the Condition Reporting and Resolution System.
- DWF&FS-2013-WSA-12228, *Quarterly Criticality Safety Assessment*, dated March 14, 2013, for T Plant and Central Waste Complex. No issues identified.
- SHS&Q-2012-MA-12029, *Criticality Safety Evaluation Report Configuration Management Processes*, dated August 1, 2012.
- SHS&Q-2012-MA-10758, *Criticality Safety Management Assessment of WFMP Facilities*, dated May 2, 2012, in part evaluated Safety Management Program Key Attributes for Chapter 6, Criticality Safety, from HNF-11724.
- SHS&Q-2012-NSPEB-11752, *Nuclear Safety Performance Evaluation Board Review of WFMP*, dated May 21, 2012. This review documented one finding and one observation in the area of nuclear safety. The finding was related to the project not reviewing a potential issue found during a fire protection assessment regarding whether modification to the water system at T Plant would impact the fire suppression system which is safety significant. The Project reviewed and found no impact. The observation was made on the complexity of the compliance matrix for the SWOC MDSA, as well as some entries citing the same section of the TSRs for both the implementing document and the requirement. The issue was tracked and closed by CR-2012-1541. The latter issue of citing the TSR for both the requirement and the implementing document was found during this surveillance, indicating CR-2012-1541 did not resolve the issue. FRs contacted the RL SWOC Safety Basis point of contact, who indicated an implementing reference should be able to be provided upon request. Observation 003 documented this issue.
- SHS&Q-2012-MA-11916, *DSA Configuration Control*, dated June 5, 2012. This review was not specific to SWOC but was requested due to on-going issues.
- WFMP-2012-WSA-11690, *Critical Lifts & Compliance with DOE/RL-92-36*, dated September 27, 2012, reviewed Chapter 11 supplemental key attributes in the SWOC MDSA related to hoisting and rigging. Two opportunities for improvement, and a good work practice were identified. No Condition Report was identified or found upon searching the CRRS. Additionally, the WSA distribution section was blank. Finding 003 documented this issue.
- WFMP-2012-WSA-11789, *SMP Assessment of Radioactive Waste Storage*, dated September 25, 2012. This review fulfills Key Attribute 9-1A from HNF-11724 which stated, "Radioactive waste is managed by federal/state regulations and as required by CRD O 435.1,

Radioactive Waste Management. The Line of inquiry (LOI) was to determine whether facilities were managing radioactive waste by federal/state regulations and as required by CRD 0 435.1 by comparing a cross section sample of CRD O 435.1 requirements. This review only looked at clocks for storing low-level waste and whether those clocks were tracked. Given the SWOC facilities purpose is to manage waste, this review does not constitute a cross section of CRD O 435.1 requirements or federal/state requirements to demonstrate the criteria in C9-1A-1-1," CHPRC facilities managing radioactive waste were managing this waste by federal/state regulations and as required by CRD O 435.1. One additional review is planned for this LOI.

At the time of this surveillance, six additional nuclear safety related reviews were listed on the IEP to be completed in FY 2013. This included a review to verify SWOC TSRs & SAC Implementation, as well as a review to determine what information a shift office reviews prior to returning systems, structures, and components back to service following maintenance.
In the past year, six MOPs/SSOs have been completed that focused on nuclear safety. Reviews looked at aspects of source strength control, TSR implementation, drum venting, transportation, receipt of a waste shipment, and entry into a Limiting Condition of Operation.
Overall, the contractor's self-assessments in the area of nuclear safety were considered adequate.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed:

D. M. Boone, CHPRC
A. S. Mortensen, CHPRC
D. G. Sauceda, ETMEC
K. R. Shupe, CHPRC
C. J. Simiele, CHPRC
J. R. Weidert, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-OOD-0049

AUG 22 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – CONTINUING HIGH NUMBER OF HAZARDOUS ENERGY CONTROL ISSUES AT CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC)

The Richland Operations Office (RL) has reviewed and evaluated past hazardous energy control issues identified in the Occurrence Reporting and Processing System (ORPS). In addition, RL has reviewed and evaluated the CHPRC ORPS Quarterly Performance Analysis Report for third quarter Fiscal Year 2013. Over the last approximately two-year period CHPRC has reported 66 events in the ORPS system. Of the 66 events it appears that approximately 20 (30%) were related to hazardous energy control; Attachment 1 contains a list of subject ORPS reports.

RL recognizes that CHPRC has been proactive in reporting hazardous energy events; thereby, providing the information necessary to see such performance issues and is commended. However, the number of events appears high when compared to all events reported. It should also be noted that several CHPRC events have similarities to issues identified in EM Headquarters memorandum from Tracy Mustin titled, "Response to Recent Electrical Safety Events," provided to CHPRC under a separate letter.

RL understands that the events identified were not of equal significance and do not all have the exact same causes. RL is more concerned with the general number of hazardous energy control related events and what CHPRC is doing from a broader perspective to prevent recurrence. In addition, the identified events appear to constitute a recurring event (i.e., similar in nature related to hazardous energy control events, the trend does not appear to be significantly improving, could be symptomatic of a larger trend). CHPRC, after discussions with RL, has now declared a recurring event report. RL understands that CHPRC is performing a collective significance evaluation (CR-2013-1984) for the subject events, and requests CHPRC to provide when completed along with resulting actions.

AUG 2 2 2013

If you have any questions, please contact me, or your staff may contact Jim E. Spets, Acting Director, Operations Oversight Division, on (509) 373-0140.

Sincerely,

Clinton M. Jacobsen
Contracting Officer

OOD:JJW

Attachment

cc w/attach:
B. B. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Hazardous Energy Control Events 2012 and 2013 (current as of letter)

EM-RL--CPRC-CENTPLAT-2012-0001, *Energized Circuit Found During Safe Condition Check*

EM-RL--CPRC-CSB-2013-0001, *Missing Information in Component Position Field on Controlling Organization Lockout Tag*

EM-RL--CPRC-GENLAREAS-2012-0004, *Repetitive Issues - Access / Identification of Unprotected / Exposed Electrical Terminals*

EM-RL--CPRC-GPP-2012-0004, *Work Performed Without Authorized Worker Lock Being Placed*

EM-RL--CPRC-GPP-2013-0004, *Un-terminated 480 Volt Type W Cable Found Energized in 100 KW Area*

EM-RL--CPRC-GPP-2013-0005, *Sampler experiences electrical shock during well sampling at well 199-H4-84 in the 100H Area*

EM-RL--CPRC-GPP-2012-0003, *Fork Lift Moves Portable Flag Pole and Contacts Zero Voltage Overhead Fiber Optic Line Located Beneath 13.8 KV Electrical Lines*

EM-RL--CPRC-PFP-2012-0007, *90V DC Identified During Safe-to-Work Check on Battery Charger BC-1 in Room 266 of Building 234-5Z*

EM-RL--CPRC-PFP-2012-0010, *Some Work Performed on Exhaust Fan EF-6 without AWLs Hung Over Established Controlling Lockout/Tagout*

EM-RL--CPRC-PFP-2013-0003, *30V/80V AC Identified in Maintenance Work Boundary During Lockout/Tagout Safe Condition Check*

EM-RL--CPRC-SNF-2012-0003, *Lockout/Tagout Technical Error - Walk Down Prior to Work Release Discovered Safe Condition Check Documented But Not Performed*

EM-RL--CPRC-SNF-2012-0008, *Annunciator Panel Door Opened During Work Activity Evaluation Without Hazardous Energy Control In Place*

EM-RL--CPRC-SNF-2012-0009, *Valve Discovered Locked Out in Wrong Position During Independent Verification of Lock and Tag*

EM-RL--CPRC-SNF-2012-0012, *Voltage Discovered During Safe Condition Check at Cold Vacuum Drying Facility*

EM-RL--CPRC-SNF-2013-0002, *Improper Selection of an Eight Criteria Checklist Versus Tagout Authorization Form During Preparation for Lockout/Tagout at K West Basin*

EM-RL--CPRC-SNF-2013-0004, *Error on Tagout Authorization Form (TAF) In Safe Condition Check Instruction at Cold Vacuum Drying Facility*

EM-RL--CPRC-SOLIDWASTE-2013-0002, *Work Performed with Inadequate Hazard Review*

EM-RL--CPRC-TPLANT-2012-0001, *Questionable Guarding of Electrical Terminals*

EM-RL--CPRC-WESF-2013-0001, *Lockout/Tagout Device Fell Off Circuit Breaker Handle*

EM-RL--CPRC-WRAP-2012-0001, *Mild Electrical Shock while Conducting Maintenance*

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-ESQ-0014

MAY 06 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF SURVEILLANCE REPORT ON RADIOLOGICAL CONTROLS (S-13-ESQ-PRC-001)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits a copy of the referenced surveillance report, S-13-ESQ-PRC-001, for the 200 West Pump & Treat Facility. This surveillance identified no findings, nine observations, and six good practices, which are documented in the attached report. No formal response to this letter is required. However, please note that the Richland Operations Office closure verification on one of the observations is required. If you have any questions, please contact me, or your staff may contact Clifford E. Clark, Acting Director, Environmental, Safety, and Quality Division, on (509) 376-9333.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

ESQ:FMR

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Division: Environmental, Safety, and Quality Division (ESQ)

Surveillant: Frank M. Roddy

Surveillance Number: S-13-ESQ-PRC-001

Date Completed: March 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 200 West (200 W) Pump & Treat Facility

Title: Startup of 200 W Pump & Treat Facility – Radiological Controls

Guide: 10 CFR 835, and DOE/RL-2002-12, Hanford Radiological Health and Safety Document

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Surveillance Scope:

The objective of this surveillance was to ensure that the contractor is adequately performing radiological controls for the startup of the 200 W Pump & Treat Facility. In addition, the surveillance evaluated the contractor's generation and maintenance of required records and documents per applicable requirements.

Surveillance Summary:

Through a combination of procedure reviews, work activity observation, instrument inventory inspection, personnel interviews and record reviews, the surveillant evaluated compliance with the technical and regulatory requirements, contained in the lines of inquiry.

The surveillance validated that the program for radiological controls was adequate and met requirements. However, the surveillant identified the following observations, which are forward-looking, appropriate, and precautionary measures anticipating possible future contamination. In addition, the surveillant noted good practices.

Observations:

- **S-13-ESQ-PRC-001-O01:** The contractor has established a reasonable, graded approach to the radiological controls program for the 200 W Pump & Treat Facility.

- **S-13-ESQ-PRC-001-O02:** The contractor has established a field gamma spectrographic approach to identify natural radioactive isotopes in the filters/resin/bio-sludge waste streams to distinguish the radioactivity from Hanford generated isotopes.

- **S-13-ESQ-PRC-001-O03:** The contractor has installed state-of-the-art radioactive contamination detection equipment (hand and foot monitors and personnel contamination monitor (PCM)) prior to the system becoming significantly contaminated.

- **S-13-ESQ-PRC-001-O04:** The contractor has established a precautionary posting for radiological controls prior to the building becoming contaminated.

- **S-13-ESQ-PRC-001-O05:** The contractor has established a spill containment process into the design layout of the facility prior to the significant contamination of the facility.

- **S-13-ESQ-PRC-001-O06:** The contractor has established and furnished a change-room facility prior to the contamination of the facility as a precautionary measure based on prior experience at other Pump & Treat facilities.

- **S-13-ESQ-PRC-001-O07:** The contractor has implemented an all-digital electronic record system for records storage, backup record generation, and global searchability.

- **S-13-ESQ-PRC-001-O08:** Radiation Work Permit (RWP)-GW-037, Revision 1 and RWP-GW-038 should be revised to include Special Instruction #4 Face Shield on the list of Radiological Protection Requirements, and Protective Equipment.

- **S-13-ESQ-PRC-001-O09:** The project has not done a dry-run test of their process and procedures for resin change out.

The surveillant observed work evolutions including:

- Daily instrument source checks, including light leak testing. The contractor is using the newer instrumentation which has the overload circuitry alarm.
- Plan of the day meeting.
- Tour of the radiological process building and the biological process building.

Note: Included in OA Report 47360

In addition to the direct observations, the surveillant also reviewed radiological related documents including:

- Radiological Design Review, 200 W Pump &Treat Facility, PRC-RP-46742, Release 0.
- Radiation Protection Technical Evaluation, Radiological Characterization and Program Implementation for the 200 W Pump & Treat Facility, TE-SGRP-12-001-1.
- Gamma Spectrum report from the 100 area water filter using the SAM-940 instrument, March 7, 2013.
- Work Release Priorities, March 13, 2013.
- Radiation Work Permit, RWP-GW-037, Revision 01, all work within posted Contamination Area (CA).
- Radiation Work Permit, RWP-GW-038, Tc-99 ion exchanger resin discharge and waste packaging.
- Procedure, PRC-PRO-RP-380, *Internal Dosimetry Program*, Revision 0, Change 9.
- Procedure, PRC-PRO-RP-40024, *Area Dosimetry Program*, Revision 1, Change 2.
- Procedure, PRC-PRO-RP-40029, *REQUIRED Radiological surveillances*, Revision 0, Change 0.
- Procedure, PRC-PRO-RP-40031, *Workplace Air Monitoring Program*, Revision 0, Change 5.
- Procedure, PRC-PRO-RP-40063, *Radiation Protection Instrument Program*, Revision 3, Change 6.
- Computerized data spreadsheets of surveys performed.

Finally the surveillant conducted personnel interviews with the following Soil and Groundwater personnel:

- Radiological Engineer for Soil and Groundwater.
- A senior Radiological Control (Radcon) manager in the Soil and Groundwater group.
- A senior Radcon supervisor in the Soil and Groundwater group.

Note: Included in OA Report: 47360

Good Practices:

- **S-13-ESQ-PRC-001-GP01:** The contractor has established a precautionary approach assuming the potential for contamination based on previous Pump & Treat facilities.

- **S-13-ESQ-PRC-001-GP02:** The precautionary approach was followed in a graded level of application based on the anticipated quantities of Tc-99 from the plume that this particular Pump & Treat facility would be dealing with.

- **S-13-ESQ-PRC-001-GP03:** Special field gamma spectrographic capability was added to allow identification of natural radioactivity and specifically distinguish it from the man-made isotopes so as to facilitate normal uninterrupted operations.

- **S-13-ESQ-PRC-001-GP04:** The new designs for contamination detection equipment was installed for the personnel contamination monitor and the hand and foot monitors, rather than older obsolete equipment from closed facilities.

- **S-13-ESQ-PRC-001-GP05:** The spill containment was well planned and incorporated into the design. The recycling of the sluice water was likewise well thought out.

- **S-13-ESQ-PRC-001-GP06:** The data is being collected in electronic digital format promoting the ability to perform global searches for specific data, minimizing storage volume and providing easy retention and retrieval.

Surveillance Results:

Observations:

S-13-ESQ-PRC-001-O01:

The contractor has established a reasonable, graded approach to the Radcon program for the 200 W Pump & Treat Facility.

Discussion:

The graded approach was documented in: Radiation Protection Technical Evaluation, Radiological Characterization and Program Implementation for the 200 W Pump & Treat Facility, TE-SGRP-12-001-1 and Radiological Design Review, 200 W Pump & Treat Facility, PRC-RP-46742, Release 0. These were implemented in the design, and in the operations of the facility by RWP-GW-037, Revision 1, all work within posted CAs and RWP-GW-038, Tc-99 ion exchanger (IX) resin discharge and waste packaging.

The design and construction of the building was done to prepare for possible contamination events, in case they might occur. The floors were all sloped toward drains which returned the water to the beginning of the process. The pre-filters were all segregated such that they could be handled, if radioactive, and shielded. The IXs were likewise located. The potential spill area of the resins during transfer was designated as an Radiological Buffer Area (RBA) and would be up-posted during resin changeout as a temporary CA. This area would also have air sampling during resin changeout. A change

room was erected immediately adjacent to the RBA and is stocked with the appropriate Personal Protective Equipment (PPE). Two hand and foot monitors are installed at appropriate locations at the RBA. RWPs have been prepared for normal surveillance and resin changeout and waste packaging. Posting of the building and the resin and prefilter areas was performed in anticipation of possible contamination. An area Thermoluminescent Dosimeter for monitoring the IXs is mounted on the wall of the building adjacent to the IXs.

There are several options for transferring the spent resin to Environmental Restoration Disposal Facility (ERDF). One option being considered is sluicing the resin into geo-tubes (burlap bags). Another option includes using 4x4x8 boxes or an ERDF can. The containers will likely be prepositioned inside ERDF containers and the water will be recycled back to the beginning of the process while the resin will be trapped inside the container. Drains surround the loading area to catch any potential leakage. No resin has been changed out yet.

All ERDF cans are posted as Radioactive Materials Area (RMA), empty, in-process as well as the full ones.

There are granulated activated charcoal filters on all vents including those at the field transfer stations.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O02:

The contractor has established a field gamma spectrographic approach to identify natural radioactive isotopes in the filters/resin/bio-sludge waste streams to distinguish the radioactivity from Hanford generated isotopes.

Discussion:

A SAM-940 field gamma spectrum analyzer has been used to determine the isotopic composition of the radioactivity buildup on the filters at other Pump & Treat facilities under CHPRC. The radioactivity has been found to be Technologically Enhanced, Naturally Occurring Radioactive Material [TENORM] (Ra-226, Rn-222, and K-40). These filters will be sent to ERDF but the spectrum analysis shows that man-made radioisotopes are not present so concerns for system leaks are ameliorated and the waste acceptance criteria at ERDF are proven to be met. The same would be true for resins.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O03:

The contractor has installed state-of-the-art radioactive contamination detection equipment (hand and foot monitors and PCM) prior to the system becoming significantly contaminated.
Discussion:

Two Canberra Sirius 5AB hand and foot monitors have been installed at the exit points for the RBA for the IXs. These monitors are gas-flow proportional counters with 18 percent efficiency for Tc-99 (the principal isotope expected in the 200 W Pump & Treat Facility.) The change room has a Canberra Argos 5AB PCM which has a similar efficiency for Tc-99. There is some Tc-99 buildup on the resin, which has a decontamination factor of 1000.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O04:

The contractor has established a precautionary posting for radiological controls prior to the building becoming contaminated.

Discussion:

The Radiation (RAD) Building is posted with the precautionary signs, "Internally Contaminated System Located Within." The sign has the standard color and the standard radiation symbol.

The ion exchangers are posted similarly.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O05:

The contractor has established a spill containment process into the design layout of the facility prior to the significant contamination of the facility.

Discussion:

The floors are all sloped to the drains which are pumped back to the start of the process.

The resin transfer process will be to an ERDF can surrounded by floor drains. One option has the resin pumped into a geo-tube which acts as a sieve to retain the resins and let the water drain out. The water is recycled to the beginning of the process.

The systems are controlled from an electronic control room where valves and pumps can be operated electronically to contain any spill.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O06:

The contractor has established and furnished a change-room facility prior to the contamination of the facility as a precautionary measure based on prior experience at other Pump & Treat facilities.

Discussion:

The change-room is fully functional. It is stocked with the necessary PPE for resin or filter changeout. It has a Canberra Argos 5AB PCM. This equipment is in place as a precautionary measure prior to the resin becoming significantly radioactive or the need for resin changeout. The experience from other Pump & Treat facilities was factored into the design of the 200 W Pump & Treat Facility.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O07:

The contractor has implemented an all digital electronic record system for records storage, backup record generation, and global searchability.

Discussion:

The use of an all-digital records system allows all authorized personnel to pull up records and perform global searches as desired. It optimizes recordkeeping volumes and retrievability. The records are being stored on the Integrated Document Management System, a file storage database. There is a computerized tracking and trending program to ensure that the proper surveillances have been done. The weekly surveys with pictures are in the database. Pictures of the specific survey point locations are also in the database to ensure that these points can readily be found.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O08:

RWP-GW-037, Revision 1 and RWP-GW-038 should be revised to include SI #4 Face Shield on the list of Radiological Protection Requirements, Protective Equipment.

Discussion:

It was noted that face shields are required under certain conditions as shown in the list under Special Instruction #4. However, face shields with a reference to Special Instruction #4 were not listed in the table of protective equipment. This wording should be added to the table to be consistent.

RL Lead Assessor Closure Required: **YES [ ]** **NO [x]**

S-13-ESQ-PRC-001-O09:

The project has not done a dry-run test of their process and procedures for resin changeout.

Discussion:

It would be best practice to perform this exercise/assessment to ensure that everything has been thought through carefully before the start of transferring contaminated resin.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

Contractor Self-Assessment:

A contractor self-assessment/dry-run test of resin transfer has not yet been done but should be done to check out the procedures and processes prior to the transfer of actual contaminated resin. It is suggested that DOE observe the dry-run.

Contractor Self-Assessment Adequate: **YES [ ]** **NO [x]**

Management Debriefed:

Todd Southerland, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-ESQ-0030

JUN 17 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – ANNUAL SUBMITTAL OF PRC-MP-QA-599, QUALITY ASSURANCE PROGRAM (QAP), REVISION 2, CHANGE 1, FOR TITLE 10, CODE OF FEDERAL REGULATIONS, PART 830, SUBPART A, "QUALITY ASSURANCE REQUIREMENTS" FOR APPROVAL

This letter is in response to the May 16, 2013, (CHPRC-1301619) letter requesting the Richland Operations Office (RL) review and approval of the annual update of PRC-MP-QA-599, Revision 2, Change 1, submitted in accordance with Section 830.121(b)(3) of Title 10, Code of Federal Regulations, Part 830, Subpart A, and the Contractor Requirements Document of DOE Order 414.1D, Attachment 1, Paragraph 2.c. RL review comments were discussed with your staff and resolution addressed in the attached review comments record. RL agrees with the proposed resolution of RL comments. The submitted QAP is therefore approved.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

AMSE:KMV

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

REVIEW COMMENT RECORD (RCR)	1. Date May 31, 2013	2. Review No. N/A
	3. Project No. N/A	4. Page 1 of 3

PRC-MP-QA-599, REVISION 2, CHANGE 1, QUALITY ASSURANCE PROGRAM, DATED MAY 14, 2013.	6. Program/Project/ Building Number Central Plateau Project	7. Reviewer Krishna Vadlamani	8. Organization/Group DOE RL-AMSE Quality Assurance Team	9. Location/Phone FOB Room 505/ (509) 376-1381

17. Comment Submittal Approval:

Organization Manager (Optional) _____ Date _____

10. Agreement with indicated comment disposition(s)

Reviewer/Point of Contact _____ Author/Originator _____

11. CLOSED

Reviewer/Point of Contact _____ Date _____ Author/Originator _____

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Section 1.2.6, QAP Review: The effectiveness of the QAP and its implementation is assessed on a triennial basis in accordance with HNF-22632 section 3.0. Suggest inclusion of **HNF-22632** in Appendix B as a quality assurance program implementation document	N	Agreed, will change at next revision of PRC-MP-QA-599.	Accepted KMV 6/4/13
2	Though Section 8.3.7 Calibration and Control of Measuring and Test Equipment, paragraph 2, 2nd sentence, specifies that the recognized standards shall meet the minimum accuracy for calibration of M&TE. However, this section fails to include the 4:1 accuracy limit specified in ASME NQA-1, BR 12, paragraph 302, from a quality assurance requirements flow down stand	H	Agreed, will add the following paragraph from NQA-1, Requirement 12, Section 302 to PRC-MP-QA-599 Section 8.3.7 at next revision: *Reference standards shall have a minimum accuracy four times greater than that of the measuring and test equipment being calibrated to ensure that the reference standards contribute no more than one-fourth of the allowable*	Accepted KMV 6/4/13

REVIEW COMMENT RECORD (RCR)	1. Date May 31, 2013	2. Review No. N/A
	3. Project No. N/A	4. Page 2 of 3

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
	point. Please include the numerical accuracy limit (4:1 ratio) specified in the above section. Note: RL recognizes that PRC Level 2 implementation procedure PRC-PRO-MN-490 includes the above specified accuracy limit.		*calibration tolerance. Where this 4:1 ratio cannot be maintained, the basis for selection of the standard in question shall be technically justified.*	
3	Section 11.2, Basic Requirements for Suspect/Counterfeit Items (S/CI) control process does not cite "S/CI oversight" specified in DOE O 414.1D, Attachment 3, paragraph 2.a, which states, " Include a S/CI oversight and prevention process commensurate with the facility/activity hazards and mission impact." Suggest addition of oversight requirement statement in Section 11.2 referenced above, and delete the word "self" in Section 11.4.3, bullet 2.	H	Agreed, will change at next revision of PRC-MP-QA-599.	ACCEPTED KMV 6/4/13
4	PRC Control of Suspect/Counterfeit and Defective Items procedure, PRC-PRO-QA-301, process step 21, states: Within three working days of confirmation, REPORT all S/CI to the DOE-RL Contracting Officer via electronic mail to the RL, Safety and Environment Division representative, who will then notify the OIG. Fix the sentence. Note that the RL Safety and Environment Division must be replaced with "Office of the Assistant Manager for Safety and Environment (AMSE) - Lead Quality Assurance Engineer" for notification of S/CI discoveries to RL.	N	Agreed, will change at next revision of PRC-MP-QA-599.	ACCEPTED KMV 6/4/13

REVIEW COMMENT RECORD (RCR)	1. Date May 31, 2013	2. Review No. N/A
	3. Project No. N/A	4. Page 3 of 3

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.) -	16. Status
	H= Hold; N= Not a Hold			

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-ESQ-0032

JUL 03 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – APPROVAL OF CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) WORKER SAFETY AND HEALTH PROGRAM (WSHP)

This is in response to the May 7, 2013, letter (CHPRC-1301675) requesting approval of the CHPRC WSHP submitted pursuant to 10 Code of Federal Regulation (CFR) 851. The Richland Operations Office (RL) approves this update to the WSHP contingent upon a subsequent update to address requirements stipulated in 10 CFR 851.11(d), "Labor Organizations." CHPRC shall submit an update addressing all requirements of 10 CFR 851 within 90 days of the date of this letter. If you have any questions, please contact me, or your staff may contact Ed MacAlister, Director, Environment, Safety, and Quality Division, on (509) 373-0462.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

ESQ:TKM

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-ESQ-0035

JUL 1 1 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 - OPERATING EXPERIENCE LEVEL 1 DOCUMENT, IMPROVING U.S. DEPARTMENT OF ENERGY CAPABILITIES FOR MITIGATING BEYOND DESIGN BASIS EVENTS (OE-1: 2013-01)

Pursuant to the Contractor Requirements Document of DOE Order 210.2A DOE Corporate Operating Experience Program, the attached Operating Experience Level 1 document is provided for your review and action, as appropriate. The Mission Support Alliance, LLC (MSA) has the lead for developing the contractor response to Action 1 and will coordinate input from other prime contractors. RL-SES will work with MSA to develop planning assumptions; the plan and schedule for response to Action 1 shall be submitted for RL approval by December 31, 2013. The completed response for Action 1 is due by September 30, 2014. The plans and schedule for response to Action 2, as applicable, are due to RL by September 30, 2013. Actions associated with responses to Action 1 and Action 2 shall be entered into the respective company's corrective action tracking system.

If you have any questions on Action 1, please contact Gary Loiacono, Security and Emergency Services Division, at (509) 376-0935; or for technical questions, please contact Steve W. Sanders, at (509) 376-7557; for Action 2, contact Pete J. Garcia, Nuclear Safety Division, at (509) 372-1909.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

ESQ:DCL

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Publicly available at:
http://energy.gov/sites/prod/files/2013/12/f5/April-2103_Operating_Experience_Level_1-BDBE_0.pdf

Office of Health, Safety and Security

Operating Experience Level 1

OE-1: 2013-01

April 2013

Improving Department of Energy Capabilities for Mitigating Beyond Design Basis Events

PURPOSE: The purpose of this Operating Experience (OE) document is to (1) provide results from U.S. Department of Energy (DOE), including the National Nuclear Security Administration initiatives related to beyond design basis events (BDBEs), and (2) provide direction for enhancing capabilities for mitigating BDBEs at DOE sites.

BACKGROUND: After the March 2011 Fukushima Daiichi nuclear plant accident in Japan DOE embarked upon several initiatives to investigate the safety posture of its nuclear facilities relative to BDBEs. These initiatives included issuing Safety Bulletin 2011-01, *Events Beyond Design Safety Basis Analysis*, conducting pilots to refine possible process improvements, and conducting two DOE nuclear safety workshops. DOE issued two reports documenting the results of these initiatives: *Review of Requirements and Capabilities for Analyzing and Responding to BDBEs*, August 2011, and *BDBE Pilot Evaluations: Results and Recommendations for Improvements to Enhance Nuclear Safety at DOE Nuclear Facilities*, January 2013.*

RESULTS OF BDBE CAPABILITIES REVIEWS: DOE instituted requirements in the early 1990s for evaluating BDBEs as part of the development of nuclear facility safety analyses. These requirements include periodically updating natural phenomena hazards (NPH) assessments, and developing and implementing emergency management plans for severe accidents, including BDBEs.

