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(007243SH)

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
*3100 Port of Benton Blvd • Richland, WA 99354 • (509) 372-7950*
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February 14, 2017 — 17-NWP-012

By certified mail

Mr. Doug S. Shoop, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: A7-50
Richland, Washington 99352

Mr. Ty Blackford, President and CEO
CH2M HILL Plateau Remediation Company
PO Box 1600, MSIN: H7-30
Richland, Washington 99352

Re: Dangerous Waste Compliance Inspection on September 20, 2016, at 400 Area Waste Management Unit, RCRA Site ID: WA7890008967, NWP Compliance Index No. 16.582

Dear Mr. Shoop and Mr. Blackford:

Thank you for your staff's time during the 400 Area Waste Management Unit inspection on September 20, 2016. The Department of Ecology's (Ecology) compliance report of this inspection is enclosed. The report cites one area of non-compliance listed in the compliance problems section of the report.

To return to compliance, complete the action required and respond to Ecology within the timeframe specified. Include all supporting documentation in your response, (such as photographs, records, and statements explaining the actions taken and dates completed). Submit this information to Kathy Conaway at 3100 Port of Benton Boulevard, Richland, Washington 99354.

Specific deficiencies or violations not listed in the enclosed compliance report does not relieve your facility from having to comply with all applicable regulations.

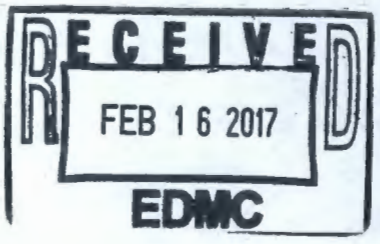
Failure to correct the deficiencies may result in an administrative order, a penalty, or both, as provided by the Hazardous Waste Management Act (Revised Code of Washington 70.105.080 and .095). Persons who fail to comply with any provision of this chapter are subject to penalties of up to $10,000 per day per violation.

If you have questions or need further information, please contact me at kathy.conaway@ecy.wa.gov or (509) 372-7890.

Sincerely,

Kathy Conaway

Kathy Conaway
Dangerous Waste Compliance Inspector
Nuclear Waste Program




tkb

Enclosure

cc: See page 2

17-NWP-012
400 Area Waste Management Unit
RCRA Site ID: WA7890008967
NWP Compliance Index No.: 16.582
Inspection Date: September 20, 2016

cc electronic w/enc:
Dave Bartus, EPA
Jack Boller, EPA
Dennis Faulk, EPA
Duane Carter, USDOE
Cliff Clark, USDOE
Tony McKarns, USDOE
Allison Wright, USDOE
Deborah Singleton, CHPRC
Daniel Turlington, CHPRC
Joel Williams, Jr., CHPRC
Jon Perry, MSA
Ken Niles, ODOE
Shawna Berven, DOH
John Martell, DOH
Debra Alexander, Ecology
Kathy Conaway, Ecology
Suzanne Dahl, Ecology
Jared Mathey, Ecology
John Price, Ecology
Stephanie Schleif, Ecology
Ron Skinnarland, Ecology
Alex Smith, Ecology
Katie Wilson, Ecology
CHPRC Correspondence Control
Environmental Portal
Hanford Facility Operating Record

cc w/enc:
Steve Hudson, HAB
Administrative Record
NWP Central File
NWP Compliance Index File: 16.582

cc w/o enc:
Rod Skeen, CTUIR
Gabriel Bohnee, NPT
Russell Jim, YN

# Washington Department of Ecology
# Nuclear Waste Program
# Compliance Report

| | |
|---|---|
| **Site:** | **400 Area Waste Management Unit** |
| **RCRA Site ID:** | **WA 7890008967** |
| Inspection Date: | September 20, 2016 |
| Site Contacts: | Joel Williams, Regulatory Inspection Lead, CH2M HILL, Plateau Remediation Company (CHPRC)<br>Duane Carter and Tony McKarns, Untied States Department of Energy - Richland Operations Office (USDOE-RL) |
| Phone: | (509) 376-4782 – Joel Williams FAX: N/A |
| Site Location: | 400 Area, Hanford Site<br>Benton County, Washington |
| At This Site Since: | 1982 NAICS#: 56221, 924110, and 54171 |
| Current Site Status: | Storage Facility (TSDF) / Large Quantity Generator / Operating Unit Group # 16 |

**Ecology**

Lead Contact: Kathy Conaway Phone: (509) 372-7890 FAX: (509) 372-7971
Other Representatives: Jared Mathey – Ecology Compliance Support
Report Date: February 14, 2017
Report By: Kathy Conaway
Index: #16.582

Kathy Conaway (Signed) Feb. 14, 2017 (Date)

## Site Location

The Hanford Site was assigned a single United States Environmental Protection Agency (EPA) identification number, and is considered a single Resource and Conservation Recovery Act of 1976, as amended, (RCRA) facility even though the Hanford Site contains numerous processing areas spread over a large geographic area. The Hanford Site is a tract of land approximately 583 square miles and is located in Benton County, Washington. This site is divided into distinct Dangerous Waste Management Units (DWMUs), which are administratively organized into "unit groups." A unit group may contain only one DWMU or many; currently, there are 36 unit groups at the Hanford Site. Individual DWMUs utilize only a very small portion of the Hanford Site. Additional descriptive information on the individual DWMUs is contained in unit group permit applications and in Parts III, V, and VI of the *Hanford Facility RCRA Permit, Dangerous Waste Portion, WA7890008967, Revision 8C* (hereafter referred to as the Permit).

## Owner and Operator Information

The United States Department of Energy (USDOE), is the owner and operator of the 400 Area Waste Management Unit (WMU) and oversees waste management and cleanup activities ongoing at the Hanford Site. CHPRC is contracted by USDOE to co-operate the 400 Area WMU.

