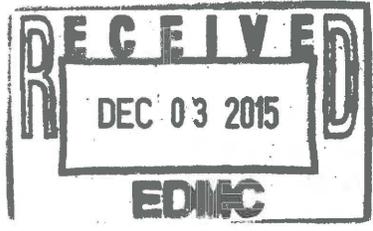


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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

3100 Port of Benton Blvd • Richland, WA 99354 • (509) 372-7950  
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December 1, 2015

15-NWP-204

By certified mail

Ms. Stacy Charboneau, Manager  
Richland Operations Office  
United States Department of Energy  
PO Box 550, MSIN: A7-50  
Richland, Washington 99352

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

Re: Dangerous Waste Compliance Inspection on June 30, 2015 for the Hanford Site Hexone Storage and Treatment Facility, Resource Conservation and Recovery Act (RCRA) Site ID: WA7890008967, Nuclear Waste Program (NWP) Compliance Index No. 15.539

Dear Ms. Charboneau and Mr. Ciucci:

Thank you for your staff's time during the Department of Ecology's (Ecology) non-financial records review (NRR) compliance inspection. The purpose of our NRR was to determine compliance with the Washington State Dangerous Waste Regulations (Chapter 173-303 Washington Administrative Code) for the Hexone Storage and Treatment Facility. These regulations establish a system for safe and responsible management of dangerous waste.

Ecology's compliance report for the Hexone Storage and Treatment Facility inspection is enclosed. This report cites two areas not in compliance with the Dangerous Waste Regulations and five areas of concerns. The areas of non-compliance and the actions required for a return to compliance are listed in the Compliance Problems section of the report.

To return to compliance, complete the actions required and respond to Ecology within the specified timeframes in the Compliance Problems section of the report. Include all supporting documentation such as photographs, records, and statements explaining the actions taken and dates completed to return to compliance. Submit the above paperwork along with any requested documentation, to Edward Holbrook at 3100 Port of Benton Boulevard, Richland, Washington 99354.

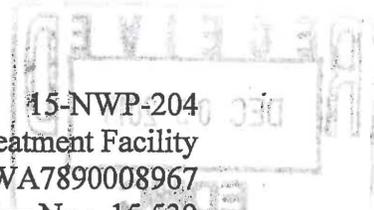
Failure to correct the deficiencies may result in an administrative order, a penalty, or both, as provided by the Hazardous Waste Management Act (Revised Code of Washington 70.105.080 and .095). Persons who fail to comply with any provision of this chapter are subject to penalties of up to \$10,000 per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



1551851

Ms. Charboneau and Mr. Ciucci  
December 1, 2015  
Page 2 of 2

15-NWP-204  
Hexone Storage and Treatment Facility  
RCRA Site ID: WA7890008967  
NWP Compliance Index No.: 15.539  
Inspection Date: June 30, 2015



If you have questions or need further information, please contact me at (509) 372-7909 or [edward.holbrook@ecy.wa.gov](mailto:edward.holbrook@ecy.wa.gov).

Sincerely,

Edward Holbrook  
Dangerous Waste Compliance Inspector  
Nuclear Waste Program

tkb

Enclosure

cc electronic w/enc:

- Dave Bartus, EPA
- Jack Boller, EPA
- Dennis Faulk, EPA
- Cliff Clark, USDOE
- Tony McKarns, USDOE
- Joel Williams, Jr., CHPRC
- Jon Perry, MSA
- Ken Niles, ODOE
- Debra Alexander, Ecology
- Kathy Conaway, Ecology
- Kelly Elsethagen, Ecology
- Jane Hedges, Ecology
- Jared Mathey, Ecology
- John Price, Ecology
- Stephanie Schleif, Ecology
- Ron Skinnarland, Ecology
- Environmental Portal
- Hanford Facility Operating Record

cc w/enc:

- Steve Hudson, HAB
- Administrative Record
- CHPRC Correspondence Control
- NWP Central File
- NWP Compliance Index File: 15.539

cc w/o enc:

- Rod Skeen, CTUIR
- Gabriel Bohnee, NPT
- Russell, Jim, YN
- NWP Reader File

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

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**Site:** Hexone Storage and Treatment Facility (Hexone Facility)  
**RCRA Site ID:** WA7890008967  
**Inspection Date:** June 30, 2015  
**Site Contacts:** Joel F. Williams Jr., CH2M Hill Plateau Remediation Company (CHPRC)  
Tony McKarns, United States Department of Energy (USDOE)  
**Phone:** (509) 376-4782 – Joel Williams Jr.  
**FAX:** (509) 372-2828 – Joel Williams Jr.  
**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 / Closure Unit # 19  
**Compliance Index #:** 15.539