Facility reviews performed in accordance with DOE's Safety Bulletin 2011-01 guidance as well as pilot studies conducted at four DOE nuclear facilities concluded that DOE had put into place appropriate emergency management, safety analysis, and safety control requirements to mitigate severe accidents including those caused by BDBEs. Additionally, insights gained from the pilot studies on the potential effects of BDBEs across multiple facilities at a site helped to improve planning for an integrated site response to such events. However, further analysis of DOE's most hazardous nuclear facilities would be beneficial. Details on the results of the prior pilot studies can be found in the 2013 report on the BDBE pilot evaluations.

REQUIRED ACTIONS: In order to provide greater assurance that DOE has appropriate provisions in place to mitigate BDBEs and to enhance safety, the following actions shall be taken:

Action 1: All Program Offices, in coordination with responsible contractors, shall evaluate their site emergency management programs' response to severe accidents/events (including BDBEs) that could have a site-wide impact, using the guidance in Attachment 1, and make appropriate enhancements. This review and appropriate enhancements, if not already accomplished, shall be completed by the end of Calendar Year (CY) 2014.

Action 2: Program Offices shall direct contractors responsible for hazard category 1 and 2 nuclear facilities that have the potential to exceed DOE's 25 rem public dose evaluation guideline based on an unmitigated accident analysis, to conduct an evaluation using the guidance in Attachment 2 in conjunction with the 2015 annual update of their Documented Safety Analyses (DSAs). This action is not applicable to Transportation DSAs.

Program offices shall provide a consolidated report on the all actions taken to their respective Under Secretary no later than December 31, 2015.

INFORMATION CONTACT: For further information on this OE document, contact James O'Brien, Director, Office of Nuclear Safety at (301) 903-1408, james.o'brien@hq.doe.gov or James Fairobent, Director, Office of Emergency Management at (202) 586-8759, jim.fairobent@nnsa.doe.gov.

Daniel B. Poneman, Acting Secretary of Energy

* These reports can be found at www.hss.energy.gov/nuclearsafety

Attachment 1
Emergency Management Guidance and Lessons Learned

The purpose of this guidance is to describe a process for incorporating Fukushima lessons learned into Department of Energy (DOE) emergency management programs. The guidance applies to all DOE Program Offices, including the National Nuclear Security Administration (NNSA), and which are required by DOE Order 151.1C, *Comprehensive Emergency Management System*, to have an Operational Emergency Base Program.

Insight gained from the BDBE Pilot Evaluation and the Targeted Emergency Management Reviews show that DOE's emergency management requirements already dictate consideration of all potential severe accidents, including BDBEs. The pilot evaluations and reviews did not identify any significant issues and confirmed that the existing hazards survey/emergency planning hazards assessment process is sound. All sites had base level of preparedness for severe natural phenomena events and most DOE/NNSA process activities reviewed do not require significant emergency actions to place facilities in a safe shutdown condition. Consideration of the lessons learned provided below could serve to enhance the sites emergency management base program.

Analyze emergency planning needed to respond to severe events

DOE Order 151.1C requires each DOE/NNSA facility/site or activity to have an Operational Emergency Base Program that is comprehensive and addresses all hazards and that provides the framework for response to serious events or conditions that involve the health and safety of workers and the public, the environment, and safeguards and security. This forms the basis of an emergency management program that provides capabilities for an all-emergency response. This approach should now be reviewed, commensurate with the hazards present, to ensure an appropriate emergency response to severe events is available at each DOE/NNSA facility/site, or activity. The hazards survey shall be updated, in accordance with the existing maintenance requirement, to include additional multi-facility, site wide events identified through lessons learned from the Fukushima nuclear accident, and the Operational Emergency Base Program should be adjusted accordingly. The base program should also consider preparations to initiate "self-help" emergency response activities for severe events that effectively isolate a site from outside response assistance and infrastructure support. These preparations should not represent extensive planning, but should be sufficient to activate/ initiate a self-help response, e.g. locations of medical and life sustaining supplies on site.

DOE Order 151.1C requires the Operational Emergency Hazardous Material Program be technically based on an emergency planning hazards assessment (EPHA). According to DOE Guide 151.1-2, *Technical Planning Basis*, the EPHA analyses address a spectrum of potential events ranging from low-consequence, high-probability events to high-consequence, low-probability events, including those considered to be beyond the design basis in the facility's Documented Safety Analysis (DSA). As a result of lessons learned from Fukushima, DSA BDBE analyses may change. As part of the existing EPHA maintenance requirements, facilities should ensure that the range of severe events addressed in their EPHA is maintained consistent with these DSA changes. In case of a severe event, there may be basic, and possibly time-urgent initial response actions that could be taken to stabilize a hazardous material situation, delay safety degradation, or prevent further damage. These actions are considered shutdown or "walk-away" strategies, and should be identified and evaluated for inclusion as essential initial response actions. Responsibilities between Facility Operations management and Site Emergency Management should be clearly assigned so that the organization responsible for taking appropriate actions throughout the event progression is readily understood at all times, and any transfer of responsibility is preplanned based on established criteria.

Plan for the response to simultaneous accidents at multiple facilities

Where multiple facilities exist across a DOE/NNSA site, severe event planning should consider scenarios where the same severe event triggers hazardous material releases from multiple facilities. In accordance with the existing requirements and guidance, the EPHA should contain information about the impact of simultaneous or sequential hazardous material releases on collocated facilities on the site. For nuclear facilities, the DSA BDBA evaluation identifies facility specific event responses to which Site support is expected, along with the anticipated post-event response time constraints to aid in integrated severe event planning across the Site.

Coordinate site, facility, and community emergency plans

A severe event is likely to affect both a DOE/NNSA site and the surrounding community and overwhelm the capabilities of the site and the surrounding offsite mutual aid organizations. In these situations, the need for emergency management becomes critical, as scarce assets must be used prudently to accomplish the National Response Priorities (i.e., safety of human life, stabilization of the situation, and minimization of adverse impacts on the environment), and to integrate the DOE/NNSA site response into the National Response Framework (references can be located at the Federal Emergency Management Agency web site, www.fema.gov). The DOE/NNSA site should also coordinate planning for the evacuation of the site under severe event conditions.

Integrate the site's emergency management, security, and continuity of operations (COOP) activities

COOP plans identify mission essential functions that may be of use in determining priorities for restoration/mitigation efforts in a severe event scenario. DOE/NNSA requires that COOP plans contain pre-determined delegations of authority for situations where the normal management channels are disrupted. These delegations reinforce the understanding that on shift personnel are expected to make operational and safety decisions when severe events disrupt the normal lines of communication.

Conduct emergency drills and/or exercises for severe events

Emergency drills and exercises at DOE/NNSA facilities/sites, focused on severe events, should include events that impact multiple facilities and can cause the loss of infrastructure capabilities, e.g., onsite and offsite power, communications, and roadways, and the unavailability of mutual aid. Scenarios should also include secondary or compounding severe events occurring during critical stages of initial response or later remediation efforts.

Attachment 2
Documented Safety Analysis (DSA) Guidance

The purpose of this guide is to provide expectations for performing an enhanced evaluation of beyond design basis events (BDBEs) as a part of the annual DSA updates. It is generally expected that existing DSAs subject to the criteria of Action 2 already include an evaluation of BDBEs as required by DOE-STD-3009. The enhanced evaluation incorporates an analytical approach that was developed during the BDBE pilots, but documents the results of the analysis in the same manner as described in STD-3009. The enhanced evaluation process should incorporate lessons learned as described in, *A Report to the Secretary of Energy: Beyond Design Basis Event Pilot Evaluations, Results and Recommendations for Improvements to Enhance Nuclear Safety at Department of Energy Nuclear Facilities*, January 2013.

As with any DSA preparation and update activity, the BDBE evaluation should be conducted by a qualified team leader and a multidisciplinary team consisting of experts in the areas of facility operations, facility safety analysis, structural/mechanical engineering, NPH, and emergency management, the last of which is particularly relevant to the objective of this evaluation. The intent is to perform an expert-based and qualitative evaluation.

The facility's DSA should serve as a starting point for the evaluation of BDBEs. The DSA is expected to include a discussion of the BDBEs considered, and may include a discussion of analyses or enhancements made to the facility to meet DOE Order 420.1C, *Facility Safety*, requirement to evaluate the impact of changes in NPH data and/or analysis methodologies every ten years. The new analyses and enhancements should identify how the design has "evolved" to provide assurance of safety under events that are beyond the original design basis. As described in the HSS report to the Secretary referenced above, it is prudent for the team to perform a walkdown of the facility to support a qualitative evaluation of how a BDBE may impact the facility (the qualitative evaluation is discussed in the next section of this attachment) and to look for potentially unknown vulnerabilities to BDBEs (e.g., unsealed penetrations or low-lying electrical equipment in the case of flooding accidents). This walkdown also ensures the reviewers are familiar with facility's size, key features and distances to other structures and potential temporary service connections (like fire hydrants or well water sources).

This enhanced BDBE evaluation is intended to identify BDBEs that may cause a release of radioactive material beyond that analyzed in the unmitigated accident analysis in the DSA and/or to disable important controls relied on to mitigate the release of radioactive material shall be evaluated. The types of BDBEs that should be evaluated include:

- Seismic events
- Floods
- Fires
- Lightning
- Wind and tornadoes
- Snow and ice
- Ash fall
- Accidental aircraft crash
- Station blackout, as an initiating event or as a consequence from any of the above events
- Cascading effects of design basis events analyzed in the DSA that were previously ruled out because of the low likelihood of associated multiple failures.

If BDBE's from the above list are excluded, the rationale for exclusion should be documented. The general categories of failures to be considered for each BDBE listed above include:

- Collapse of building structure and interior walls
- Breach of water storage pools or collapse of storage racks
- Loss of electrical power and emergency power equipment (e.g., transformers, switchgear, or motor control centers)
- Loss of electrical distribution systems (e.g., conduit or cable trays)
- Operational failure of active mechanical equipment (e.g., pumps, compressors, or fans)
- Loss of pressure boundary of static equipment (e.g., tanks, vessels, or gloveboxes)
- Failure of distribution systems (e.g., piping, tubing, or ducts)
- Failure of alarms
- Loss of an emergency response center.
- Adverse spatial seismic interaction (e.g., failure of adjacent buildings or failure of adjacent stacks)

- Adverse flood-inducing interaction (e.g., failure of an adjacent water tank)

The enhanced BDBE evaluation should provide a gross estimate of the bounding impacts associated with BDBEs. It is qualitative in that it relies on a simple "what if" type of hazard evaluation technique where a multidiscipline team participates in a brainstorming session to methodically evaluate the potential failures in facility systems, structures, and components (SSCs) that could be caused by each type of BDBE. The evaluation should estimate the consequences associated with failures of SSCs that provide safety functions such as confinement, energy removal (e.g., decay heat removal or fire suppression), or prevention of energetic reaction (e.g., explosion). The evaluation may draw upon existing unmitigated accident analysis performed in the DSA.

This qualitative evaluation process is applied to each type of BDBE so different failure modes and associated effects can be understood. Although a seismic event will typically present the worst-case consequences, it is important to step through all applicable BDBEs using the same structured "what if" brainstorming technique. This information can be important when considering potential mitigation strategies.

SSCs identified as mitigating BDBE consequences should be subjected to a margins assessment (MA) to provide insights into their margin-to-failure. This should be a qualitative assessment based upon expert judgment. Civil/structural engineers should perform the MA by reviewing existing design basis analyses and supporting calculations for SSCs. This information should then be used as a baseline to compare against a SSC's expected response to higher level stresses. A MA can be difficult to accomplish if facility design information is not available, i.e., for older DOE facilities. In this case, the MA may have to rely on bounding, simplified assumptions and judgments by subject matter experts, supported by the results of structured walkdowns. For NPH events, the margins assessment should be accomplished by analyzing the facility for higher stress levels than the systems' design (for example, the next higher seismic performance or design category) based on qualitative expert judgment.

Descriptions of performance capabilities of the existing SSCs should also be added to or referenced in the DSA, as new and relevant information is learned from above BDBE evaluation. SSCs that provide protection against BDBEs, are typically safety class controls, or a subset of these controls, credited in the DSA for design basis events. If the BDBE evaluation identifies non-credited SSCs, it is not expected that these SSCs would be classified as safety class or safety significant based solely on BDBE consequences, and, therefore, additional technical safety requirements for these SSCs would not be created. These may include facility features such as temporary utility connections (power or water) and critical parameter instrumentation readings that permit monitoring after a BDBE occurs. The DSA should identify these SSCs as important for providing additional mitigation of BDBEs, and these SSCs should be maintained within the facility configuration management and maintenance programs in the same manner that other non-safety class and safety significant DSA controls are treated to preserve their safety function. PSOs should establish for their facilities whether the Unreviewed Safety Question program should be used to determine the approval authority for changes to BDBE controls, or whether more general provisions of maintenance and configuration control should be relied upon.

Based on the results of the enhanced BDBE evaluation, existing DSA descriptions of BDBE accident scenarios should be updated as necessary to clarify important assumptions needed to develop abnormal or emergency operating procedures. This may include details such as potential accident conditions associated with the range of BDBEs, cascading effects of certain scenarios, time-frames associated with scenario development, and time-critical mitigative actions. Additionally, emergency management plans for responding to BDBEs (updated using the guidance in Attachment 1) could also identify potential facility design changes for consideration. An example would be the addition of standardized connections, outside the facility, that could be used to supply cooling water, deliver fire suppression water, or provide electrical power using resources obtained through emergency management mutual aid agreements. These improvements should also be conveyed as part of the DSA annual update.

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JUL 1 1 2013

13-ESQ-0048

Mr. John C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-05RL14655 – APPROVAL OF CORRECTIVE ACTION PLAN RESPONSE TO SURVEILLANCE S-13-OOD-0010

This letter is in response to your June 5, 2013, (CHPRC-1302196) letter addressing the actions associated with the Root Cause Analysis and Extent of Condition Review contained in the letter. RL approves the Corrective Action Plan as submitted with the following additions/clarifications:

Pursuant to Section I, Clause 1.62, "Waste Reduction Program (Aug 2000)," Section I, Clause 1.107, FAR 52.245-1 "Government Property (Aug 2010) Alternate I (Aug 2010)," and Section J, Attachment J.2, Requirements Sources and Implementing Documents, "Executive Order 13327 Federal Real Property Asset Management."

1. Upon completion of a gross inventory of lay down yards and connex boxes (action number EOC-4), quarterly meetings will be held between the Richland Operations Office and CH2M HILL Plateau Remediation Company. The initial meeting will be held in October of 2013 to discuss the results of the inventory. Subsequent meetings will be to status execution of the plan to dispose of the identified material and waste. The goal for the plan should be to dispose of all waste and material and equipment (action numbers EOC-6 and EOC-7) deemed not essential for ongoing operations by the end of your contract extension period.

2. The plan and priorities for action numbers RA-14 and EOC-5 shall reduce the number of Radioactive Material Areas to the minimum number required for ongoing operations in order to eliminate unnecessary surveillance and maintenance costs as soon as practicable, but no later than September 30, 2014.

3. Procedural improvements shall include life cycle planning to ensure disposition of deactivated equipment and facilities are addressed upfront and incorporated into project execution and work control documents.

If you have any questions, please contact me, or your staff may contact Ed MacAlister, Director, Environmental, Safety, and Quality Division on, (509) 373-0462.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

ESQ:EDM

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Department of Energy
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P.O. Box 550
Richland, Washington 99352

13-ESQ-0063

SEP 09 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF SURVEILLANCE REPORT ON INJURY AND ILLNESS RECORDKEEPING (S-13-ESQ-PRC-002)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits a copy of the Richland Operations Office (RL) Surveillance Report S-13-ESQ-PRC-002. This report, which has been discussed with your staff, identifies two findings regarding injury and illness recordkeeping. Please note that RL will retain closure authority for the findings. If you have any questions, please contact me, or your staff may contact Ed MacAlister, Director, Environmental, Safety, and Quality Division, on (509) 373-0462.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

ESQ:TKM

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Department of Energy Richland Operations Office
Surveillance Report

Division: Environmental, Safety, and Quality Division (ESQ)

Surveillants: Larry Yearsley and Tobin Mott

Surveillance Number: S-13-ESQ-PRC-002

Date Completed: July 16, 2013

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: N/A

Title: Injury and Illness Reporting

Guide: N/A

Surveillance Scope:

Review of injury and illness reporting by CHPRC

Surveillance Summary:

This surveillance involved the review of the injury and illness reporting performed by CHPRC for the Fiscal Year (FY) 2012 and FY 2013 until June 1. Two instances of improper initial classification involving Occupational Safety and Health Administration (OSHA) recordable instances of injuries were noted.

Two Findings were identified as part of this surveillance.

Findings:

- **S-13-ESQ-PRC-002-F01:** The employer did not classify a recordable injury in accordance with 29 CFR 1904.5 (a).

- **S-13-ESQ-PRC-002-F02:** The employer did not record an injury or illness case in a timely manner in accordance with 29 CFR 1904.29(b)(3).

Surveillance Results:

Finding S-13-ESQ-PRC-002-F01:

Improper classification of a recordable injury in accordance with 29 CFR 1904.5 (a).

Requirement(s):

- 29 CFR 1904.5(a) "Basic Requirement," instructs that an employer "must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition or significantly aggravated a pre-existing injury or illness."

Discussion:

In this particular case, the medical record stated the employee received a shock and was exhibiting the symptoms associated with a shock event. The result was that a sedative was administered to the employee. Regardless of the employer's statement that the mechanism of injury did not give rise to the level of treatment, this claim does meet the requirement of 29 CFR 1904.5. There was a work place event which elevated the employee's heart rate and prescription medication was administered by a medical provider. Therefore, an OSHA recordable work place event occurred.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Finding S-13-ESQ-PRC-002-F02:

The employer did not record an injury or illness case in a timely manner in accordance with 29 CFR 1904.29(b)(3).

Requirement(s):

- 29 CFR 1904.29(b)(3) "You must enter each recordable injury or illness on the OSHA 300 Log within seven (7) calendar days of receiving information that a recordable injury or illness has occurred."

Discussion:

The second case management claim involved an individual who was injured in 2010. The individual eventually required surgery due to the work place event. The injury was not recorded

on the 300 log. A second surgery was conducted on the individual for the same injury in 2013 and the claim was recently added to the 300 log for the 2010 calendar.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Contractor Self-Assessment:

A self-assessment was performed by CH Corporate Health Safety Environmental. The assessment was in response to a surveillance performed by RL in 2010. The assessment confirmed some RL findings and found further information on other cases. The self-assessment was adequate but did defer to worker's compensation files not being readily reviewable. OSHA recordkeeping and worker's compensation are not necessarily related and cases that meet OSHA record-ability criteria should be noted on the 300 log. Timeliness of recording should not depend on worker's compensation results.

Contractor Self-Assessment Adequate: **YES [X]** **NO [ ]**

Management Debriefed: CHPRC safety and health management has been informed of this surveillance and the two findings have been discussed.

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

12-SED-0099

NOV 21 2012

Mr. J. G. Lehew III, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Lehew:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF SURVEILLANCE REPORT ON HAZARD IDENTIFICATION AND CONTROL (S-12-SED-PRC-016)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits a copy of the Richland Operations Office (RL) Surveillance Report S-12-SED-PRC-016. This report, which has been discussed with your staff, identifies one finding with seven separate occurrences that indicate a trend of inadequate hazard identification and control across CH2M HILL Plateau Remediation Company (CHPRC) projects. During the preparation of this surveillance, a nitric acid spill occurred at the Plutonium Finishing Plant (PFP) that led to the discovery of an additional issue involving inadequate hazard identification. Investigation into the spill identified a section of piping that contained approximately 60 liters of highly concentrated nitric acid. Due to the fact that similar spills had occurred previously at PFP and the hazardous condition had not been adequately addressed, RL considers this significant. RL noted that CHPRC project management is putting priority in response to this discovery. RL plans on providing additional oversight of the project's actions to address this hazardous condition.

Normally, RL would identify this as a Concern and request a Corrective Action Plan, but, given CHPRC's proactive response to this report, as detailed in CHPRC-1204617 dated October 19, 2012, RL did not include the concern in this report. The finding will remain and RL will retain closure authority.

If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Safety and Engineering Division, on (509) 372-1909.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

SED:SLB

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Department of Energy Richland Operations Office Surveillance Report

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Division: Safety & Engineering Division (SED)

Surveillants: Steve Bertness (Lead), Tobin Mott, Fred Beard, Glenn Florczak

Surveillance Number: S-12-SED-PRC-016

Date Completed: 8/13/2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: All CHPRC Facilities

Title: 10 CFR 851 Worker Safety and Health Program-Assessment of Hazard Identification and Assessment 10CFR 851.21 and Assessment of Hazard Prevention and Abatement 10CFR851.22

Guide: 10 CFR 851.21 Hazard Identification and Assessment and 10CFR851.22 Hazard Prevention and Abatement

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Surveillance Scope:

The scope of this Integrated Safety Management System/Occupational Safety and Health Administration core surveillance was to assess the contractor's consistency and reliability in the protection of workers and other persons from workplace hazards. The focus was on if and how the contractor assessed the workplace so that hazards could be identified and properly abated/controlled so that employee exposures to these hazards were prevented. Emphasis was placed on determining if procedures have been developed and utilized; workplace assessments are being carried out to ensure that workplace hazards are being identified and controlled to prevent employee exposures and potential exposures. CHPRC and its subcontractors conduct work involving construction, demolition, and excavation, and operations where significant hazards are created. The scope of this surveillance included verifications to determine if the CHPRC subcontractors have developed, implemented, and maintained effective procedures and programs which ensure the accurate identification, assessment, prevention and abatement of workplace hazards.

Surveillance Summary:

During the course of Fiscal Year (FY) 12, SED and Operation Oversight Division (OOD) personnel made a number of observations that have indicated a lack of proper hazard identification, assessment, prevention, and abatement. As a result, SED staff initiated a programmatic review of contractor process and procedures relating to hazard identification, assessment and control. SED staff conducted inspections of excavation and demolition activities, observed some selected work activities, and reviewed procedures, work packages, Job Hazard Analyses (JHAs) associated with hazard identification and control.

SED staff discussed the requirements with personnel, supervisors, management, and Subject Matter Experts (SMEs) involved in hazard identification and control. SED evaluated the adequacy of procedures, work documents, JHAs, and work practices associated with the identification, assessment, prevention and abatement of workplace hazards. This programmatic review identified one finding, with seven examples, listed below.

Finding: S-12-SED-PRC-016-F01:

The CHPRC hazard identification process has not been implemented adequately.

Requirement(s):

10 CFR 851.21(c) Contractors must perform the activities identified in paragraph (a) of this section, initially to obtain baseline information and as often thereafter as necessary to ensure compliance with the requirements in this Subpart.

PRC-PRO-WKM-079, Section 3.2.1, Initial Hazard Analysis - Review Work to Determine/Identify Hazards for Specific Activity, Step 4, WALK-DOWN the job site AND IDENTIFY/EVALUATE the hazards and activities to confirm the skill-based determination (both activities within the defined work scope and adjacent activities) using the Worksite Hazard Analysis (WHA) form. The WHA will be used when an activity has been determined to be skill-based work.

PRC-PRO-WKM-079, Section 3.2.2, Detailed Hazard Analysis Using AJHA Tool For Beyond Skill-Based Activities, Step 15, Based on the work instructions/procedure steps, notes, and comments from the site walk-down, DISCUSS AND ANALYZE hazards identified in the initiated AJHA during the initial hazard analysis (Hazards Preliminary screen and Hazards and Control Details screens). Additional Site reviews or walk-downs with SMEs or the AJHA team may be necessary to ensure all hazards are identified.

Discussion:

Contrary to the above requirements, the contractor did not adequately identify and analyze hazards of work activities. The surveillants concluded that implementing procedures provided adequate direction on hazard analysis. However, the continued occurrence of issues in which

inadequate hazard identification was a common factor, points to a need for the contractor to provide additional measures to improve the hazard identification, analysis and control process. During the surveillance, the team reviewed over 100 separate Operational Awareness (OAs), surveillance reports, Occurrence Reporting Processing System reports and critiques that were related to insufficient hazard identification, analysis, and control. The following seven are cited as clear examples of inadequate hazard identification, analysis, and control that support RL's Finding on this issue.

Throughout FY 12, SED and OOD have continued to identify issues relating to the identification, evaluation, and control of hazards at CHPRC work sites. CHPRC has adequate procedures for hazard identification and control that should allow for effective control of workplace hazards. During field observations, RL personnel noted poor implementation of these procedures by CHPRC and its subcontractors and a lack of effective management assessments, resulting in less than acceptable hazard identification and control in the field.

RL notes that similar issues have been previously identified in these areas. Surveillance Report S-10-SED-PRC-31 documented several findings related to flow down of requirements to and oversight of subcontractors. The RL Integrated Safety Management verification also documented RL issues with the contractor's hazard identification and control process.

Issue 1:

Confined Spaces were not properly classified, i.e., the "Splitter Box" at the 200 West Pump and Treat.

Requirements:

10 CFR *851.23(a)* states, "Contractors must comply with the following safety and health standards that are applicable to the hazards at their covered workplace: (3) Title 29 CFR Part 1910, Occupational Safety and Health Standards..."

29 CFR 1910.146(b) states, that a "Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:
(1) Contains or has a potential to contain a hazardous atmosphere;
(2) Contains a material that has the potential for engulfing an entrant;
(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; and
(4) Contains any other recognized serious safety or health hazard."

29 CFR 1910.146(c)(2) states, "If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.
NOTE: A sign reading DANGER – PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER or using other similar language would satisfy the requirement for a sign."

Discussion:

Confined space classification was not correct on the splitter box. The splitter box was labeled as a non-permit confined space but was filled with approximately 12 feet of water. The space requires labeling as a permit-required confined space due to the engulfment hazard presented by the water. (Surveillance S-12-SED-PRC-010-F02)

Issue 2:

Employees who went into the splitter box to apply a "pickling paste" were not properly apprised of the hazards associated with the pickling paste nor were they trained as required.

Requirement:

29 CFR 1910.1200(h): Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of initial assignment, and whenever a new physical or health hazard the employees have not been previously trained about is introduced into their work area.

Discussion:

Employees who entered the confined space to apply the pickling paste were not informed or trained as required in 29 CFR 1910.1200(h) in the hazards associated with the "pickling paste" that they were to use in the confined space called the Splitter Box. The fact that they were using the new chemical into a confined space increased the need for this training.

Issue 3:

There were a number of examples of improper fall protection at the 200 West pump and Treat.

Requirement:

29 CFR 1926.501(b)(1) Each employee on a walking working surface (horizontal and vertical surface) with an unprotected side or edge which is six feet (1.8) or more above a lower level shall be protected from falling by use of guardrail systems, safety net systems or personal fall arrest systems.

Discussion:

During a walkthrough of the 200 West Pump and Treat there were a number of pits in the Rad Building without proper fall protection. The pits were approximately seven feet deep and had warning tape placed around them instead of standard guardrails. This tape was placed anywhere from inches of the pit edge to approximately three feet from the edge. (OA38070)

A second example of a lack of fall protection was in the Bio building. The platforms around the centrifuges did not have fall protection on the inside. This would be the centrifuge side of the platform. There were gaps between the platforms and the centrifuges which would allow an employee to fall to the floor or equipment below. (OA42500 and 42457)

Issue 4:

There were two pieces of ungrounded equipment found in the Bio building during walkthroughs at the 200 West Pump and Treat site.

Requirement:

29 CFR 1926.404(f)(7)(iv)(C)(2) Cord and Plug-connected equipment used in damp or wet locations or by employees standing on the ground or on metal floors or working inside of metal tanks or boilers.

Discussion:

There were two different pieces of equipment in the Bio building which were missing the grounding prong on their three wire plugs. Neither of these pieces of equipment was tagged in anyway indicating that they should not be used. These pieces of equipment were found on two separate walkthroughs of the facility. The first piece of equipment was a large portable lamp. The second piece of equipment was a blower.