## Facility Background

According to the *Washington State Department of Ecology, 400 Area WMU, Revision 2B, Dangerous Waste Permit Application Part A Form*, dated September 22, 2008 (400 Area WMU Part A Application) and the *Surveillance and Maintenance Plan for the Fast Flux Test Facility Revision 0, DOE/RL-2009-26*, dated April 23, 2009 (FFTF S&M Plan), the 400 Area WMU is associated with the Fast Flux Test Facility (FFTF). The 400 Area WMU manages radioactive dangerous waste (MW) from the FFTF deactivation process. The FFTF was formerly operated as a 400-megawatt thermal liquid-metal (sodium) cooled research and test reactor owned by USDOE, which tested advanced fuels and materials. It served as a prototype for future liquid metal fast breeder reactor facilities.

The 400 Area WMU consists of two container storage units; the 403 building, Fuel Storage Facility (FSF), which is a large high bay building and the Interim Storage Area (ISA), which is a fenced outdoor pad northeast of the FFTF reactor.

According to the 400 Area WMU Part A Application, the FSF and ISA stores the following MW:

- Elemental sodium.
- Sodium hydroxide.
- Sodium potassium (NaK).
- Debris contaminated with elemental sodium, sodium hydroxide, and NaK.

Under the Unit Description section in the Permit, Part III, Operating Unit Group 16 Permit Conditions, dated December 31, 2013, the following is stated.

> *...The only mixed waste stored in these two container storage units is elemental sodium, and sodium potassium (D001, D003, and WSC2), sodium hydroxide (D002), and potassium hydroxide (D002) and debris (e.g., piping, equipment, and components) contaminated with elemental sodium, sodium potassium, sodium hydroxide, and potassium hydroxide. The 400 Area WMU will not store, treat, or dispose of bulk metallic sodium or bulk sodium hydroxide.*

The storage capacity of the FSF is approximately 1,000 gallons and the storage capacity of the ISA is approximately 19,000 gallons.

According to the FFTF S&M Plan, the FFTF was built in the late 1970s and operated from 1982 to 1992. Deactivation activities were conducted at the FFTF, beginning in 1993 through 2009. According to the Documented Safety Analysis for the Fast Flux Test Facility, FFTF-36419, approximately 6,000 to 15,300 gallons of radioactively contaminated sodium residuals still exist within the FFTF reactor vessel, storage vessels, and liquid metal piping systems. The FFTF is currently in a surveillance and maintenance phase, which is addressed in the Hanford Federal Facility Agreement and Consent Order, 89-10 Revision 8 (HFFACO), Action Plan, Section 8, Facility Disposition Process. Alternatives for the FFTF final decommissioned end state are analyzed in the Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington, DOE/EIS-15 0391, dated October 2009.

An Ecology letter dated February 21, 2012, (12-NWP-024) to USDOE directed that the 400 Area WMU dangerous waste container inspections be returned to weekly from semi-annual. Weekly inspections for the FSF and ISA were initiated and the Permit was modified to incorporate the

required changes (September 5, 2012). Also, USDOE provided a Tri-Party Agreement (TPA) Change Notice Form dated April 10, 2012, to modify text in the S&M Plan (DOE/RL-2009-26) to make the inspection language consistent with Ecology direction and Permit. In 2015, there were Class 1 permit modification changes in Addendum J, Contingency, Addendum I, Inspections, and Addendum E, Security to correct compliance issues and consistency with permit language.

Ecology sent a letter to USDOE and CHPRC dated December 1, 2016, notifying them of a failure to submit closure notice for container storage areas located in the 400 Area WMU: ISA and FSF.

Additional information on the background and recent compliance history of the 400 Area WMU can be found in the Ecology compliance reports, Compliance Index numbers:

- 11.344, inspection dated September 19-20, 2011
- 12.430, inspection dated June 28, 2012
- 15.536, inspection dated June 3, 2015

Combined findings include thirteen areas of non-compliance and nineteen areas of concerns. Also, an EPA lead inspection on May 19-21, 2014, included a review of the 400 Area WMU.

## Inspection Summary

On September 14, 2016, I provided a meeting to Ecology project and inspection support explaining the scope of my inspection. On September 15, 2016, I provided an email announcement to USDOE, Mission Support Alliance, and CHPRC of a dangerous waste inspection of the 400 Area WMU for September 20, 2016. On September 19, 2016, Joel Williams of CHPRC sent an email to Ecology and Hanford representatives providing the inspection start time, meeting location, and safety equipment needed.

On September 20, 2016, at 9:22 a.m., Jared Mathey (Support Inspector) and I arrived at the 400 Area WMU, outside of the DWMU ISA gate since the plan would be to walk down the ISA and FSF. We were met by the representatives listed below. Daniel Turlington, (CHPRC Environmental Compliance Officer) provided a safety briefing and an overview of the facility along with Justin Roberts (CHPRC Field Work Supervisor). After the safety briefing and introductions, I provided an in-briefing regarding the purpose and agenda for my inspection, and said that I would begin with asking some initial questions related to the 400 Area WMU Preparedness and Prevention addendum of the Permit.

The following personnel were present at the 400 Area WMU facility.

