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DEPARTMENT OF ECOLOGY

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March 6, 2019

19-NWP-039

By certified mail

Brian T. Vance, Acting Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: H5-20
Richland, Washington 99352

Ty Blackford, President and CEO
CH2M HILL Plateau Remediation Company
PO Box 1600, MSIN: A7-01
Richland, Washington 99352

Re: Dangerous Waste Compliance Inspection on September 26, 2018, at Hexone Facility,
RCRA Site ID: WA7890008967, NWP Compliance Index No. 18.650

Dear Brian T. Vance and Ty Blackford:

Thank you for your staff's time during the Hexone Facility inspection on September 26, 2018. The Department of Ecology's compliance report of this inspection is enclosed. The report cites no area of non-compliance and six concerns.

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

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

Sincerely,

Kathy Conaway
Dangerous Waste Compliance Inspector
Nuclear Waste Program

so

Enclosure

cc: See page 2



Brian T. Vance and Ty Blackford
March 6, 2019
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19-NWP-039
Hexone Storage and Treatment Facility
RCRA Site ID: WA7890008967
NWP Compliance Index No.: 18.650
Inspection Date: September 26, 2018

cc electronic w/enc:

Dave Bartus, EPA
Jack Boller, EPA
Dave Einan, EPA
Tony McKarns, USDOE
Allison Wright, USDOE
Linda Petersen, CHPRC
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Hanford Facility Operating Record
CHPRC Correspondence Control
MSA Correspondence Control
USDOE-RL Correspondence Control

cc w/enc:

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Administrative Record
NWP Central File
NWP Compliance Index File 18.650

cc w/o enc:

Matt Johnson, CTUIR
Jack Bell, NPT
Laurene Contreras, YN

Laurene Contreras

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

SITE: Hexone Storage and Treatment Facility
RCRA Site ID: WA7890008967
Inspection Date: September 26, 2018
Site Contacts: Linda Petersen, CH2M Hill Plateau Remediation Company (CHPRC)
Tony McKarns, United States Department of Energy – Richland Operations
Office (USDOE-RL)
Phone: (509) 373-4200 – Linda Petersen
Site Location: Hanford Site
Benton County, WA
At This Site Since: 1943 **NAICS#:** 54171, 56221, and 924110
Current Site Status: Treatment, Storage, and Disposal Facility / Large Quantity Generator
Compliance Index #: 18.650

Ecology Lead Contact: Kathy Conaway **Phone:** (509) 372-7890

Report Date: March 6, 2019

Report By: Kathy Conaway

Kathy Conaway *March 6, 2019*
(Signed) (Date)

Site Location

The Hanford Site was assigned a single United States Environmental Protection Agency (EPA) identification number, and is considered a single Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 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 580 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 30 unit groups at the Hanford Site. Individual DWMUs utilize a 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 Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste*, WA7890008967, Revision 8C (hereafter referred to as the Permit).

Owner and Operator Information

The USDOE is the owner and operator of the Hexone Storage and Treatment Facility (Hexone Facility) and oversees waste management and cleanup activities ongoing at the Hanford Site. CHPRC is contracted by the USDOE to co-operate the Hexone Facility.

Facility Background

According to the *Hexone Facility Dangerous Waste Permit Application Part A Form*, Revision 7, dated October 1, 2008, (Part A Form), the facility is located in the 200 West Area of the Hanford Site. The Hexone Facility is described as follows:

- Below grade carbon steel tank, 276-S-141 – 24,000 gallons tank storage capacity (Approximately 20,000 gallons of mixed waste were stored and treated annually)
- Below grade carbon steel tank, 276-S-142 – 24,000 gallons tank storage capacity (Approximately 16,000 gallons of mixed waste were stored and treated annually)
- A distillation system – 3,000 gallon treatment capacity per day
- Railroad tank cars – 40,000 gallon container storage capacity

The Hexone Facility stored reagent-grade methyl isobutyl ketone (Hexone) for the REDOX Plant from 1951 through 1967. After 1967, the Hexone Facility received and stored liquid mixed waste from the Reduction and Oxidation (REDOX) Plant and possibly the Hot Semiworks Plant. Activities associated with the 276-S-141 and 276-S-142 tanks can be found in the Part A form, which included storage of radioactively contaminated hexone from a one-time campaign to separate americium, curium, and promethium from reactor blanket fuel.