Issue 5:

There was an 80 ton Hydraulic Grove crane in the 100K area which did not have a swing radius guard.

Requirements:

29 CFR 1926.1424(a)(1) The requirements in paragraph (a)(2) of this section apply where there are areas in which the equipment's rotating superstructure (whether permanently or temporarily mounted) poses a reasonably foreseeable risk of: (i) Striking and injuring an employee; or (ii) Pinching/crushing an employee against another part of the equipment or another object.

29 CFR 1926.1424 (a)(2) To prevent employees from entering the hazard area the employer must: (i) Train each employee assigned to work on or near the equipment ("authorized personnel") in how to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure. and (ii) Erect and maintain control lines, warning lines, railings or similar barriers to mark the boundaries of the hazard areas.

Discussion:

There was a 80 ton Hydraulic Grove Crane which did not have a swing radius guard. There was a rope barricading the area which contained the crane, material to be lifted, and the trucks which

were being loaded. This would not be considered proper guarding of the cranes swing radius. Common practice is to tie warning or danger tape from outrigger to outrigger. This may or may not be adequate depending upon the crane configuration, i.e., whether or not the rotating superstructure extends past the outriggers and creates a hazard. This was discussed with the designated lead. Barricade tape was put up around the crane after some discussion with the designated lead and rigging personnel. This was a CHPRC supervised job utilizing Mission Support Alliance, LLC personnel. Both contractors have the responsibility to identify and control hazards in order to properly protect employees. (OA 40243)

Issue 6:

There was a lack of noise surveys or individual noise monitoring (baseline or otherwise) done at the 200 west Pump and Treat Facility. There was a lack of proper control, such as proper posting of noise warnings and the proper use of hearing protection, for employees working in Decontamination and Decommissioning (D&D) operations.

Requirements:

10 CFR 851 Appendix A Paragraph (a): Initial or baseline surveys and periodic resurveys and/or exposure monitoring as appropriate of all work areas or operations to identify and evaluate potential worker health risks.

10 CFR 1926.52(b): When employees are subjected to sound levels exceeding those listed in Table D-2 of this section, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, personal protective equipment as required in Subpart E, shall be provided and used to reduce sound levels within the levels of the table.

Discussion:

There was a lack of noise surveys, monitoring, consistent identification of high noise areas, and wearing of hearing protection by employees at the 200 West Pump and Treat construction site. Below are portions of OAs which reflect noise related problems.

Noise hazard areas in the Bio building are not posted and do not appear to be controlled. Engineers were testing a system that was obviously a noise hazard but no controls or personal protective equipment were in place. (OA 42457)

During the walk through (of the 200 West P&T) there were no visual signs (postings) of High Noise Areas. A request was made to obtain personal and area noise surveys and dosimetry monitoring. This information was never received by SED staff. (OA 41252)

There was some grinding being done in the Bio building by UMC personnel. The noise level was measured at approximately 100db by a cell phone sound level meter. All personnel in the area were not using hearing protection. (OA39282)

On 11-29-2011, a GSSC IH/Safety Professional conducted a site visit at CHPRC 209 D&D activities. At the 209E D&D project, workers entered a high noise area without hearing protection and an entrance into the demo area was not posted warning workers of the noise hazard. The demo zone was evaluated as a recognized noise hazard and other entrances were posted. Even though hearing protection requirement was discussed in the pre-job, the communication was not sufficient to stop workers from entering the area without hearing protection thus validating the need for postings. (OA 40716)

Issue 7:

A 200 West Pump and Treat mechanical work package was improperly used at the ZP-1A facility. This allowed for potentially contaminated pieces of equipment to be taken off site without being properly surveyed.

Requirement:

10 CFR 851.21(a)(5) states: Contractors must establish procedures which evaluate operations, procedures and facilities to evaluate workplace hazards.

Discussion:

CHPRC Critique CCRT-2012-200W-007 indicates that in the turnover of this work from Soils and Groundwater project to Engineering Projects and Construction (EPC) that the job safety analysis and the health and safety plan were not discussed. The EPC was doing this work using a 200 West Pump and Treat mechanical work package in a completely different facility, the ZP-1A building. Work in a different facility, no matter the similarities between the work, requires a separate, facility specific JHA. As identified in the contractor critique, a proper turnover and JHA would likely have identified the ZP-1A facility as having potential internal contamination. (See Section 14-Apparent Causes CRT-2012-200W-007)

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

Good Practice: NA

Contractor Self-Assessment: None identified

Contractor Self-Assessment Adequate: **YES [ ]** **NO [x]**

Management Debriefed: Mark Hughey, Terry Vaughn

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

12-SED-0107

OCT 12 2012

Mr. J. G. Lehew III, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Lehew:

CONTRACT NO. DE-AC06-08RL14788 IMPLEMENTATION OF DOE O 426.2, PERSONNEL SELECTION, TRAINING, QUALIFICATION, AND CERTIFICATION REQUIREMENTS FOR DOE NUCLEAR FACILITIES CONTRACTOR REQUIREMENTS DOCUMENT (CRD), DATED APRIL 21, 2010

The Richland Operations Office (RL) is tasked to review the CH2M Hill Plateau Remediation Company (CHPRC) implementation of the DOE O 426.2 CRD at least once in each three year interval. In anticipation of the full review of CHPRC's implementation of the CRD for DOE O 426.2, RL conducted preliminary reviews of various aspects of CHPRC's 426.2 Training and Qualification (T&Q) program. Based upon the results of these preliminary reviews, RL found a number of issues related to CHPRC's T&Q program. Examples of these issues are provided in the attachment to this letter. Prior to continuing with the formal review of CHPRC's 426.2 T&Q program implementation, RL requests that CHPRC conduct a self-assessment of their 426.2 T&Q program and report the results and any required corrective actions to RL within sixty days of the receipt of this letter.

If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Safety and Engineering Division, on (509) 372-1909.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

SED:RJS

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Attachment: 12-SED-0107

1. Issues with Training Implementation Matrix (TIM):

   - TIM did not have appropriate Richland Operations Office approvals.
   - The TIM does not adequately meet 426.2 Contractor Requirements Document requirements.
   - The TIM does not cover all of the required facilities (e.g., Solid Waste Operations Complex).
   - TIM does not describe the Roles & Responsibilities for all of Operating Organization personnel. It covers only management positions.
   - There are no requirements for the Qualification Program, such as a pointer to applicable qualification standards (or similar documents) that would list requirements for each technical position.

2. Issues with Training and Qualification Program:

   - There are no requirements for the Qualification Program. Normally there would be a pointer to applicable qualification standards (or similar documents) that would list requirements for each technical position.
   - There is no listing of training and qualification requirements for each position; therefore, the qualifications don't include education, experience, training requirements, required competencies, and Knowledge Skills and Abilities (KSAs) required for each position.
   - Unreviewed Safety Questions and Packaging Safety personnel appear to be missing from the TIM's listing of Technical Staff.
   - Qualification Cards reviewed are not based upon organizational formal Requirements, but rather rely heavily upon Course Attendance and Required reading. Many courses do not appear to have been evaluated to ensure they meet competency/ KSA requirements.

Department of Energy
Richland Operations Office
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Richland, Washington 99352

13-SED-0001

OCT 1 6 2012

Mr. J. G. Lehew III, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Lehew:

CONTRACT NO. DE-AC06-08RL14788 – APPROVAL OF PRC-MPSH-32219, 10 CFR 851 CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) WORKER SAFETY AND HEALTH PROGRAM (WSHP) DESCRIPTION

This is in response to the July 25, 2012, letter (CHPRC-1202928) and subsequent reissue dated September 17, 2012, same letter number, requesting review and approval of CHPRC's 10 CFR 851 WSHP. The Richland Operations Office (RL) notes that in the executive summary of the WSHP, CHPRC acknowledges that this program applies to CHPRC employees and contractors. Consistent with the requirements and definitions of 10 CFR 851, RL expects this program to be applied to CHPRC subcontractors at any level.

At this time, RL is conditionally approving CHPRC's WSHP. This approval is contingent upon successful resolution of RL's concern regarding CHPRC's hazard identification, evaluation and control processes. This concern is documented in RL Surveillance Report S-12-SED-PRC-016, which has been discussed with your staff, and is in final concurrence for formal transmittal to CHPRC. Successful resolution of the RL concern will be documented by RL concurrence with the closure of the concern in accordance with existing corrective action management procedures. This conditional approval will expire 180 days after CHPRC's receipt of S-12-SED-PRC-016.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

SED:SLB

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Department of Energy
Richland Operations Office
P.O. Box 550
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13-SED-0002

OCT 18 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF CH2M HILL PLATEAU REMEDIATION COMPANY (CHPRC) LOCKOUT ACTIVITIES SURVEILLANCE (S-12-SED-PRC-023)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits a copy of the Surveillance S-12-SED-PRC-023, titled CHPRC Lockout Activities. The surveillance found no concerns, findings, or observations and had two good practices. If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Safety and Engineering Division, on (509) 372-1909.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

SED:JBG

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
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Department of Energy
Richland Operations Office
Surveillance Report

Division: Safety and Engineering Division (SED)

Surveillant: Jack George

Surveillance Number: S-12-SED-PRC-023

Date Completed: September 24, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: CHPRC Company-wide

Title: CHPRC Lockout Activities

Guide: N/A

Surveillance Scope:

The Richland Operations Office (RL) Lockout/Tagout Technical Authority (LOTO TA) performed surveillance on CHPRC Lockout/Tagout (LOTO) activities to determine if all the applicable Integrated Safety Management System, Occupational Safety and Health Administration, DOE O 422.1 "*Conduct of Operations*" and National Fire Protection Association 70E requirements are implemented.

The surveillance consisted of the LOTO TA reviewing the CHPRC self-assessment activities involving LOTO and reviewing LOTO logbooks at Waste Encapsulation and Storage Facility and Plutonium Finishing Plant (PFP). Also there were observations of LOTO activities at PFP.

Surveillance Summary:

The assessor found that in general, LOTO practices were performed in accordance with procedures and the CHPRC self-assessment program was effective. There were no concerns, findings, or observations. There were two good practices.

Good Practice: The Nuclear Safety Performance Evaluation Board (NSPEB) is effective in determining the health of LOTO operations.

Good Practice: The Safety, Health, Security & Quality (SHS&Q) Operations staff recognized recurring electrical safety and lockout issues.

Surveillance Results:

Good Practice:

The NSPEB is effective in determining the health of LOTO operations.

Discussion:

The NSPEB assessed operations at PFP during August and September of 2012. The LOTO TA observed them during this assessment. Specifically, the NSPEB assessed every LOTO operation during this time period. They found one major issue.

They found while performing maintenance on an electrically driven fan some authorized workers performed work without LOTO. The rest of the LOTO operations at PFP were performed to requirements.

During this assessment and review of the other NSPEB reports the LOTO TA evaluated that the NSPEB is effective in evaluating all aspects of operational issues, as well as LOTO issues.

Good Practice:

The SHS&Q Operations staff recognized recurring electrical safety and lockout issues.

Discussion:

In August 2012, CHPRC declared a recurring Occurrence Report for exposed electrical terminals. The SHS&Q Operations staff recognized that since the first of the year there had been at least four issues where electrical panels were accessed without performing an electrical hazard analysis. This led to workers being exposed to energized parts without LOTO or the Energized Electrical Work Permit process being used.

The LOTO TA reviewed their analysis and found it to be accurate. CHPRC has taken corrective actions to prevent these types of issues from occurring in the future.

Contractor Self-Assessment: The self-assessment process in the area of LOTO is effective. This conclusion is specifically supported by the two Good Practices.

Contractor Self-Assessment Adequate: **YES [X]** **NO []**

Management Debriefed:

Ted Jarecki, CHPRC

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13-SED-0003

NOV 29 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF REVIEW OF THE LOSS OF CONFIGURATION CONTROL OF THE SAFETY BASES SURVEILLANCE (S-12-SED-PRC-012)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits a copy of the surveillance report S-12-SED-PRC-012, "Review of the Loss of Configuration Control of the Safety Bases." The surveillance activities resulted in the identification of one finding with three examples.

CH2M HILL Plateau Remediation Company (CHPRC) is directed to process the enclosed Surveillance Report through the CHPRC corrective action management system. A formal corrective action plan is not required, as the Richland Operations Office (RL) notes that CHPRC has already completed a Cause Evaluation Report (CR-2012-1238 dated June 7, 2012) for the examples discussed in the finding. However, please note that RL closure verification is required for the finding.

The Cause Evaluation Report included the identification of root and contributing causes and associated corrective actions, a number of which have been implemented. RL notes, however, that after the Surveillance was completed another configuration control issue was identified regarding HNF-11724, Revision 9. The issue was self-identified by CHPRC during implementation of the revised safety basis document. While there may have been no loss of configuration control for the implemented version of the document, RL considers this event to add urgency to the need to resolve these issues. RL requests that the adequacy of the corrective actions previously identified to provide short term assurance be evaluated in light of this most recent occurrence, and the results of this evaluation provided to RL within 60 days of the date of this letter.

Further, RL notes that the long term corrective action identified to date is to implement web-based software which will provide an enhanced level of assurance of configuration control above the manual process currently in place. As this action is scheduled for completion on March 15, 2013, RL requests that CHPRC perform an effectiveness review of the corrective actions taken and provide a report documenting this review to RL by June 1, 2013.

If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Safety and Engineering Division, on (509) 372-1909.

Sincerely,

Jenise C Connerly

Jenise C. Connerly
Contracting Officer

SED:GZM

Attachment

cc w/attach:
M. V. Bang, CHPRC
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J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Department of Energy
Richland Operations Office
Surveillance Report

Divisions: Safety and Engineering Division (SED)

Surveillant: Gregory Z. Morgan

Surveillance Number: S-12-SED-PRC-012

Date Completed: September 15, 2012

Contractor: CH2M HILL Plateau Remediation Company (CHPRC)

Facility: 100K West Basin and Cold Vacuum Drying Facility

Title: Review of the Loss of Configuration Control of the Safety Bases

Guides: 10 CFR 830
ISM 5.4, Continuous Improvement
CMS 3.1, Configuration Management Implementation
OPS 9.6, Investigation of Abnormal Events and Occurrence Reporting

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Surveillance Scope:

The objective of this surveillance was to evaluate the performance of CHPRC Safety Basis Configuration Control, with respect to compliance with contractual requirements, U.S. Department of Energy (DOE) requirements, other applicable codes and standards, and CHPRC policies and procedures.

Surveillance Summary:

This surveillance reveals that CHPRC did not meet all requirements applicable to the configuration control activities. Multiple examples of not meeting requirements were noted.

The surveillance activities resulted in the identification of one Finding (with three examples), and no Observations.

S-12-SED-PRC-012-F01: CHPRC did not adequately maintain configuration control safety basis documents.

Requirements:

10 CFR 830 Subpart B (Safety Basis Requirements) 830.202 Safety basis. (a) The contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must establish and maintain the safety basis for the facility;

10 CFR 830 Subpart B (Safety Basis Requirements) 830.202 Safety basis. (c) In maintaining the safety basis for a hazard category 1, 2, or 3 DOE nuclear facility, the contractor responsible for the facility must: (1) Update the safety basis to keep it current and to reflect changes in the facility, the work and the hazards as they are analyzed in the documented safety analysis;

10 CFR 830 Subpart B (Safety Basis Requirements) 830.205 Technical safety requirements. (a) A contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must: (2) Prior to use, obtain DOE approval of technical safety requirements and any change to technical safety requirements.

Discussion:

Contrary to these requirements, CHPRC failed to maintain configuration control of safety basis documents as discussed in the examples below.

Example 1

On 04/03/12, following the 03/29/12 implementation of the Knock-Out Pot (KOP) material processing safety basis changes for the Cold Vacuum Drying Facility (CVDF), Engineering staff conducted a review of the CVDF Final Safety Analysis Report (FSAR) changes (HNF-3553). This review was to ensure that the correct revisions for the entire document were reflected. Page Changes through revision "E" were expected; however, a discrepancy was found in that Page Changes reflecting revisions A through D were not found. The CVDF was not operating, but was in "Facility Shutdown Mode."

This issue was self-identified by CHPRC. Upon discovery, CVDF Operations initiated a long term order to prevent entering OPERATION submode until the FSAR and TSR were corrected. Two maintenance work packages (1C-12-2548 and 1858), released since issuance of the revision, were re-evaluated to ensure the Unreviewed safety question (USQ) screening conclusions were not invalidated. CHPRC issued CHPRC Condition Report CR-2012-0958. Required actions are complete, but a CHPRC management follow-up is needed to ensure the actions to prevent recurrence were effective.

Example 2

HNF-SD-SNF-TSR-001, *105 KW Basin TSRs*, Revision 13, Administrative Control (AC) 5.9.2 (12), 105-KW Basin Containerized Sludge Controls, requires that "A program shall be in place for 105-KW SCS containers to prevent the potential formation of a pocket of flammable gas or a

vessel-spanning bubble during sludge retrieval or storage operations of sufficient size to pose a potentially significant hazard to the facility worker."

Instead, CHPRC removed AC 5.9.2 (12) without authorization from DOE, and operated for some period of time without formal implementation of that AC, although there is evidence that the requirements were maintained as a good practice. On 4/06/12 at 1622 hours, the 100K Project Plant Review Committee (PRC) determined that a potential inadequacy of the documented safety analysis exists as a result of the removal of a TSR AC pertaining to sludge container controls without documented evidence of DOE approval. This issue was self-identified by CHPRC during an extent of condition review as part of a corrective action for CHPRC Condition Report CR-2012-0958.

CHPRC determined that existing Process Standard required controls were sufficient and no additional controls are required. The contractor also plans to submit safety basis changes intended to return the safety basis to appropriate configuration control and correct the specific issues identified. Required actions to prevent recurrence are complete, but a CHPRC management follow-up is needed to ensure the actions to prevent recurrence were effective.

Example 3

105-KW Basin FSAR (Table 3-10) and associated TSRs and AC 5.9.2.9 were modified, and analytical methodologies accepted. These were included as footnotes in DD-51489, Revision 0, *KOP/MCO Processing RL Review Comment Closure Document.* Incorporating this document was a Condition of Approval in the RL issued Safety Evaluation Report. As noted in CHPRC letter CHPRC-1200699 Revision 1, "when DD-51489 was released into the Document Management & Control System (DMCS), an older file was inadvertently used that did not include the footnote in the red-lined text." CHPRC-1200699 Revision 1 concludes that "The footnote was found to be included in implemented TSR AC 5.9.2.9. Because this footnote was not included in the RL approved DD-51489 Revision 0, the footnote was determined to have not been approved by RL. This unapproved addition to the TSR AC was the subject of a PISA determination and was determined to not be an USQ. As discussed above, footnotes provide supplemental information and are not required actions. There were no known operational impacts to the 105-KW facility as a result of the unapproved addition of the footnote to TSR AC 5.2.9.2.

Nevertheless, from the time DD-51489 was issued until discovery of the issue, CHPRC operated the 105-KW Basin in accordance with a safety basis, including TSRs, which was different than the approved safety basis.

The contractor also submitted safety basis changes intended to return the safety basis to appropriate configuration control and correct the specific issues identified. These submittals have been approved by DOE. Required actions are complete, but a CHPRC management follow-up is needed to ensure the actions to prevent recurrence were effective.

RL Lead Assessor Closure Required: **YES [x]** **NO [ ]**

Contractor Self-Assessment: CHPRC performed a formal self-assessment of the issues identified above. The assessment team concluded that the Contractor's self-assessment activities regarding safety basis configuration control were generally effective. The contractor also submitted safety basis changes intended to return the safety bases to appropriate configuration control and correct the specific issues identified. Two of these submittals have been approved by DOE and the other is planned to be submitted soon.

Further, CHPRC has developed a process which is intended to prevent or minimize such errors. In response to an RL request (12-SED-0078), CHPRC states (CHPRC-1203372A R1) "Evaluation of this new process identifies the inherent potential for small document errors to be introduced during the multiple handling steps necessary to revise, review, approve, and release a revision to a safety basis document. Compensatory measures have been undertaken to help detect and prevent such errors. Nonetheless, recognizing the weaknesses inherent in multi-step manual processes, continuing efforts are underway to apply software approaches used in the commercial nuclear industry to help reduce potential vulnerabilities. These new approaches will be incorporated into CHPRC procedures as these tools become available." In light of all the above, these examples reveal inadequacies in the contractor control and implementation of the safety basis. As of the date of this report, it is not certain that the corrective actions will prevent repetition of these events.

Contractor Self-Assessment Adequate: **YES [x]** **NO []**

Contractor Management Briefed:

Ty Blackford, CHPRC Vice-President, Decontamination, Waste, Fuels, and Remediation Services
Alan Ramble, Director, Nuclear Operations Support and Compliance
John D. Williams, Xron Associates, Nuclear Operations Support and Compliance

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13-SED-0009

NOV 2 8 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – HANFORD SITEWIDE LOCKOUT/TAGOUT (LOTO) ISSUES

There are generally three types of work that involve hazardous energy isolation on the Hanford Site:

1. Cold and Dark method associated with Deactivation & Demolition where the energy source is permanently removed with no intent of reconnection and LOTO is no longer required.
2. Greenfield Construction type activities, where the system is built from the load to the energy source and LOTO is not required until there is an ability to connect the system to the energy source.
3. Servicing/Maintenance activities as defined in DOE-0336, which require full implementation of LOTO.

Recent events have brought to the attention of the Richland Operations Office (RL) that some servicing/maintenance (work) is being performed without LOTO. This is an issue that affects every Hanford Contractor. DOE-0336 Sections 5.4 and 5.9, which implement Occupational Safety & Health Administration 29 CFR 1910.147(c), require the Authorized Worker (AW) performing work to install their LOTO.

The issue manifests itself in multiple forms. Prime examples include:

1. The contractor will assign an AW to LOTO the electrical source and "safe it off," then they assign a non-electrical AW to perform work without LOTO.
2. The contractor will assign an AW to LOTO and remove a part of a piping system, and then they assign another AW to perform work without LOTO.

Each case mentioned above relies on an administrative process, such as the work package or operating procedure to prevent hazardous energy from reaching and injuring the AW. The reoccurrence of these issues show that the Controlling Organization and AW consider these practices to be acceptable. It is RL's clear expectation that each AW performing work on an energized system apply their AW Lockout prior to commencing that work.

These expectations need to be disseminated through management to each AW. Please provide to RL within 30 days of the date of this letter the actions you have taken or will take to assure full and expeditious implementation of DOE-0336, Sections 5.4 and 5.9.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

SED:JBG

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
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13-SED-0012

DEC 0 3 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 - TRANSMITTAL OF THE EVALUATION OF SAFETY OF THE SITUATION AND OPERABILITY DETERMINATION FOR THE WASTE ENCAPSULATION AND STORAGE FACILITY (WESF) UNREVIEWED SAFETY QUESTION (USQ) REGARDING RADIATION DEGRADATION OF THE POOL CELL CONCRETE

The purpose of this letter is to respond to the September 25, 2012, (CHPRC-1203815) letter requesting review and approval as required by 10 CFR 830, Subpart B, of the WESF positive USQ (WESF-12-151) regarding radiation degradation of pool cell concrete. The submittal is approved with no conditions of approval. The basis for the approval is documented in the attached Safety Evaluation Report.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

SED:DWC

Attachment

cc w/attach:
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DNFSB

Safety and Engineering Division
U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: November 2012

Safety Evaluation Report for the Evaluation of Safety of the Situation for WESF Degradation of Pool Cells Concrete Positive Unreviewed Safety Question

Safety Evaluation Report for the
Evaluation of Safety of the Situation for WESF Degradation of Pool Cells Concrete
Positive Unreviewed Safety Question

SIGNATURE PAGE

Prepared By:

11/8/12

Dennis W. Claussen, Nuclear Safety Engineer
Safety and Engineering Division

Date

Approved By:

11/8/2012

Pete J. Garcia, Jr., Director
Safety and Engineering Division

Date

Safety Evaluation Report for the
Evaluation of Safety of the Situation for WESF Degradation of Pool Cells Concrete
Positive Unreviewed Safety Question

Executive Summary

This Safety Evaluation Report (SER) documents the basis for the Richland Operations Office (RL) approval of the Waste Encapsulation and Storage Facility (WESF) Evaluation of the Safety of the Situation (ESS) regarding the potential for degradation of pool cell concrete due to exposure to radiation, and authorizes continued operation of WESF. The ESS documents actions that CHPRC has performed to minimize radiation to pool cell concrete and implementation of an Operational Restriction to prohibit cesium capsules in rows near end walls.

Review Scope

The CHPRC submittal from John G. Lehew III, to Jenise Connerly, RL, CHPRC-1203815, dated September 25, 2012, transmitted the WESF ESS for degradation of the pool cells concrete due to radiation exposure. This submittal addresses a positive Unreviewed Safety Question (USQ) declared concerning the potential for pool cell degradation. The RL staff from Safety and Engineering Division, and Central Plateau Division performed a review of this submittal.

Review Summary

Description of WESF Pool Cells

The pool cell area has 12 pool cells that support underwater storage of the strontium and cesium capsules. All pool cells have liners constructed of type 304 stainless steel. Although all pool cells, except Pool Cell 12, are designed for cover block installation, cover blocks are not installed on pool cells that store capsules to prevent potential damage to the capsules due to a cover block drop. Pool Cells 1 and 3 through 7 store capsules. Pool Cells 2 and 8 contain shielding water but do not store capsules. Pool Cells 9 through 11 are normally dry. The east and west walls of the pool cell area and the divider walls of the pool cells are all constructed of 12-inch thick reinforced structural concrete. The pool cell floors, except for Pool Cell 12, are constructed of 21-inch thick reinforced structural concrete. The Pool Cell 12 floor is constructed of 18-inch thick reinforced structural concrete.

Degradation Studies

INEEL/EXT-04-02319, *Literature Review of the Effects of Radiation and Temperature on the Aging of Concrete*, indicates degradation may result in a 30-50 percent reduction in concrete strength in the affected region due to exposure to radiation levels above E10 Rad. This study could not distinguish between the damage caused by high temperature and the damage caused by high levels of radiation exposure.

Beginning signs of deterioration at values of 1.30 E10 Rad for ordinary Portland cement are documented in SRNL-STI-2010-00004, *Determining the Effects of Radiation on Aging Concrete Structures of Nuclear Reactors – 10243*. Exposures reaching 8.36E10 Rad were reported to result in significant degradation of Portland cement paste samples. [It is noted that SRNL-STI-2010-00004 incorrectly converted MGys to Rad so the Rad values presented in this ESS are an order of magnitude lower than reported in SRNL-STI-2010-00004.]

SP-55-10, *The of Nuclear Radiation on the Mechanical Properties Concrete*, American Concrete Institute report, 1978

Gamma Radiation Exposure to WESF Pool Cell Structures

When conservatively assuming all capsules stored had maximum loading (75.8 KCi per capsule), and conservatively assuming all capsules have been continuously stored in a fixed location since 1976, the estimated overall maximum exposure to the surface of the concrete divider walls (walls between the pool cells) using MicroShield® is 3.3E11 Rad. The continued storage of cesium capsules in the WESF pool cells for another 10 years, accounting for decay, would result in overall concrete surface radiation exposures approaching 4E11 Rad (using the maximum capsule value). These gamma radiation exposures are approximately an order of magnitude above the value reported (1.30E10) for the beginning signs of deterioration for ordinary Portland cement paste samples and are also above the value of 8.36E10 Rad which was reported to result in significant degradation of Portland cement paste samples (SRNL-STI-2010-00004).

The exposure 0.5 inches into the concrete divider wall is reduced over 50 percent to 1.6E11 Rad. The exposure 1.0 inch into the concrete divider wall is reduced to 8.6E10 Rad. The estimated exposure at the center of the concrete divider wall is approximately 1E10 Rad (plus similar exposure from adjacent pool cell), such that the entire thickness of the wall may have been exposed to radiation levels of concern. Because of the water shielding, only the lower portions (approximately three feet up from the floor) of the 18 foot central pool cell divider walls would have regions of this estimated exposure level. Floor exposures are lower by over a factor of 10 because the racks are mounted approximately eight inches above the floor, and the capsules have end caps with a combined stainless steel thickness of 0.8 inches. The top one inch of the 21-inch thick floor may have been exposed to the radiation level of concern. End walls have also seen greatly reduced exposures by over a factor of 100 due to: 1) routine practice of storing strontium capsules (primarily a beta emitter) in Rack 1 toward the Pool Cell 12 end wall; and 2) not using the last four rows of Rack 3 under heat exchangers toward the pipe trench end wall.