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**Ecology**

**Lead Contact:** Edward Holbrook **Phone:** (509) 372-7909 **FAX:** (509) 372-7971  
**Other Representatives:** N/A  
**Report Date:** December 1, 2015  
**Report By:** Edward Holbrook

  
(Signed)

12/1/15  
(Date)

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**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) facility, even though the Hanford Site contains numerous processing areas spread over a large geographic area. The Hanford Site is approximately a 586 square mile tract of land located in Benton County, Washington. It is divided into a number of dangerous waste management units (DWMUs) that are administratively organized into "unit groups." A unit group may contain only one DWMU or many. Currently, there are 37 unit groups at the Hanford Site. Individual DWMUs use only a few small portions 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 Permit, Dangerous Waste Portion, WA78900008967, Revision 8C*, (hereafter referred to as the Permit).

**Owner/Operator Information**

The United States Department of Energy (USDOE) is the owner and operator of the 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 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 Facility. 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 (MW) were stored and treated annually).
- Below grade carbon steel tank, 276-S-142 – 24,000 gallons tank storage capacity (Approximately 16,000 gallons of MW 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 received liquid MW from the Reduction and Oxidation (REDOX) Plant. There is also a possibility the Hexone Facility received MW from the Hot Semiworks Plant.

The Hexone Facility stored reagent-grade methyl isobutyl ketone (hexone) for the REDOX Plant from 1951 through 1967. After 1967, the Hexone Facility stored and distilled hexone, used in the REDOX Plant and possibly the Hot Semiworks Plant. Activities associated with 276-S-141 and 276-S-142 tanks can be found in the Part A Form, which included the addition of water, normal paraffin hydrocarbon (NPH), tributyl phosphate, and radioactive constituents (americium, curium, and promethium).

The treatment process, during operational years, included pumping MW from the 276-S-141 and 276-S-142 tanks through the distillation system to decrease the radioactivity of the waste. The MW was sent to railroad tank cars located within the Hexone Facility, where it was stored until the MW was transferred to an offsite incinerator in June of 1992. Three distillation vessels associated with the Hexone Facility that contained process residue were sampled and are stored elsewhere on the Hanford Site as MW.

Currently the 276-S-141 and 276-S-142 tanks each contain from 5 to 30 gallons of MW (93% NPH and 7% hexone) and up to 250 gallons of phosphate tar. The railroad tank cars were emptied, cleaned, and removed from the Hexone Facility. It is unclear how many railroad tank cars were associated with the Hexone Facility, or where the tank cars were sent. Closure of the 276-S-141 and 276-S-142 tanks are associated with the 200-IS-1 Operable Unit. The two tanks were stabilized by filling them with grout and deactivating the purge system.

EPA waste codes associated with the Hexone Facility include F003, D001, due to the hexone stored in the 276-S-141 and 276-S-142 tanks. Additionally, the waste is assigned a state-only toxic dangerous waste code, WT02. Tank 276-S-142 also stored NPH and tributyl phosphate from a one-time distillation campaign to separate americium, curium, and promethium from the Shippingport reactor blanket fuel in 1966. Other EPA waste codes associated with the Hexone Facility can be found on the Part A Form.

**Note:** I did not find documentation supporting the possibility of MW being transferred from the Hot Semiworks Plant to the Hexone Facility, as described in the Part A Form. Due to the scope of this inspection (Non-financial Record Review, Compliance Index No. 15.539), I did not look for documentation regarding transfers of MW. Also, information regarding vessels and railroad tank cars were not reviewed due to the scope of the NRR inspection.

### Inspection Summary

This inspection was an announced Non-financial Record Review (NRR), which was performed as part of the complete evaluation inspection of the Hanford Site. The scope of the inspection was to review the Hexone Facility's inspection schedule and records from June 2013 through June 2015. The review included the following documents:

- Technical Procedure 2CP-SUR-S-04004, CPSM-PRO-OP-50685 REDOX Surveillance Revision 2 Change 6, dated December 8, 2014.

- Inspection Record: REDOX Annual Surveillance, Document Number SM-13-06722, Inspection Date October 3, 2013.
- Inspection Record: REDOX Annual Surveillance, Document Number SM-14-05727, Inspection Date November 12, 2014.