The distillation campaign took place from July to December 1990 and included pumping mixed waste from the 276-S-141 and 276-S-142 tanks through the distillation system to decrease the radioactivity of the waste. The mixed waste was sent to railroad tank cars located within the Hexone Facility, where it was stored until the mixed waste was transferred to an offsite incinerator in June of 1992. The railroad cars were decontaminated, sampled, and released for other uses on the Hanford site. Three distillation vessels associated with the Hexone Facility that contained process residue were sampled and sent for management as mixed waste at the Central Waste Complex.

According to the Part A Form, currently the 276-S-141 and 276-S-142 tanks each contain from 5 to 30 gallons of mixed waste (93% NPH and 7% hexone) and up to 250 gallons of phosphate tar. In 2002, the two tanks were stabilized by filling them with grout. The purge system was then deactivated. According to the Part A Form, dangerous waste codes associated with the Hexone Facility include F003 and D001 due to the hexone stored in the 276-S-141 and 276-S-142 tanks. Additionally, it appears the dangerous waste was mistakenly assigned a state-only toxic dangerous waste code: WT02, as the waste was previously designated with F003 and D001 federal waste codes. Other dangerous waste codes associated with the Hexone Facility can be found on the Part A Form.

Compliance Background

Prior to the Washington State Department of Ecology (Ecology) 2000 inspection (Compliance Index #00.178 below), Ecology's Silver Memo, *Close Out Form for Environmental Compliance Issues Identified in DOE/RL Letter 95-PCA-342*, dated July 6, 1995 (Close Out Form #16.6.2:40.16) established that the Hexone tanks including the cover gas system and the liquid level monitors be inspected weekly..

On November 6, 1998, USDOE informed Ecology that the Hexone Facility would be managed under the *REDOX facility Surveillance and Maintenance Plan*, DOE/RL-98-19, as referenced in a 1998 draft version of that document transmitted to Ecology (Accession Number D199046833) which stated:

Certain TSD standards of WAC 173-303 apply to the Hexone Storage Tanks at REDOX. These tanks have been deemed unfit for use and are therefore subject to the requirements of 40 CFR 265.196 as invoked by WAC 173-303-400. In addition, WAC 173-303-400 invokes standards of WAC 173-303-280 through -440, including provisions for security, personnel training, general inspections, contingency planning and emergency preparedness, and facility recordkeeping and reporting. Particularly relevant with regards to the REDOX S&M activities are the inspection requirements of

WAC 173-303-320. As agreed to with the regulators, these requirements are met by performing a weekly inspection to ensure proper operation of the associated nitrogen cover system. Additionally, weekly inspection of the liquid level monitors is performed. Any problems identified during inspections are remedied. Inspection records are kept in the Hanford Facility Operating Record. (*Close Out Form for Environmental Compliance Issues Identified in DOE/RL Letter 95-PCA-342*, dated July 6, 1995; Tracking Number 16.6.2: 40.16, approved January 13, 1997 [DOE-RL 1995].)

It appears that the draft version was not finalized, and Ecology has not observed a final version of DOE/RL-98-19 that included surveillance and maintenance of the Hexone Facility. However, the 2000 Ecology inspection (Compliance Index #00.178) was performed observing the standards agreed upon in Close Out Form #16.6.2:40.16, an agreement which was then rescinded as a result of the 2000 compliance inspection.