- Joel Williams Jr., CHPRC Regulatory Compliance Lead
- Daniel Turlington, CHPRC Environmental Compliance Officer (ECO)
- Justin Roberts, CHPRC Field Work Supervisor (FWS)
- Seyed Tabaloa, CHPRC Radiological Control Technician (RCT)
- Noah Walkwerson, CHPRC Nuclear Chemical Operator (NCO)
- Deborah Older, CHPRC Nuclear Chemical Operator (NCO)
- Kim Strieck, Stationary Operating Engineer (SOE)

- Duane Carter, USDOE-RL Environmental Representative
- Tony McKarns, USDOE-RL Environmental Representative

I asked about the public address (PA) system onsite and if it could be tested (turned on) at this time. Addendum F of the Permit states the ISA has no installed communication or alarm systems. Therefore, compliance with internal communications is through the PA system which can be heard throughout the 400 Area property protection area. Deborah Older said that the PA system could not be ready for testing today however, we could return on another day and observe the testing. J. Roberts said that the PA system is tested every Monday at 1:15 pm. I said that I would request the Ecology Waste Management Project to coordinate a visit with our permitting staff at a later date. I observed the CHPRC personnel present at the inspection had cell phones and 2-way radios, compliant with the Permit. Additionally, I verified with the stationary operating engineer (SOE) in the field that the pressure alarm in the feed line for inert gas to the Core Container Pots stored in the FSF were wired to an alarm panel in Building 481A to alert the SOE in the event of low pressure.

**NOTE**: *Verifying the testing frequency of the PA system, an email to Ecology dated 12/29/2016 from the current CHPRC ECO at 400 Area WMU, Stewart McMahand, stated that an operational check for the site wide PA system is performed monthly, on the last Monday of the month.*

I asked the name of the Building Emergency Director (BED) for the day. J. Roberts said the BED today was William Doremus.

I asked for the current number of containers stored at the ISA and the FSF. D. Turlington stated that there were nineteen containers in the ISA. The Permit states that these containers were generated from decommissioning FFTF and going to a minimum safe condition. Some waste inventory was placed in ISA because it was a sodium-contaminated waste material. Also, there are containers with mixed waste. J. Williams said that there are two component pots (CCP)/containers in the FSF containing sodium.

I said that I was ready to inspect the ISA. Ecology observed a security sign on the locked fence gate to the ISA. The sign read *"Danger, Unauthorized Personnel Keep Out"*. D. Older unlocked and opened the gate to the ISA. I asked to check the fire extinguisher for the ISA which was stored on the inside of the fence at the gate entry. Ecology observed that the fire extinguisher was last inspected in July 2016.

*DSC01474, ISA Fire Extinguisher with Inspection Card*

We moved to the connex box and D. Older unlocked the doors and opened them for viewing. We observed the waste containers and labeling behind the boundary chain marking the restricted access area. Ecology observed the connex box provided secondary containment for the waste containers stored inside and that each container was affixed with a hazardous waste label. J. Mathey saw a yellow colored waste drum in the rear of the first bay of the connex box and asked the for the drum label information. D. Older read the container number CP-12-17-F. I asked about any other containers or equipment stored at ISA since there were items in the storage area. T. McKarns said that there were two empty transportation containers and that the other modules were empty storage casks.

*DSC 01475 - DSC0476, ISA Drum Containers*

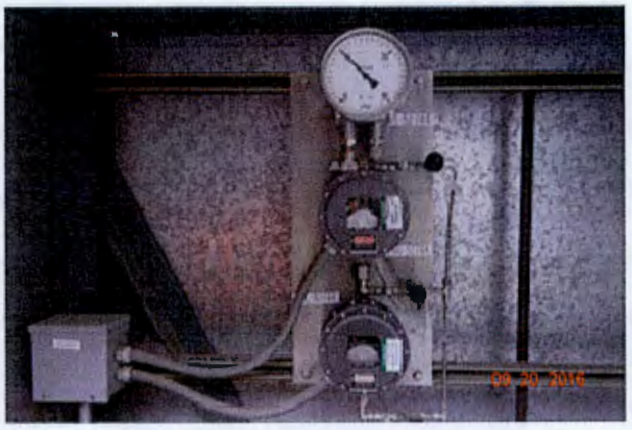

*DSC01477 - DSC01478, ISA Drum Containers*

We left the ISA and proceeded to the north side of building 4710, the Permit location of the 400 Area WMU emergency spill kit. I observed that the 400 Area WMU emergency spill kit was stored outside under a cover and in-between the ISA and FSF. I observed that there was a tape seal over the lock on the container. I did not request that it be opened.


*DSC01479 - Spill Kit Container*

I requested to inspect the alarm panel located in building 481A that alerts the SOE in the event of low pressure. We proceeded to building 481A and while waiting for access into the building, we went over to the nearby area where the argon gas system instrument gauges are located. In the FSF, sodium in the CCPs is stored at room temperature under an inert gas blanket to protect sodium from reaction with air. Argon is the gas used for this procedure. Kim Strieck, SOE, arrived and described the different gauges to us. I asked about the top gauge with a reading of 10 inches of water. K. Strieck explained that the middle gauge, pressure switch high (PSH-52744), is the high setting where the alarm would be triggered and is currently set at 15 inches of water. He explained that the bottom gauge, pressure switch low (PSL-52744), reads the low setting and where the alarm sounds. He explained it is currently set at 2.5 inches of water. I observed labels dated December 10, 2015, indicating that calibration was performed on PSH-52744 and

PSL-52744 and due again in December 2017. I asked if there had been any alarm sounding in the past 3 years and according to K. Strieck, there has been no alarm trigger for the argon gas system.



*DSC01481 - Argon Gas Instruments*

We entered the SOE office area in building 481A where control and instrument panels were located. K. Strieck demonstrated the alarm system check for the alarm panel, C-676, associated with the feed line for inert gas at FSF. There was a dial tone check and then a verbal check of every facility alarm. It ended with the system check announcing a status check for the argon gas system "argon pressure normal." If the system does alarm, the SOE contacts the manager. According to K. Strieck, a system check of alarm panel C-676 is performed daily.