According to CPSM-PRO-OP-50685, inspections associated with the Hexone Facility are performed in accordance with general surveillance criteria and the Surveillance and Maintenance Plan (DOE/RL-98-19) for the REDOX Facility. The objectives of surveillance are described as follows:

- Ensure adequate containment of any contaminants left in place.
- Provide physical safety and security controls.
- Maintain the facility in a manner that will minimize risk to human health or the environment.

Section 1.3, Applicability in CPSM-PRO-OP-50685, states, "Walk-through surveillance of the exterior and non-radiological and radiological interior will be conducted and documented – Annually." The section also identifies the following structures, associated with the Hexone Facility, which are covered by the annual inspection:

- 276-S Solvent Handling Building (exterior only)
- 276-S-141 Tank (exterior only)
- 276-S-142 Tank (exterior only)

**Note:** The 276-S Solvent Handling Building is not described in the Part A Form for the Hexone Facility. Inspection records that were provided, pertain to the 276-S-141 and 276-S-142 tanks only.

Under Section 1.5, Facility Description in CPSM-PRO-OP-50685, the following is provided for the structures above:

**276-S Solvent Handling Building** – Only exterior surveillance is performed of the 276 S Solvent Handling Facility which was used for bulk storage of pure hexone and chemical treatment of new and recycled hexone. The above-ground concrete building is located north and west of the 202 S Silo. The building has two sections: the process section and service/operating section.

**276-S-141 and 276-S-142 Tanks** – Hexone storage tanks 276 S 141 and 276 S 142 are buried north of the 276 S Building. These single-shell, carbon-steel tanks were used to store makeup solvent for the REDOX Facility during operations. The residual sludge in the tanks from the distillation process was grouted as an interim closure in 2002. Only exterior surveillances are performed on these tanks.

Under Section 4.1, REDOX Complex Exterior Surveillance in CPSM-PRO-OP-50685, the procedures for conducting the annual inspection are provided and refer to "Data Sheet 1 – REDOX Exterior Surveillance." The section also describes how to fill out Data Sheet 1 as well as actions to be taken when deficiencies are found. Under Section 4.2, REDOX Complex Interior Surveillance, the procedures for conducting the inspection are provided and refer to "Data Sheet 2 – REDOX Interior Surveillance." The section also describes how to fill out Data Sheet 2 as well as actions to be taken when deficiencies are found. At the top of Data Sheet 1, I observed 276-S-141 Tank and 276-S-142 Tank listed. I did not observe the tanks listed on Data Sheet 2.

On Data Sheet 1 – REDOX Exterior Surveillance, I observed that the column next to the two tanks is titled "Completed Initial/Date." The criteria items to be reviewed during the annual inspection for the exterior surveillance include the following:

- **Building/Area Secure** – Criteria: Exterior doors and all gates and the main entrance are locked (and operate properly for emergency egress), windows are closed and are intact, and there is no obvious indication of unauthorized entry into the building; perimeter fence is secure/undamaged.
- **Structural Integrity** – Criteria: There is no new damage or deterioration, e.g., structural faults, damaged/friable asbestos, openings or holes in buildings/walls/ceilings/doors that would allow pests into the facility, no unpainted or deteriorating wooden pieces, upper edge of roof and flashing is in good condition, and there are no obvious abnormal or unsafe conditions.
- **Animal/Pest Intrusion** – Criteria: There is no new evidence of animal issues/intrusion, e.g., bird nests/droppings, anthills, beehives, termite nests, etc.
- **Electrical Hazards** – Criteria: There are no new open J boxes, conduit fittings, exposed or hanging wires, improper labeling, etc.
- **Ground Subsidence (exterior)** – Criteria: There are no new indications of ground subsidence (as might occur due to water leaking from broken underground pipes, etc.).
- **Housekeeping** – Criteria: Accumulation of dirt, sand, debris, tumbleweeds, etc., or equipment, material, etc., in/around the building is not acceptable.
- **Occupational Hazards** – Criteria: There are no occupational hazards that may endanger personnel, e.g., tripping and slipping hazards, broken steps, missing handrails, exit door egress locked or obstructed.
- **Signage** – Criteria: No missing or fallen signs or postings (e.g., radiological, confined space, electrical, etc.) Gates and entries to the facilities should be posted with “WARNING NO UNAUTHORIZED ACCESS” (or equivalent wording) signs.
- **Water Intrusion (Leaks)** – Criteria: There is no standing water or evidence of current or recent water pathways into or out of the building due to structural damage or leaks due to broken or leaking pipes or other reasons. Attempt to date issue with marker and photograph.
- **Containers** – Criteria: There are no unlabeled or unidentified containers or hazardous materials observed.
- **Combustible Material Storage** – Criteria: There is no observed instance of unauthorized storage of combustible materials.
- **Combustible Loading** – Criteria: Combustible loading conditions are within allowable limitations and consistent with analyzed accidents.
- **Exits (for exterior surveillances)** – Criteria: Egress requirements are maintained for allowed surveillance pathways.

