



1221559

September 11, 2013

13-NWP-095
VIA CERTIFIED MAIL

Mr. Kevin W. Smith, Manager
Office of River Protection
United States Department of Energy
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Mr. Lyden D. Olson, President
Washington River Protection Solutions
P.O. Box 850, MSIN: H6-63
Richland, Washington 99352

Re: 200 Area Hanford, 242-A Evaporator and 241-AW-102 Double Shell Tank (DST) Joint Ecology Air Operating Permit (AOP # 00-05-006) and DOH (FF-01 License) Audit # 820 Inspection on September 18, 2012

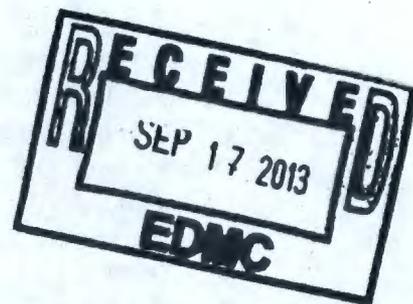
Dear Mr. Smith and Mr. Olson:

The Departments of Ecology and Health performed a joint inspection of the 242-A Evaporator and the 241-AW-102 Double-Shell Tank (DST) on September 18, 2012. We appreciate the assistance we received from United States Department of Energy and Washington River Protection Solutions staff during our inspection.

The inspection was initiated in response to incidents discovered in August 2012 regarding an open pathway between the 242-A Evaporator Condenser Room and DST 241-AW-102. Specifically, the inspection focused on toxic and radiological emissions from the 242-A Evaporator facility and DST 241-AW-102.

The purpose of this inspection was to determine compliance with:

- Washington Administrative Code Chapters
 - 173-400, General Regulations for Air Pollution Sources.
 - 173-401, Operating Permit Regulations.
 - 173-460, Controls for New Sources of Toxic Air Pollutants.
 - 246-247, Radiation Protection – Air Emissions.
- Hanford Air Operating Permit Number 00-05-006.
- Radiological Air Emission License FF-01.



The concerns found by the Departments of Ecology and Health during the inspection are summarized in the enclosed reports (Appendix A and B). A significant finding determined that incomplete information was submitted to both Departments identifying all applicable control technology components that control release or potential release of pollutants to the atmosphere.

Mr. Kevin Smith and Mr. Lyden Olson
September 11, 2013
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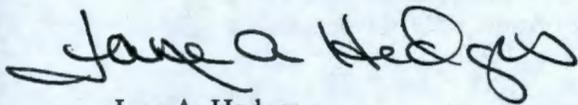
13-NWP-095

Corrective Actions required to address the concerns are detailed in Appendix A. Upon completion of the corrective actions, send the signed **Certification Statement** (Appendix D) to:

Mr. John Martell, Manager
Radioactive Air Emissions Section
Washington State Department of Health
309 Bradley Blvd., Ste. 201
Richland, WA 99352

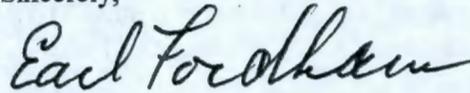
If you have questions or need clarification of this letter or the enclosures, please contact Philip Gent at philipgent@ecy.wa.gov or (509) 372-7983 or Ernest McCormick at (509) 946-0624.

Sincerely,



Jane A. Hedges
Program Manager
Nuclear Waste Program
Department of Ecology

Sincerely,

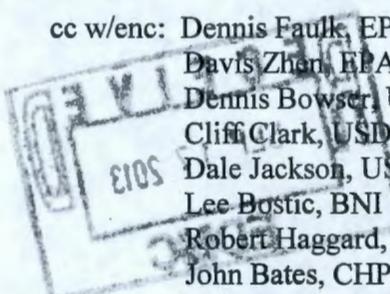


Earl Fordham
Deputy Director
Office of Radiation Protection
Department of Health

Enclosures: Appendix A: Department of Ecology Inspection Report
Appendix B: Department of Health Inspection Report
Appendix C: Department of Health Notice of Correction Form
Appendix D: Certification Statement
Appendix E: Inspection Agenda Questions