Facility exterior walls that support the above grade structures have not seen any significant exposures as they are shielded by the primary storage pool cell physical structural arrangement. It should be noted that other mechanisms for concrete degradation at WESF are minimized. Chemical degradation of concrete is minimized due to stainless steel liners in the pool cells. Also, concrete degradation due to temperature is minimized since the water in the pool cells is typically at ~25°C.

Analysis of Structural Degradation

A conservative percentage degradation of concrete strength was assumed based on information presented in degradation studies (SRNL-STI-2010-00004). It was conservatively assumed that the outer one inch on each side of the bottom three feet of the pool cell divider walls has 100 percent loss of concrete strength and that the middle 10 inches of the wall has a 50 percent reduction of concrete strength. The remaining top 15 feet of the divider walls have no loss of concrete strength. It was also conservatively assumed that

the top one inch of the pool cell floor has a twenty percent loss of concrete strength and the remaining 20 inches of floor has no loss of concrete strength.

The stainless steel liner covers the pool cell walls and floors with 16ga and 14ga stainless steel respectively. The liner is attached to the concrete walls via 4-1/4 inch deep plate-stud anchors that are imbedded into the walls at a 24 inch grid on the flat surface and at 18 inch spacing at the corners. For the purpose of assessing effects on the liner the assessment assumed a loss in concrete compressive strength of 100 percent in the outer one inch of the bottom three feet of the pool cell divider wall and 50 percent in the middle 10 inches of the wall to determine the effect on the liner during a design basis seismic event. This will not result in any damage to the liner and the liner will continue to bear on the concrete and continue to isolate the concrete from pool cell water.

The seismic and structural analyses for WESF, CHPRC-01858, Revision 1, Structural Evaluation of WESF Concrete Degradation Due to Radiation, analyzed and compared the shear strength of the divider walls to the seismic demand resulting from a design basis earthquake of 0.25 g, with damping and ductility factors as described in the above analysis. This included both concrete and reinforcing rebar separately. The stainless steel liner was also assessed to determine the potential for liner damage due to shifting.

Considering only the rebar (i.e., assuming the concrete provides no shear strength over the bottom three feet of the divider walls) resulted in a shear strength capacity to demand ratio of 5.3 (324 kips rebar strength divided by 61 kips seismic demand). Although analysis of the shear strength of concrete alone to compare to the seismic demand of the divider walls did not account for degradation due to radiation exposure, a simple conservative application of the analysis provide a useful comparison of strength to demand. Considering the bottom three feet of the divider wall retained only 50 percent of initial strength for 10 inches of wall depth, and no wall strength for the outer 1 inch on each side results in a shear strength capacity to demand ratio slightly greater than 2. Alone, either the rebar or concrete are capable of withstanding the shear strength demand of the design basis earthquake.

Conservative assumptions include the following:

- The 61 kips seismic demand assumed cover blocks are in place on top of the walls (currently prohibited by TSR control).
- Strength of the concrete is based on design requirements of 3000 kips rather than the as built strength of 4500 kips.
- Concrete strength degradation assumed for comparison above far exceeds that calculated for the given radiological exposure.

The Review Team agrees with the conclusion that the structural integrity of WESF is not compromised under the levels of concrete degradation described above and the basin will continue to provide the credited safety functions.

Operational Restrictions

As discussed above, actions that have been implemented to minimize the gamma radiation exposure to the pool cell end walls are: 1) routine practice of the storage of strontium capsules (primarily a beta emitter) in

Rack 1 toward the Pool Cell 12 end wall; and 2) not using the last four rows of Rack 3 under heat exchangers toward the pipe trench end wall. These actions will reduce exposure by a factor of 100 to the pool cell divider walls. As a result, CHPRC has implemented the following operational restriction:

> Operational Restriction: Prohibit storage of cesium capsules in the first four columns of Rack 1 and the last four columns of Rack 3 for all pool cells to minimize long term gamma radiation exposure to the pool cell end walls.

Operational restrictions on placement of capsules have been a routine practice at WESF, which has resulted in greatly reduced exposures to the end walls. As discussed above, the new operational restriction will result in further reduction in exposures to the end walls. Based on the conclusions of the conservative analysis documented in CHPRC-01858 and this SER, the operational control is not required to enable the basin structure to maintain its integrity over an extended period of time. However, it does provide an important protective function over the life of the facility and should be maintained. While not considered to rise to the level of a Technical Safety Requirement, RL considers this control as part of the basis for approval.

Conditions of Approval

None.

Conclusion

Based on the above, the Review Team concludes that WESF pool cell concrete has sufficient strength to withstand a design basis earthquake based on CHPRC-01858. Therefore, the Review Team recommends the RL designated approval authority for WESF approve the submittal, with no conditions of approval.

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13-SED-0013

NOV 15 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – APPROVAL OF ANNUAL UPDATE TO THE PLUTONIUM FINISHING PLANT (PFP) SAFETY BASIS AND UNREVIEWED SAFETY QUESTION SUMMARY REPORT

This is in response to the July 3, 2012, letter (CHPRC-1202614) requesting approval of the annual update to the PFP Safety Basis. The Richland Operations Office (RL) has reviewed the changes as indicated and pursuant, to 10 CFR 830, approval is hereby granted with one condition of approval, which is documented in the attached Safety Evaluation Report. Any other material changes or deletions which may be included in the final document but not identified in the CH2M HILL Plateau Remediation Company request are not approved. The Documented Safety Analysis shall be implemented within 90 days of receipt of this letter.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

SED:AJC

Attachment

cc w/attach:
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Safety and Engineering Division
U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: November 2012

Review of 2012 Annual Update to the Plutonium Finishing Plant (PFP) Safety Basis Documents

Review of 2012 Annual Update of PFP Safety Basis Documents

Signature Page

Prepared By:

11/7/2012

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Safety and Engineering Division

Date

Approved By:

11/7/2012

Pete J. Garcia Jr., Director
Safety and Engineering Division

Date

Review of 2012 Annual Update of PFP Safety Basis Documents

Introduction

This Safety Evaluation Report (SER) documents the Richland Operations Office (RL) review of the contractors' submittal of the 2012 annual update to the Plutonium Finishing Plant (PFP) safety basis (Reference 1).

The subject transmittal was delivered to fulfill the CH2M HILL Plateau Remediation Company (CHPRC) contract requirement contained in Section C.3.2.2, *Nuclear Safety*, which states in part, "the contractor shall maintain, implement, and annually update (Deliverable C.3.2.2-1), the nuclear safety basis documents, and analyses for its Hazard Category 1, 2, and 3 facilities in accordance with 10 CFR 830, Subpart B, *Nuclear Safety Management.*" In satisfaction of this contract requirement, the contractor transmittal included the 2012 Annual Update to the PFP safety basis, including a revision to HNF-15500, *PFP Deactivation and Decommissioning (D&D) Documented Safety Analysis (DSA) (Attachments 1 and 3)*, a revision to HNF-15502, *PFP D&D, Technical Safety Requirements (TSRs)* (Attachments 2 and 4), and the annual summary of the *Unreviewed Safety Question (USQ) Evaluations at the PFP* (Attachment 5). In addition to the above, the contractors' submittal was developed in accordance with the criteria document *CHPRC- 01758, PFP Safety Basis Criteria Document for 2012 Annual Update* (Reference 2), which was issued in March 2012 consistent with the CHPRC internal procedure PRC-PRO-NS-700, *Safety Basis Development*. RL previously reviewed and concurred (informally) on the 2012 revision to the criteria document.

In December 2009 all of the plutonium bearing materials which had been stabilized, packaged and stored at PFP, were shipped off-site. The 2736-Z Complex facilities, which supported the plutonium stabilization and storage mission at PFP, were demolished in 2011/2012.

As a result, the remaining mission at PFP now includes the removal of process equipment/gloveboxes in the remaining PFP buildings (e.g., 234-5Z, 236-Z, 242-Z, and 291-Z), decontamination of equipment/gloveboxes in these buildings, Transuranic (TRU) waste recovery and packaging, deactivation of the remaining facility systems, and the final demolition of the PFP buildings to slab on grade.

The PFP DSA (HNF-15500) and TSR (HNF-15502) provide the safety basis documentation for the safe completion of this remaining work.

Scope of Review

The following documents were reviewed by the RL Review Team as part of this PFP safety basis change:

- HNF-15500, REVISION 7, PFP D&D DSA, Attachments 1 and 2 to Reference 1.

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- HNF-15502, REVISION 7, PFP D&D TSRs, Attachments 3 and 4 to Reference 1.
- Summary of USQ Evaluations at the PFP, March 1, 2011 through February 28, 2012, Attachment 5 to Reference 1.
- CHPRC- 01758, *PFP Safety Basis Criteria Document for 2012 Annual Update*, (Reference 2).

The RL Review Team included participation from nuclear safety, confinement ventilation, and fire protection subject matter expert's within the RL Safety and Engineering Division. This review also included support from personnel within the Operations Oversight Division. This review was performed using applicable portions of the RL Integrated Management System Authorization Basis review protocols.

Summary Description and Review of Major DSA Changes

The 2012 PFP annual update included changes to reflect facility modifications occurring over the 12 month period covered by this submittal. Changes were made to the DSA accident analysis to reflect the demolition of the 2736-Z Complex and to support closure of CHPRC-01196, "291-Z Building Justification for Continued Operation" (JCO, Reference 5). In addition, the concept of "Operationally Clean" was eliminated in this annual update to the PFP safety basis.

General DSA changes included:

- References and descriptive text related to the 2736-Z Complex (including the former buildings: 2736-Z, 2736-ZA, 2736-ZB, 2736-ZC, and 2721-Z) were either deleted and/or revised to reflect the completion of the demolition of the 2736-Z Complex in 2011 and early 2012.
- 291-Z Material-at-Risk (MAR) was included and risk associated with this source term was evaluated to support the closure of the associated 291-Z JCO (References 3 and 5).
- Universal deletion of text, analyses and references for the concept of "Operationally Clean," rendering the associated JCO (Reference 6) null and void, consistent with prior RL direction (Reference 15, PFP-12SED0004-4).
- This annual update acknowledged the Standard Large Waste Box (SLB2) as an approved waste container at PFP. Reference to the use of SLB2 container was added to sections throughout this revision to the PFP DSA and TSR's.
- The Safety Management Programs, Section 3, were not impacted by this annual update.

Summary of Substantial Changes to DSA Accident Analysis (Chapter 4):

All accident analyses related to the 2736-Z Complex and references to the 2736-Z Complex were deleted in this submittal. The 2736-Z Complex has been demolished to a slab on grade. Accident analyses, associated text and references to the now defunct concept of "Operationally Clean" were deleted in this annual update. In addition, this annual update included the following noteworthy

changes to key assumptions and approaches to analyses used in re-evaluating the inherent risks associated with some key elements/systems within the PFP D&D Project.

- MAR assumptions and revised/supplemental accident analysis, based on Non-Destructive Assay (NDA) data in 291-Z, were added in this annual DSA update to address the discovery of holdup material in the deactivated 26 inch process vacuum system (PVS) line in the 291-Z building (note: this material holdup discovery was previously addressed in the 291-Z Unanticipated Holdup JCO, Reference 5, which will be closed with the approval/implementation of this DSA/TSR update). This MAR discovery results in an increase in the 291-Z plutonium (Pu) inventory from 125 grams Pu to 1200 grams Pu. The 1200 grams of Pu (e.g,. MAR value) represents a conservative upper inventory limit, and is based on the criticality safety value, which was derived from the best estimate NDA value (Reference 7), plus an additional 25% margin of safety, which is consistent with the standard MAR estimating methodology for all PFP safety analysis. The submittal documents the location of the bulk of the 291-Z inventory in an isolated section of a deactivated 26 inch PVS line running through the building, just under the ceiling. The remainder of the 291-Z holdup material is located in either the 291-Z plenum or Room 501 vacuum sump, consistent with a prior engineering estimate included in the original DSA (issued circa 2004 timeframe). Based on a review of PFP historical records (References 8 and 9), the DSA submittal concluded the PVS holdup material was most likely residual plutonium nitrate from a previous process transfer upset involving the transfer of liquid solutions at PFP.
- The submittal provided technical references and a reasonable rationale to support a reduction in the assumed Airborne Release Fraction (ARF) x Respirable Fraction (RF) to 6E-03 and 1E-02 for the holdup material located in the 291-Z building (References 10, 11, 12 and 13). The basic technical argument is that for plutonium nitrate solutions, which are characteristic of the solutions historically transferred through the PVS, residual solutions would dry by air evaporation to form a large solid dry mass of material, which has been demonstrated to be characterized by a small RF. It is also documented that this dried material is not easily broken up into respirable sized pieces and is not easily suspended in air when disturbed. Material of this physical form is significantly different from the light, fluffy powder material used in tests to generate the ARF and RF values catalogued in DOE-HDBK-3010-94. The contractor's submittal also applied a Damage Ratio (DR) of 0.1 to the source term for this specific holdup MAR. The RL Review Team evaluated the contractor's approach, including the supporting technical references (References 10, 11, 12, and 13), the ARFs and RFs used, and concluded the proposed methodologies are reasonable and conservative for the subject 291-Z PVS source term. Application of a DR of 0.1 is also considered conservative and reasonable for this holdup. This is due to the air dried plutonium nitrate material in question being housed in a robust, circumferentially welded, stainless steel, schedule 40 line, which would require a substantial insertion of direct energy, which is not available nor postulated, to generate a large breach of this PVS line and a subsequent release of the bulk of the sequestered holdup/MAR in the line.

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- No changes were made to the MAR values used in analyses for the 234-5Z building, 236-Z building, 242-Z facility or the 216-Z-9 Operations support facility. Clarifying text was added to sections in Chapter 4 of the revised DSA (Section 4.2.4, Radioactive Material Holdup), to document that even though D&D activities in 2011 removed source term material from the 234-5Z and 236-Z buildings (approximately 10 percent of the MAR value was removed, based on the criticality values), the resulting decrease in the MAR for 236-Z and 234-5Z was too small to have any significant impact on the conclusions of the accident analyses, and consequently have no impact on the derived TSR control set.
- For the 291-Z MAR involved in a postulated fire accident, the release fraction selected was consistent with the CHPRC Safety Analysis and Risk Assessment Handbook (SARAH, PRC-STD-NS-8739, Reference 19) guidelines for non-combustible contaminated solids, and consistent with the known/expected physical form of these holdup materials (i.e., dried plutonium nitrate solids). In postulated fire scenarios involving this holdup, the contractor used ARF and RF values of 6E-03 and 1E-2, which the contractor considered appropriate values for non-combustible contaminated solids. The Review Team determined these values to be consistent with DOE-HDBK-3010-94 guidelines. The RL Review Team concurs with CHPRC regarding this supplemental 291-Z analysis, and concludes the evaluation assumptions used for this specific holdup material are conservative, bounding and compliant with applicable safety analysis contractual requirements and guidelines.
- This annual update established the following additional systems as "Defense-in-Depth": 1) Backup steam driven ventilation exhaust fans; and 2) 291-Z Fire Detection and Radio Fire Alarm Reporter System.

In this DSA annual update, the following accident analyses were impacted by the 291-Z MAR discovery, and these changes were incorporated to support closure of the 291-Z JCO (CHPRC – 01196).

1) Scenario Case A - Waste Staging and Storage Area Fires, control selection discussion was revised to reflect attributes of the new Specific Administrative Control (SAC) on Ignition Source Controls (SAC 5.19).

2) Scenario Case B-5 - Fire Involving Contaminated Equipment Outside or in Unconfined Area, revised to reflect the legacy holdup material (i.e., MAR) in 291-Z, located in deactivated 26 inch PVS line. The vacuum piping was modeled as contaminated non-combustible equipment with a holdup of 900 grams MAR. This holdup now represents the bounding MAR for a postulated fire outside or in an unconfined area.

3) Scenario Case C-4 - Fire in Unconfined Area, revised to reflect the MAR in 291-Z. The submittal argued that the nature of this MAR was characterized by a relatively low ARF X RF of 6E-03 and 1E-02. The re-analysis uses these adjusted ARF/RF values, recalculates the dose consequences to both the Collocated Worker (CW) and the Maximally-exposed Offsite Individual (MOI), and then credits the Ignition Source Controls (SAC 5.19), Combustible Material Controls (SAC 5.18), and the 291-Z Fire Alarm System as Defense in Depth (DID) equipment to reduce the risk to the collocated worker to an Risk Class (RC) III event.

4) Scenario Case E-3 - Equipment Explosion in Unconfined Area, was revised to acknowledge the 291-Z MAR as bounding, resulting in an unmitigated RC III event for both the Collocated Worker (CW) and Maximally-exposed Offsite Individual (MOI), due primarily to the use of an ARFXRF (e.g. 6E-03 X 1E-2) and DR of 0.1 for this special source term. Nonetheless, DID controls were added which included the Chemical Management Program, Combustible Material Controls and Flammable Gas Inventory Controls.
5) Scenario Case F-5 - Explosion in Unconfined Area was revised to acknowledge the 291-Z MAR inventory, with no impact to the dose consequences or derived controls, due to the nature of this material and its physical location.
6) Scenario Case I - Glovebox or Containment Loss of Ventilation was revised to acknowledge the 291-Z MAR inventory, with no impact to the dose consequences or derived controls, due to the nature of this material and its physical location relative to the other MAR at risk at PFP.
7) Scenario Case J-2 - Drop of Equipment from Unconfined Area, was revised to acknowledge the 291-Z MAR inventory, with no impact to the dose consequences or derived controls, due to the nature of this material and its physical location relative to the other MAR at risk at PFP.
8) Scenario Case J-4, Solid Spill from Equipment Removal - Unconfined Area, was revised to acknowledge the 291-Z MAR inventory, with no impact to the dose consequences or derived controls, due to the nature of this material and its physical location relative to the other MAR at risk at PFP.
9) Scenario Case K-3, Crane Load Impacts to PFP Structures, was revised to acknowledge the 291-Z MAR inventory, with no impact to the dose consequences or derived controls, due to the nature of this material and its physical location relative to the other MAR at risk at PFP.
10) Scenario Case M, Wet Oxide Criticality, was revised to acknowledge the 291-Z MAR inventory, and the Criticality Safety Program was credited for prevention to reduce the risk to the CW to RC III.

The Review Team evaluated the above changes and determined they are technically reasonable, employ conservative parameters and are consistent with the contractual requirements and Hanford guidelines for the performance of accident analyses.

High Risk Scenarios at PFP:

This PFP annual update resulted in no changes to the "High Risk Scenarios." The PFP High Risk Scenarios remain as follows (e.g., risk-dominant scenarios where RC III and/or RC IV has not been achieved for either the MOI and/or the CW): 1) Scenario A, TRU Waste Fire 242-Z; 2) Scenario B, Fire Involving Contaminated Equipment (242-Z); 3) Scenario C, Facility Wide Fires (234-5Z/242-Z); 4) Scenario K-5, Aircraft Crash; and 5) Scenario L, Seismic.

The most effective way to address the residual risks associated with these high risk scenarios is to move forward expeditiously with the D&D of the remaining PFP facilities that contain holdup MAR (e.g., 234-5Z, 236-Z, 242-Z and 291-Z). Since the estimated risk associated with these high risk scenarios is directly proportional to the in-situ MAR, the residual risk associated with

these high risk scenarios will decline as this MAR is removed from the remaining PFP facilities.

Engineered Safety Features

No substantial changes to the credited Engineered Safety Features at PFP were included in this annual update. The credited engineered systems remain limited to the following three critical safety significant systems: 1) Building Confinement; 2) Fire Sprinkler Systems; and 3) Criticality Safety Systems.

However, based on revised accident analysis and resolution of COAs, this annual update designated the 291-Z Fire Alarm System and the 291-Z Backup Steam Turbine-Powered Ventilation Exhaust Fans as Important-to-Safety Defense-in-Depth (ITS-DID) systems. The backup steam-powered turbines maintain the confinement function, ensuring worker safety and protecting against the inadvertent release of radionuclides, in the event electric powered exhaust is lost (a condition that has occurred several times over the last few years). The 291-Z Fire Alarm system ensures prompt notification of workers and the Hanford Fire Department in the event of a fire in the 291-Z building.

Impacts on PFP D&D TSR Control Set (HNF-15502):

This annual update included several changes to the PFP TSR. Most of these changes were associated with clarifications to text to improve understanding of the technical requirements, and/or changes to the imbedded references within the TSR (e.g., Hot Work control is now regulated by PRC-PRO-FP-40421, "Hot Work," which replaces the Mission Support Alliance specific document MSC-RD-9900, "Hot Work"). All references to the concept of "Operationally Clean" have been deleted from the TSR.

SAC 5.18, Combustible Controls was revised to now include the 291-Z facility. This change was required due to the revised DSA accident analysis, Scenario C-4 "Unconfined Area Fire," which credited combustible material controls with reducing the likelihood of a 291-Z fire involving the legacy MAR in the process vacuum system piping. Combustible material controls will remain applicable to the 291-Z facility until that legacy MAR has been removed from the PVS. This change supports the closure of the 291-Z MAR JCO (CHPRC-01196, Reference 5).

A new SAC 5.19, Ignition Source Control was prepared and submitted with this TSR annual update. This new TSR SAC ignition source control establishes the technical requirements applicable to potential ignition sources within 234-5Z, 236-Z, 242-Z and 291-Z, resulting in the identification and control of potential ignition sources at PFP, consistent with the DSA accident analysis, which credits ignition source controls as part of a frequency reduction of fire risks (e.g., Scenario A - TRU Waste Staging/Storage Area Fire, Scenario C- Equipment Fires, Scenario Case C-4 "Unconfined Area Fire"). This new TSR SAC includes technical requirement elements which cover "Hot Work," "Power tools, battery chargers, and energized power cords," and

"Spontaneous Ignition Sources" (e.g., oily rags). This new SAC is applicable to 234-5Z, 236-Z, 242-Z and 291-Z until these affected facilities have been de-inventoried of MAR. This new SAC also includes the necessary CONDITIONS, REQUIRED ACTION and COMPLETION TIMES, and periodic SURVEILLANCE REQUIREMENTS to properly define the essential elements of this SAC in support to implementation at PFP (note: terms in ***capitals*** are defined terms within the TSR's). In addition, this TSR change supports closure of an EM-23 Assessment finding related to Administrative Control (AC) and SAC usage at PFP. Previously, the ignition source control requirements at PFP were included within AC 5.20, General Fire Protection Requirements. A new TSR SAC is considered a more appropriate administrative control mechanism for this particular credited control.

SAC 5.21, Flammable Gas Inventory control was revised and now includes the 291-Z building. In addition, all references to the 2736-Z Complex have been deleted, as demolition of these buildings has been completed. Applicability of SAC 5.21 to the 291-Z building was established as a DID control, which will remain applicable until the 291-Z MAR is removed from the building, which is an unconfined space.

AC 5.22, Traffic Control, was revised to clarify that this control will remain applicable to the 216-Z-9 Crib until such time as responsibility for this high MAR waste site is officially transferred to the Decommissioning, Waste, Fuels and Remediation Services organization.

SAC 5.24, Material Management, Section 5.24.2.b, "Unconfined Area Inventory Control Requirements" was revised to acknowledge the 291-Z holdup material. The bulk of the holdup material in the 291-Z is located in a section of the deactivated PVS line, which is constructed of 6 inch diameter, schedule 40, circumferentially welded ductile stainless steel. The RL Review Team considers this PVS line to be a mechanically strong configuration with inherently low risks. Surveillance Requirements (and Conditions, Required Actions and Completion Times) were added to SAC 5.24 to document that material management assumptions are being maintained in accordance with the DSA accident analysis assumptions, and to ensure consistency with the SAC requirements in DOE-STD-1186 (Reference 17). Other changes to SAC 5.24 were basically word clarifications to technical requirements and restrictions deemed necessary for completeness (e.g., such as, for 236-Z canyon, TRU waste is limited to waste generated from within the canyon, and introduction of any other waste is prohibited).

The RL Review Team reviewed each TSR change included in this annual update submittal, and concluded these changes result in a technically complete set of accurate and consistent TSR controls, which together support the credited controls assumed in the revised mitigated accident analysis. The RL Review specifically confirmed the compatibility of the revised TSRs with the updated DSA accident analysis (e.g., Chapter 4 of revised DSA). These revised TSR controls, in the 2012 Annual Update, result in a mitigated risk envelope at PFP of RC III or less for all postulated accident scenarios, except for those few high risk scenarios previously mentioned.

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Review of 2012 PFP USQ Annual Summary Report

The CHPRC submittal included, as Attachment 5 to the submittal, the "Summary of USQ Evaluations at the PFP from March 1, 2011 through February 28, 2012," as required by the PRC contract (i.e., Section 3.2.2, Deliverable C.3.2.2), and consistent with the requirements of 10CFR830, Subpart B, "Nuclear Safety Management."

There were 299 total USQ determinations in the 2012 annual summary report. The following is the general breakdown of these USQ determinations: 1) 1 positive USQ determination associated with the occurrence report for the catastrophic failure of exhaust fan EF-1; 2) 154 negative USQ determinations in the "Facility Modification" category, three of which impacted the safety basis documentation; 3) 2 negative USQ evaluations as a result of occurrences/PISA's; 4) 71 negative USQ determinations in the Work Plan/Work Package/Work Package Engineering Document category; and 5) 71 negative USQ determinations in the "Others Items" category. Of the negative USQ determinations, the vast majority had no impact on the safety basis. However, three negative USQ's in the "Facility Modification" category required changes to the PFP safety basis documents.

To assess the robustness of the USQ process at PFP, the RL Review Team focused on the facility modification category of USQ Evaluations (USQE). From the list of 154 discrete items in the facility modification category, the RL Review Team selected a statistically appropriate sample population, based on achieving a 95 percent confidence level in the results of the sampling.

The objective of reviewing a sample of USQ's is to evaluate the technical accuracy of the negative USQ conclusion(s), as a means of assessing the overall robustness and integrity of the CHPRC USQ process at PFP. The calculated sample size for a sample population of 154 discrete items is 12 (for a 95 percent confidence interval). A random number generator was used to select the 12 items from the complete list of facility modification USQE's in the contractor's annual update. The following item numbers were selected from the list of 154 Facility Mod. USQE's: 112, 139, 141, 136, 151, 106, 085, 107, 043, 081, 079, and 127.

These item numbers corresponded with the following discrete facility modification USQE's in the list:

- PFP-023-2011 R1, "Deactivation of Hard-Wired Indicator for Seismic Annunciator ANN-714"
- PFP-100-2011 R1, "Electrically Deactivate Gloveboxes and Hoods in Room 159 and Room 166"
- PFP-142-2011, "Downgrade 2736-Z Complex Ventilation, Vacuum, Stacks, and Air System Drawings"
- PFP-208-2011, "Electrical Deactivation and Isolation of 2735-Z"
- PFP-386-2011, " Wall Removal Between Rooms 235A-1 and 235A-2"

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- PFP-396-2011, " Remove Gloveboxes HC-12S, HC-13MD, HC-1C, and HC-1D from Room 228B"
- PFP-437-2011, "Cancel Door 708 Replacement"
- PFP-485-2011, " Remove 2736-Z Complex Facilities from Essential Drawings"
- PFP-521-2011, " Stairs and Platform Removal from Room 235A-2 at PFP"
- PFP 557-2011, "Relocation of Fire Control Panel FCP-1414"
- PFP 588-2011, " Remove Breaker F8X212 from Service and Upgrade Winterization Drawings"
- PFP 589-2011, " Add Vibration Switches to Exhaust Fans"

The RL Review Team evaluated the above USQ determinations and concluded they were compliant with the USQ process requirements, and contained sufficient technical details directly and/or by reference to support the final negative determination. In addition, this USQ sampling provided the RL Review Team with a level of confidence that the PFP USQ process is functioning properly and generates technically accurate results which meet USQ contract requirements.