*DSC01480 - Entry doors to Building 481 and office 481A*

*DSC01482 - Alarm System Panel, Procedure, Personnel Shift Schedule, and Alarm Monitor*

We then went to the FSF. Prior to entry, D. Older provided each of us with oxygen meters. The FSF fire extinguisher is located on the outside of the building next to the door. I observed that the fire extinguisher card tag indicated last inspection was September 2016. J. Mathey and I observed a sign posted on the outside of the FSF door *"Danger – Unauthorized Personnel Keep*

*Out."* Inside the FSF, we observed that both metal containers holding the CCPs were labeled with hazardous waste and with the major risk of dangerous when wet and water reactive. There were drip pans as secondary containment for the two large boxes. A forklift/rigging device is provided as part of the base for each metal box and results in an elevation of the base of the box 4 inches above the drip pan. We walked back outside the FSF I asked about a cell storage in the FSF as described in the current 400 Area WMU Part A Application. According to T. McKarns, the cell storage was underneath the grating of the FSF. I said that we can talk about this more at the MO-294 building. We left the 400 Area WMU around 10:38 a.m.

I resumed the inspection at the MO-294 building around noon. Personnel that joined us for the afternoon inspection were:

- Deborah Singleton, Environmental Compliance Director, CHPRC
- Marshall Myrick, Waste Management Representative, CHPRC
- Kym Tarter, Operating Records Specialist, CHPRC
- Paula Gray, Emergency Compliance for CP S&M, CHPRC
- Julie Burton, Waste Management Representative, CHPRC
- Stuart McMahand, ECO for 400 Area WMU, CHPRC

At the request of the Nuclear Waste Program (NWP) Transition Project and in preparation for a Part A Unit Group workshop with CHPRC and USDOE, I began with 400 Area WMU Part A Application questions. I explained that there seemed to be current Part A language that could be outdated. Specifically, the below ground cell containing a carbon steel storage vessel located in the FSF, building 403 The current Permit does not include it, only the Part A. T. McKarns and J. Williams stated that the current 400 Area WMU permitted DWMUs are for the following areas; one connex box in the ISA and the two metal containers storing CCPs in the FSF. In the Part A for the ISA, the concrete pad was used for cask storage. It appears that this area is now storing unused and empty casks. I then asked about process codes and capacities, as the Part A indicates a combined capacity of 20,000 gallons. J. Williams said that the FSF storage capacity was 1,000 gallons and the ISA capacity was 19,000 gallons.

I requested the waste profile for the ISA and FSF, which is required in the Permit under Waste Analysis, Permit Condition III.16.C.2. D. Turlington left to go obtain the information from the operating record and returned explaining that after talking with the waste management representative, he was told that there appeared to be no waste profile for the 400 Area WMU. J. Williams contacted Marshall Myrick, the waste management representative, who said he did not believe there was a current waste profile for the waste at the 400 Area WMU. M. Myrick said that we could contact Angie Willette or Rick Austin. Deborah Singleton then said that she would locate the waste profile in the operating record and I said that I would include this in my record request. I received a copy of the 400 Area WMU Waste Profile Sheet on October 12, 2016. I observed it was signed by the 400 Area WMU ECO and authorized waste management representative and dated April 12, 2012. It contained the generator information, waste stream information, physical and chemical characterization, and packaging information.

***NOTE:*** *Julie Burton a Waste Management Representative, came in to tell us that she had found the 400 Area WMU waste profile. I said I would include it on the records request.*

I requested the waste inventory for the ISA and FSF. D. Turlington provided a waste inventory list that included the container pin numbers, start date of storage, location, size, type, and other pertinent information about the contents in the stored containers. J. Mathey and I verified the start dates of storage.

Kym Tarter, operating record specialist, joined us at 1:00 p.m. to assist us with operating record questions. I asked if there were any on-going operations currently at the 400 Area WMU and D. Turlington replied no. I asked to see a copy of the 400 Area WMU Building Emergency Plan (BEP) and was provided one by the CHPRC Emergency Preparedness Coordinator, Paula Gray. I reviewed the BEP and called the daily shift office to verify who the BED was for today on their weekly call list. I spoke with Captain Reed and he told me that the name was William Doremus. D. Turlington then called William Doremus who confirmed he was the BED for the 400 Area WMU.

I asked if last year's Ecology inspection findings for the 400 Area WMU had resulted in any changes or implementation. J. Williams said that any change was a result of primarily global issues with the site.

I asked if there have been any changes to the 400 Area WMU Personnel Training Plan since June 2015. K. Tarter brought up the current Personnel Training Plan, PRC-STD-TQ-4236 Central Plateau Project Surveillance and Maintenance DW Training Plan, Revision 1, Change 2, dated May 7, 2013. I confirmed that there had been no changes since June 2015.

I reviewed the weekly inspection records for the month of August 2016 for the ISA and FSF. I observed no problems. J. Mathey reviewed the monthly emergency inspections for August 23, 2016, and September 19, 2016. He observed the printed name, signature, date, and time of the inspection on the emergency response and spill kits. He also reviewed the monthly inspections for the emergency eye wash station conducted on August 17, 2016, and September 12, 2016. The August 2016 inspection record for the ISA fire extinguisher could not be found. I requested a copy on the records request along with a copy of the December 21, 2015, annual ignitable reactive waste inspection record.

Stuart McMahand, the new ECO for the 400 Area WMU, joined us around 2:00 p.m.

I had a short discussion about operating record and Package Identification Number (PIN) files. J. Willians explained that the 400 Area WMU official operating record for dates of container storage are their PIN files. K. Tarter then showed us the PIN file for container 001649 located in the ISA. J. Mathey observed the date of storage of June 24, 2009, in the PIN file.