The Hexone Facility tanks 276-S-141 and 276-S-142 are also identified in the TPA milestone M-037-10, which was created in principal as part of the *Tentative Agreement on Hanford Federal Facility Agreement and Consent Order Change Forms Implementing Changes to the Central Plateau Cleanup*, dated March 31, 2010, and approved by both parties on October 26, 2010. M-037-10 requires completion of unit-specific closure requirements according to the dangerous waste closure plan by September 30, 2020.

Sampling and analysis was performed to support the interim stabilization of the tanks which resulted from dangerous waste violations found in the 2000 Ecology inspection (Compliance Index #00.178, see below). The unapproved, draft closure plan, *Hexone Storage and Treatment Facility Closure Plan*, DOE\RL-2009-112, Revision 0, was published in May of 2010 and is based on that analysis. The draft closure plan calls for excavation and removal of the tanks, visual inspection and sampling of soil beneath the tanks and removal of soil should dangerous waste contamination be found. The closure schedule in the draft plan estimates this process will take 26 months including documentation, design, and procurement. By that schedule, if it were approved in order to meet M-037-10 deadline, closure activity would have to begin sometime in fiscal year 2018. The draft plan's schedule does not include any time for treatment of waste.

Compliance Index #00.178

April 25 – May 23, 2000, Ecology conducted a CEI of the Hexone Facility. The Ecology inspection found that the facility was not being inspected weekly or maintained as was required by Close Out Form #16.6.2:40.16. As a result of the 2000 Ecology inspection, Ecology rescinded the enforcement discretion described as follows, in letter *Re: Notice of Correction for Stabilization of the Hexone Storage and Treatment Facility USDOE DOCKET NUMBER OONWPKM005* dated May 26, 2000:

Ecology's inspection revealed that the [Hexone Tank System] has not been removed from service as required by 40 CFR 265.196, and has not been managed in accordance with formal agreements made with Ecology as documented in Close Out Form #16.6.2:40.16, signed by USDOE on December 6, 1996... Ecology herein rescinds its agreement with the provisions of Close Out Form #16.6.2:40.16. In its place, Ecology will require the [Hexone Facility] be managed per the requirements set forth in this letter.

The Ecology letter provided management requirements, under the "corrective measures" section, in a series of three bullet points. The first two measures were for developing a schedule for removing, deactivating or stabilizing the tanks. The third measure specified an inspection schedule requiring the following: "USDOE and [Bechtel Hanford Inc.] must implement monthly inspections of the above-ground portions of the [Hexone Facility] to include inspection of all nitrogen purge feed lines to the [Hexone Facility] tanks and all exhaust system ventilation lines from the [Hexone Facility] tanks sufficient to ensure they are not leaking..." There was one violation cited:

1. WAC 173-303-400(3) and by reference 40 CFR Subpart J §265.196, "Response to leaks or spills and disposition of leaking or unfit-for-use tank systems."

This violation was closed out in a May 21, 2002, letter, *Re: Completion of Compliance Actions at the Hexone Storage and Treatment Facility*, which concurred with USDOE's intention to adopt an annual inspection schedule for the Hexone Facility. That intention was communicated in a March 22, 2002, letter number 02-RCA-0253, *Change in Hexone Storage and Treatment Facility (HSTF) Inspection Frequency Following Stabilization Completion*. In this letter USDOE-RL asserted, "This letter is to inform the State of Washington Department of Ecology of a change in the HSTF inspection frequency. The current daily and monthly inspections will shift to an annual inspection following HSTF stabilization. The HSTF inspection will be performed as part of the annual 202-S (REDOX) Facility inspection. The HSTF will be visually inspected for surface subsidence, weed control, and proper posting." As noted above, the required daily and monthly inspections had been focused on a nitrogen purge system that had already been removed and USDOE expressed future inspections would focus on surveillance and maintenance activities. I did not observe any agreement that removed the Hexone Facility from following interim status requirements from Permit Condition I.A or that allowed inspections to be held to a lower standard than those described in WAC 173-303-320 and WAC 173-303-395. I did observe a March 28, 2002 (post grouting), email exchange between Mr. Bob Wilson (Ecology) and Mr. James Golden (Bechtel Hanford Inc) in which Mr. Golden affirmed the agreed basis for inspection stating "here's the basis for changing the inspection frequency at Hexone":