cc w/enc: Dennis Faulk, EPA
Davis Zhen, EPA
Dennis Bowser, USDOE-ORP
Cliff Clark, USDOE-RL
Dale Jackson, USDOE-RL
Lee Bostic, BNI
Robert Haggard, BNI
John Bates, CHPRC
Robert Anderson, MSA
Tom Beam, MSA
Matthew Barnett, PNNL
Jack Donnelly, WRPS
Steven Killoy, WRPS
Felix Miera, WRPS
Michael Peloquin, WRPS
Lucinda Penn, WRPS
Jeff Voogd, WRPS

Stuart Harris, CTUIR
Gabriel Bohnee, NPT
Russell Jim, YN
Steve Hudson, HAB
Ken Niles, ODOE
Philip Gent, Ecology
Shawna Berven, WDOH
Gabriel Boothe, WDOH
David Jansen, WDOH
John Martell, WDOH
Ernest McCormick, WDOH
John Schmidt, WDOH
Administrative Record
Correspondence Control, USDOE-ORP
Environmental Portal



APPENDIX A

**ECOLOGY NUCLEAR WASTE PROGRAM
INSPECTION REPORT**

Washington Department of Ecology

**Site: 200 Area Hanford, 242-A Evaporator and 241-AW-102 Double Shell Tank (DST),
Audit # 820**

Inspection Date: September 18, 2012

Site Contacts: Jeff Vogt* Washington River Protection Solutions (WRPS)
Environmental Compliance Officer (ECO)
Michael Greene WRPS, Regulatory Point of Contact (POC)
Brian Von Bargaen WRPS, Operations Manager

*Phone: (509) 373-4101

Site Location: Hanford Nuclear Reservation – 242-A Evaporator and DST 241-AW-102

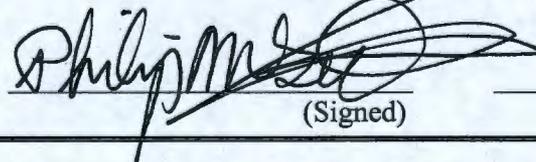
Department of Ecology (Ecology)

Lead Contact: Philip Gent Phone: 509-372-7983
FAX: 509-372-7971

Other Representatives: Ernest McCormick, Department of Health (Health)
Gabriel Boothe, Department of Health (Health)

Report Date: June 10, 2013

Report By: Philip Gent


(Signed) 9/11/13
(Date)

Type and Reason for Inspection

Ecology Nuclear Waste Program (NWP) conducted an Air Operating Permit and Approval Order inspection in response to an incident occurring between July and August 2012 at the 242-A Evaporator (242-A).

In August 2012, an open air pathway was discovered between the 242-A Evaporator and Double-Shell Tank (DST) 241-AW-102. On September 12, 2012, Jeff Voogd informed Ecology of the discovery of the open pathway.

The open air pathway between 242-A and 241-AW-102 was created when the condenser room steam condensate divert drain piping was opened for maintenance without seal loop C103-2 being operational. This condition created a single joined system (unit). As the systems were unified, the potential existed for flow between the formally separate units as a function of differential pressures. The combined systems differential pressures are primarily a result of the independent exhausters operations in each of the formally separate systems.

The focus of Ecology's inspection was to investigate the incident and obtain an understanding of relationship between the two separately permitted units.

Air Emission Permit Summary:

The 242-A building is subject to 173-400 Washington Administrative Code (WAC) *General regulations for air pollution sources*. The 241-AW-102 tank is subject to Hanford Air Operating Permit Number 00-05-006, Renewal 2, issued 01 April, 2013 and ORDER DE05NWP-001, Revision 1.

Inspection Summary:

On September 18, 2012, Philip Gent, Ecology representative, and Ernest McCormick and Gabriel Boothe, Health representatives, began a focused inspection with an in-briefing at the 2750 E Building in 200 East on the Hanford Site.

Mr. Mike Green, WRPS Environmental Coordinator, circulated a sign-in sheet. Representatives for the United States Department of Energy Office of River Protection (ORP) and WRPS (the ORP primary contractor) were also present.