I asked about the 400 Area WMU Land Disposal Restriction (LDR) section of the *Calendar Year 2014 Hanford Site Mixed Waste Land Disposal Restrictions Full Report, DOE/RL-2015-08, Revision 0* (2015 LDR Report) submitted to Ecology. I asked if all the waste was solid waste and J. Williams said yes. I asked if the planned treatment was associated with the Tri Party Agreement (TPA) milestone, M-092 since report states "treating or planned to treat onsite". J. Williams said that there are Hanford plans to build a facility for treatment of the sodium for the 400 Area WMU. After treatment, the waste stream disposal section of the 2014 LDR Report, states that "Disposal of the matrices is not expected". I asked what did that mean. CHPRC and USDOE personnel could not answer and I agreed to include it in the document request.

I said that I wanted to follow-up on concerns identified in the previous NWP inspection (Compliance Index Number 15.536) at the 400 Area WMU, specifically concerns 3, 4, 5, and 6 related to contingency, TPA milestones, and LDR reporting. CHPRC and USDOE representatives agreed that I would include the questions in the document request and CHPRC would provide a response.

I went over the document request list with J. Williams. I requested the records for:

- 400 Area WMU Waste Profile
- 400 Area WMU weekly and daily inspections for August 29, 2016 – 2CP-SUR-F-05024, pages 11-12
- Annual 2015 ignitable and reactive waste inspection
- Monthly fire extinguisher inspection for August 2016
- PIN files for containers CP-12-17-F and 0049499 from the ISA
- Answer to LDR question(s)
- Answers to questions on concerns in previous compliance inspection

We completed the day's inspection at 2:50 pm.

On October 12, 2016, at the Ecology office, there was a follow-up meeting on an information response. CHPRC provided verbal communication of the issue identified with the ISA monthly inspection of the fire extinguisher and a summary of their specific corrective actions and initiatives for continuous improvement moving forward. Also, CHPRC provided the follow-up information package for Ecology review.

## Records Review

Waste Profile information that I reviewed is discussed on page 8 of this report.

I reviewed the Annual Ignitable/Reactive Waste Fire Inspection record. The location was the outdoor storage (Hazmat Storage Unit) on the ISA pad. The date was December 21, 2015. I observed that there were no comments in the inspection record. Building 403, FSF also received an Annual Ignitable/Reactive Waste Fire Inspection performed on December 21, 2015. The comments for FSF inspection indicated that the required sign, *"No Smoking Sign"* had the *"Danger"* portion faded. A new sign will be installed and a note dated January 12, 2016, stated that the work request was submitted for sign replacement and to be performed under SM-15-03863, P.R. #5. The "yes" box for the question exceed the Maximum Allowable Quantities (MAQ) specified in the International Fire Code Chapter 50 was marked yes. The comment associated with this yes box stated "ICR 2007-04 Rev 1 and 2007-05" address compliance with the IFC while being over the MAQ.

I reviewed the weekly DW inspection records for ISA and FSF dated August 29, 2016. Time of inspection for the FSF was marked 10:45 a.m. and the ISA was marked 10:48 a.m. I observed the printed name and the signature with what appeared to be the first name initials and last name. The daily inspection section was marked not applicable for this period. Documentation of printed name and signature for environmental inspections was provided in the document request

package. CHPRC signed Operations Timely Order WD-16-001 Revision 0, which became effective July 25, 2016 and establishes their expectations for documenting the full printed name and signatures on environmental inspections. CHPRC procedure PRC-PRO-EP-15333, *Environmental Protection Process* provides instruction to document the printed first and last name and handwritten signature of the inspector.

I reviewed the separate container history information packages for two ISA containers, CP-12-17-F and 0049499. CP-12-17-F drum was placed in the ISA storage between May 7, 2009, and June 24, 2009. Contents are two uncleaned Bottom Loading Transfer Cask (BLTC) filters and a filter core. Sodium estimate is 1.3 gallons. The waste was generated from the Maintenance and Storage Facility (MASF) loadout area. The designation code was DW with DW numbers D001 and D003. The waste stream description was sodium metal. Work Document 4A-96-00085 dated March 27, 2012, states "*two filters and one housing from BLTC repairs are radioactively contaminated plus contain sodium compounds.* ***Drums containing these items need to be moved to the ISA waste storage module pending future washing to remove sodium compounds prior to disposal".*** It does not appear that removing the sodium compounds has occurred. Drum container #00494999 container history information and work package 4A-07-08242/W states that one 55-gallon drum contains 300 Area oxygen monitor probes and NaK sensors. There is an estimation of one half quart of sodium and NaK. It was moved into the ISA storage on August 4, 2008. A letter to Keith Klein, DOE-RL, from contractor Fluor Hanford confirmed the completion of the TPA target date MX-92-11-T01 on August 25, 2004, which was for the disposition of all Hanford non-radioactive sodium. A sodium unloading filter station from MASF was also removed and placed in two 85 gallon drums and contains an estimation of one and a half gallon of sodium in each drum. The majority of the history information pertained to asbestos removal as Class 1 asbestos work. Information said that the majority of the piping insulation on the sodium unloading filter station contained asbestos in the outer black mastic coating and the asbestos content varied from 1% to 20% Chrysolite based on sample analysis. (Emphasis added)