At the bottom of Data Sheet 1 there are sections for a printed name, signature, and date. The Sections are titled “Performed by NCO 1,” “Performed by NCO 2,” and “FWS Review.” I did not observe an area where the inspector is required to document the time of the inspection.

**Note:** NCO stands for Nuclear Chemical Operator and FWS stands for Field Work Supervisor.

I observed that CPSM-PRO-OP-50685 also provides Data Sheet 3 – REDOX Surveillance – Comments Sheet, which is used for documented deficiencies and actions taken to correct the deficiencies. There is space for the description, location, actions taken, and work document numbers. At the bottom of Data Sheet 3, there is space for the printed name, signature, and date where personnel can document who performed the work and a review by the FWS.

I observed that the Data Sheet 1 – REDOX Exterior Surveillance, which was used for the annual inspection dated October 3, 2013, was different from the Data Sheet 1 provided in CPSM-PRO-OP-50685. I observed that the data sheet used was revision 2, change 3, which appears to have a section for the fire protection engineer or delegate to write their name, signature, and date. There appears to be no other changes between the technical procedure and the Data Sheet 1 used on October 3, 2013.

I observed the initials and date “TM 10-3-13” next to 276-S-141 Tank and 276-S-142 Tank. These appear to be the only two structures documented on this Data Sheet 1. I observed that “yes” was marked for all the items except “Electrical Hazards,” which was marked “N/A.” I observed the full printed name of the NCO inspector and only the first name initial and full last name of the FWS. I did not observe the time of the inspection written on the October 3, 2013, annual inspection recorded on Data Sheet 1.

I observed that Data Sheet 1 – REDOX Exterior Surveillance, which was used for the annual facility inspection on November 12, 2014, was a different version from the Data Sheet 1 provided in CPSM-PRO-OP-50685. I observed that the data sheet used was revision 2, change 5. I did not observe any other differences between the two Data Sheets.

I observed the initials and date “11-12-14 DSO” next to 276-S-141 Tank and 276-S-142 Tank. I also observed the same date and initials next to 15 other listed structures on the same Data Sheet 1 and “NA” besides the building “Operable System.” I observed that “yes” was marked for all the items except “House Keeping.” The item for “House Keeping” was marked “No” in red, with a written “1” circled in red as well. I observed that the second page of Data Sheet 1 was missing as well as the Data Sheet 3, which possibly would have been used to comment on the “Housekeeping” deficiency. According to the USDOE and CHPRC response table provided to Ecology with the Data Sheet 1, the following was noted.

*The actual inspection of the Hexone tanks was performed on 11-12-2014 with final sign-off of all the inspections listed on 02-04-2015.*

On September 28, 2015, I sent an email to Mr. Williams and Mr. McKarns regarding the missing pages; second page of Data Sheet 1 and Data Sheet 3. I also explained in my email to them how using the signature blocks included on the second page of Data Sheet 2 as the second page of Data Sheet 1 could not be considered a complete inspection record. I requested the missing pages associated with the November 12, 2014 annual inspection be provided to Ecology by October 5, 2015. I received an email from Mr. McKarns, which requested a deadline extension for the missing pages to October 14, 2015. I sent an email to Mr. McKarns approving the deadline extension.

On October 14, 2015, I received a response from USDOE and CHPRC regarding my September 28, 2015 email. I observed that the Data Sheet 3 comments associated with the November 12, 2014, inspection were not directly related to the Hexone Facility. The accumulated debris and tumble weeds noted were identified on the north perimeter fence near buried railroad tracks. USDOE and CHPRC provided a statement that the missing second page of the Data Sheet 1 used for the November 12, 2014, annual inspection could not be located.

### Compliance Problems

The Dangerous Waste inspection on June 30, 2015, 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: Edward Holbrook  
Washington Department of Ecology  
Nuclear Waste Program  
3100 Port of Benton Blvd  
Richland, WA 99354

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 Edward Holbrook 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:  
Edward Holbrook at (509) 372-7909**

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

**1) WAC 173-303-400(3), as referenced by the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition I.A Effect of Permit.**

**WAC 173-303-320(2): The owner or operator must develop and follow a written schedule 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. In addition:**

**(d) The owner or operator must keep an inspection log or summary, including at least the date and time of the inspection, the printed name and the handwritten signature of the inspector, a notation of the observations made, an account of spills or discharges in accordance with WAC 173-303-145, and the date and nature of any repairs or remedial actions taken. The log or summary must be kept at the facility for at least five years from the date of inspection.**

**Observations:** The time of the annual facility inspections were not documented on the Data Sheet 1 for October 3, 2013 and November 12, 2014.