Justification for Extension of Service Life of Filters in Filter Rooms FR-309, FR-313, and FR-314

RL previously approved the continued (restricted) use of aged filters in filter rooms FR-309, FR-313, and FR-314 based on the rationale provided in CHPRC Document CHPRC-00156, "*Justification for Extended Use of Aged HEPA Filters in Confinement Ventilation System Exhaust Filter Rooms at the Plutonium Finishing Plant*" (Reference 18). The specific RL approval (documented in 10-SED-0005, Reference 20), granted PFP authorization to use these filter rooms through November 17, 2012, and included the following key constraints and criteria:

- Normal operations will use compliant filter rooms (FR-310, FR-312, FR-315 & FR-318).
- All three filter rooms that exceed 10 years of age (FR-309, FR-313 and FR-314) will be used for Emergency Use only and only up to 90 days.
- The expected dP across the filters (FR-309, FR-313 and FR-314) from worst case fire soot loading is well below the capability of the filters.
- The current values for dP across the filters (FR-309, FR-313 and FR-314) is low, which provides ample margin for continued operation.
- The E-3 filters do not operate in a harsh environment which might accelerate degradation.
- All events within the PFP Safety Basis for which filtered exhaust is credited continue to show low dose consequences to the MOI regardless of filter performance.
- The cost benefit evaluation of replacing the filters (at this time) did not justify the negative impacts to the D&D activities that will ultimately further reduce risk.

At the time RL approved continued (restricted) use of these filters, demolition of 234-5Z was scheduled to begin in September 2012, and was to be completed in 2013. During the past three years the schedule for D&D of PFP has been extended through 2015 (and possibly beyond), which

now requires replacement of these filters. Due to other facility priorities and difficulty in obtaining replacement High-efficiency particulate air (HEPA) filters in a timely manner, additional time is now required to complete replacement of HEPA filter rooms FR-309, FR-313, and FR-314.

At this time, PFP continues to conduct operations with E-3 and E-4 filter rooms which are compliant with all requirements. During the past three years, the FR-309, FR-313, and FR-314 filter rooms have only been placed into operation to allow aerosol testing of the other normally on-line and fully compliant E-3 and E-4 filter rooms. The cumulative operation time for filter rooms FR-309, FR-313 and FR-314 over the past three years, has been less than two weeks. Due to infrequent use the last three years, any degradation of filter rooms FR-309, FR-313, and FR-314 has been primarily affects of aging, and not the result of humidity, chemicals or radionuclides impacts, and/or particulate loading.

The rationale for allowing the restricted use of these older filter rooms for an additional 120 days, is the same as the original rationale presented in CHPRC-00156 and reflected in 10-SED-0005, which concluded the incremental risk associated with Emergency/Restricted Use of these filter rooms in excess of 10 years old, is qualitatively determined to be insignificant. As a result, the RL Review Team concluded that granting PFP an additional 120 days past November 17, 2012 to replace the HEPA filters in FR-309, FR-313, and FR-314 will not measurably increase the risk to the government, and therefore a 120 day extension for completion of filter replacement work is recommended and approved with this action.

Closed Conditions of Approval (COA)

The following COA's are considered closed with the approval and implementation of this annual update.

- PFP- 12SED0004- 1: Implement redlines to SAC 5.17 "Confinement Barrier Door Controls" and LCO 3.2.1 "Confinement Ventilation."
- PFP-12SED0004-4: Suspend implementation of SAC 5.7, Operationally Clean, until a safety basis revision is submitted and approved to resolve these items.

Lastly, PFP-12SED0004-2 requested an engineering report regarding the Confinement Ventilation System excursion due to PFP Room 308 Uninterruptable Power Supply surveillance work errors (Reference: Occurrence Report EM-RL-CPRC-PFP-201 1-0005), and PFP- 12SED0004-3 requested a revised PFP Fire Hazards Analysis be prepared and issued. It is acknowledged that both of these COA's were closed via separate contractor actions.

Review of 2012 Annual Update of PFP Safety Basis Documents

Conditions of Approval

The JCO "Unanticipated Holdup Discovered in 291-Z" may be closed upon implementation of this annual update. However, consistent with prior authorizations (Reference 16), heavy lifts over the 291-Z building shall continue to be performed as "Critical Lifts" and COA PFP-12SED0095-1 (Reference 16) shall be replaced with the following COA:

PFP-13SED0013-1: Heavy lifts over the 291-Z building shall be conducted as "Critical Lifts" to minimize the potential for load drop accidents which could adversely impact important safety equipment installed in this building.

Conclusion

The RL Review Team recommends the RL Approval Authority approve the 2012 PFP Annual Update submitted in Reference 1, subject to the single COA above. The contractor shall implement the approved PFP safety basis changes within 90 days of this approval.

References

1. Letter, CHPRC-1202614, J.G. Lehew III, CHPRC, to J.C. Connerly, DOE-RL, "Transmittal of Annual Update to the Plutonium Finishing Plant Safety Basis and Unreviewed Safety Question Summary Report," dated July 3, 2012.

2. CHPRC- 01758, *"PFP Safety Basis Criteria Documentfor 2012 Annual Update,"* Revision 0.

3. Letter, D. S. Shoop and J. C. Connerly, RL, to J. G. Lehew III, CHPRC, "Contract No. DE-AC06-08RL14788 – Approval of Justification for Continued Operation (JCO) For Operationally Clean Limitations Resultant from External Review Findings," CHPRC-01203, Revision 0, 11-SED-0099, dated May 17, 2011.

4. Letter, D. S. Shoop and J. C. Connerly, RL, to J. G. Lehew III, CHPRC, "Contract No. DE-AC06-08RL14788 – Approval of Justification for Continued Operation (JCO) Concerning Unanticipated Holdup Discovered in 291-Z Building," 11-SED-0110, dated June 10, 2011.

5. Letter, CHPRC-11012842, "JCO - Unanticipated Holdup Discovered in 291-Z," March 10, 2011.

6. Letter, CHPRC-1100861, "JCO – Operationally Clean Limitations Resultant from External Review Findings," dated February 28, 2011.

7. Memorandum, 3B200-KTB-10-133, Rev 2, "NDA Results for 291-Z 26 Inch Vacuum Lines," January 2011.

8. Letter, D.T. Crawley, PFP Process Engineering to W.J. Gartin, Manager, Weapons Manufacturing Division, dated November 1964, concerning the transfer of plutonium nitrate solutions at PFP.

9. Letter (no. 65490-87-085), H. H. Hopkins, Advanced Process Group to PFP Issues File, dated April 1987, concerning contamination in the 291-Z sump.

10. "Nuclear Weapons Complex – Management of Health, Safety and the Environment," National Research Council, Washington D.C., 1989, Appendix D – Plutonium.

11. "Plutonium Release Studies – Part IV: Fractional Release from Heating Plutonium Nitrate Solutions with Flowing Air," J. Mishima, LC Schwendiman, CA Radasch, Battelle Memorial Institute – Pacific Northwest Laboratory, 1968.

12. HW-69738, "Parameters in the Conversion of Plutonium Nitrate to Plutonium Trichloride by a Direct Calcination-Fluid Bed Chlorination Process," MJ Rasmussen, GL Stifffler, HH Hopkins, General Electric, 1961.

13. *Section E – Pilot Plant Work* of BNWL-1941, "Results of Research to Evaluate solid Plutonium Nitrate as a Safe Shipping Form," GH Bryan, JK Thompson, HH Van Tuyl, CL Brown, JL Ryan, Battelle Pacific Northwest Laboratories, 1977.

14. CHPRC-00179, Revision 2, Fire Hazards Analysis for the Plutonium Finishing Plant.

15. Letter, D. S. Shoop and J. C. Connerly, RL, to J. G. Lehew III, CHPRC, "Contract No. DE-AC06-08RL14788 - Response to CHPRC Transmittal of Annual Update to the PFP Safety Basis and USQ Report," 12-SED-0004, dated December 21, 2011.

16. Letter, D. S. Shoop and J. C. Connerly, RL, to J. G. Lehew III, CHPRC, "Contract No. DE-AC06-08RL14788 –"Approval of Page Change Revision to JCO – Unanticipated Holdup Discovered in 291-Z," 12-SED-0095, dated September 11, 2012.

17. DOE-STD-1186-2004, Specific Administrative Controls, August 2004.

18. CHPRC-00156, *Justification for Extended Use of Aged HEPA Filters in Confinement Ventilation System Exhaust Filter Rooms at the Plutonium Finishing Plant,* November 2008.

19. PRC-STD-NS-8739, Revision 0, Change 1, "CHPRC Safety Analysis and Risk Assessment Handbook (SARAH)," dated August 2011.

Review of 2012 Annual Update of PFP Safety Basis Documents

20. Letter, D. A. Brockman and J. Osso, RL, to J. G. Lehew III, CHPRC, "Contract No. DE-AC06-08RL14788 – PFP Safety Basis Changes to Close Out HEPA Filter Age Degradation JCO and Associated USQ," 10-SED-0005, dated November 17, 2010.

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-SED-0014

DEC 0 3 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 - TRANSMITTAL OF THE ANNUAL UPDATE TO THE SOLID WASTE OPERATIONS COMPLEX (SWOC) MASTER DOCUMENTED SAFETY ANALYSIS (MDSA), HNF-14741, REVISION 9, THE SWOC TECHNICAL SAFETY REQUIREMENTS (TSR), HNF-15280, REVISION 9, AND THE SWOC FACILITIES UNREVIEWED SAFETY QUESTION DETERMINATIONS

This is in response to the June 27, 2012, letter (CHPRC-1202300) requesting approval of the safety basis documents for the SWOC. The Richland Operations Office (RL) has reviewed the changes (including resolution to RL review comments documented in the CH2M HILL Plateau Remediation Company (CHPRC) Review Report CHPRC-01803) as indicated and pursuant to 10 CFR 830, approval is hereby granted to the final Revision 9 of HNF-14741 and HNF-15280 contained in the CHPRC-0183 Review Report with no conditions of approval. Any other material changes or deletions which may be included in the final document but not identified in the CHPRC request are not approved. The attached Safety Evaluation Report (SER) describes the RL review and basis for approval of Revison 9 to the SWOC MDSA and TSR, and concludes that all previous conditions of approval have been satisfied. The revised safety basis shall be implemented within 90 days of receipt of this letter.

As documented in the attached SER, RL reviewed the submitted USQ Determinations performed from October 1, 2010 through December 31, 2011, and no comments were generated. The submitted listing of safety basis documents was also reviewed, and RL concurs that the list does represent the currently authorized and approved list of safety basis documents with the inclusion of the document number of this approval letter for Revisions 9 of the MDSA and TSR.
RL concurrence with the list of documents making up the safety basis does not relieve the contractor from any requirement of 10 CFR 830, or establish actions required to conform to said requirements as a change as defined by Clause I.102, FAR 52.243-2, Changes – Cost Reimbursement.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

SED:PJM

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Safety and Engineering Division
U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: October 2012

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SOLID WASTE OPERATIONS COMPLEX (SWOC) MASTER DOCUMENTED SAFETY ANALYSIS (MDSA) AND TECHNICAL SAFETY REQUIREMENTS (TSR)

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SWOC MDSA AND TSR

Signature Page

Prepared By:

11/7/12

P. J. Macbeth, Review Team Leader
Safety and Engineering Division

Date

Approved By:

Pete J. Garcia Jr.

11/7/2012

Pete J. Garcia Jr., Director
Safety and Engineering Division

Date

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SWOC MDSA AND TSR

Introduction

This Safety Evaluation Report (SER) documents the Richland Operations Office (RL) review of the Solid Waste Operations Complex (SWOC) Master Documented Safety Analysis (MDSA) (HNF-14741), Revision 9, Technical Safety Requirements (TSR) (HNF-15280), Revision 9, and the summaries of Unreviewed Safety Question Determinations (USQDs) performed during the reporting period between October 1, 2010 and December 31, 2011, as transmitted in the June 27, 2012, (CHPRC-1202300) letter requesting review and approval of the annual updates to the SWOC MDSA and TSR. Four facilities comprise SWOC, the Low-Level Burial Grounds (LLBG), the Central Waste Complex (CWC), the T Plant Complex (T Plant), and the Waste Receiving and Processing Facility (WRAP). In accordance with contract requirements and consistent with 10 CFR 830, Subpart B, the contractor submitted this update to the SWOC MDSA to address previous conditions of approval, the changes in operations evaluated in the USQDs, and planned future activities as described below in the Scope of Review section of this SER.

The CH2M HILL Plateau Remediation Company (CHPRC) request included the following documentation for review: Attachments 1 and 2 are the clean copies of Revision 9 to the SWOC MDSA and TSR, respectively. Attachment 3 contains a redline/strikeout version of Attachment 1 and Attachment 4 contains a redline/strikeout version of Attachment 2 to facilitate the review. Attachments 3 and 4 are transmitted for information only. Attachment 5 contains the USQD summary reports for the SWOC, the Solid Waste Storage and Disposal (LLBG and CWC), T Plant, and the WRAP facilities for Unreviewed Safety Questions (USQs) generated between October 1, 2010, and December 31, 2011.

Attachment 6 is a revised USQD addressing the single open Condition of Approval (COA) from the SER for Revision 8 that is being closed by this review as described in the Previous COA section below.

Attachment 7 presents a listing of documents that comprise the SWOC Safety Basis. The list includes, upon RL approval, Revision 9 of the MDSA and TSR submitted as Attachments 1 and 2, as revised by the Review Report CHPRC-01803 to resolve review comments, as well as this SER. The CHPRC Safety Management Program and its associated approving SER are also part of the SWOC Safety Basis.

Scope of Review

The RL review included each of following documents attached to the contractor's transmittal letter, CHPRC-1202300:

- Attachments 1 and 3: HNF-14741, Revision 9, *MDSA for the SWOC.*
- Attachments 2 and 4: HNF-15280, Revision 9, *TSR for the SWOC.*
- Attachment 5: 2009 Annual Summary of SWOC USQDs.
- Attachment 6: SER COA Closure USQ.
- Attachment 7: SWOC Safety Basis Documents List.

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SWOC MDSA AND TSR

The major changes in the Revision 9 annual update documents include:

- Incorporation of hazards analysis for K Basin sludge receipt and storage at T Plant and facility layup activities imposed by the "cool and dim" operational status.
- Text revisions throughout the safety analysis and TSR documents to support receipt of K Basin Sludge.
- Revisions to support intra-facility shipments using trucks in addition to the forklifts that are already authorized.
- Deletion of one fire accident (Fire (FIR)-7A) that was bounded by other analyses.
- Downgrading of the 2402-W and 2402-WC structures to Less Than Hazard Category (HC) 3 structures to support their use as storage areas for operational supplies.
- Provided clarifications of text and updates to accommodate revised references.

Development of HNF-21239, *SWOC Fire Hazards Analysis* (FHA), Revision 5A, constitutes an annual update to the SWOC FHA and has been integrated into the MDSA during the MDSA annual update. This annual update of the FHA incorporated minor changes identified throughout the course of the year. The FHA has been provided informally to RL Safety and Engineering Division (SED) and is available electronically on the Waste and Fuels Management Project (W&FMP) Nuclear Safety website.

The Criticality SERs supporting the work scope defined in the MDSA are also available electronically for review on the W&FMP Project Nuclear Safety website.

To facilitate the delivery of a quality product, multiple formal MDSA, TSR, and FHA document review and comment resolution cycles were performed as documented in draft review report CHPRC-01803. Staff from SED, Operational Oversight Division (OOD), and Program personnel have been included on the designated review team and provided opportunities to review the safety basis documentation prior to formal submittal. This process is consistent with the in-process review cycles previously committed to by RL and CHPRC management.

CHPRC initiated the incorporation of the K Basin sludge analyses in 2011 to support the receipt of sludge at T-Plant. The analyses were initiated as part of Revision 9 to the MDSA because personnel with appropriate technical knowledge were available and to support procurements. The Sludge Treatment Project (STP) schedule has been delayed, and RL was requested to only approve the sludge analyses to support procurement of components should funding become available. CHPRC will come back to RL to formally request approval to implement the MDSA in support of sludge receipt and storage operational activities at a future date. This additional approval request will be made consistent with STP funding availability and project schedules.

The RL Review Team included participation of nuclear safety, engineering, and fire protection staff from SED, OOD, and staff from the Waste Disposal Project. This review was performed in accordance with the applicable portions of the RL Integrated Management System Authorization Basis review process.

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SWOC MDSA AND TSR

Summary of Review

This review included revisions to the MDSA and TSR, and the supporting USQDs performed during the past reporting year, as summarized below.

Revision 9 of the MDSA incorporates changes that were required for planned work within the SWOC. This revision will keep documentation current and reflects changes in the facility, the work, and the hazards as they are analyzed in the MDSA. This discussion of changes to the MDSA is not intended to be all-inclusive, but provides a general understanding of Revision 9. Approval of K Basin sludge receipt and storage operations is not being requested at this time and will not be authorized. RL is only approving the designation of sludge safety components (e.g., Sludge Treatment System (STS) Cask, Sludge Treatment Storage Containers (STSCs), and Nitrogen Purge System) in support of procurement activities. A separate request to approve implementation of K Basin sludge receipt and storage at T Plant will be submitted by CHPRC at a future date consistent with the STP milestones. The most significant changes include:

Chapter 2, Facility Description

- Added new description for receipt and storage of STSCs at T Plant;
- added allowances for CWC buildings to be managed by WRAP;
- provided additional references for Remote Handled (RH) wastes activities;
- clarified and corrected references for building code of record, construction codes, and fire codes;
- clarified exhaust fan configuration for 2403-WA, -WB and -WC;
- clarified that the 2706-TB liquid waste system has been deactivated;
- added reference to RH 72-B casks for use at CWC;
- provided a revised description for intra-area transfers to include other motor vehicles (i.e., trucks, tractors, trailers) for RL consideration. The associated changes involving this set of changes are not approved, and will be redacted to leave the wording as it was in Revision 8 of the MDSA and TSR;
- added discussion on use of water in LLBG to aid process and control dust;
- added discussion on ground thawing systems that can be used in LLBG;
- clarified packaging configurations for National Fire Protection Association containers;
- clarified alarm functions for the 2706-T fire alarm system; and
- added discussion downgrading the 2402-W and WC buildings to Less Than HC 3 structures to support storage of general supplies.

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SWOC MDSA AND TSR

Chapter 3, Hazard and Accident Analysis

- Incorporated CHPRC-01468, Lay-Up Plan Hazards Analysis (HA) and CHPRC-01625, K Basin Sludge HA into Table 3.3.2.7-1, *Bounding Accident Scenarios at SWOC;*
- clarified binning of Hazards to accidents to resolve USQ SWOC-12-026p issues;
- incorporated activities associated with receipt and storage of STSCs at T Plant;
- provided hazard category reduction methodology for changing a facility hazard categorization to less than HC 3;
- revised Table 3.3.2.9-1, *SWOC Equipment Important to Safety* to include the vented drum overpack, STSC Design, STS Cask Design, and Nitrogen Purge System as Safety Significant Structures, Systems and Components; added the 2706-T dP alarm system, 221-T Cell Leak Detection System, and STSC Overpack as defense-in-depth equipment;
- added DE-Ci values to the accident source term tables;
- added clarification that the 2706-TB liquid containment system has been removed from service;
- added clarification that FIR-4 bounds intra-facility transfers that utilizes forklifts and other motorized vehicles (e.g., trucks, tractors, trailers). The associated changes involving this set of changes are not approved, and will be redacted to leave the wording as it was in Revision 8 of the MDSA and TSR;
- provided clarification that FIR-7 bounds all large inside fires;
- deleted FIR-7A, *Large Inside Fire with Aisle Spacing*; analysis performed for FIR-7 was determined bounding for all large inside fires;
- provided clarification that FIR-10 bounds fire, deflagration/explosion scenarios associated with receipt and storage of STSCs at T Plant; expanded control set to include STSC Design, STS Cask Design, Nitrogen Purge System, and K Basin Sludge Storage Control;
- provided clarification that SP-1 bounds spill scenarios associated with intra-facility transfers utilizing forklifts and other motorized vehicles (e.g., trucks, tractors, trailers). The associated changes involving this set of changes are not approved, and will be redacted to leave the wording as it was in Revision 8 of the MDSA and TSR;
- provided clarification that SP-4 bounds spills and over pressurization scenarios associated with receipt and storage of STSCs at T Plant; expanded control set to include STSC Design, Nitrogen Purge System, STS Cask Design, Cover Block Vent path, and K Basin Sludge Storage Control;

- provided clarification that SP-5 bounds spills scenarios associated with storage of STSCs at T Plant; expanded control set to include STSC Design and K Basin Sludge Storage Control;

- for criticality accident (CR)-1, provided clarification that the 2706-TB liquid containment system has been removed from service; deleted reference to Criticality Safety Evaluation Report (CSER) 03-001;

- for CR-2, deleted reference to CSER 03-001; expanded control set to include the K Basin Sludge Storage Control;

- provided clarification that SP-7 bounds spray release scenarios associated with a leaking STSC; expanded control set to include STSC Design and K Basin Sludge Storage Control; and

- added discussion downgrading the 2402-W and WC buildings to Less Than HC 3 structures to support storage of general supplies.

Chapter 4, Safety Structures, Systems, and Components

- Revised Table 4.1-1, *Safety Related Structures, Systems, and Components* to include the STSC, STS Cask, and Nitrogen Purge System;

- added new Section 4.4.17 for the STSC;

- added new Section 4.4.18 for the STS Cask;

- added new Section 4.4.19 for the Nitrogen Purge System;

- expanded description for Section 4.5.1, *Venting Waste Containers* to clarify the control strategy for the Specific Administrative Control (SAC) and safety function provided by the SAC; expanded description on required surveillances to provide bases for periodicity and adequacy of actions performed;

- expanded description for Section 4.5.3, *Vehicle Access Control* to clarify the control strategy for the SAC and safety function provided by the SAC; expanded description on required surveillances to provide bases for periodicity and adequacy of actions performed;

- expanded description for Section 4.5.4, *Container Management* to clarify the control strategy for the SAC and safety function provided by the SAC; expanded description on required surveillances to provide bases for periodicity and adequacy of actions performed;

- added new Section 4.5.5 for K Basin Sludge Storage Control (new SAC); and

- updated Table 4.5-1, Summary of Specific Administrative Controls to include the new SAC for K Basin Sludge Storage Control.

Chapter 5, Derivation of Technical Safety Requirements

- Revised chapter to update the credited controls summary tables consistent with the accident analysis and control set outlined in Chapters 3& 4 and the TSRs.

Chapter 6, Prevention of Inadvertent Criticality

- Provided clarification that TSR Administrative Control (AC) key elements may differ or be more restrictive than the key attributes described in HNF-11724;
- provided clarification that HNF-7098, project procedures, and the TSR AC allow CSERs to be implemented directly in work control documents without a Criticality Prevention Specification; and
- provided clarification on evaluating fire/criticality scenarios/hazardous conditions consistent with those analyzed in the FHAs and criticality safety analysis.

Chapter 7, Radiation Protection

- Updated Table 7.6.3-1, T*echnical Basis Documents for SWOC Facilities* to include current reference documents for work space monitoring and internal dosimetry.

Chapter 11, Operational Safety

- Expanded discussion on control of explosives (e.g., Canine Training Aids and Jet Shot Well Decommissioning).

Chapter 17, Management, Organizational, and Institutional Safety Provisions

- Expanded discussion on Hanford Fire Department to identify services provided by the Fire Protection Organization;
- removed references to Central Characterization Project and provided description for the WIPP Certification Program Support Organization; and
- added new subsections for Decontamination & Decommissioning, Plutonium Finishing Plant Closure Project, W&FMP, and Soil and Groundwater Remediation; for W&FMP, provided clarification that there were no variances between HNF-11724 and the SWOC MDSA.

Chapters 1, 8-10, and 12-16

- Incorporated minor administrative changes (e.g., revision numbers, reference numbers).

Changes in the TSR involved replacing the previous Inert Gas System Limiting Condition for Operation (LCO) that had been proposed for handling high activity sludge from K Basin with the Nitrogen Purge System LCO for handling STSCs. An associated SAC for T Plant Sludge Storage Control was also added. Three new Design Features were also added; Vented Container

Overpacks, STSCs and the STS Cask. There were also a few clarifications on frequency requirements and wording changes to clarify the bases for the TSR controls.

During the course of the review, there were a few editorial and clarification comments generated by the RL Review Team that were adequately dispositioned as shown in CHPRC-01803, Revision 0, *Document Review Report SWOC MDSA and TSRs Revision 9,* written to document the changes and revisions that have been incorporated into the documents prior to release of Revision 9 of the SWOC MDSA and TSR. CHPRC-01803 includes a clean copy of the revised Revision 9 of the entire MDSA and TSR so there is no ambiguity on what RL is approving.

The RL Review Team comments are documented in the review report CHPRC-01803, and included editorial corrections, questions on a couple of accident analysis parameters, and clarifications on TSR requirements wording. The changes proposed to allow use of motorized vehicles for movement of containers within SWOC as intra-facility movements were not approved because they did not include adequate analyses of potential transportation accidents and controls to meet regulatory requirements. The documents were redacted to leave the wording in the sections addressing proposed truck transfers as it had been approved in Revision 8 of the MDSA and TSR. All RL review comments were adequately resolved.

Changes to clarify the TSRs were reviewed carefully and clarified to ensure that the intent of the controls was clearly stated and that they could be effectively implemented. The formerly inactive Inert Gas System LCO that had been imposed for management of the high activity sludge from K Basin was replaced with a Nitrogen Purge System LCO and Surveillance Requirements designed to manage receipt of the STSCs. The new SAC on Sludge Storage at T Plant is intended to prevent or minimize occurrence of waste container-related accidents. Specific elements include provisions for receipt, handling, and storage of STS casks and STSCs containing K Basin sludge materials.

The foregoing changes including the other editorial and clarification changes were judged by the RL Review Team to be adequate and acceptable for this revision to the SWOC safety basis. The accidents presented provide a spectrum of potential conditions representing the risks of operations at SWOC, and are the bases for selection of a robust control set that provides adequate protection to workers, the public and the environment. Residual risks being accepted by RL that could arise during SWOC activities appear to be acceptably small and of low frequency. The objectives of preparation and approval of the safety basis specified in 10 CFR 830, Subpart B appear to have been met.

In the judgment of the RL Review Team, the changes to clarify existing safety basis requirements and wording did not result in, or reflect, a significant change in the risk presented by the facilities covered by this safety basis. Review of the submittal as summarized above resulted in no significant issues being identified. A few comments and editorial/clarification items were provided to CHPRC by the RL Review Team for resolution prior to issuance of Revision 9 of the SWOC MDSA and TSR. All comments have been resolved and documented in CHPRC-01803. As a result, the Review Team recommends approval of the submitted changes to the SWOC safety basis, as modified to resolve RL Review Team comments as documented in the review report, CHPRC-01803.

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SWOC MDSA AND TSR

Unreviewed Safety Questions

Attachment 5 of the submittal letter provided a summary of the Potential Inadequacies in the Safety Analysis (PISA) determinations and USQDs performed during this reporting period. These were reported in four subsections, one for each SWOC operating organization and one for SWOC as a whole. The summary on page 1of 28 of Attachment 5 summarizes the contents of the entire attachment.

During the past reporting year Attachment 5A indicates there were no PISA determinations and 32 USQDs (including revisions) performed for SWOC as a whole, none of which were positive.

For Solid Waste Storage and Disposal facilities Attachment 5B indicates there were no PISA determinations and 20 USQDs (including revisions), none of which were positive.

Attachment 5C indicates that for T Plant there were no PISA determinations, and nine USQDs, none of which were positive.

There were no PISA determinations and 20 USQDs (including revisions) performed specific to the WRAP facility listed in Attachment 5D, none of which were evaluated to be positive. Revision 3 to USQD WRP-10-006 evaluated removal of continuous air monitors (CAMs) from the WRAP Shipping and Receiving and Non-Destructive Examination/Non-Destructive Assay areas of the facility to resolve questions from Revision 8. Extensive discussions between CHPRC and RL were held and the issues have been adequately addressed.

The RL Review Team reviewed the submitted PISA and USQD summaries and identified no issues with their conclusions.

Condition of Approval

None.

Previous Conditions of Approval

The previous SER (11-SED-0106) approving Revision 8 to the MDSA and TSR contained one COA:

> SWOC-11SED0106-1: Revise USQD WRP-10-006 to properly recognize Significance of the proposed action and provide RL with adequate justification for the removal of CAMs credited for worker protection during accident conditions. Work with RL subject matter experts (SMEs) to resolve questions on CAM removal methodology and approval authority for changes to facility configurations.

Several meetings were held between the CHPRC W&FMP Nuclear Operations Support and Compliance organization and SED Nuclear Safety and Radiation Protection personnel to resolve open issues related to a previously issued USQ supporting CAM removals at WRAP. Consensus was reached on an appropriate analysis and the USQ (WRP-10-006) was revised as required.

SAFETY EVALUATION REPORT FOR THE ANNUAL UPDATE TO THE SWOC MDSA AND TSR

Based on the RL Review Team evaluation of the changes in the basis and supporting USQD, the COA SWOC-11SED0106-1 is closed by this review.