In my preparation for inspecting the 400 Area WMU, I reviewed the LDR information provided in the *DOE/RL-2015-08, Revision 0,* dated April, 2015. There were no waste generation projections for 2015 to 2019. The physical form of the waste is a solid. The waste codes were D001, D002, D003, and WSC2. All constituents/waste numbers of the waste stream still require treatment. Under Planned Treatment, it stated "that treating or plan to treat on site." **In Appendix B, the LDR Report Treatability Group Data Sheet for the 400 Area WMU, Section 5.0 Waste Stream Disposal, after treatment, how will the waste stream be disposed of (include locations, milestone numbers, variances required, etc. as applicable).** The report only provides "*Disposal of the matrices is not expected."* During my inspection, I asked that this be explained. I also asked where the treatment on site is located. I received the following responses to my questions. (Emphasis added)

> *The statement "disposal of matrices is not expected," means that the sodium/NaK could be used for other purposes such as converting to sodium hydroxide for use in the Waste Treatment Plant (WTP) processes. The statement "treating or plan to treat on site," means that if the sodium/NaK is to be converted to sodium hydroxide for use at the WTP, a site will be chosen to build a sodium hydroxide facility to convert (treat) the sodium NaK.*

DOE-RL/CHPRC also referred to the following number 8 response.

> *Ecology Concern #6 states, "The 2013 Land Disposal Restrictions (LDR) Report states the current inventory of Mixed Waste (MW) at the 400 Area WMU is 1.9 cubic meters with no projected generation of MW from 2014-2018. The 2013 LDR report further identifies characterization of the MW as completed and the treatment process to be utilized is deactivation and conversion to sodium hydroxide. The report also identifies the TPA Milestone M-92-09 as related to the waste in the 400 Area WMU and states "Treatment is planned to begin after 2018." The TPA Milestone M-92-09 states the following:*
>
> > *Establish milestones and/or target dates if needed for acquisition of new facilities, modifications of existing facilities, and / or modification of planned facilities necessary for storage, treatment, processing, and disposal of Hanford site sodium. Due Date: September 30, 2018.*
>
> *USDOE-RL and CHPRC have not addressed the differences between bulk sodium stored on the Hanford Site and the residual elemental sodium and NaK (debris sodium) that remains in core component pots (CCP), tubing, etc., being stored in the 400 Area WMU. The extraction of the* elemental *sodium and NaK from the CCPs, tubing, etc., were not completed before being placed in storage in the 400 Area WMU. How RL and CHPRC plan to extract the MW debris sodium and convert it to sodium hydroxide appears to have not been fully addressed. Furthermore, the treatment or transfer of the MW in the 400 Area WMU is directly related to the closure of the unit group. The DWMU FSF last receipt of MW was approximately 2006, while the Dangerous Waste Management Unit Interim Storage Area last receipt of MW was approximately 2009.*

Ecology believes that it is not possible or practicable to extract usable sodium from the debris waste stored in the ISA and FSF and for the small amounts of sodium that has been identified and quantified by the facility. The 400 Area WMU section of the 2014 full LDR Report does not appear complete in sections of the LDR Report Treatability Group Data Sheet. Comments on the 2014 LDR Full Report have not been completing resolved either. The 400 Area WMU will need to be part of the resolution process. Meetings have been delayed because of USDOE personnel being unavailable however, meetings are scheduled to resume as soon as possible.

I reviewed the monthly inspection records for the fire extinguisher at the ISA location.

Required monthly inspections of the fire extinguisher at the ISA DWMU storage location were not completed for December 2015 and January 2016. CHPRC explanation for these missed inspections was because the CHPRC inspectors did not take action to gain access to the extinguisher. The inspector's supervisors signed off on the inspection reports these months. Fire extinguisher inspections were missed for May 2016, August 2016, and September 2016. There were no record of inspections for these months.

In the DOE-RL/CHPRC response to the missed fire extinguisher inspections, the following corrective actions were provided.

> *Corrective Action #1. The procedure has been revised to include the ISA Pad fire extinguisher as part of the monthly inspection requirements, as identified in the 400 Area WMU permit. Attached is a the copy of revised procedure SM-32149 Fire Extinguisher & First Aid Kit Inspections, page 17 of 18, Appendix A (cont'd.) – Portable Fire Extinguisher*

*Inspection, 400 Area Fire Extinguishers (ISA Pad). In the attached CHPRC Work Record for September 2016, there is another entry dated 10-5-2016 that states "Verified ISA Pad fire extinguisher added to App. A of SM-32149." The ISA pad extinguisher was inspected as required by the revised Preventative Maintenance SW-32149 procedure on October 10,2016 (see attached completed Preventative Maintenance SM-32149 Inspection Sheet, dated October 10, 2016).*

*Corrective Action #2. To avoid this issue in the future, CHPRC is in the process of developing a timely order to reinforce 400 Area WMU permit requirements pertaining to inspections. CHPRC personnel involved in the inspection process for the 400 Area WMU will be briefed on the timely order and sign a roster to acknowledge their understanding of the content prior to the next inspection (November 2016). CHPRC will provide Ecology with a completed copy of the timely order once it has been implemented.*

A timely order for monthly fire extinguisher inspections was developed and a signed copy was provided to Ecology on November 1, 2016.

I identified two concerns in my request for documents and information. USDOE-RL and CHPRC responded to the concerns from the previous Ecology inspection (Compliance Index Number 15.536, performed June 3, 2015). The response related to concerns #3, #5, and #6.

I asked if CHPRC evaluated emergency preparedness associated with Concern #3.

I wanted to understand their follow-up to the concerns if any, and answer some questions associated with the concerns. DOE-RL/CHPRC provided the following.