The Hexone Tanks are unfit for use, and will not be upgraded to meet the regulatory requirements for active tanks. As such, the tanks are subject to the requirements of 40 Code of Federal Regulations (CFR) 265.196. The following actions have been taken to ensure protection of human health and the environment: 1) use of the tanks has ceased; 2) waste removal has occurred (only a hard heal [sic] remains) to a degree that prevents further release to the environment; 3) visible releases are not present; 4) the tanks are completely filled with grout (stabilized); 5) the regulatory authorities have been informed of any known releases associated with the units and the units are scheduled for closure (pursuant to the Tri-Party Agreement); and 6) any problems identified during the annual inspections will be remedied.

This is the only discussion of a basis for changing the inspection frequency of the Hexone Facility I have observed.

Compliance Index #15.539

December 1, 2015, Ecology conducted a Non-financial Record Review (NRR) inspection of the Hexone Facility. The Ecology compliance report documented two violations:

1. WAC 173-303-320(2): USDOE and CHPRC failed to document the time of the inspection on inspection logs.
2. WAC 173-303-380(1): USDOE and CHPRC failed to retain dangerous waste inspection logs in the operating record.

The two violations were resolved and returned to compliance. The Ecology compliance report also documented five concerns.

1. Procedure CPSM-PRO-OP-50685 considers involvement of a Fire Protection Engineer as optional, but the Hexone facility contains D001 (ignitable) waste.
2. Completing a separate Data Sheet 1 for the Hexone Facility would clarify if deficiencies are related to the Hexone Facility or the other REDOX Complex buildings.
3. The missing second page of the Data Sheet 1 used for the November 12, 2014, annual inspection was not located.

4. No "actions taken" were provided on the inspection log to close out deficiencies observed during CHPRC's inspection.
5. No schedule for CFR Part 265 Subpart J – Tank Systems inspection or other inspections were specified in procedure.

Compliance Index #16.555

March 14, 2016, Ecology conducted a NRR inspection of the Hexone Facility. The Ecology Compliance Report documented one violation:

1. WAC 173-303-320(2) - Failure to document the time of the inspection on logs.

The one area of non-compliance was resolved and returned to compliance.

Compliance Index #17.617

1. There were 10 concerns identified in the findings of the compliance report.

Inspection Summary

On September 26, 2018, Ecology announced a NRR inspection for the Hexone Facility, via email. The scope of the inspection was to review the Hexone Facility's scheduled inspections from July 2017 – December 2017. The announcement requested the following documents:

- Complete 2017 REDOX Surveillance Package w/Procedure and data sheets
- Central Plateau Surveillance and Maintenance Monthly Emergency Equipment Inspections for July – Dec. 2017. Please highlight any equipment associated with Hexone Storage and Treatment Facility
- Central Plateau Surveillance and Maintenance Annual Emergency Equipment Inspections for 2017. Please highlight any equipment associated with Hexone Storage and Treatment Facility

On October 18, 2018, I received a package of documents and information that explained that CHPRC now covers tank inspection under CPSM-PRO-EP-53098 Annual CPS&M Facility TSD Inspection. This was provided.

- 2017 REDOX Annual Surveillance.
- Monthly Emergency Equipment Inspections with note stating that the two tanks have been grouted therefore, no hazards present that require monthly or annual emergency inspections. All characteristic dangerous wastes have been decharacterized. The F003 listed waste is decharacterized since there is no ignitability or toxic therefore, the tanks have no dangerous waste codes.
- CP S&M Annual Emergency Equipment Inspections 2017. A note stated the annual inspection requirements are satisfied via monthly inspections.

