



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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January 25, 2013

13-NWP-009

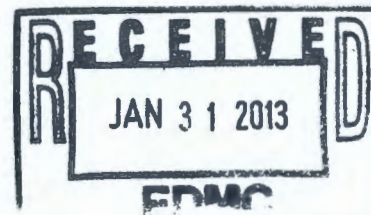
Mr. Kevin W. Smith, Manager  
Office of River Protection  
United States Department of Energy  
PO Box 450, MSIN: H6-60  
Richland, Washington 99352

Re: Washington State Department of Ecology (Ecology) Assessment Report for Field Monitoring Activities Conducted December 27, 2012, of the Waste Material Near Riser 83 of the 241-AY-102 Double Shell Tank (DST)

Dear Mr. Smith:

On December 27, 2012, Ecology visited the 241-AY Farm to witness the weekly visual inspection of the waste material found near Riser 83 of the 241-AY-102 DST. Ecology's Assessment Report and photographs from the field visit are enclosed. The following notes are important highlights from the Visual Inspection:

- The weather reported at the pre-job was cloudy and low winds. According to the Hanford Meteorological Station, the area had received approximately 3 inches of snow on December 25 and additional moisture on December 26 and December 27, 2012.
- The camera viewed the waste in respect to the different in-annular space "landmarks" including the black dot or rock, two white pebbles, orange pieces of insulation/foam, and ventilation slots. It was noted by all witnessing the video that the area of the waste material did appear to have slightly increased in size, near the upper portion of the leak where the waste material extends outward in "finger channels," and near the smaller piece of orange insulation/foam. The extent of the leak seemed to slowly expand as compared to the amount of waste material viewed during the visual inspections conducted on October 25, 2012, and November 12, 2012.
- The increase in the extent of the waste material present within the annulus may be due to an increase in material or as a result of the draining of the deeper pools of waste material outward onto the annulus floor. Many of these "deeper pools" of waste material as indicated by a darker green color of material, appeared to be lighter green in nature and not as thick, which may indicate they are draining.
- The waste material in the ventilation slot appeared to be wider and thicker, especially on the base near the 6 ½ inch ring. The top of the material appeared to have dried where it contacted the concrete. However, moisture streaks on either side of the waste material within the ventilation slot were again visible.



Mr. Smith  
January 25, 2013  
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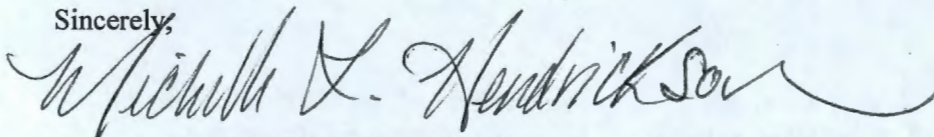
- The waste material in the finger channels of the waste or pools of waste (that are dark green, light green, and yellow) appear to look deeper, extend in length, and had split to flow toward another direction creating an additional finger channel.

The United States Department of Energy-Office of Rive Protection, Washington River Protection Solutions (WRPS), and Ecology Integrated Project Team continues to meet to develop and evaluate options for the interim and longer term management of this tank and its contents.

It is undetermined at this time if the 241-AY-102 DST will be repaired or closed. Regardless, the waste (supernatant, sludge, and interstitial liquids) must be removed. WRPS has completed the necessary procurement, testing, and construction/installation requirements to be able to pump the supernatant from the tank. However, the capability to remove the sludge is still in the planning phase.

If you have any questions, please contact me at [Michelle.Hendrickson@ecy.wa.gov](mailto:Michelle.Hendrickson@ecy.wa.gov) or (509) 372-7970.

Sincerely,



Michelle L. Hendrickson, CHMM, PE  
Tank System Operations and Closure Engineer  
Nuclear Waste Program

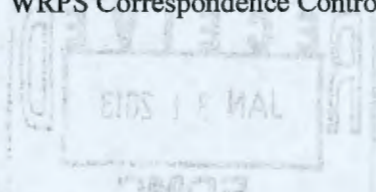
tkb  
Enclosures (2)

cc electronic w/enc:

Dennis Faulk, EPA  
Lisa Domnoske-Rauch, USDOE  
Tom Fletcher, USDOE  
Jeremy Johnson, USDOE  
Derek Wright, USDOE  
Randall Robinson, DNFSB  
Jason Engeman, WRPS  
Steve Killooy, WRPS  
Jeff Voogd, WRPS  
Dennis Washenfelder, WRPS  
David Bernhard, NPT  
Dirk Dunning, ODOE  
Ken Niles, ODOE  
John Martell, WDOH  
John Schmidt, WDOH  
USDOE-ORP Correspondence Control  
WRPS Correspondence Control

cc w/enc:

Stuart Harris, CTUIR  
Alex Nazarali, CTUIR  
Gabriel Bohnee, NPT  
Russell Jim, YN  
Steve Hudson, HAB  
Administrative Record: ✓  
DST/TWS/214-AY-102/S-2-3  
Environmental Portal, LMSI





## ASSESSMENT REPORT

### Field Monitoring Activities

#### A. GENERAL INFORMATION

Project: 241-AY-102 Field Monitoring, Riser 83 Video  
 Project Contact: Jeremy Johnson (ORP) Phone: (509) 376-1866  
 Review Date: 12/27/2012  
 Reviewer: Michelle Hendrickson, CHMM, PE  
 USDOE Project: US Department of Energy-Office of River Protection (USDOE-ORP)  
 USDOE Contact: Tom Fletcher/Jeremy Johnson  
 Prime Contractor: Washington River Protection Solutions (WRPS)  
 Project Manager: Michael Hardesty Phone: (509) 373-4573  
 Location: 241-AY-102, 200 East Area, Hanford  
 Scheduled Start Date: 12/27/2012 Actual Start Date: 12/27/2012 Completion Date: 12/27/2012  
 Contract Amount: Approximately \$75,000 for 4 Riser Visual Inspections  
 Sub-Contractor: N/A  
 Location: 200 East Area, Hanford Nuclear Reservation, Richland, WA