Mr. McCormick, Mr. Boothe, and I explained the purpose of the focused inspection and provided an inspection agenda (See Appendix E) to the group outlining Ecology's and Health's initial questions and document requests.

After the meeting room introductions, Mr. McCormick, Mr. Boothe, and I explained each inspection agenda item. Since our request for information was extensive and only provided the morning of the inspection, WRPS staff said that they would gather the requested documentation and information and provide it to Ecology and Health after ORP reviewed and released it. I told WRPS staff that we did not expect the documents to be available today, and that the dates for submittal would be determined later.

In response to reading agenda item one, Rob Dale of WRPS responded that various transfer pits and a decontamination (safety) shower are some additional connections associated with 241-AW-102. Mr. McCormick followed up on Mr. Dale's response asking if this associated shower was identified in the Health Radiological License FF-01. Mr. Dale responded that the shower was not identified in the FF-01 license.

The other agenda items were discussed, and Jeff Voogd of WRPS responded that WRPS would respond to the agenda items in a two-step process. The first step would be to determine the timeframe that answers would be provided to the agenda items. The second step would be to prepare the answers and documents and provide them to the Agencies performing the inspection.

Following discussion of the agenda, WRPS inspection escort (identified in the site contacts) took Ecology and Health to the 242-A building. We went to Mobile Building-150 where a WRPS Health Radiation Technician (HRT) facilitated our facility access and provided us with daily dosimeters and badges. A WRPS escort was assigned to the inspection and the escort provided a safety briefing before the tour started.

Our inspection team with the WRPS escort team went to the 242-A control room and James Hamilton, the on-duty Nuclear Chemical Operator (NCO), provided an overview of the 242-A Evaporator (242-A) operations using a wall schematic to facilitate his presentation. Mr. Hamilton explained that the 242-A's primary mission is to reduce the volume of tank waste beginning with feed tank 241-AW-102.

After Mr. Hamilton's presentation, we toured the 242-A condenser room. The section of steam condensate divert drain piping that had been opened for maintenance without seal loop C103-2 being operational was closed as the maintenance work had been completed. Seal loop C103-2 is physically located below the floor and making it impossible to perform a visual inspection.

After our field inspection, the Health and Ecology inspectors returned to the 2750 E Building for a summary out-briefing. Ecology and Health discussed the process for receiving the information to the initial agenda items and WRPS inspection escort team was informed that Health and Ecology would each receive all of the requested information, regardless of the agency requesting it.

Areas of Concern

Ecology observed no violations of the facility's current permit conditions at the time of the inspection. However, the review of information requested determined that the Notice of Construction (NOC) permit for the 241-AW-102 tank was deficient in identifying all controls in place for all pathways with the potential to circumvent the permitted exhaust system.

1. According to the original application submitted to obtain ORDER DE05NWP-001, Revisions 1, (DOE-RP document 03-ED-178 and 07-ESQ-091) for DST (241-AW-01), it said that the exhauster "serves as a **containment system** for radioactive particulates present in the tank headspace. Additionally, the exhauster removes flammable gases and vapors that evolve from the liquid surface in the DSTs, and serves to remove heat." (emphasis added)

Ecology has determined the following:

- a. As the ventilation system is a "containment" system, the original NOC application failed to appropriately identify and report all barriers and controls associated with the containment system.
 - b. During times that the permitted exhaust system is not in operation (e.g. maintenance, break-down, etc.), the waste in the tank continues to generate gases and vapors that will disperse throughout the headspace of the tank and into any tank breaches until equilibrium is reached. The extent of the dispersion is controlled by the barriers and controls associated with the containment systems that were not identified in the original NOC application.
2. The original application submitted to obtain ORDER DE05NWP-001, Revisions 1, (DOE-RP document 03-ED-178 and 07-ESQ-091) for 241-AN and 241-AW tank farms, states that the ventilation system operates by drawing "outside" air into and through the tank vapor space.