Safety Basis Documentation

The RL Review Team reviewed the list of safety basis documentation submitted as Attachment 7 to CHPRC-1202300 and concurs that the following documents comprise the approved SWOC Safety Basis:

- SWOC MDSA, HNF-14741, Revision 9, *MDSA.*
- SWOC TSR, HNF-15280, Revision 9, *TSRs for the SWOC.*
- DOE/RL SER approving the MDSA and TSR, Revision 9 documents, 13-SED-0014.
- PRC SMP, HNF-11724, Revision 8 or Latest Revision, *CHPRC Safety Management Programs.*
- RL SER for HNF-11724, Revision 8, 11-SED-0120.

Conclusions

The RL Review Team recommends that the designated RL approval authority approve the SWOC MDSA, HNF-14741, Revision 9, and TSR, HNF-15280, Revision 9 initially transmitted in letter CHPRC-1202300, as revised to resolve review comments as documented in CHPRC-01830, Revision 0, *"Document Review Report for the Solid Waste Operations Complex Master Documented Safety Analysis and Technical Safety Requirements Revision 9"* as the safety basis for operations at SWOC facilities. This SER documents the review of the entire SWOC MDSA, Revision 9, and TSR, Revision 9, and, as such, supersedes all previous SWOC SERs.

No issues were identified in the review of the submitted USQDs, and RL concurs with the listing of the SWOC Safety Basis (reflecting issuance of the RL approval and this SER) contained in Attachment 7 of CHPRC-1202300.

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-SED-0016

DEC 2 1 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – RESPONSE TO TRANSMITTAL OF THE REVISED ENHANCED MAINTENANCE PLAN FOR THE PLUTONIUM FINISHING PLANT (PFP) EXHAUST FANS, MOTORS, AND STEAM DRIVEN TURBINES IN 291-Z

This is in response to the July 25, 2012, letter (CHPRC-1202962), requesting concurrence with the "Enhanced Maintenance Plan for the PFP Exhaust Fans, Motors, and Steam Driven Turbines" (HNF-51021, Revision 1) in accordance with 10 CFR 830, Subpart B. HNF-51021, Revision 1, was submitted to the Richland Operations Office (RL) in response to Justification for Continued Operations (JCO) Condition of Approval (COA) PFP-12SED0036-1. RL has completed its review of the plan, but is unable to provide concurrence at this time.

RL acknowledges that CH2M HILL Plateau Remediation Company (CHPRC) actions performed up to this point have significantly improved the operational status of the 291-Z exhaust fans. The exhaust fan operational improvements satisfy the intent of COAs PFP-12SED0036-1, PFP-12SED0036-2, PFP-12SED0036-3, and PFP-12SED0036-4 to the extent necessary to support implementation of the JCO. However, the submitted HNF-51021, Revision 1, did not meet RL's expectations for scope and fan performance acceptance specifications. RL understands significant improvements to the plan have been made since the submittal. CHPRC should work closely with the RL Safety and Engineering Division staff to complete the revision to the subject document and address the comments in the attachment to this letter. CHPRC shall provide RL with the revised plan and any proposed safety basis changes within 90 working days of receipt of this letter. The revised submittal package should support final closure of the associated JCO.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

SED:AJC

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Attachment
13-SED-0016

Plutonium Finishing Plant (PFP) Enhanced Maintenance Plan Issues List

CH2M HILL Plateau Remediation Company (CHPRC) (CHPRC-1202962 dtd. 7/25/12) requested the Richland Operations Office (RL) concurrence and approval of HNF-51021 Revision 1, Enhanced Maintenance Plan for the PFP Exhaust Fans, Motors, and Steam Driving Turbines in 291-Z. The enhanced maintenance plan was requested as part of the approval of the 291-Z Exhaust Fan Failure Justification for Continued Operation (JCO) Condition of Approval (COA) PFP-12SED0036-1 of RL Safety Evaluation Report (SER) 12-SED-0036. The plan was requested to develop and institute a predictive maintenance program to establish reliability of a system operating beyond its design life yet continuing to serve a safety significant function. The Safety and Engineering Division (SED) recognizes that the plan was not mature but was submitted to meet the Condition of Approval (COA) deadline which did not provide sufficient time to gather all of the data necessary to provide detailed inspection and test criteria. A review team was assembled which included participants from SED engineering, nuclear safety, and maintenance. The review resulted in the following issues/concerns:

1. Newport News Shipbuilding (NNS) Report recommendations have not been incorporated in the plan.

In section 2.0 of the plan it states: "These recommendations, and any others they make, will be evaluated once the final letter report is issued." The NNS report has been issued (July 26, 2012) and made numerous recommendations that SED believe need to be incorporated (at least considered) into the plan. It is not clear the recommendations were fully considered during development of the plan. For example, the NNS report states that high temperature shutdown switches be installed to address the potential for acute bearing failure. There is no commitment to include these recommendations.

2. The plan appears to contain inappropriate vibration monitoring frequencies for equipment of this age and condition.

The plan specifies "Monthly readings and trending of overall and enveloped vibration levels in the horizontal direction on fan bearings..." A basis for taking trends only from horizontal monthly vibration readings was not provided. It wasn't clear that a degraded condition or potential failure could be identified as early as if trending included vertical and axial directions. The plan further states "Quarterly three axes (horizontal, vertical, and axial) full spectrum vibration readings..." and goes on to state "These may be reduced to annual readings ..." In light of the overall and enveloped vibration reading taken only in the horizontal direction, extending the periodic readings for the vertical and axial directions does not appear appropriate. It additionally states that fan internal inspections will be conducted on a biennial frequency. These frequencies appear inconsistent with those recommended for new equipment let alone equipment beyond its design life. For perspective, ASME N511 requires vibration tests and visual inspections (includes fan impellers) on a quarterly basis. It would be expected that monitoring frequencies for equipment beyond its design life would be more frequent not less than for a system within its design life. For the purpose of trending, monitoring vibration levels beyond quarterly would be unable to identify any adverse trend in a timely manner. Therefore,

the information would not be useful as a predictive tool and could not be used to form the basis of operability.

3. Limits for axial vibration appear inappropriate for fans of this age and condition.

The plan establishes fan axial vibration for "Alarm" limits at 25 percent above normal operating levels, and "Shutdown" limits at 25 percent above normal operating levels + .15 inches/second. This strategy accepts high axial vibrations (in some cases above industry shutdown levels) for exhaust fans as "normal." Given the age, condition and current performance (e.g., high vibration) of these components, this strategy may lead to more exhaust fan problems as it fails to address the cause of the high vibrations.

The plan considers the measurement of axial vibration as optional citing a portion of ISO 10816-1.

This appears to be an inappropriate use of the guidance documents. While ISO 10816 is one of the more recognized vibration standards, SED recognizes it has been in place since 1995 (still the current version of ISO 10816-1). The standard has general application to a wide variety of machines. However, none of the fan specific standards (ISO 14694, AMCA 204 or Howden Buffalo) specifically exclude axial vibration and presumably include it. ISO 14694 specifically states "Although alternative standards exist which deal with vibration of machines generally (e.g., ISO 10816), they currently have limitations because of their universal nature, when considering a specific family of machines such as fans, with installed powers below 300kW." In fact ISO 10816 part 3 states, "it is not common practice to measure axial on main radial load carrying bearings during continuous monitoring." But goes on to state "Specific axial vibration criteria are at the moment only given in the case of thrust bearings where axial vibration correlate with axial pulsation which could damage axial load carrying surfaces." In the case of fans there are axial thrust loads, which is presumably why ISO 14694 (the governing standard for the fans) does not contain any exclusion for axial vibration.

SED is concerned with referencing ISO 10816 when a specific fan standard is available. This becomes notable when addressing axial vibration. Also expert independent vibration sources (vibration training and Newport News Shipbuilding) have stated that PFP should not live with high axial vibrations. Therefore, axial vibration measurements must be taken and appropriate axial action levels must be determined.

4. The plan does not limit future increases to vibration levels.

The plan states "These alarm and shutdown levels may be adjusted in the future as more fan vibration data becomes available. Changes to these levels will be documented by revision to this document." There is no discussion on the process and specific criteria to be used in deciding on these level adjustments. There is no commitment to tie these levels to predictive bearing failure data, nor remaining bearing life expectations given a level of vibration. SED has a similar concern relative to changes in surveillances frequencies. This acceptance criteria establishes operability levels that in essence are safety significant as they compensate for safety significant equipment that no longer meets a safety significant pedigree (i.e., procured General Schedule and

outside their design life). Since this program compensates for equipment that can't qualify as Safety Significant, any changes should be approved by RL.

5. The plan establishes safety significant operability requirements that SED believes must be incorporated into the Technical Safety Requirements (TSRs).

There is no discussion within the plan as to the categorization level of the proposed surveillances and controls. The plan states the alarm and shutdown levels may be adjusted in the future as more fan vibration data becomes available; however, changes to these levels will be documented by revision to the document, which will be provided to U.S. Department of Energy (DOE) for concurrence at some undetermined time. There is no discussion on formal DOE approval.

The ventilation system is safety significant; however, the reliability is significantly compromised compared to the level expected. The specific periodicity and action levels for surveillance contained in the plan provide a safety significant function to compensate for compromised engineered controls. Enhanced maintenance (i.e., predictive maintenance with access to spare parts) is one of the more significant methods of ensuring that these general service components that are beyond their service/design life, may continue to reliably perform their safety function. Additionally, redundancy is necessary to support maintenance activities. As a result, these surveillances and shutdown equipment should be captured within the TSRs, either as discrete surveillances associated with a Limiting Condition for Operation, new TSR, or as part of a Specific Administrative Controls. Redundant equipment should also be addressed in the TSRs.

6. Spare parts should be considered a critical part of maintenance program for beyond design life equipment.

The plan evaluated the procurement of "new" spare fans, but eliminated this alternative based on: 1) the commitment to "install cutoff" switches, which are "assumed" (in the report) to limit fan damage to a level where the damaged fan could (likely) be repaired and; 2) the high cost associated with procurement and installation of "new fans." The plan states that it shouldn't take more than six months to receive a replacement fan if needed, and knowing which parts to stock to address partial failure is difficult; therefore, having a replacement fan or parts is cost prohibitive. No information was provided to compare cost of parts and labor on wholesale fan replacement rather than repair parts and labor costs (including extended down time) for repair of a partial failure. Nor was a comparison provided of the cost of delays for fan replacement by not having spare parts readily available versus the potential six months down time to obtain a replacement fan. The cost of $350 K identified doesn't appear significant compared to overall project cost and cost per day for lost work time, if work is stopped. If a replacement fan is readily available it would probably decrease lost work costs and then the broken fan can be repaired over time and become the replacement fan.

Spare parts should be considered critical items, whether or not they purchase complete fan packages, or maintain an inventory of motors, shafts, bearings, and other various support items. The RL project and the facility are fully aware that the length of a plant shutdown for repairs directly contributes to the cost. Based on the age of these fans and motors, other failures are expected to occur. Having spare parts readily available would be low cost insurance against the

risk of escalating cost and schedule. The vibration monitoring and other actions to extend life could give notice of impending failure. But if you do not have the parts on hand to make repairs it still becomes very costly.

7. The plan allows for operating fans beyond their operability limits indefinitely.

The plan states that alarm and shutdown levels are not levels at which the piece of equipment must be immediately shut off, since vibration problems can't be analyzed when the machine is shut off and not vibrating. It goes on to say that instead, shutdown should be considered if the problem cannot be analyzed and corrected in a reasonably short period of time. This seems inconsistent with typical approaches to degrading equipment. The equipment should be taken out of service, and any continued operation would be part of the maintenance mode. Continued operation of the equipment would only be associated with troubleshooting and repair. Related to this, there is no defined period to accomplish this, just a general statement of a short time. It is not appropriate to continue to rely on equipment for day to day operations that may be in the process of failure, and may cause significant injury, unless in an emergency situation.

8. Application of vibration standards to PFP fans does not appear to address the current age and condition of the fans.

The plan states the Standards should be used as guidelines in determining action levels for the 291-Z fans. The Standards and guidance listed were evaluated in establishing action levels for the exhaust fans. At the time the exhaust fans in 291-Z were manufactured and installed vibration monitoring was in its infancy, and vibration Standards did not exist. The plan does not address if, when printed, the early standards said anything about applying them to existing fans or fans in poor condition. It also doesn't include discussion why just because they weren't manufactured to those specs, high vibration levels wouldn't be indicators of fan failure and be applicable to all fans.

While ISO 10816 is one of the more recognized vibration standards; it has been in place since 1995 (still the current version of ISO 10816-1). The standard is a general application to a wide variety of machines. ISO 14694 specifically states "Although alternative standards exist which deal with vibration of machines generally (e.g., ISO 10816), they currently have limitations because of their universal nature, when considering a specific family of machines such as fans, with installed powers below 300kW." Therefore, there is concern in preferencing ISO 10816 when a fan standard is available. This becomes notable when addressing axial vibration.

9. The exception for excluding EM-6 from the requirements (i.e., action levels) appeared unsupported.

The plan states "...the initial alarm and shutdown limits for fan motors, with the exception of the EM-6 horizontal readings, will be ..." and goes on to state "EM-6 will be allowed to remain in operation as long as the vibration level do not routinely exceed 0.4 in/sec...." As noted in the historical vibration data provided in Section 3.2 motor vibration exceeds 0.2 (motor alarm limit) the majority of the time and routinely exceeds 0.31 (motor shutdown limit). While the plan states for a basis "vibration spectrum of EM-6 indicate that the most likely cause of the EM-6

horizontal vibration levels is electrical issues related to age." This statement does not support the exception. There was no additional analysis or reference to a source to support the conclusion. Nor was any formal justification documented.

SED notes that the EM-6 motor has been replaced and meets the motor vibration criteria.

10. The plan failed to include an inspection to address the likely cause of EF-1 Fan failure.

The PFP EF-1 Fan failure report stated the likely cause was failure at the hub. Although the postulated failure mechanism was hub failure, no commitment was given for inspection of the hub. Visual inspection of the fan impellors only was proposed at a biennial periodicity. No specific and effective compensatory measures were provided to address the lack of hub inspection, even though the plan says no other inspection methods are possible, and the visual inspection is not optimal.

As the postulated "most likely" cause of the failure was the hub, basic logic would call for inspection of all hubs. Newport News Shipbuilding experts along with RL Engineering believe that the outer bearing over heating is the primary cause of the failure. RL does recognize the significant level of attention this plan applies to the bearings, which RL considered the actual failure mode.

11. Basis provided for vibration shutdown switch levels appears inadequate.

The plan commits to the installation of vibration cutoff switches, but does not specify the date by which this installation would be completed. Due to the catastrophic failure of EF-1, which the contractor's report indicates may have originated in the fan hub (likely initiator), the commitment to internal fan inspection protocols (absent any technical specifics) appears to be deficient, or at least too open-ended, to ensure the early detection and prevention of another catastrophic fan failure. Additionally, installation of fan high vibration cutoff switches is just a proposed idea at this time, with no specific activation thresholds or installation schedules provided in the report.

The plan states "These switches react to vibration in all directions and will be initially set at an acceleration level of ~0.5 g above the fan's normal operating level. This value is preliminary and is based on a best estimate from the literature of several vibration switch manufacturers." This basis requires further refinement.

Additionally, the vibration and thermal shutdown switches provide the primary barrier against significant worker injury during an energetic fan failure. Reliance on a safety management program is not sufficient given the degraded condition of the fans. Normal equipment maintenance would require fan repair or replacement given the existing level of vibration. These shutdown switches are required to support operability of equipment that meets the definition of safety significant in DOE-STD-3009 that is applied to equipment whose failure could result in prompt worker fatality or serious injury. Therefore, they should be considered safety significant, and captured within the TSRs

12. Flexible mounted bearing limits are identified; however, none appear to be installed at PFP.

The plan does not clarify if any flexible mounts are installed in this system. The information on limits appears in several places and all should be removed or flexible mounts identified. By itself, discussion on these limits without associated discussion on existing flexible mounts complicates and makes the plan confusing.

Department of Energy
Richland Operations Office
P.O. Box 550
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13-SED-0018

NOV 2 7 2012

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF THE 2012 ANNUAL UPDATE TO HNF-13830, REVISION 3, REDUCTION-OXIDATION (REDOX) FACILITY DOCUMENTED SAFETY ANALYSIS (DSA), AND THE UNREVIEWED SAFETY QUESTION DETERMINATION SUMMARY

This is in response to the July 24, 2012, letter (CHPRC-1202844) requesting approval of the safety basis document for the REDOX Facility. The Richland Operations Office (RL) has reviewed the changes as indicated and pursuant to 10 CFR 830, approval is hereby granted with one condition of approval which is documented in the attached Safety Evaluation Report. Any other material changes or deletions which may be included in the final document but not identified in the CH2M HILL Plateau Remediation Company request are not approved. RL concurrence with the list of documents making up the safety basis does not relieve the contractor from any requirement of 10 CFR 830, or establish actions required to conform to said requirements as a change as defined by Clause I.102, FAR 52.243-2, Changes – Cost Reimbursement. The DSA shall be implemented within 90 days of receipt of this letter.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

SED:KMR

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Safety and Engineering Division
U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: November 2012

REDUCTION-OXIDATION FACILITY DOCUMENTED SAFETY ANALYSIS

Signature Page

Prepared By:

Kyle M. Rankin 11/14/12

Kyle M. Rankin, Review Team Leader Date
Safety and Engineering Division

Approved By:

Pete J. Garcia Jr. 11/14/2012

Pete J. Garcia, Jr., Director Date
Safety and Engineering Division

Executive Summary

This Safety Evaluation Report (SER) documents the Richland Operations Office (RL) review and approval basis for the annual update of the Reduction-Oxidation (REDOX) Facility Documented Safety Analysis (DSA), HNF-13830, Revision 3. This annual update included minor editorial changes and two significant changes related to the addition of a concise description of the physical boundary of REDOX and the structure classification of the 202-S Canyon Building and 291-S Sand Filter. Included in the annual DSA submittal was the annual summary of the Unreviewed Safety Question Determinations (USQDs) for the past year in which the contractor performed ten USQDs wherein all resulted in negative determinations. The Review Team reviewed the lists of USQDs performed and identified no issues with the conclusions.

The REDOX Facility is located centrally at the Hanford Site within the 200 West Area. The facility operated as a continuous-flow, solvent-extraction process plant for recovering plutonium from irradiated uranium fuel from 1952 to 1967 and is currently deactivated in shutdown mode. The facility is now under the CH2M HILL Plateau Remediation Company (CHPRC) Balance of Site Surveillance and Maintenance (S&M) program, is unoccupied, and remains locked with the exception of periodic surveillances performed to verify structural integrity and no significant degradation in confinement capabilities.

The REDOX Facility extraction process separated uranium, plutonium, and neptunium as individual product streams from associated fission products in the irradiated fuel. The facility has no active systems with the exception of ventilation, electrical, and compressed air. The current ventilation system relies on the operation of one 20,000 ft^3/min exhaust fan (EF-1 or EF-2) to maintain appropriate negative differential pressure; all supply fans have been deactivated. Electrical power is supplied by two 13.8 kV lines, one of which supplies the majority of loads in the REDOX Facility and the other supplies various lighting panels in the 202-S Canyon Building. Compressed air is provided with a single compressor for ventilation damper control in the 291-S Facility. These systems are not credited with a safety function in the DSA. The REDOX Facility is a Hazard Category (HC) 2 nuclear facility based on the quantity, form, and location of radioactive material and a comparison with threshold quantities of radionuclides from DOE-STD-1027-94.

The RL technical evaluation of the submitted document was conducted to determine compliance with 10 CFR 830, Subpart B requirements. This SER documents the technical review, which verified that the changes to the DSA meet regulatory requirements. The RL Review Team recommends that *HNF-13830, Revision 3, REDOX Facility DSA*, as modified during the review process to resolve the review comments, be approved as a 10 CFR 830 compliant DSA, subject to the Condition of Approval listed below.

Review Process

The CHPRC submittal from J. G. Lehew III, CHPRC, to J. C. Connerly, RL, CHPRC-1202844, dated July 24, 2012, *Transmittal of the 2012 Annual Update to HNF-13830, Revision 3, REDOX Facility DSA, and the USQD Summary* was the subject of this review.

The U.S. Department of Energy (DOE) staff from the Safety and Engineering Division, Operations Oversight Division, and Assistant Manager for River and Plateau performed a review of the submittal. This review was performed under the applicable portions of the RL Integrated Management System Authorization Basis review procedure and was consistent with DOE-STD-1104-96.

The review resulted in RL comments which were resolved and documented in CHPRC-01916, *Document Review Report for REDOX Facility DSA, Revision 3,* Revision 0.

Approval Basis

Changes in the annual update to the REDOX Facility include reclassifying the 202-S Canyon Building (including cellblocks) and the 291-S Sand Filter structure as Defense in Depth (DID) Important to Safety (ITS) instead of a design feature and providing a description of what constitutes the REDOX Facility physical boundary. The description of the REDOX Facility physical boundary is now defined as including "the buildings with greater than HC 3 inventory (identified as 202-S, 291-S, 292-S, 293-S, 2711-S, 2715-S, and 2718-S), plus the yard area within the fence surrounding the facility (excluding marked WRPS Tank Farm facilities), plus any active containments or waste queues supporting building activities, including vehicle access route to each queue." The Review Team considers this an adequate definition that will provide a bounded physical area for proposed work within the facility.

The 202-S Canyon Building and 291-S Sand Filter structures are being reclassified from a design feature to DID ITS. The main reason for this change is that the facility structure does not meet the 10 CFR 830 definition of a design feature, "...if altered or modified, would have a significant effect on safe operation," as the structures are not credited in the accident analysis. However, the contractor recognizes that the structures serve, to some extent, as a confinement barrier for the protection of the onsite worker that may be present, resulting in the DID ITS designation. The contractor monitors and maintains the REDOX Facility structure through surveillance programs, evaluations, and repairs to maintain structural stability and minimize hazard migration. RL agrees with the change in status as any proposed activity or change to the REDOX Facility would go through the USQ process. The USQ process supports the feature to contain the inventory for protection of the onsite worker and a positive USQD would require approval by the DOE, thereby preserving expected structural integrity by ensuring the activity or change does not weaken the structure of the facility.

The annual submittal also requested concurrence with Attachment 4 of the submittal, the REDOX Facility safety basis list, as well as confirmation that the acceptable anniversary date for the annual submittal is April 4. The Review Team concurs with the list of documents making up the REDOX safety basis that are contained in Attachment 4 of the submittal. Additionally, the Review Team agrees the annual DSA submittal date of April 4 is acceptable.

Conditions of Approval

REDOX-13SED0018-1: The contractor shall incorporate CHPRC-01916, *Document Review Report for REDOX Facility DSA, Revision 3,* Revision 0, issued under ECR-12-001409, into the submitted safety basis documents before implementing the revised safety basis.

Conclusions

In summary, the Review Team reviewed the REDOX Facility DSA and TSR changes in detail and concludes that they meet the criteria for a compliant safety basis. The DSA and TSRs provide an adequate level of safety necessary to support S&M operations and meet the requirements of 10 CFR 830, Subpart B. Therefore, the Review Team recommends that the designated approval authority for this facility approve the REDOX DSA annual update, HNF-13830, Revision 3, as modified during the review process to resolve comments and documented in CHPRC-01916, Revision 0. In addition, the Review Team concurs the documents provided in Attachment 4 of the submittal make up the REDOX safety basis. This SER will set the annual submittal date for the REDOX DSA as April 4.

Department of Energy
Richland Operations Office
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13-SED-0027

FEB 0 1 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF THE ANNUAL UPDATE TO THE DOCUMENTED SAFETY ANALYSIS (DSA) FOR THE U PLANT FACILITY, HNF-13829, REVISION 5, AND THE UNREVIEWED SAFETY QUESTION (USQ) DETERMINATION SUMMARY

This is in response to the August 24, 2012, letter (CHPRC-1203457) requesting approval of the safety basis document for U Plant. The Richland Operations Office (RL) has reviewed the changes as indicated, including resolution to RL review comments documented in the CH2M HILL Plateau Remediation Company (CHPRC) Review Report CHPRC-01943, dated December 19, 2012, and pursuant to 10 CFR 830, approval is hereby granted of the DSA as revised to resolve review comments with no conditions of approval. The RL review is documented in the attached Safety Evaluation Report (SER). Any other material changes or deletions which may be included in the final document are not approved. The approved DSA shall be implemented within 90 days of receipt of this letter.

As documented in the attached SER, RL reviewed the submitted USQ Determinations performed from July 1, 2010 through December 31, 2011, and no comments were generated. The submitted listing of safety basis documents was also reviewed, and RL concurs that the list does represent the currently authorized and approved list of safety basis documents with the inclusion of the document number of this approval letter for Revision 5 of the DSA. RL concurrence with the list of documents making up the safety basis does not relieve the contractor from any requirement of 10 CFR 830, or establish actions required to conform to said requirements as a change as defined by Clause I.102, FAR 52.243-2, Changes – Cost Reimbursement.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

SED:PJM

Attachment

cc: See Page 2

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J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Safety and Engineering Division
U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: December 2012

U Plant
Documented Safety Analysis
(HNF-13829, Revision 5)

SIGNATURE PAGE

Approved By:

1/2/2013

Paul Macbeth, Review Team Lead
Safety and Engineering Division

Date

Pete J. Garcia Jr.

1/25/2013

Pete J. Garcia, Jr., Director
Safety and Engineering Division

Date

This Safety Evaluation Report (SER) documents the basis for the Richland Operations Office (RL) approval of the annual update of the U Plant Documented Safety Analysis (DSA), HNF-13829, Revision 5, submitted via letter CHPRC-1203457, dated August 24, 2012, as revised during the review process, with resolution of comments documented in CHPRC-01943, dated December 19, 2012. This annual update includes changes to descriptions and analyses based on completion of the specified Decontamination and Decommissioning (D&D) activities in the U Plant canyon building (221-U) and associated facilities within the scope of this DSA described in Revision 4 of the DSA. Summaries of the 25 Unreviewed Safety Question (USQ) determinations including one Potential inadequacy in the safety analysis (PISA) determination performed since submittal of the last update of this DSA were included in the submittal of this annual update.

U Plant is located centrally on the Hanford Site within the 200 West Area. The U Plant was constructed in 1944 as one of three chemical separation plants, but was never used for its original purpose. In 1952, U Plant was converted to the tributyl phosphate (TBP) process to recover uranium from process waste. In 1958, U Plant was placed in standby mode, and since that time has been used to store contaminated equipment from other facilities. The facility is now under the CHPRC Decommissioning and Remediation Project, under which it is essentially unoccupied, and remains locked with the exception of periodic surveillances performed to verify structural integrity, perform minor pre-demolition activities, and ensure that there is no significant degradation in confinement capabilities. Only the ventilation system Sand Filter remains as the U Plant Hazard Category (HC) 2 nuclear facility segment based on the quantity, form, and location of radioactive material and a comparison with threshold quantities of radionuclides from DOE-STD-1027. The grouted 221-U Canyon and the detached 241-WR Vault have final hazard categorizations of less than HC 3. The UO_3 and other U Plant ancillary structures contained no or minimal residual radiological contamination and have been demolished.

For criticality considerations, the Sand Filter is classified as a Limited-Control facility. The facility contains more than a minimum critical mass of material; however, criticality is not credible due to the form and distribution of the material.

The DSA is applicable to the 291-U sand filter and is not part of the authorized final disposition activity at the present time. It will continue to be managed by this or a replacement DSA until the disposition path is authorized. Activities in the 241-WR vault and involving the sand filter (that is isolated in place by grouting from each end of the ventilation tunnel) will consist primarily of Surveillance & Maintenance activities and limited deactivation or further preparatory activities for final disposition.

Review Process

An RL technical evaluation of the annual update changes to the DSA submitted was conducted to determine compliance with 10 CFR 830, Subpart B requirements. This SER documents that technical review, which verifies that the changes to the DSA meet regulatory requirements. The *U Plant Facility Documented Safety Analysis*, HNF-13829, Revision 5 is the safety basis document reviewed under this SER. The review was performed by an RL Review Team

composed of staff from the Safety and Engineering Division, Operations Oversight Division, and Assistant Manager for the Central Plateau. The U Plant DSA review was performed in accordance with the RL Integrated Management System (RIMS) procedure consistent with the guidance in DOE-STD-1104-96.