***Note: This "concern" that Ecology stated comes from the 400 Area WMU Compliance Inspection Report, dated 11-09-2015 (15-NWP-200).***

***Note: The DOE-RL/CHPRC Responses come from DOE-RL Letter, dated 02-08-2016 (16-ESQ-0034).***

***Ecology Concern No. 3 states, "The (Contingency and Building Emergency) plans did not provide a description of emergency circumstances associated with waste sodium and NaK (e.g., fires and explosions) or a response to facility operation emergencies associated with the pressure in the argon gas system."***

*DOE-RL/CHPRC Response: As stated in the DOE-RL letter dated 02-08-2016, Section J.3.2.4 of the contingency plan provides protective action responses to fires and explosions. Section J.3.2.3 indicates that evaluation by professionals did not identify potential emergency situations associated with pressure containing systems. After review of argon system, it is still unclear the basis of this concern. High or low pressure in the argon system has not been deemed to present a credible emergency situation in and of itself. Argon is an inert gas and is used to prevent reaction of sodium and NaK with moisture. A total failure of the argon system would increase the potential for fire (an emergency that is addressed in the contingency plan). At this time, based on a review of the argon system there is not a need to revise the contingency plan and/or Building Emergency Plan. Additionally in the FFTF BEP, Section 6.1.4 Fire/Explosion states "A fire or explosion would require the affected building to be evacuated. A fire or explosion in an area containing hazardous material or dangerous waste could generate environmental release concerns.*

*The sodium systems containing bulk quantities of frozen sodium are maintained with an inert gas blanket. A breach of these systems is considered to be unlikely and if any breach did occur, it would be very small and the leakage of cover gas would be made up by the cover gas supply system. A larger breach that may introduce air into the sodium systems would result in only a minor reaction between the sodium and oxygen or water vapor in the air and would not present a significant hazard. A large rapid sodium-water reaction event is not considered credible considering the low probability of a large system breach combined with the low probability of significant water accumulation (considering the draining of all water systems in the plant, the arid Hanford climate, and the periodic inspection of vulnerable locations."*

It appears that DOE-RL/CHPRC have provided a thorough description of the Argon Gas System and explanation of the standard safety precautions that need to be in place when managing any pressurized contained gas. Because the argon gas system is at very low pressure, it may not need to be addressed in the Contingency Plan. There are significant concerns associated with alkali metal fires and the Contingency Plan should include a description of emergency situations associated with metallic Na and NaK. Any first responder would need to have this information available as part of any emergency response. This issue will be discussed and resolved through the Ecology Revision 9 permitting process.

Concern #5-6 were associated with closure and LDR. No milestones were created for closure and the permit process is in effect. DOE-RL had proposed a milestone to ensure that the notice of the date at which closure is expected to begin. DOE-RL/CHPRC response to concern #5 was:

***These "concerns" that Ecology stated comes from the 400 Area WMU Compliance Inspection Report, dated 11-10-2015 (15-NWP-200).***

***DOE-RL/CHPRC response letter was transmitted to Ecology on 02-08-2016 (16-ESQ-0034)***

***Ecology Concern Number 5 states, "Details and concerns regarding the 400 Area WMU, Addendum H, Closure Plan are described in the Ecology compliance report No. 11.344. The 400 Area WMU closure plan was last revised in June 30, 2009. The Permit, Part III, Addendum H, Closure Plan, dated June 30, 2009 also does not mention or specifically describe elemental sodium or NaK."***

*DOE-RL/CHPRC Response to Concern # 5: The storage of mixed waste sodium and NaK is described in the 400 Area WMU permit addendums (e.g., Addendum A Part A Form). These two constituents do not need to be described in detail in the Closure Plan because it is described elsewhere in the permit that they are being stored in the 400 Area WMUs. Addendum H.2, "Closure Activities," requires that records are reviewed for the storage of waste that indicates only sodium and NaK waste are stored within the 400 Area WMU, ISA, and FSF. Therefore, DOE-RL/CHPRC believes that a modification to the closure plan is not necessary. DOE-RL/CHPRC recommends that Ecology provide this request to the Hanford RCRA permit, Revision 9.*

The notice of the date at which closure is expected to begin and the closure schedule in the closure plan must be used to define when closure is to occur and be completed, not in a TPA

milestone. This issue must be discussed and resolved through the Ecology Revision 9 permitting process. DOE-RL/CHPRC response to concern #6 was:

***Ecology Concern #6 states, "The 2013 Land Disposal Restrictions (LDR) Report states the current inventory of Mixed Waste (MW) at the 400 Area WMU is 1.9 cubic meters with no projected generation of MW from 2014-2018. The 2013 LDR report further identifies characterization of the MW as completed and the treatment process to be utilized is deactivation and conversion to sodium hydroxide. The report also identifies the TPA***

***Milestone M-92-09 as related to the waste in the 400 Area WMU and states "Treatment is planned to begin after 2018." The TPA Milestone M-92-09 states the following: Establish milestones and/or target dates if needed for acquisition of new facilities, modifications of existing facilities, and I or modification of planned facilities necessary for storage, treatment, processing, and disposal of Hanford site sodium. Due Date: September 30, 2018. RL and CHPRC have not addressed the differences between bulk sodium stored on the Hanford Site and the residual elemental sodium and NaK (debris sodium) that remains in core component pots (CCP), tubing, etc., being stored in the 400 Area WMU. The extraction of the elemental sodium and NaK from the CCPs, tubing, etc., were not completed before being placed in storage in the 400 Area WMU. How RL and CHPRC plan to extract the MW debris sodium and convert it to sodium hydroxide appears to have not been fully addressed. Furthermore, the treatment or transfer of the MW in the 400 Area WMU is directly related to the closure of the unit group. The DWMU FSF last receipt of MW was approximately 2006, while the Dangerous Waste Management Unit Interim Storage Area last receipt of MW was approximately 2009.***