Annual CPS&M Facility TSD's Inspection, CPSM-PRO-EP-53098, Revision 0, Change 3

The document *Annual CPS&M Facility TSD Inspection* is a K-Basin Operations and Plateau Remediation Project technical procedure. Its effective date was July 31, 2017. The stated purpose of this procedure is to "provide a safe and uniform method for routine surveillance of non-operating interim status Treatment, Storage, and/or Disposal (TSD) Units." The scope describes this procedure will be used to surveil TSDs that are no-longer receiving waste, and scheduled for closure under the Hanford Federal Facility Agreement and Compliance Order (Tri-Party Agreement). According to the Section 1.2, "Scope" surveillance of these TSDs is performed on an annual basis according to "agreements with Ecology." The document states surveillance "consists of inspection and documentation to ensure any unfavorable conditions are recognized and addressed."

The “PREREQUISITES” chapter list Tools, Equipment, and Materials needed to surveil the Hexone Facility are two-way radios (or cellphone) and a digital camera.

Under the “PERFORMANCE” chapter, Nuclear Chemical Operators (NCOs) are directed to complete all steps unless otherwise noted. Appendix A lists all Facility Operations TSD Units. If during the performance of the inspection, deficiencies are found, then the NCO takes action to correct/stabilize the deficiency to ensure the safety of the area and personnel as follows:

Photograph and then document all deficient observation(s) on Inspection data Sheet. If the deficiency can be corrected as part of the surveillance procedure scope (e.g., housekeeping, etc.), then perform the appropriate corrective action(s) and document completion on the inspection data sheet.

If the action(s) necessary to correct the deficiency are not within the scope of this procedure, then perform the following: Photograph the deficiency (including tumbleweeds); identify the deficiency in writing on the inspection data sheet; circle any items that does not meet the criteria; notify the FWS and ECO. Print the name, sign, date and time of the inspection on the data sheet(s). Forward completed data sheet(s) to the FWS and the ECO for review.

Appendix A, “CPS&M Facility TSD Sites”

According to Appendix A, “CPS&M Facility TSD Sites” of the *Annual CPS&M Facility TSD Inspection* procedure, the Hexone Facility is on an annual surveillance schedule. The table in this appendix also lists the basis for this schedule as the Ecology close-out letter to the 2000 Ecology inspection, *Re: Completion of Compliance Actions at the Hexone Storage and Treatment Facility*, dated May 21, 2002. As discussed in Compliance Background of this report, that letter was a response to USDOE-RL letter number 02-RCA-0235 which stated the permittee intended to adopt an annual inspection frequency. I observed that neither the Ecology nor USDOE letters offered a basis for an annual inspection frequency, or even addressed what type of inspections would be performed. USDOE-RL only stated “The current daily and monthly inspections will shift to an annual inspection following HSTF stabilization.”

Note: Section 7.3 “Inspections” of the draft closure plan *Hexone Storage and Treatment Facility Closure Plan*, DOE/RL-2009-112, Revision 0, states “The HSTF TSD unit has been inspected to meet interim status requirements. Annual inspections are performed based on Ecology approval in 2003 (Price, 2003, ‘*Modification of Inspection frequency of Certain Hanford Facility Treatment Storage, and/or Disposal (TSD) Units*’).” Ecology concurs that this facility falls under Permit Condition I.A and operates to interim status standards, however the Hexone Facility is not listed in the Ecology 2003 letter for approval of an annual inspection frequency.

Appendix B, Inspection Data Sheets.”

Data Sheet 2 – Hexone Storage and Treatment Tanks (Page 1 of 2). I observed criteria with the following descriptions listed on “Appendix B” data sheet corresponding to the Hexone Facility inspection:

- ‘Danger – No smoking’ Signage secure and signs visible on each side of the facility and legible?
- Signs reading ‘Danger – Unauthorized Personnel Keep Out’ or equivalent language are posted and legible on locked entrance gate.
- The major risk marking (Hazardous Waste/radioactive/flammable) is present and legible on each side of the perimeter fence.
- Barriers: Perimeter fencing intact, in good shape with no signs of need of repair?
- Animal/Pest Intrusion: No animal intrusion, anthills, termite nests, animal burrows, bird nests, etc.
- Vegetation: No evidence of tumbleweed accumulation within perimeter fence.
- Ground Subsidence: No indications of ground subsidence, depressions, degradation, etc.