Review Summary

The selected remedial action for final disposition of the 221-U canyon called for treatment and removal of the D-10 tank from cell 30, then grouting equipment currently in the process cells, filling the process cells, galleries, hot pipe trench, ventilation tunnel, drains and other voids below the operating deck level with grout prior to demolition of the canyon roof and walls to the approximate level of the canyon deck, and burial of the remaining canyon structure beneath an engineered barrier. The major changes in this DSA subsequent to completion of planned grouting of the 221-U Canyon and 291-U Ventilation System ducting included simplification of the hazard and accident analyses to ensure that all residual hazards associated with the facility were properly identified and adequate controls developed to protect workers, the public, and the environment.

Grouting of the canyon involved grouting the most contaminated areas first, beginning with the grouting of the cell drain header and followed by the process cells and hot pipe trench. The base of equipment in the process cells was locked into place with a layer of strong grout to prevent shifting and cavities of equipment with large voids were grouted to prevent buoyancy during flood grouting of the process cells through the key block openings. The top couple of feet in each cell was filled with a flowable non-aggregate void-filling slurry grout which filled remaining voids and locked the cover blocks into place.

The hot pipe trench ventilation pipes were grouted, followed by the lower galleries. The ventilation tunnel was grouted last, through ventilation pipes in the hot pipe trench or from the ventilation duct outside the canyon. The order of grouting ensured that all the voids in the canyon were filled to the maximum extent practical.

The sand filter removed particulates from the exhaust before the air was discharged through the 291-U-1 stack. The filter consists of seven layers of sand and gravel material in a concrete housing equipped with tiles designed to evenly distribute the air flow. The layers decrease in size from coarse gravel and rock on the bottom layer, to progressively finer sand on the top layer. The top layer of fine sand is covered with a crushed rock layer. The filter materials were selected for resistance to HNO_3 and freedom from silt, organic matter, and shale, which provides reliability against clogging. As grouting neared completion, the ventilation tunnel was also grouted from the ventilation tunnel to the sand filter and then from the stack back to the sand filter. In this way, the sand filter was isolated by grout from both sides.

During the review, the RL Review Team developed a number of comments that required clarification and resolution prior to approval of the as-submitted DSA. These comments were provided informally via email to the DSA authors and resolved as shown in the DSA review report (CHPRC-01943, dated December 19, 2012). Appendix D of CHPRC-01943, dated

December 19, 2012, contains the as-revised DSA that has been reviewed to ensure that the Review Team comments were all appropriately resolved, and is the version being approved.

Approval Bases

The changes in this annual update to the U Plant DSA include descriptions of the completed activities undertaken for D&D of the canyon building and new analyses of accidents to accommodate the final status of the facility. The Technical Safety Requirements in Appendix C provide adequate protection of workers, the public, and the environment for the activities authorized for the U Plant HC 2 facility. Before cancellation of this DSA, the appropriate safety basis documentation for the 241-WR vault, demolition of the above-grade portions of the 221-U canyon, and the 291-U sand filter disposition must be in place.

The 25 negative USQ determinations including one PISA determination performed since submittal of the last update of this DSA were reviewed and no issues were identified with the U Plant USQ process or conclusions of these determinations. The list of safety basis documents included in the transmittal, updated to provide the reference to the approval letter and this SER, accurately reflect the approved safety basis for the authorized operations at U Plant.

Fire Hazards Analysis

The Fire Hazards Analysis for the U Plant facility was previously removed from Appendix C of the DSA and issued as a stand-alone document, CP-43543. The RL Fire Protection Engineer will provide comments on updating the FHA separate from this SER. The resolution of any RL comments on the FHA will not change the conclusions, accident scenarios, or controls in the DSA. Therefore, resolution of the FHA issues will not hold up approval of the DSA.

Conditions of Approval

None.

Conclusions

In summary, the RL Review Team reviewed the U Plant Facility DSA and TSR changes in detail and concludes that they meet the criteria for a compliant safety basis. The DSA and TSR provide an adequate level of safety necessary to support surveillance operations for the sand filter until final D&D of the 221-U canyon, and meet the requirements of 10 CFR 830, Subpart B. The Review Team recommends that the RL approval authority approve the U Plant DSA and TSR, HNF-13829, Revision 5, as revised during the review process to resolve comments, which is documented and shown in appendix D of the review report CHPRC-01943, dated December 19, 2010.

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13-SED-0031

FEB 12 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF SURVEILLANCE ON CONFINEMENT VENTILATION SYSTEM PROGRAM – FAN SPARE PARTS (S-13-SED-PRC-005)

Pursuant to Clause E.1, "DOE Inspection and Acceptance," this letter transmits a copy of the above referenced surveillance. The attached surveillance identifies three Observations which are documented in the attached report. No formal response to this letter is required. However, please note that the Richland Operations Office closure authority for one Observation is required. If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Safety and Engineering Division, on (509) 372-1909.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

SED:MRH

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC

Attachment
13-SED-0031

Department of Energy
Richland Operations Office
Surveillance Report

Division: Safety and Engineering Division (SED)

Surveillants: Mark Hahn, Burt Hill

Surveillance Number: S-13-SED-PRC-005

Date Completed: December 2012

Contractor: CH2M Hill Plateau Remediation Company (CHPRC)

Facility: Plutonium Finishing Plant (PFP)

Title: Oversight Surveillance of CHPRC Confinement Ventilation System (CVS) Program – Spare Parts Program

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Surveillance Scope:

The CVS program surveillances are used to validate that CHPRC has implemented a program to effectively manage CHPRC's CVSs serving nuclear facilities. The objective of this surveillance was to review the implementation of the CHPRC Spare Parts Program in the PFP. Specifically, it evaluated the adequacy of the spare parts program supporting the aging PFP exhaust fans (291-Z electric exhaust fans, EF-2 through EF-7). The scope was limited to validating that spare parts are adequately identified, procured and inventories maintained to support the operability/reliability expectation for PFP Safety Significant (SS) exhaust fans (291-Z).

Surveillance Summary:

Background: As a result of a catastrophic failure of PFP's 291-Z exhaust fan EF-1 in 2011, the operability of the PFP exhaust fans serving a credited SS function has been questioned. The fans are well beyond their design life and showing significant signs of wear. Because of the short remaining life of the facility, replacement is not considered a cost effective resolution. Instead, the approach for maintaining a SS level of operability/reliability for fans utilizes a robust predictive maintenance program, coupled with redundancy and adequate spare parts to provide for reliable operations.

Conduct of the surveillance: The surveillance team conducted a review of the facility implementation of CHPRC spare parts program. Documents were reviewed and interviews conducted with CHPRC staff to determine the adequacy of the program for identifying the appropriate spare parts and quality requirements. Additionally, the spare parts inventories were examined to ensure the minimum inventory, quality records, and storage requirements are being maintained and controlled.

Results: The purpose of a spare parts program is to provide sufficient engineering information and to establish an inventory of parts to maintain continuity of facility operations through availability of equipment, parts, and components. The requirements for a spare parts program are derived from DOE O 420.1B, *Facility Safety, Contractor Requirements Document (CRD O 420.1B)* and CRD O 433.1A, *Maintenance Management Program for DOE Nuclear Facilities*, are described in CHPRC procedures PRC-PRO-EN-1819 and PRC-MP-MN-40443 CHPRC Nuclear Maintenance Management Program Description Document, and implemented by PRC-PRO-EN-129, *Controlling Spare Parts Inventory*. The surveillants evaluated the documentation that implement the spare parts program. PRC-PRO-EN-129 provides instructions for inventory management of spare parts. In support of PRC-PRO-EN-129, reference/guidance documentation as Desk Instructions, exists for spare parts category Identification Number (ID) set up, purchase requisition, storage requests and shelf life processes. While the requirements to have a spare parts program exist, the specifics on instructions on how to define an adequate set of spare parts (i.e., which parts shall be included in the inventory) are limited. An observation (O01) is noted that guidance doesn't appear to exist to define what constitutes a "critical" spare part and needs to be included in the program. Weekly spare parts inventory reports (including one specifically when inventory falls below the minimum level) are provided to the facility System Engineers (SEs).

For PFP 291-Z exhaust fans the system design/configuration was reviewed against the established spare parts listing. The design configuration listing is based on components documented in HNF-5816, "*PFP HVAC System Component Information*." An observation (O02) was noted that review of the list against the current critical characteristics document (HNF-5186) revealed several inconsistencies. However, a draft version of the next revision of HNF-5186 (update in process to accommodate recent configuration changes associated with restoring the exhaust fans) was provided which corrected the discrepancies.

The surveillants examined the spare parts inventory against the component listing. There were inventory listed for all but two spare part Catalog IDs (excluding any that current Purchase Requisition (PR) or Purchase Order (PO) accounted for); the fans and fan shafts. The SE indicated that CHPRC is in the process of placing the fan shaft vendor on the CHPRC Evaluated Supplier List for future spare parts procurement. The facility has decided not to procure spare fans due to the low probability of failure (particularly for the short remaining life of the facility reported at less than three years) and high replacement cost and assume the associated risk. (Observation O03).

The spare parts currently held in inventory were walked down and examined for consistency with the inventory reports. No deficiencies were observed. Additionally a sample of quality records for PFP 291-Z exhaust fan spare part catalog IDs was reviewed. These included; PO, PR, Commercial Grade Item (CGI) dedications, Quality Assurance Inspection Plans (QAIP) etc. No deficiencies were observed.

Conclusions: RL surveillants reviewed the implementation of the CHPRC Spare Parts Program in the PFP associated with the aging PFP exhaust fans (291-Z electric exhaust fans, EF-2 through EF-7). The review indicates that CHPRC has a program in place for managing spare parts identified for specific systems/equipment. A weakness was noted that little guidance was in place for defining an adequate set of spare parts, which instead relies heavily upon the experience of the facility SEs. The spare parts identified for the PFP exhaust fans appear appropriate. With the exception of the fans and fan shafts, spares are in inventory and appropriately managed. While an observation for the shafts was noted, PFP is in the process of obtaining spares. The facility has decided not to procure spare fans due to the low probability of failure (particularly for the short remaining life of the facility reported at less than three years) and high replacement cost and assume the associated risk.

The following observations resulted from this surveillance effort:

Observations:

- **S-13-SED-PRC-005-O01:** A weakness exists in that there is not a process or guidance for determining/defining a list of spare parts.
- **S-13-SED-PRC-005-O02:** Component listing of critical spare parts in not up to date (revision in process).
- **S-13-SED-PRC-005-O03:** Fan shaft should be included as spare parts (in process).

Surveillance Results:

Observation: S-13-SED-PRC-005-O01:

A weakness exists in that there is doesn't appear to be a process or guidance for determining/defining a list of spare parts.

Discussion:

The CHPRC spare part management program is supported by a wide variety of processes and guidance (list) for managing spare parts once they are identified as a "spare part." The identification and definition of being a spare part is largely at the discretion of the SE. However no guidance exists to define what constitutes a critical spare and needs to be included in the program. The process appears to rely solely on the experience of the SE to determine what components are critical and necessary to requiring an on-hand spare to maintain continuity of facility operations. No qualification requirements for this

experience or training were apparent. It is suggested that guidance be developed, documented and provided to the SE to aid in spare parts selection. The guidance should include factors such as procurement lead time, safety significance, system importance, system redundancy etc.

RL Lead Assessor Closure Required: **YES [X] NO [ ]**

Observation: S-13-SED-PRC-005-O02:

Component listing of critical spare parts in not up to date (revision in process).

Discussion:

PFP maintains a listing of heating, ventilation, and air conditioning (HVAC) equipment including the 291-Z exhaust fans. The listing HNF-5816, *PFP HVAC System Component Information*, contains the engineering details for critical system components. A review of the current revision (Rev 17) against the current spare part listing reveal a number of inconsistencies/discrepancies. Notably, many critical spares (e.g., bearings, mounting hardware etc.) are not included or parts are identified as a quality level inconsistent with SS equipment. However a draft revision of the listing was provided to the surveillants, which corrects the discrepancies. A significant number of obsolete Catalog IDs in the spare parts system also remain and should be removed. Additionally, the plant life extension study (HNF-31902), which examined critical SSCs has not been updated since 2006, should be considered for revisiting and any changes included in the spare parts program.

RL Lead Assessor Closure Required: **YES [ ] NO [X]**

Observation: S-13-SED-PRC-005-O03:

Fan shaft should be included as spare parts (in process).

Discussion:

The surveillants examined the inventory identified on the Spare Parts inventory sheets against the spare parts listing (HNF-5816). There was inventory listed for all but three spare part IDs. These include the fans, fan shafts, and bearings for exhaust fan EF-2. The surveillants noted that there were several other spare part IDs without any existing inventory, however for these IDs there are current spare part procurement actions (i.e., PR or PO) in process.

The facility has decided not to procure spare fans due to the low probability of failure (particularly for the short remaining life of the facility reported at less than three years) and high replacement cost and assume the associated risk. It is noted that the safety risk

is minimal should the facility lose fans (including redundancy), because it could simply terminate Deactivation & Decommissioning activities. However, this represents a significant programmatic risk. While there is no inventory for fan shafts or procurement requisition, the SE indicated that CHPRC is in the process of placing the fan shaft vendor on the CHPRC Evaluated Supplier List for future spare parts procurement actions. While the EF-2 bearings (bearing only) had no current inventory, this is not considered significant as there are spare complete bearing assemblies being returned to inventory from completed work packages where the bearing assemblies were not used.

RL Lead Assessor Closure Required: **YES [ ] NO [X]**

Contractor Self-Assessment: The contractor conducted various management assessments of this program at the company level. All the system level reviews focused on evaluating the quality pedigree of the spare parts in inventory.

Contractor Self-Assessment Adequate: **YES [X] NO [ ]**

Management Briefing:
T. Oten, CHPRC

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

13-SED-0034

FEB 0 6 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF THE RICHLAND OPERATIONS OFFICE (RL) REVIEW OF THE PLUTONIUM FINISHING PLANT (PFP) IN-SITU NON-DESTRUCTIVE ASSAY (NDA) PROGRAM (A-13-SED-NDA-006)

This letter transmits the final report of the RL assessment, "Review of PFP In-Situ NDA Program," conducted in the Fall of 2012 (A-13-SED-NDA-006). This effort included participation of both Safety and Program staff from RL.

The Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 2007-01, Safety-Related In Situ NDA of Radioactive Materials, on April 25, 2007. In response, the U. S. Department of Energy (DOE) accepted the DNFSB's recommendation and issued an Implementation Plan (IP) in October 2007. The IP directed formation of an NDA subject matter expert team, the Technical Support Group (TSG), which was tasked to: 1) evaluate the "extent-of-condition" of In-Situ NDA programs at selected DOE sites; 2) address issues raised in the recommendation; and 3) establish a baseline for future complex-wide development and program enhancements. The TSG conducted a review of the PFP In-Situ NDA program and issued a report in 2009.

Additionally, as part of a "continuous improvement" process, the IP committed DOE to "conduct periodic reviews to ensure that NDA holdup measurement programs were using technology adequate for their intended purpose" (Commitment 5.5.4). The attached report documents the results of RL's 2012 review of the contractor's In-Situ NDA program at the PFP facility. This report also satisfies IP 2007-1 Commitment 5.5.4 which commits to periodic reviews of this mission critical program.

The attached report contains a single observation which concerns the training and qualification aspects of the subject program. No formal response to this letter is required. However, please note that RL closure authority for the observation is required. Please coordinate closure of the observation with Al Colburn of the assessment team.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Doug S. Shoop
Deputy Manager

Jenise C. Connerly
Contracting Officer

SED:AJC

Attachment

cc w/attach:
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Safety and Engineering Division
U.S. Department of Energy, Richland Operations Office

REVIEW OF PLUTONIUM FINISHING PLANT (PFP) *IN-SITU* NON-DESTRUCTIVE ASSAY (NDA) PROGRAM

A-13-SED-NDA-006

Date Published: January 2013

Review of PFP *In-Situ* NDA Program

Signature Page

Suzanne Clarke, Review Team Member — Date: 1/13/2013

Alan J. Colburn, Review Team Member — Date: 1/11/2013

Karl Husted, Review Team Member — Date: 1/14/13

Paul Macbeth, Review Team Member — Date: 1/14/2013

John Silko, Review Team Member — Date: 01.14.13

Review of PFP *In-Situ* NDA Program

Executive Summary Background

The Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 2007-01, *Safety-Related In-Situ Nondestructive Assay (NDA) of Radioactive Materials*, on April 25, 2007 (Reference 1). In response, the U. S. Department of Energy (DOE) accepted the DNFSB's Recommendation and issued an implementation plan (IP) in October of 2007 (Reference 2). The IP directed formation of an NDA subject matter expert team, the Technical Support Group (TSG), which was tasked to: 1) evaluate the "extent-of-condition" of *In-Situ* NDA programs at selected DOE sites; 2) address issues raised in the Recommendation; and 3) establish a baseline for future complex-wide development and program enhancements. Additionally, as part of a "continuous improvement" process, the IP committed the Department to "conduct periodic reviews to ensure that NDA holdup measurement programs were using technology adequate for their intended purpose" (Reference 2, Commitment 5.5.4). This report documents the Richland Operations Office (RL) assessment review of the contractors' *In-Situ* NDA program at the Plutonium Finishing Plant (PFP) facility, satisfying the requirements in Commitment 5.5.4. The functional areas contained in this assessment review and the specific lines of inquiry are the same as those included in the 2009 TSG review (Reference 6).

Transition of the In-Situ NDA Program from Operations to D&D:

The Plutonium Finishing Plant (PFP) completed its fissile material inventory stabilization and packaging operations mission in March of 2004, followed by transition to the current mission of plant decontamination, and demolition (D&D). PFP's sister-facility at the Rocky Flats Environmental Technology Site (RFETS) had made a similar transition to D&D prior to PFP. An important lesson learned from the RFETS transition was the extent to which holdup measurements become the limiting critical path D&D activity if existing NDA programs (configured for plutonium processing) are used. In early 2003, PFP employed *In-Situ* NDA subject matter experts (SMEs) from multiple DOE sites (including RFETS) to provide successive, independent, in-depth, reviews to identify the changes needed to establish a successful *In-Situ* NDA program optimized for the needs of PFP D&D. References 3-5 provide example assessments from this transition time period: the Los Alamos National Laboratory (LANL) report, dated March 2004, is a comprehensive program assessment summarizing months of review team effort, and culminates with sixty-seven recommendations. Twenty-three were high priority recommendations considered important to program reliability (Reference 3). In contrast, a year later, a follow-up March 2005 surveillance team concluded that (Reference 5):

> "The PFP portable NDA program has made considerable progress since being highlighted in 2003 and being provided with a large number of problem areas to fix in 2004. This surveillance shows the program has diligently responded to prior appraisals."

Actions in Response to DNFSB Recommendation 2007-1:

The PFP *In-Situ* NDA Program had matured by the time of the 2007-1 IP-directed baseline review, performed by the TSG in September of 2009. The objective of the TSG review was to establish the "extent-of-condition" of the Department's *In-Situ* NDA programs. The results of the PFP evaluation

are documented in a report entitled: "Technical Support Group (TSG) State-of-the-Practice Review of the *In-Situ* NDA Program at the Hanford Plutonium Finishing Plant." The TSG reported (Reference 6):

> "Nearly all *in-situ* measurements are quantitative. The equipment used for *in-situ* measurements is all commercially available and relatively new. The data quality objective (DQO) measurement process is the cornerstone of the Hanford *in-situ* measurement program and, when combined with rigorous calibration methodology, quality control (QC) fixtures and adherence to procedures, the quality of the final assay result, and the ability of that result to meet customer needs, is quite high."

The process PFP utilized for programmatic design and implementation verification was similar to that described in the 2007-1 IP. The mainly positive TSG baseline review is thought to attest to both the process employed, and the determined effort expended, to transition the PFP *In-Situ* program from plutonium processing to facility D&D. A RL follow-up assessment in 2010 (Reference 9), focused on NDA staff training and selection, found no substantial changes to the program and supported the general conclusions of the earlier TSG review. The current challenge is to maintain (and verify) the quality of the *in-situ* NDA measurements (and oversight) through a very difficult era of uncertain funding and staff turn-over.

This RL review was conducted during September and October of 2012 in compliance with the Department's 2007-1 IP Commitment 5.5.4. The purpose of this effort was to follow-up the September, 2009, TSG baseline review, by conducting periodic status reviews of the same functional areas, to ascertain the current status of the *In-Situ* PFP Program (References 2 and 7).

As a result, the functional areas included in this current review effort and the specific lines of inquiry (LOI's) explored, were developed to be consistent with the baseline TSG effort, and were documented in a review plan specific to this task (Reference 7). The functional areas in this review plan included the following: 1) training and qualification; 2) design requirements for new facilities and equipment; 3) standards for conducting NDA holdup measurements; 4) implementation of standards; 5) research and development; 6) quality assurance; and 7) oversight.

The PFP *In-Situ* NDA Program review team included two members from the RL Safety and Engineering Division (SED) Nuclear Safety Staff, two members from the RL PFP Program Staff, and a NDA Scientist/SME.

Executive Summary of Results and Conclusions

The PFP NDA program, as implemented, is a technically sound program producing results for material handling needs, and meeting administrative, safeguards, and criticality safety requirements. Procedures in place implement the requirements which flow down from applicable American Society for Testing and Materials (ASTM) and American National Standards Institute (ANSI) standards, as well as criticality safety and safeguards requirements. The program, as implemented, keeps a minimum level of knowledge available for meeting assay requirements. No significant changes have

been made to the program since the TSG performed its assessment in 2009 and RL performed its follow-up focused assessment of NDA staff training and selection in 2010 (References 6 and 9).

The use of the database and spreadsheet for control of measurements and calculations is an excellent practice to ensure consistent and reliable results.

The following points should be noted and analyzed as further cuts are considered:

- It was noted that many references within HNF-20866 are not current and need to be updated.
- The program has suffered from personnel losses over the past few years, possibly leaving the program thin on overall experience and education.
- The program as implemented is usable, but provides no opportunities for advancement of knowledge within the NDA discipline.
- Additionally, after initial qualification, no periodic assessment and/or requalification is required for technical staff in the PFP In-Situ NDA group, as set forth in PRC-RD-EN-10484, *Non Destructive Assay Management Program*. This is the topic of the single "Observation" documented in the following section, Section 1.0, of this report.

1.0 -Training and Selection of *In-Situ* NDA Holdup Measurement Personnel

Review team members evaluated the PFP qualifications/requirements/certification process for key *In-Situ* NDA program positions, focusing on the positions of "NDA Scientist" and "NDA Technician." PFP documents and maintains the qualification status/cards for each NDA Scientist and NDA Technician working at the plant. The substance of the PFP *In-Situ* NDA training and qualification requirements program has not changed since the RL focused reviews in early 2010 (References 8 and 9).

NDA experience as well as PFP-specific experience (or experience at another plutonium facility) is valued. The focused review in 2010 (Reference 8) expressed concern with the lack of PFP experience within the PFP NDA Scientist group. Currently (at the time of the interviews during September and early October of 2012), 4 NDA Scientists are working at PFP. All meet the PFP NDA Scientist qualification criteria. The qualification process includes education requirements, job specific experience requirements, and job specific PFP NDA Scientist course work (primarily consisting of completing a required technical reading list). The four qualified PFP NDA Scientists all have bachelor's degrees in a relevant discipline and have been working at PFP for 4 or more years. In addition to their education and job experience, to initially qualify the PFP NDA Scientists are required to complete course 200625, *PFP A Labs Scientist Initial Qualification*. PFP also has a requalification course for NDA Scientists, course number 20626, *PFP A Labs Scientist Requalification*, posted on their PFP Training website. However, this course is just a place holder and contains no actual content. No such requalification requirement or course exists for NDA Technicians.

PFP has 10 *In-Situ* (portable) NDA Technicians. Five of the 10 NDA Technicians have been at PFP for over 10 years. The other five NDA Technicians have been at PFP for more than four years: two are currently in the process of qualifying. Qualification of NDA Technicians is accomplished using

"On-The-Job" (OJT) Training protocols. This OJT involves participation on teams dispatched to the field to perform actual NDA measurements under the direct supervision of PFP qualified NDA Technicians and NDA Scientists. In addition, several courses are required to obtain the "NDA Technician" certification status, including: 1) 201438, "PFP Portable NDA Equipment Qualification;" 2) 201439, "PFP Fixed NDA Equipment; and 3) 201440, "PFP Operate the Tennelec Alpha Energy Analyzer." It can take from four to six months for an NDA Technician to achieve qualification status.

Observation A-13-SED-NDA-006-001: There is no requirement for NDA Scientist and Technicians to requalify after initial qualification is completed.

Discussion:

Interviews with PFP NDA management confirmed that after initial qualification, neither the NDA Technicians nor the NDA Scientists are required to requalify. The RL Review Team identified this as a weakness in the contractor's *In-Situ* NDA qualification/requalification program. The Review Team also concluded this weakness represents a noncompliance with DOE Order 426.2, "Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities." Specifically, the training courses required for initial qualification, for both the "NDA Technician" and "NDA Scientist" positions, are not sufficient to permanently establish the qualification status of the personnel involved in the conduct of these *In-Situ* NDA activities at the PFP. As a result, the RL Review Team recommends the contractor conduct an evaluation of their In-Situ NDA training, qualification and requalification program for compliance with DOE O 426.2 and revise the program, as necessary, to ensure compliance with the order.

RL Lead Assessor Closure Required: **YES [X]** **NO [ ]**

2.0 - Design Requirements for New Facilities and Equipment

After six years of working diligently to remove plutonium holdup from PFP gloveboxes and systems, often finding that the plutonium was chemically bound to surfaces and could not be decontaminated to meet low-level waste disposal criteria as initially anticipated, holdup avoidance is now given a high priority for any new plutonium containment designs/systems. However, there are few opportunities for new facility design at PFP.

Whenever possible, PFP upgrades its *in-situ* NDA equipment capability since the potential to decrease the measurement uncertainty benefits worker safety, safeguards, and could reduce overall project cost. For example, PFP recently upgraded *In-Situ* Object Counting System (ISOCS) to perform three-dimensional modeling.

3.0 - Standards for Conducting NDA Holdup Measurements

The PRC-RD-EN-10484, *Non Destructive Assay Management Program* document sets forth a comprehensive set of requirements which onsite contractors and subcontractors must meet. This

document provides guidance which spans personnel selection, qualification and training, quality improvement, document development and control, records management, software management and control, data quality objectives, quality assurance objectives, quality control and calibration, data collection, reduction, review, and reporting, procurement, and management assessments. The requirements are derived from ANSI standards, ASTM standards, DOE documents, as well as other site program documents.

Additionally, measurement requirements flow down from administrative, safeguards, and criticality safety procedures: MSC-PRO-609, *Nuclear Material Measurement and Measurement Control,* HNF 7098, *Criticality Safety Program,* HNF-20866, *Plutonium Finishing Plant's Deactivation & Decommissioning Nondestructive Assay Measurement Plan,* and HNF-23383, *PFP Generalized Geometry Holdup Calculations and Total Measurement Uncertainty.* Administrative direction is also provided in FSP-PFP-5-8, *PFP Administration*, Section 17.

Two measurement techniques are used within the portable NDA group. These are Generalized Geometry Holdup (GGH) and *In-Situ* Object Counting System (ISOCS). The GGH method is based directly off the LANL holdup measurements course. The ISOCS is a Canberra system which calculates detector efficiency based on the detector and object measurement geometry. The GGH method is employed almost exclusively for the quantification of hold-up material. The ISOCS systems are primarily used for items near the TRU/LLW threshold.

Procedures

Procedures are maintained under configuration management and must undergo change, review, and, approval per PRC-PRO-MS-589, *CH2M HILL Plateau Remediation Company Procedures.* Measurements, data analysis, and reporting are directed by approved procedures. Management, quality assurance (QA), operation, and the NDA personnel are involved in procedure development, consistent with the implementation, throughout PFP, of the Data Quality Objective (DQO) process. Therefore, all interested groups have input to procedure changes. NDA measurement personnel provide feedback to both the application and viability of the procedures during normal operations and testing. Prior to release, newly revised procedures are reviewed for applicability and workability. Alterations are recorded via the document change form process. The procedures group ensures that only the latest revision of a procedure is available on the internet procedures pages.