**Action Required:** Within 30 days upon receipt of this compliance report, USDOE and CHPRC must note in their operating record the dates that inspection records were deficient and the description of the

deficiency with WAC 173-303-320(2)(d) requirements and submit a copy of the documentation placed in the operating record to Ecology.

USDOE and CHRPC must immediately start documenting the time of the inspection on the inspection records and within 60 days upon receipt of this compliance report, USDOE and CHRPC must also update and submit to Ecology, data sheets with a space to document the time of the inspection that meets the requirements of WAC 173-303-320(2)(d).

**2) WAC 173-303-400(3), as referenced by the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition LA Effect of Permit.**

**173-303-380(1): Operating record. The owner or operator of a facility must keep a written operating record at their facility. The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility:**

**(e) Records and results of inspections as required by WAC 173-303-320(2)(d), General inspection (except such information need be kept only for five years);**

**Observation:** The second page of Data Sheet 1 associated with the November 12, 2014 annual inspection was missing. The second page had the spaces for the printed name, signature, and date of the inspection.

**Action Required:** Within 30 days upon receipt of this compliance report, USDOE and CHRPC must note in their operating record the date and the description of the deficiency with WAC 173-303-380(1)(e) requirements and submit a copy of the documentation placed in the operating record to Ecology.

## Concerns

1. According to CPSM-PRO-OP-50685, involvement of the Fire Protection Engineer is optional during annual inspections. The following is stated under Sections 1.3, Section 2.4, and Section 3.2.  
*Fire Protection Engineer (FPE) will be invited to accompany the surveillance whenever he is available.*  
*The FPE will be invited to accompany each surveillance but is not required to be present. The FPE will also review surveillance observations to verify that: (1) General combustible loading conditions are within allowable limitations and consistent with analyzed accidents; and (2) Egress requirements are maintained for allowed surveillance pathways.*  
*Fire Protection Engineer (FPE), when available*  
Considering the EPA waste code D001 is listed in the Part A Form for the Hexone Facility, a requirement to complete an ignitable and reactive inspection, at least annually, in accordance with the Washington State Dangerous Waste Regulations Chapter 173-303-395 Washington Administrative Code (WAC) should be performed. According to WAC 173-303-395, "This inspection must be performed in the presence of a professional person who is familiar with the International Fire Code, or in the presence of the local, state, or federal fire marshal."
2. All 17 buildings listed on the November 12, 2014, surveillance Data Sheet 1 were documented as being inspected with the initials "DSO" and date "11-12-14." It is unclear if the "Housekeeping" deficiency pertained to the 276-S-141 or 276-S-142 tanks or one of the other fifteen buildings listed on the Data Sheet 1. 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. The training program should be reevaluated for any personnel who perform the job duty to ensure that records are managed and maintained as required by WAC 173-303-320(2)(d).
4. Although the housekeeping deficiency noted on the Data Sheet 3 associated with the November 12, 2014, annual inspection of the Hexone Facility appears to be related to another building within the REDOX Facility, the date and nature of any repairs or remedial actions taken should be documented. The Data Sheet 3 has a space for actions taken, which filled out properly would close out any concerns regarding the deficiency observed. If the deficiency relates to the Hexone Facility, USDOE and CHPRC would be required to document the date and nature of any repairs or remedial actions taken, in accordance with WAC 173-303-320(2)(d).
5. From review of the records provided to me, there appears to be no inspection schedule for the 40 CFR Part 265 Subpart J – Tank Systems for the Hexone Facility. Additionally, no other inspection frequency was record other than the annual facility inspection completed as required in the Hexone Facility Technical Procedure, CPSM-PRO-OP-50685. Documentation regarding the reasons for not scheduling other tank inspections should be included in the facility operating record and made available upon request.

The Department of Ecology is an equal opportunity agency and does not discriminate on the basis of race, creed, color, disability, age, religion, national origin, sex, marital status, disabled veteran's status, Vietnam Era veteran's status or sexual orientation. If you have special accommodation needs or require this document in alternative format, please contact Edward Holbrook at (509) 372-7909 (Voice) or use the Washington State Relay operator by dialing either 711 or 1-800-833-6388 (TTY).