***USDOE-RL and CHPRC have not addressed the differences between bulk sodium stored on the Hanford Site and the residual elemental sodium and NaK (debris sodium) that remains in core component pots (CCP), tubing, etc., being stored in the 400 Area WMU. The extraction of the elemental sodium and NaK from the CCPs, tubing, etc., were not completed before being placed in storage in the 400 Area WMU. How USDOE-RL and CHPRC plan to extract the MW debris sodium and convert it to sodium hydroxide appears to have not been fully addressed. Furthermore, the treatment or transfer of the MW in the 400 Area WMU is directly related to the closure of the unit group. The DWMU FSF last receipt of MW was approximately 2006, while the DWMU ISA last receipt of MW was approximately 2009.***

*DOE-RL/CHPRC Response to Concern Number 6: On September 29, 2016 Tri-Party Agreement Milestone Change Number M-26-16-02, Federal Facility Agreement and Consent Order Change Control Form was approved delaying submittal of the 2016 LDR Report while continuing the resolution of the comments on the 2014 LDR Report. The 400 Area WMU will be part of the resolution process. Concern #6 for the 400 Area WMU will be addressed when resolution of the 2014 LDR Report is completed.*

*Attached is a copy of the Tri-Party Agreement Change Form, approved dated 09-28-2016. Note: Page 4 of the change form is intentionally blank.*

While DOE-RL/CHPRC may have some flexibility for when to schedule waste treatment, the waste needs identified in the LDR Report and include a schedule for treatment. The 400 Area

WMU section of the 2014 LDR Full Report appears incomplete as explained in the previous sentence. This is an issue that must be part (and currently is) of the resolution process with Ecology in the resolution of the comments for the 2014 LDR Full Report.

**Compliance Problems**

The Dangerous Waste inspection on September 20, 2016, found the following compliance problems.

Each problem is covered in three parts:
(1) **Citation from the regulations**
(2) **Specific observations** from the inspection that highlight the problem
(3) **Required actions** needed to fix the problem and achieve compliance.

The problems listed below must be corrected to comply with Washington Dangerous Waste Regulations (Chapter 173-303 WAC), or other environmental laws or regulations. Complete the required actions listed below and respond to Ecology at the following address within 60 days of receipt of this compliance report. Include all supporting documentation such as photographs, records, and statements explaining the actions taken and dates completed to return to compliance.

Attention: Kathy Conaway
Washington Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd
Richland, WA 99354

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You may request an extension of the deadlines to achieve compliance. Make the request in writing, including the reasons an extension is necessary and proposed date(s) for completion, and send it to Kathy Conaway before the date specified above. Ecology will provide a written approval or denial of your request.

**If you have any questions about information in this Compliance Report, please call: Kathy Conaway at (509) 372-7890**

This does not relieve you of your continuing responsibility to comply with the regulations at all times.

**Condition II.O.1 General Inspection Requirements**

**The Permittees will inspect the Facility to prevent malfunctions and deterioration, operator errors, and discharges, which may cause or lead to the release of dangerous waste constituents to the environment, or threaten human health. Inspections must be conducted in accordance with the provisions of WAC 173-303-320(2).**

**Permit Condition III.16.H Inspections**

**III.16.H.1 The Permittees will perform inspections of the 400 Area WMU according to Addendum I, Inspection Plan for inspecting all monitoring equipment, safety and**

**emergency equipment, security devices, and operating and structural equipment that help prevent, detect, or respond to hazards to the public health or the environment pursuant to the requirements of WAC 173-303-320. [WAC 173-303-320(2)]**

**400 Area Waste Management Unit, Addendum I Inspection Requirements, Table I.1. Inspection Schedule –Requirement Description: Portable fire extinguishers, portable emergency response kit, and spill kit with an inspection frequency of "monthly".**

**Observation:** I reviewed the monthly inspection records for the fire extinguisher at the ISA location. Required monthly inspections of the fire extinguisher at the ISA DWMU storage location were not completed for December 2015 and January 2016. CHPRC explanation for these missed inspections was because the CHPRC inspectors did not take action to gain access to the extinguisher. The inspector's supervisors signed off on the inspection reports these months . Fire extinguisher inspections were also missed for May 2016, August 2016, and September 2016. I did not observe any record of inspections for these months.

In the October 12, 2016 DOE-RL/CHPRC response to the missed fire extinguisher inspections, the following corrective actions were provided.

*Corrective Action #1.The procedure has been revised to include the ISA Pad fire extinguisher as part of the monthly inspection requirements, as identified in the 400 Area WMU permit. Attached is a the copy of revised procedure SM-32149 Fire Extinguisher & First Aid Kit Inspections, page 17 of 18, Appendix A (cont'd.) – Portable Fire Extinguisher Inspection, 400 Area Fire Extinguishers (ISA Pad). In the attached CHPRC Work Record for September 2016, there is another entry dated 10-5-2016 that states "Verified ISA Pad fire extinguisher added to App. A of SM-32149." The ISA pad extinguisher was inspected as required by the revised Preventative Maintenance SW-32149 procedure on October 10,2016 (see attached completed Preventative Maintenance SM-32149 Inspection Sheet, dated October 10, 2016).*

*Corrective Action #2. To avoid this issue in the future, CHPRC is in the process of developing a timely order to reinforce 400 Area WMU permit requirements pertaining to inspections. CHPRC personnel involved in the inspection process for the 400 Area WMU will be briefed on the timely order and sign a roster to acknowledge their understanding of the content prior to the next inspection (November 2016). CHPRC will provide Ecology with a completed copy of the timely order once it has been implemented.*

**Action Required:** A timely order for fire extinguisher inspections was developed and a signed copy was provided to Ecology on November 1, 2016. Monthly inspections have resumed.
**No Further Action is Required.**