Calculations and Results

For the GGH method, the PFP group utilizes spreadsheets to obtain final gram value results; the calculations and associated errors are based on the LANL GGH course and are documented in HNF-23383. For more complex systems, the group uses a database to control counting: the database utilizes the GGH spreadsheet for data manipulation and reduction. Spreadsheet configuration control ensures the output is consistent. Scientists perform both the initial and a second 'independent' review (by a different scientist) of the data prior to formal release of the NDA results in a letter report. Uncertainties are selected and handled within the spreadsheet and database. Procedures are in place to document the systematic, random, and standard uncertainties.

4.0 – Implementation of Standards

On Tuesday, September 25, 2012, K. Husted (NDA Scientist) & S. Clarke (Chemist) of this review team observed the PFP *in-situ* NDA, via the GGH method, of a small, A-line glovebox, 12S, in Building 234-5Z. The glovebox had previously undergone decontamination and removal from Room 235A-2: it was being held in a low-background area, Room 235-D, for the fissile-material confirmatory assay required prior to disposal.

The reviewers were accompanied to Room 235-D by the PFP NDA scientist, Luis Estrada. One reviewer, knowledgeable in NDA science and methodology, focused on observing the quality of the performance by the PFP NDA technicians. The other reviewer was assisted by the PFP NDA scientist in observing the level of procedure compliance. The reviewer verified that the NDA team followed the sequential steps provided in the technical procedure, ZA-948-401, *Portable Non-Destructive Assay (NDA) using the PFP-GGH Database System,* Revision 0, Change 3, dated May 31, 2012.

Measurement Program

Implementation begins with the work planning process. Measurements are requested from the NDA group and if a DQO exists for the measurement, the measurement is scheduled and worked. If not, a DQO meeting is held to establish criteria and parameters, the work is planned and executed, and results reported. The measurements are typically planned in advance, and planning can include walk downs and review of drawings and documentation to assist in ensuring data quality. A results letter is released to report results to safeguards, criticality safety, and the customer.

The PFP Safeguards and Criticality Safety disciplines have independent uses of the results obtained during assay. The Criticality Safety group uses the measured value plus 2TMU (total measurement uncertainty): this provides conservatism to the fissile-material quantification to ensure that container limits are not exceeded, whereas safeguards uses the measured (reported) value to provide for inventory balancing.

The NDA group utilizes both 2x2 sodium iodide (NaI) and high purity germanium (HPGe) detectors for quantification. As previously determined in 2009 (Reference 6), the equipment is modern vintage and in good condition; the equipment is maintained in operable condition, and repaired or replaced as needed.

Prior to performing and upon completion of NDA measurements the systems are run through daily QC checks which include background and standards measurements. During item measurements the detectors are periodically checked for energy drift. These instrument data are tracked and reviewed.

Measurements are taken in the field according to a "Shot Plan." Methods and Shots are directed by the scientists and communicated through the use of configuration controlled shot sheets and databases, drawings, presentations, sketches, and previous shot plans and markers. Backgrounds are

accounted for by methods including bypass and plugged measurements. The GGH methodology for Compton background subtraction is employed. Procedurally, methods are employed for ensuring the quality of the data to include accounting for source terms, attenuators, geometry, weights, and dead time. These items are included in the software used to provide results.

Attenuators are used for normal measurements in reduction of the 59.5kev ^{241}Am peak, and in the case of high dead time. These are accounted for in either the calibration or the addition of added attenuators in the calculations, respectively.

Calculations and Results

Calculations and results are accomplished through the use of spreadsheets and databases which are under the configuration control process. Procedures are in place to maintain and direct the process for changes to these items. The calculations have been verified and documented as correct. These tools are used throughout the assay process to provide for data entry at the point of data generation, and to provide final calculation results. It should be noted the scientist who was instrumental in the implementation of these tools has left the group and it is not known if the expertise remains to make changes, if necessary.

Methods used and available include both average density and transmission corrections. As indicated earlier, attenuators and shields are accounted for in the software. The software is also used to determine and propagate errors associated with the measurement. Error propagation is through summation in quadrature.

Minimum Detectible Activity (MDA) is not calculated for the NaI detectors. This is due to the use of these detectors exclusively in the presence of material which would exceed the MDA. The ISOCS system utilizing the Canberra Genie software reports the MDA if no material is detected which exceeds the MDA.

Standard practice for reporting results includes conservatism. Due to an incident in which a line was completely blocked and results were under reported (using the assumption that material accumulated in a layer around the inner circumference), the standard practice for holdup measurement was revised to assume the lines are completely full (conservatively assumes self-absorption). Otherwise, when assaying packets, the size and weight of packets are measured and used for the average density correction.

Practices and procedures employed within the NDA group provide assurance that the measurement program is technically sound in implementing standards.

5.0 - Research and Development

The current mission of decontamination and demolition does not include resources for research. However, it should be noted that PFP has a rich history of research and development that includes hundreds of contributions to the scientific and technical literature. Until the end of the de-inventory mission in 2008, PFP operated a laboratory within Building 234-5Z fully dedicated to research and development. RL has observed that current work still benefits from an institutional memory, and

staff expectation, of technically defensible decisions.

During the American Resource and Recovery Act (FY 2009-2011), funding was identified to upgrade/replace *in-situ* NDA instrumentation and equipment. Recently, PFP upgraded ISOCS to perform three-dimensional modeling. However, the program struggles to accommodate the numerous and highly variable funding cycles experienced during most of the last decade. PFP finds it difficult to find experienced NDA scientists and technicians during periods of expansion, only to lose them as the funding contracts.

An example of the PFP technical approach to program development is presented in this report's Executive Summary. The steps selected by PFP to transition their *In-Situ* NDA program to accommodate the needs of D&D incorporated recommendations from independent subject matter experts and lessons-learned from the RFETS experience (References 3, 4, and 5). The success of the PFP development process and stability of the program are reflected in the September, 2009, State-of-the-Practice review of the PFP Non-Destructive Assay *In-Situ* Holdup Program (Reference 6).

6.0 - Quality Assurance

The Program Management responsibility for the *In-Situ* NDA QA and QC functions resides with the PFP NDA Scientists and Professionals. Organizationally, the PFP NDA Scientists reside in the "Safety Basis and Technical Support Division (SB&T)," which is independent of the PFP Operations Organization. The Mission Support Alliance, LLC, contractor has a "Safeguards and Performance Assurance Division," which performs independent quarterly reviews of PFP NDA results to evaluate, confirm and ensure that technical accuracy and material accountability objectives are met.

PFP has a mature QA Plan applicable to *In-Situ* NDA (FSP-PFP-5.8, Section 17), which covers all aspects of the program, including software QA, NDA measurements, and the review of NDA results. Potential conflicts of interest are resolved by having PFP NDA staff report up through the SB&T organization and not plant operations. Calibration of NDA equipment is procedurally driven and checks are done prior to use each day, and every 15 minutes during use (to check for instrument drift). Several customers have input into the NDA measurement plan process, including waste operations, criticality safety and safeguards. The QA program has a standing DQO program to meet all customer needs/requirements, including the stringent safeguard requirements.

QA/QC data is made available to all project, safety, waste management, criticality safety and safeguards staff: these entities are key customers for the data. Equipment calibration documentation is maintained in instrument log books, which includes instrument checks before, during, and after usage, in addition to any actions taken to resolve discrepancies concerning instrument calibration, recalibration and instrument efficiency checks. NDA instruments are calibrated in low background areas, and clearly marked with calibration status. Three different detection systems are used at PFP: sodium iodide; germanium detectors; and the ISOC's from Canberra. PFP uses several standards, including foil standards from LANL, and sheet and food pack standards that were fabricated at PFP. All standards used in calibrations of various detectors are well characterized.

PFP uses a special QC fixture for equipment/detector functional checks. This fixture provides a consistent geometry for use with the plutonium (Pu) and Cesium (Cs) standards, giving reproducible and consistent performance results for detection. Daily instrument/detector checks are performed with this fixture, using both the Pu and Cs sources for inputs. Limits are provided for each instrument and if "out of specification" conditions are identified, procedures are then followed to address those conditions prior to field use. NDA field data is regularly reviewed by NDA scientists (and other staff) to ensure results are correct and technically defensible.

While direct validation of *In-Situ* NDA measurements is difficult, indirect methods do confirm that PFP NDA results are accurate for intended purposes. These indirect methods of validation include the following: 1) independent comparison and reconciliation of each item by Safeguards; and 2) using known standards and sources to compare the NDA results for different NDA detector systems. This consistently results in good confirmation of assigned NDA values.

7.0 - Oversight

The LOI's associated with this review of the "Oversight" functional areas were structured to explore (Reference 8):

- Who is involved in oversight of the PFP *In-Situ* NDA Program.
- What is included in these oversight activities.
- When and how frequently these oversight activities are performed.
- How this oversight is performed and what standards/criteria are used.

Oversight of the PFP *In-Situ* NDA Program involves both internal and external reviews. Internal reviews include: Work Site Assessments (WSAs); Management Oversight Programs and/or Practices (MOPs); and Senior Supervisor Oversight (SSO). External reviews include: this current programmatic review in September and October 2012; the RL focused reviews of the PFP NDA staff qualifications in 2010 (References 8 and 9); the 2009 TSG review (Reference 6); and prior programmatic reviews by teams mainly comprised (or led) by those without a primary conflict of interest (References 3, 4, and 5). The CHPRC recently completed a WSA at PFP (conducted July/August 2012), which concluded the following for the PFP In-Situ NDA Program (Reference 10):

> "The 2009 TSG report concluded that the PFP NDA program is "best in practice within the DOE complex." Since that time, the overall PFP Closure Project Mission has remained unchanged. Subsequently, the WSA verifies that the key elements of the PFP *In-Situ* NDA program have remained consistent, thus ensuring adequate technical support in achieving the overall facility project mission (refer to detailed WSA checklist). With PFP nearing the end of mission, there is no significant basis to change the existing NDA program."

The WSA, performed by the CHPRC at PFP, used a multipage checklist that included 44 LOIs. Collectively, those LOIs focused the review on the key elements of the *In-Situ* NDA Program, including the following: 1) availability of qualified staffing; 2) training of personnel; 3) availability of detailed and accurate technical and operational procedures; 4)

availability and use of proper NDA detection equipment; 5) equipment calibration, maintenance and vendor support of NDA equipment; 6) internal and external oversight activities; 7) corrective action processes to disposition any identified deficiencies; and 8) organizational alignments and reporting arrangements.

All areas of inquiry in the WSA report were classified as "Satisfactory," with the one exception being the DOE field office lacking NDA-cognizant personnel on staff. This element (e.g., LOI number 36) was classified as "unsat." The overall conclusion of the WSA report was that the PFP *In-Situ* NDA Program had not substantially changed since the 2009 TSG review and favorable report (Reference 6), which concluded the PFP NDA Program was "best in practice within the DOE Complex."

PFP will conduct an annual WSA of the In-Situ NDA Program, in addition to the more informal SSO's and MOP's. In addition, the PFP *In-Situ* NDA Program is subject to continuous oversight of the four NDA Scientists, who review every work plan for NDA, review the raw data that's collected, and process the data and generate the final TRU holdup/inventory reports.

References

1. "Safety-Related *In-Situ* Nondestructive Assay of Radioactive Materials;" Defense Nuclear Facility Safety Board Recommendation 2007-1, dated April, 2007.
2. "Implementation Plan for Defense Nuclear Facility Safety Board (DNFSB) Recommendation 2007-01; Safety-Related *In-Situ* nondestructive Assay of Radioactive Materials;" October, 2007.
3. "Nondestructive Analysis Capabilities for D&D of the Plutonium Finishing Plant;" Los Alamos National Laboratory (LANL); LA-UR-04-2986; dated March, 2004. Assessment Team (commissioned in April, 2003, with two site visits to assist PFP in 2003 prior to the 2004 visit associated with this report): (LANL); A. Belian, N. Ensslin, P. Russo, and; (RFETS) F. Lamb.
4. "Fluor Hanford, Inc. Nondestructive Assay Program;" Richland Operations Office (RL), Safety and Engineering Division; S-04-SED-FHI-016, dated May 26, 2004. Assessment Team (RL): L.T. Nirider, G.Z. Morgan and A.J. Colburn.
5. "Plutonium Finishing Plant Criticality Safety and Portable Non-Destructive Assay;" Richland Operations Office; Safety and Engineering Division; S-05-SED-FHI-008, dated March 4, 2005. Assessment Team: F. Lamb (RFETS), L.T. Nirider (RL), R. Wilson (EM).
6. "Technical Support Group State-of-the-Practice Review of the Nondestructive Assay *In-Situ* Holdup Program at the Hanford Plutonium Finishing Plant;" dated September, 2009. Assessment Team: D. Bracken (LANL), D. Dolin (SRS), C. Gunn (Y-12), B. Keele (RL), F. Lamb (Unwin), T. Nirider (RL), G. Pfennigwerth (Y-12), and S. Smith (ORNL).
7. "DOE-RL Review Plan for Biennial Review of PFP *In-Situ* NDA Program;" dated September, 2012.

8. "NDA Staffing/Qualifications Status Review;" T. Nirider (RL, currently at ORP), Operational Awareness Report Number 28494, dated January 28, 2010.

9. "Review of Plutonium Finishing Plant Qualifications/Requirements for the Non-Destructive Assay Program Staff;" S. Clarke (RL), Operational Awareness Report Number 29518, dated March, 2010.

10. "CHPRC Work Site Assessment Report: PFP/Nondestructive Assay;" PFP-2012-WSA-11943; dated August, 2012.

11. Memorandum from J. A. Dowell, AMRP, to R.E. Wilson, EM-41: "Periodic Reviews of Non-Destructive Assay (NDA) Holdup Measurement Programs at the Plutonium Finishing Plant;" 112-AMRP-004, dated May18, 2012.

12. Memorandum from M. B. Moody, Deputy Assistant Secretary for Safety, Security, and Quality Programs Environmental Management to M. S. McCormick, Manager, Richland Operations Office, "Periodic Reviews of NDA Holdup Measurement Programs," dated April 2012.

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13-SED-0037

FEB 15 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH) APPROVAL OF USE OF POWERED AIR PURIFYING RESPIRATORS (PAPR) FOR PROTECTION AGAINST NITRIC ACID

Staff of the Richland Operations Office (RL) met with your staff recently regarding the status of NIOSH approval of Organic Vapor/Acid Gas/High Efficiency Particulate Air (OV/AG/HE) cartridges used in the TL Optimair PAPR configuration for protection against nitric acid. This letter transmits information regarding a path forward on the issue.

RL concludes that the OV/AG/HE cartridges used in the TL Optimair PAPR configuration are not NIOSH approved for use against nitric acid. The CH2M HILL Plateau Remediation Company (CHPRC) should retract statements issued at the Plutonium Finishing Plant and potentially elsewhere implying that the OV/AG/HE cartridges used in the TL Optimair PAPR configuration are NIOSH approved for use against nitric acid. The retraction should clarify this point to the work force so that workers understand that the cartridges have not been NIOSH-approved for use against nitric acid.

Where an exposure assessment shows that exposures to nitric acid may exceed occupational exposure limits (OEL), NIOSH approved respiratory protection for nitric acid must be used. However, RL does not take issue with the use of this configuration for levels of nitric acid that do not exceed OEL and therefore respiratory protection is not required. Use of a respirator for comfort regarding irritants below OELs may be acceptable as long as the use of respirators does not create a significantly greater hazard. The determination of the expected contaminant levels should be made based on an exposure assessment specific to nitric acid.

It is our understanding that exposure assessments for nitric acid prepared to date may have been based on sampling data for nitrogen dioxide. As stated above, the exposure assessments must be specific to nitric acid, and RL therefore expects sampling results for nitric acid will specifically be considered in preparing the assessments. Nitrogen dioxide may or may not be detectable when dealing with nitric acid, especially in better ventilated situations, and therefore may not be a good surrogate for nitric acid.

Finally, RL also requests that CHPRC consult with RL should CHPRC wish to pursue a binding interpretation regarding NIOSH approval of OV/AG/HE cartridges in the TL Optimair PAPR configuration for use against nitric acid or any other safety and health issue so that we can assist CHPRC in obtaining an interpretation regarding compliance with 10 CFR 851.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Sincerely,

Jenise C. Connerly

Jenise C. Connerly
Contracting Officer

SED:TM

cc: M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
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13-SED-0039

MAR 05 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 – TRANSMITTAL OF THE EVALUATION OF SAFETY OF THE SITUATION (ESS) AND OPERABILITY DETERMINATION FOR THE WASTE RECEIVING AND PROCESSING (WRAP) FACILITY UNREVIEWED SAFETY QUESTION (USQ) REGARDING CRACKED GLOVEBOX WINDOWS

This is in response to the December 17, 2012, letter (CHPRC-1205125) requesting approval of the ESS and Operability Determination for the WRAP USQ regarding cracked glovebox windows. The Richland Operations Office (RL) has reviewed the information submitted, and pursuant to 10 CFR 830, approval is hereby granted with no conditions of approval, as documented in the attached Safety Evaluation Report. Any other material changes or deletions which may be included in the final document, but not identified in the CH2M HILL Plateau Remediation Company requests, are not approved. RL also concurs with the list of safety basis documents submitted as Attachment 3. RL concurrence with the list of documents making up the safety basis does not relieve the contractor from any requirement of 10 CFR 830, or establish actions required to conform to said requirements as a change as defined by Clause I.102, FAR 52.243-2, Changes – Cost Reimbursement.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Jenise C. Connerly
Contracting Officer

SED:PJM

Attachment

cc w/attach:
M. V. Bang, CHPRC
V. M. Bogenberger, CHPRC
J. A. Ciucci, CHPRC
R. M. Millikin, CHPRC
T. L. Vaughn, CHPRC
DNFSB

Safety and Engineering Division
U.S. Department of Energy, Richland Operations Office

Safety Evaluation Report

Date Published: February 2013

WASTE RECEIVING AND PROCESSING (WRAP) GLOVEBOX CRACKED WINDOW EVALUATION OF THE SAFETY OF THE SITUATION (ESS)

WRAP GLOVEBOX CRACKED WINDOW ESS

Signature Page

Prepared By:

2/20/13

P. J. Macbeth, Review Team Leader
Safety and Engineering Division

Date

Approved By:

Pete J. Garcia Jr.

2/20/2013

Pete J. Garcia Jr., Director
Safety and Engineering Division

Date

WRAP GLOVEBOX CRACKED WINDOW ESS

Introduction

This Safety Evaluation Report (SER) documents the Richland Operations Office (RL) review of ESS (submitted as Attachment 2 to CHPRC-1205125) based on the Operational Determination (OD), (submitted as Attachment 1 to CHPRC-1205125), and associated positive Unreviewed Safety Question Determination (USQD) WRP-12-032p, completed to evaluate the potential degradation of a passive Design Feature at the WRAP facility. Specifically, the evaluation addresses two windows on top of the Low-Level Waste (LLW) Glovebox 107-GB-07-102 that are cracked The review also included the list of safety basis documents for the Solid Waste Operations Complex [SWOC] (submitted as Attachment 3 to CHPRC-1205125).

Scope of Review

The following documents were reviewed by the RL Review Team in support of the review of this ESS:

- USQ Determination - WRP-12-032p, Degradation of LLW Sorting Glovebox 107-GB-07-102 Lighting Fixture Glass Panels.
- OD - Waste Receiving and Processing Glovebox Cracked Windows Operability Determination (Attachment 1 to CHPRC-1205125).
- ESS - CHPRC-1205125, ESS of the WRAP Glovebox Cracked Glass, Revision 0.
- Safety Basis Document List (Attachment 3 to CHPRC-1205125).
- Operations Timely Order – CWC-12-006 Revision 1.
- Occurrence Report EM-RL – CHPRC-WRAP-2012-0002, Positive USQ Related to Degradation of Passive Design Feature (Glovebox Windows).
- Root Cause Evaluation Report CR-2012-3140.

The RL Review Team included participation from nuclear safety personnel within the RL Safety and Engineering Division, and personnel from the Operations Oversight Division and the Central Plateau Division. This review was performed using applicable portions of the RL Integrated Management System Authorization Basis review protocols.

WRAP Glovebox USQ and Associated ESS Description and Basis for Approval

An OD performed by CH2M HILL Plateau Remediation Company (CHPRC) evaluated the current status of the WRAP facility LLW Sorting Glovebox 107-GB-07-102 with two cracked lighting panel windows. The windows form part of the glovebox shell, which per the SWOC Safety Basis is credited as a safety significant passive Design Feature. Although the confinement function of the windows has not been compromised, the cracked condition of the windows has undergone a technical evaluation and has been determined to represent a degraded passive Design Feature and a positive USQ. Per the SWOC Technical Safety Requirement (TSR) Section 6.7 definition of the WRAP glovebox physical shell, the cracked windows represent a potential degradation of the glovebox shell resulting in degradation of a passive Design Feature. The safety basis does not consider facility Modes when determining the continued operability/reliability of passive Design Features.

WRAP GLOVEBOX CRACKED WINDOW ESS

The evaluation concluded that the facility is in a safe condition for the following reasons.

- The glovebox does not contain any waste drums.
- Combustible debris, which was a by-product of glovebox maintenance (bags, failed gloves, rags), has been removed and the glovebox vacuumed.
- The glovebox is in an extended Standby (lay-up) Mode.
- Worker presence near the glovebox is limited to surveillance and maintenance to support continuation of the extended Standby status (CHPRC-01507, Revision 2).
- The cracked panes are intact and continue to provide a confinement barrier to the release of airborne contamination from the glovebox.
- The panes on the ceiling of the glovebox are for light transmission as this area is not designed for worker presence during glovebox operations.
- Heavy metal light fixtures over the windows also provide an additional barrier to credible missile escape from the glovebox.
- Operations Timely Order CWC-12-006 Revision 1 has been issued to prohibit glovebox operation until this issue is resolved.

Approved drawings designate one quarter inch thick laminated safety glass, specified as ASTM C1172 Kind LA, in glovebox drawings showing the cracked windows. Kind LA specifies that both glass layers are annealed.

The LLW Sorting Glovebox has been placed in an extended Standby (lay-up) Mode. The lights that normally illuminate the glovebox interior are turned off and are only activated to support surveillance requirements and other activities needed to maintain the Standby condition as defined by the SWOC safety basis.

A timely order restricts return to operability prior to replacement of the cracked windows. The following control is implemented to ensure the Design Feature efficacy is restored prior to glovebox operations. "CHPRC SHALL replace the glovebox 107-GB-07-102 cracked windows prior to putting the glovebox back into OPERATION MODE."

Scope of Operations Authorized by the ESS

The LLW glovebox SHALL remain in its Standby Mode while the lighting windows remain cracked, providing the following conditions remain satisfied.

1. The subject windows maintain ventilation and radiological separation between the glovebox and the surrounding room.
2. The lights that normally illuminate the glovebox interior are turned off and only activated to support surveillance requirements and other activities to maintain the Standby condition as defined by the SWOC safety basis.
3. Glovebox activities should be limited to those that are needed to maintain a safe condition and those deemed necessary to safely repair the damaged window panes.

Prior to resuming LLW glovebox operations, the windows SHALL be replaced.

WRAP GLOVEBOX CRACKED WINDOW ESS

Evaluation of Risk

As shown in the referenced USQDs, the degraded passive Design Feature credited in the SWOC safety basis for the cracked windows is to provide a barrier to internally generated missiles in the event of an explosion or other energetic release of solid material that could penetrate the glovebox shell and injure nearby workers. Because operation of the affected glovebox is prohibited until the cracked windows are replaced, there is no increase in risk by approving the ESS. Because the WRAP facility is currently in a lay-up mode with the Process Area gloveboxes in Standby Mode, there is little chance for inadvertent operation of the Low-Level glovebox line before the windows are replaced.

Evaluation of Compensatory Measures

There are no compensatory measures imposed by the ESS other than continued enforcement of the timely order, CWC-12-006, Revision 1. Leaving the Low-Level glovebox in Standby Mode until the windows are replaced provides a safe configuration.

Conditions of Approval

None.

Conclusion

The Review Team recommends the RL designated approval authority approve the subject ESS. This ESS can be terminated when safety basis changes are implemented that clarify the functional requirements of the windows or the cracked windows are replaced. RL concurs with adding the subject ESS and this SER to the list of applicable safety basis documents at SWOC, as shown in Attachment 3 to CHPRC-1205125. Any changes to the WRAP safety basis required to resolve this issue shall be incorporated into the next annual update and submitted for the U.S. Department of Energy approval.

References

1. Letter, CHPRC-1205125, J. C. Fulton, CHPRC, to J. C. Connerly, DOE-RL, Contract Number DE-AC06-08RL14788 – Transmittal of the Evaluation of Safety of the Situation and Operability Determination for the Waste Receiving And Processing Facility Unreviewed Safety Question Regarding Cracked Glovebox Windows.
2. USQD WRP-12-025, Cracked Windows Found on WRAP Gloveboxes and Continuation of Cleanup Activities.
3. USQD WRP-12-032p, Degradation of LLW Sorting Glovebox 107-GB-07-102 Lighting Fixture Glass Panels.

WRAP GLOVEBOX CRACKED WINDOW ESS

Safety Bases Documents

IMPLEMENTED DOCUMENTED SAFETY ANALYSIS & TSR DOCUMENTATION

1. HNF-14741, Revision 8, Master Documented Safety Analysis (MDSA).
2. HNF-15280, Revision 8, SWOC TSRs.
3. 12-SED-0070, SER approving MDSA & TSR, Revision 8 documents.
4. HNF-11724, Revision 8 or Latest Revision, CH2M HILL Plateau Remediation Company Safety Management Programs.
5. 11-SED-0120, SER for HNF-11724, Revision 8 or Latest Revision.

DOCUMENTS APPROVED BUT NOT IMPLEMENTED

1. HNF-14741, Revision 9, MDSA.
2. HNF-15280, Revision 9, TSRS for the SWOC.
3. 13-SED-0014, SER approving MDSA & TSRs, Revision 9 documents.

JUSTIFICATION FOR CONTINUED OPERATION/ESS DOCUMENTATION

1. CHPRC-01920, Revision 0, ESS of the WRAP Facility Glovebox Cracked Glass.
2. 13-SED-0039, SER approving CHPRC-01920, Revision 0.

Occurrence Report

1. Occurrence Report EM-RL - CPRC-WRAP-2012-0002, "Positive USQ Related to Degradation of Passive Design Feature (Glovebox Windows)," dated November 6, 2012.

Root Cause

1. Root Cause Evaluation Report for EM-RL - CHPRC-WRAP-2012-0002, Positive USQ Related to Degradation of Passive Design Feature (Glovebox Windows), CR-2012-3140, December 15, 2012 – January 10, 2013.

Operations Timely Order

1. Operations Timely Order CWC-12-006, Revision 1, dated November 8, 2012.

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Richland, Washington 99352

13-NSD-0019_RL

JUN 07 2013

Mr. J. C. Fulton, President
and Chief Executive Officer
CH2M HILL Plateau Remediation Company
Richland, Washington 99352

Dear Mr. Fulton:

CONTRACT NO. DE-AC06-08RL14788 - APPROVAL OF HANFORD SITE CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM (CBDPP), DOE-0342, REVISION 2

The purpose of this letter is to approve the Hanford Site CBDPP, DOE-0342 Revision 2, which was signed by CH2M HILL Plateau Remediation Company (CHPRC) and transmitted to the U.S. Department of Energy Richland Operations Office (RL) for review and approval via Mission Support Alliance, LLC (MSA) letter MSA-1302024 dated May 21, 2013. RL hereby approves Revision 2 to DOE-0342. MSA will be responsible to maintain strict configuration control of the CBDPP document.

The CBDPP DOE-0342 Revision 2 contains significant changes to several major products addressed in DOE-0342, including Assessment/Characterization of Buildings/Structures/Conex Boxes, Postings, Work Controls, and Medical Evaluations. CBDPP DOE-0342 also contains a number of non-significant changes. As described in 11-SED-0002 dated October 7, 2010, approval pursuant to 10 CFR 850 was provided by the appropriate RL signature on the issue resolution forms for the revised products, and contractor implementation was required to begin within 30 days. Accordingly, CHPRC shall initiate appropriate training of its staff as soon as it is made available by the Volpentest Hazardous Materials Management and Emergency Response facility. In addition, CHPRC shall provide input to MSA by June 21, 2013, to facilitate the development of a schedule recommendation for sitewide implementation of the revised CBDPP. Based on this information from CHPRC and other Hanford Contractors, RL will determine a consistent date for implementation of the revised CBDPP and will issue appropriate direction.

If you have any questions, please contact us, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment, on (509) 376-0108.

Matt McCormick
Manager

Clinton M. Jacobsen
Contracting Officer

NSD:PG

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