Ecology has determined that drawing air from the 242-A Evaporator Building is air from "outside" of the tank, but it does not meet the implied intent of atmospheric air described as "outside air" in the original application. The drawing of air from within the 242-A Evaporator building was a result of a failed barrier (e.g. the loop seal) that was omitted from the original NOC application.

Corrective Actions

Under the terms of Approval Order DE05NWP-001, Revision , Section 4.0 list item 2: "*Obtaining this authorization by misrepresentation, or failure to fully disclose all relevant facts*", Ecology is requiring the following corrective actions:

1) **Within 30 days of receipt of this inspection report, submit a request to modify NOC ORDER DE05NWP-001, Revisions 1.**

At a minimum, the request will include details of all barriers and controls associated with the 241-AW Tank Farm exhauster system. This can be accomplished by submitting the ALARACT demonstration outlined in the letter "*241-AW Tank Farm (Emission Unit 296-A-46 and 296-A-47{EUs 855 & 856}) As Low As Reasonably Achievable Control Technology (ALARACT) Demonstration,*" AIR 12-1202 transmitted on December 13, 2012" (DOE-ORP submitted to the Department of Health's Mr. Martell, the ALARACT Demonstration on February 27, 2013 in letter 13-ECD-0014) as an attachment to the request for a NOC modification.

2) **Within 60 days of receipt of this inspection report, submit a schedule to modify NOC ORDERS DE05NWP-002, Revision 2 and DE11NWP-001.**

At a minimum, the schedule will include details as required in Appendix C, Item 5.

Should a good cause exist to extend the required dates, an extension of 60 days can be requested only once. Please submit your request and a statement of good cause, in writing, to:

Mr. John Martell, Manager
Radioactive Air Emissions Section
Washington State Department of Health
309 Bradley Blvd., Ste. 201
Richland, WA 99352

You will need to send all documentation and written communications in regards to these corrective actions to the Department of Health and the Department of Ecology. Please sign the certification statement in Appendix D for submitting the permit modification requests required in 1 and 2 above.

APPENDIX B

**DEPARTMENT OF HEALTH
INSPECTION REPORT**

Washington Department of Health

200 Area Hanford, 242-A Evaporator Facility, Emission Unit (EU) 1294, Audit # 820

Inspection Date: September 18, 2012

During the inspection of the 242-A Evaporator Facility, EU 1294, under Audit # 820, the Washington State Department of Health (Health) has determined the U.S. Department of Energy, Office of River Protection (USDOE-ORP), is out of compliance with Washington Administrative Code (WAC) 246-247-060(1) and WAC 246-247-110(7) by failing to appropriately identify and report all potential pathways, barriers, and controls preventing the entry of radionuclides into the vapor space of the building and, ultimately, to the point of release to the environment.

WAC 246-247-060

(1) Requirements for new construction or modification of emission units.

(a) Early in the design phase, the applicant shall submit a NOC containing the information required in Appendix A.

WAC 246-247-110

(7) Provide conceptual drawings showing all applicable control technology components from the point of entry of radionuclides into the vapor space to release to the environment.

This Notice of Correction (NoC) is issued in accordance with Revised Code of Washington (RCW) Chapter 43.05, Technical Assistance Programs. The substance of the compliance concern, what must be done to achieve compliance, and the date by which compliance must be achieved are given in Appendix C.

Revisit:

The Radioactive Air Emissions Section (RAES) will revisit this compliance concern on a date of its choosing; not before the compliance date given on the enclosed NoC Form. If the USDOE-ORP has not corrected the issue at that time, enforcement action(s) will ensue.

Certification Required:

Information submitted to the RAES in response to this NoC must be certified under oath or affirmation, in accordance with RCW 70.98.080(1)(a). You may accomplish this by providing the statement in Appendix D with your documents:

Technical Assistance Providers:

The RAES maintains a list of technical assistance service providers. The list can be found at: <http://www.doh.wa.gov/CommunityandEnvironment/Radiation/RadioactiveMaterials/TechnicalAssistanceProviders.aspx>

All documentation and written communications in regards to this matter sent to the Department of Health will also be sent to the Department of Ecology. All documentation and written communications in regards to this matter sent to the Department of Ecology will also be sent to the Department of Health. Please sign the certification statement located in Appendix C when submitting the permit modification requests required in this inspection report.