- There is no staining or other evidence of spills.

The data sheet provided with the procedure was completed on August 1, 2017, at 0855 and had a printed name and signature of the inspector. All of the criteria have been marked YES to indicate that they were met.

The second page of the "Appendix B" was blank and unsigned. Instructions on the sheet explained it would be used to document deficiencies noted and actions taken or to document actions that need to be taken. It also explained that it only required signatures if comments were provided, and there were none.

The additional documents provided by DOE-RL/CHPRC in the NRR request were primarily REDOX work documents and associated with safety procedures (i.e., heat stress evaluation) and radiological controls.

Concerns

- 1) Tri-Party Agreement milestone M-037-10 requires completion of unit-specific closure according to a Closure Plan by September 30, 2020. The need for an updated closure plan after stabilization was made clear in the December 13, 2001 letter approving the use of grout. USDOE did not submit a closure plan for approval until May of 2010 and has not responded to Ecology's official comments submitted in October of 2010. USDOE-RL currently reports milestone M-037-10 to be "on schedule," but according to the timeline in the draft closure plan, even if the facility was given a waiver to not treat any of the waste in the TSD inventory, closure would still take 26 months. This is reason for concern that the due date will not be met.
- 2) When Ecology requested inspection records for emergency equipment, CHPRC's response appeared to claim that the waste under the bottom grout layer had been treated to some standard and "de-characterized." USDOE and CHPRC should review WAC 173-303-140(2)(a)-(f) and 40 CFR §268.9(d) regarding notifications and certifications for characteristic waste. In particular, certifications for de-characterized waste require the language "I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment," and 173-303-140(f) requires the notification and certification be sent to Ecology.
- 3) Signs reading "Danger—Unauthorized Personnel Keep Out" or the equivalent need to be placed on every approach. CPSM-PRO-EP-53098 seems to indicate security signs are either posted just on the entrance gate, or that just the sign on the entry gate will be inspected.
- 4) WAC 173-303-395(1)(d) requires at least yearly inspection of portions of facilities where ignitable/reactive waste is stored. *RL/CHPRC Response to Washington State Department of Ecology Letter 15-NWP-204, Dated December 1, 2015*, dated February 8, 2016 asked for a concurrence that ignitable/reactive inspections were not needed. No concurrence was given.
- 5) Fire extinguishers, spill control equipment, decontamination equipment, and a fire suppression system are required at every facility unless it can be demonstrated that such equipment is not necessary. USDOE-RL and CHPRC should review the requirements for fire extinguishers, spill control equipment, decontamination equipment, and a fire suppression systems and be prepared to make a demonstration as to what equipment or systems are not required at the Hexone Facility.
- 6) The Hexone Facility is currently storing dangerous waste and the tanks have been determined unfit for use. Ecology stated in the 2001 letter *Re: Approval for Stabilization of the Hexone Storage and Treatment Facility*, the Hexone Facility is still an active RCRA storage facility subject to closure per WAC 173-303-610.

TSD standards of WAC 173-303 still apply to the Hexone Facility along with the additional provisions of an unfit for use tank system. USDOE-RL and CHPRC should review the requirements of 40 CFR 265.196 as invoked by WAC 173-303-400. USDOE-RL and CHPRC should also review the other standards invoked by WAC 173-303-400 such as WAC 173-303-280 through -440, including provisions for security, personnel training, general inspections, contingency planning and emergency preparedness, facility recordkeeping and reporting, and general requirements to ensure the Hexone Facility is in compliance with the WAC.

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