APPENDIX C

**DEPARTMENT OF HEALTH
NOTICE OF CORRECTION FORM**

NOTICE OF CORRECTION FORM

Enforcement File Number: 820

NOTICE:

This notice is given today 9/11/2013 as a:

Notice of Correction (RCW Chapter 43.05.100)

Notice of Correction under Technical Assistance (RCW Chapter 43.05.030)

This notice is given to:

*Mr. Kevin W. Smith, Manager
United States Department of Energy
Office of River Protection
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352*

This notice constitutes Notice of Correction at the following emission unit.

EU: 1294, 242-A Evaporator

The compliance issue(s) was discovered during a RAES audit/inspection:

Audit number: 820, 09/18/12, 242-A Evaporator facility

1. Description of condition out of compliance:

Failure to identify all potential pathways of radionuclides entering the vapor space rendered the initial license application incomplete.

2. State or Federal rule, regulation, or law, license condition, NOC and/or compliance order condition violated:

a. Citation: *WAC 246-247-110(7)*

b. Text: *"Provide conceptual drawings showing all applicable control technology components from the point of entry of radionuclides into the vapor space to release to the environment."*

3. Transmittal Letter: 13-NWP-095

4. To achieve compliance, within 30 days of receiving this report, you must:

Perform the ALARACT demonstration outlined in the letter "241-AW Tank Farm (Emission Unit 296-A-46 and 296-A-47{EUs 855 & 856}) As Low As Reasonably Achievable Control Technology (ALARACT) Demonstration," AIR 12-1202 transmitted on December 13, 2012. (ALARACT Demonstration received on February 27th 2013.)

5. Within 60 days of receipt of this report, you must:

Develop and submit a schedule to provide a document for all other tank farms, to other facilities or structures, listing following information:

- 1. Potential pathways of communication.*
- 2. Physical, engineered, and administrative controls for those pathways.*
- 3. Evaluation for the adequacy of the controls.*
- 4. Warning devices and operational status of the controls.*

This document should be organized similarly to the previous ALARACT demonstration, and updated on an annual basis.

Should a good cause exist to extend the required dates, a one-time extension of 60 days can be requested once. Please submit your request and a statement of good cause, in writing to:

Mr. John Martell, Manager
Radioactive Air Emissions Section
Washington State Department of Health
309 Bradley Blvd., Ste. 201
Richland, WA 99352

APPENDIX D

CERTIFICATION STATEMENT

Please certify to the following:

Kevin Smith - ORP Manager, has responsibility for the overall operation of the Hanford Facility 242-A Evaporator and is duly authorized to sign all reports and other information requested. As an authorized signatory, my certification is included below:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Smith – ORP Manager
Hanford Nuclear Reservation

APPENDIX E

INSPECTION AGENDA QUESTIONS

Ecology Agenda Questions

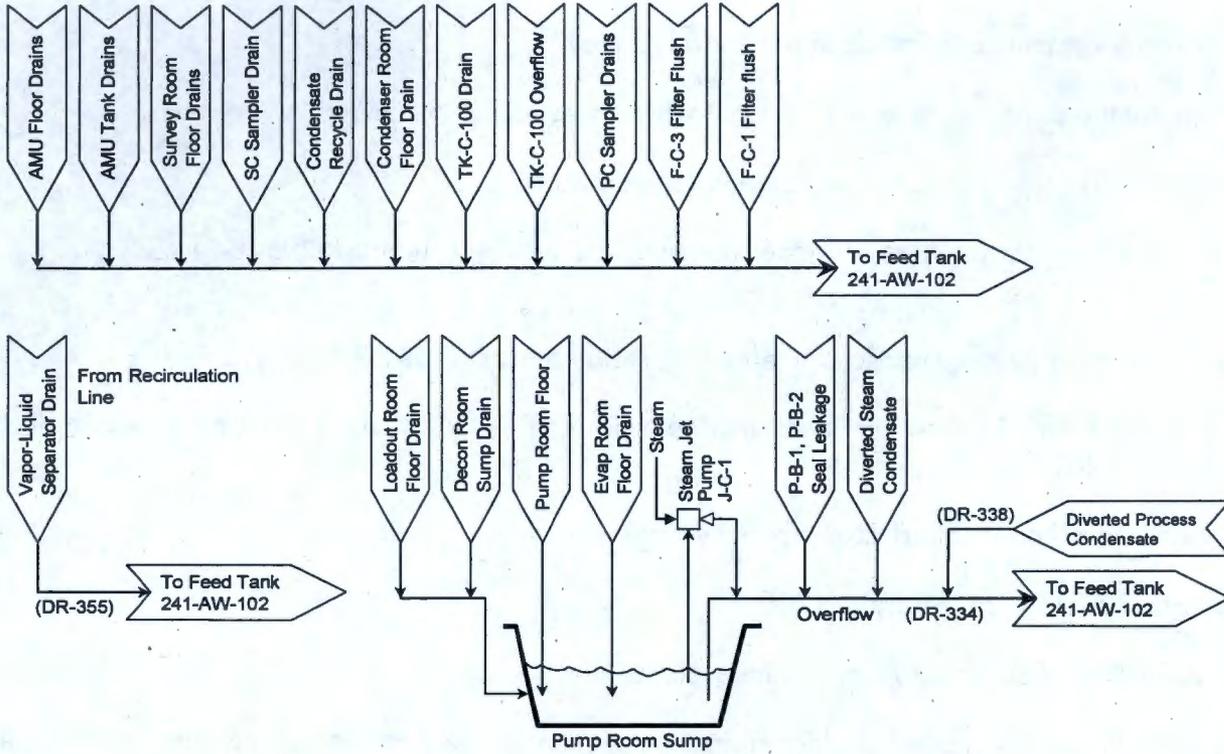
1. What other connection does 241-AW-102 have with other locations? Specifically, what lines go from the tank to other facilities or locations?
 - a. What devices are present to stop vapor communication from occurring?
 - b. What maintenance is done on these systems?
 - c. What controls are associated with the systems?
2. What operational work was being done to cycle the exhauster for 241-AW-102 on and off during the timeframe 242-A work was on-going?
3. Is data from the process vent system required/used to document compliance with the facility RCRA Permit Condition in section 4.2.2 "Demonstrating Compliance" with Subpart AA Standards kept separately from the room vent.
 - a. If the information is separate, (i.e. two measurement sources for data or two calculations based on process knowledge) did they include releases through the room vent in the total organic release calculation?
 - b. How do they determine the release total (estimated or measured)? If estimated or calculated, were at least 4 grab samples taken to verify? During operations? During non-operating times? During specific maintenance activities?
4. Please provide a copy of the calculations records documenting total organic emissions as this process and calculations are available for Ecology review on request per RCRA Permit Section 4.2.2., "Demonstrating Compliance" with Subpart AA Standards. This should include:
 - a. determined the emission rate of each candidate feed tank organic constituent by multiplying the constituent concentration by the corresponding partition factor in *Organic Emission Calculations for the 242-A Evaporator Vessel Vent System* (WHC 1996) by:
 - b. Sum the emission rates of all organic constituents to determine the emission rate for the candidate feed tank. The maximum emission rate for the campaign is the rate from the candidate tank with the greatest emission rate.
 - c. Determine the total amount of emission during the campaign by using operating time and a weighted average emission rate, based on the volume of each candidate feed tank processed.

The organic emission rates and quantity of organics emitted during the campaign are determined using these calculations and are included in the operating record for each campaign, as required by 40 CFR 264.1035. The Hanford Facility has a system to ensure organic emissions from units subject to 40 CFR 264, Subpart AA are less than the limits of 1.4 kilograms per hour and 2.8 megagrams per year.
5. Please provide timeline for the plan to review and update these calculations to demonstrate compliance with RCRA Permit Section 4.2.2., "Demonstrating Compliance" with Subpart AA Standards.
6. What did IH monitored for during the recent event?

7. What type of alarm was supposed to alarm on the drain system when the seal water was getting low?
8. Please provide documentation on seal alarm.
 - a. Is the alarm in or out of service?
 - b. Maintenance records.
9. Are there other similar alarms on other seals that are supposed to provide indication of low water volumes in other seals? If so what are their labels?
10. Have these other alarms been checked or tested recently?
11. Are these other alarms functioning?
12. What is the name/number of the "alarm procedure" to add more water in an event?
13. When was the last time this procedure was modified? When was the last time this procedure was verified?
14. When will this procedure be updated to reflect the addition of water into the proper funnel when an alarm indicates or during an event that triggers this procedure?
15. Are there other "alarm or event procedures? When where they last modified or verified?
16. Please provide any Operational Awareness Reports from the last 2 months.
17. What was the result (calculation or documentation) of the recent air flow study performed by the Rad Con organization at the 242-A Evaporator as noted to Ecology in March 8, 2012, via TOC-ENV-NOT: 2012-0021 stating:
 - a. "Unlike in past electrical outages, we are going to maintain access to the Condenser Room for some other work related activities, principally so our Radiological Controls organization can perform an air flow study. As a result, the alternative leak detection we routinely deploy will not be necessary in the Condenser Room. Operations personnel will be able to continue the performance of the required daily inspections for the Condenser Room."
18. What is the "alternative leak detection they routinely deploy in the Condenser room?" Why was it not necessary during the air flow study? How often is it checked and calibrated? What conditions trigger its usage?
19. Are there any alarms or monitors in the drainage system? Is the drainage system the "secondary system" noted in TOC-ENV-NOT: 2012-0021? If not, are there any alarms or monitors in that secondary system?
 - a. "...the secondary containment system and routed to the pump room sump and ultimately to the 241-AW-102 Double Shell Tank. Quantities of liquid sufficient, which is not expected since the evaporator vessel is empty and raw water is isolated, to reach 241-AW-102 via the 10-inch secondary containment overflow line..."

20. Have ventilation studies or calculations been performed for the drain system(s) from the Evaporator Room and/or Condenser Room? If so what were the results?
21. After these studies and "air reversal events", have additional valves, seals, vapor leak detection, and/or alarms been added?
22. Are there valving, vapor locks or seals for all of the drain sources as listed in the figure below depicting the drainage system?
23. Are there leak detectors and alarms for both liquid and vapor excursions for all of the drain sources listed in the figure below depicting the drainage system?
24. If so, have all of these leak detectors and alarms been recently checked for operation and calibrated?
25. For clarity, what system does LEL-C-103-2 belong to?
26. How do you know if the seal loop is functioning?
27. Is there a means of testing the seal alarm(s)? Specifically, is there a means of testing the seal alarms to indicate if they will work?
28. Is the leak detector inspected as part of the 242-A Evaporator system?
29. What are the inspection frequencies and remedial action requirements followed for the leak detectors? What is the schedule for repairing a leak detector? What about this leak detector?
30. Have you notified Ecology in accordance with WA7890008967, Rev. 8C, Condition I.E.15. Condition I.E.15.a states, "The Permittees will verbally report to Ecology any release of hazardous waste or hazardous substances or any noncompliance with the Permit which may endanger human health or the environment. Any such information will be reported immediately after the Permittees become aware of the circumstances."

242-A Evaporator Drain System



HEALTH AGENDA QUESTIONS

1. Provide documentation that clean out drain is sealed.
2. What are the sump well's level limits and what are its indication devices?
3. Provide a five year run history of the AW tank exhauster.
4. Provide a five year run history on the condenser exhausters (combined) 296-A-21 and 296-A-21A.
5. Are there other paths to condensate divert line drain other than 241-AW-102?
6. How often has make up water been added to weir overflow 242A and approximate volume since August 13 2012?
7. Perform a walkdown of effected piping systems.
8. Provide P&ID for 242-A drain system.
9. Explain flow of air or gas from various systems.
10. Provide dates and explanations (determination of source) of general area contamination incidents in the affected areas.
11. Are there similar configurations within tank farms?