#### PROJECT DESCRIPTION:

- On an 8/8/12 visual inspection, material was found in the Annulus Space at AY-102. On 10/23/2012, USDOE-ORP reported that the DST was leaking and more material was accumulating in the Annulus Space.
- To monitor the slow leak, WRPS is conducting weekly and often twice weekly video inspections of the material through the AY-102 Tank's Riser #83.
- As the leak in question has remained very slow, the Integrated Project Team (IPT) has provided guidance that the visual inspections at the AY-102 Tank could be reduced to once a week.

The Pre-job meeting was conducted at 12:30 PM, including the conditions of RWP WTO0399, Rev. 2. The job in the field consisted of:

1. We entered the farm at approximately 12:45 PM. The ventilation exhauster was throttled down in the annulus from -14 inch to a -1 inch vacuum. The ventilation vacuum was lessened as the air currents generated by the vacuum create air currents which cool the sludge. However, these currents also impede the collection of a flammable gas sample and cause the camera to swing, making camera manipulation within the annular space very difficult.
2. A flammable gas sampled was collected and indicated that the annulus space was less than 25% lower flammability limit.
3. The camera was in a plastic bag and wire attached in a sleeve. The sleeve was carefully inspected and then the camera was removed from the bag and lowered into the annulus space. The camera was lowered to the 53-foot mark for the video/photographs. The camera completed a 360-degree scan and was raised and tilted. Also, a zoom of 10-times was used for close-up observation of the waste. Close-ups of the material along the entire area of waste deposition were viewed. The "landmarks" within the tank (black dot or rock, two white pebbles, and ventilation slots) were specifically viewed.
4. Once all of the views were captured, the camera was raised and re-bagged.

5. We surveyed out of the 241-AY Farm.

**B. RECORDS AND PROCEDURES**

1. Personnel Contacted During Assessment

<u>Name</u>	<u>Title or Duties/Organization</u>	<u>Phone</u>
a. Steve Stamper	Camera Operator - WRPS	509-392-3977
b. Michael Hardesty	Field Work Supervisor - WRPS	509-373-4573
c. Roger Hammer	Camera Operator - WRPS	509-373-3355
d. Derek Wright	Facility Representative- USDOE-ORP	509-373-1011

2. Progress

a. Scheduled Percentage 100 %

	Yes	No	NA	See Remarks
3. Stockpiled equipment or materials				
a. Records adequate?	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Protected?	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Monitoring Procedures up to date?	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Work Packages up to date?	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Adequate involvement in changes?	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Change of monitoring procedures appropriate and submitted to Ecology?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
8. Instrument(s) Calibrated adequately?	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Permit No/TPA Requirement.: DST System Unit RCRA Permit				

**C. FIELD MONITORING**

- The weather was reported at the Plan of the Day meeting was cloudy and low winds. The area had received approximately 3 inches of snow on 12/25/2012 and additional moisture yesterday and earlier today.
- The video taken of the waste material was near Riser 83 of the 241-AY-102 Annulus Space.
- The video was viewed and camera manipulated in the AY-801 Building.
- As the camera descended to the bottom of the annular space, a thermocouple became visible. The camera zoomed in and the off-riser sampler/crawler's tracks were no longer visible.
- All witnessing the inspection noted that the color of the waste appeared to be changing. The dark green was changing to a lighter green in some locations. The lighter green was becoming a dark yellow. The darker yellow was changing to a lighter yellow. The lighter yellow was turning to a white color along the waste perimeter. Ecology also noted that some of the waste material that was white in color was now yellow. This indicates that some of the waste material may be drying, most likely due to the ventilation.
- The camera viewed the waste in respect to the different in-annular space "landmarks" including the black dot or rock, two white pebbles, orange pieces of insulation/foam, and ventilation slots. It was noted by all witnessing the video that the size of the area of the waste material did appear to have slightly increased in size, near the upper portion of the leak where the waste material extends outward in "finger channels" and near the smaller piece of orange insulation/foam. The extent of the leak seemed to slowly expand as compared to the amount of waste material viewed during the visual inspection conducted on 10/25/12 and 11/12/2012.
- Ecology noted that the increase in the extent of the waste material present within the annulus may be due to an increase in material or as a result of the draining of the

deeper pools of waste material outward onto the annulus floor. Many of these "deeper pools" of waste material as indicated by a darker green color of material, appeared to be lighter green in nature and not as thick, which may indicate they are draining.

- Ecology noted that the waste material in the ventilation slot appeared to be wider and thicker, especially on the base near the 6 ½ inch ring. The top of the material appeared to have dried where it contacted the concrete. However, moisture streaks on either side of the waste material within the ventilation slot were again visible.
- Ecology also noted that the waste material the finger channels of the waste or pools of waste (that are dark green, light green, and yellow) appear to look deeper, extend in length, and had split to flow toward another direction creating an additional finger channel.
- Ecology could not visually distinguish if any visual damage indicators such as staining, cracking, pitting, etc. of the 6 inch wide carbon steel refractory ring, annulus floor, primary tank liner, or the refractory/concrete material where the waste was in direct contact with the tank structures. This lack of visual assessment is due to the increased growth of crystals, especially in the lower 2/3rds of the leak area and increased amount of deposition of mineralization around the perimeter of the leak area within the annulus. It is unknown at this time what influence the waste will have that is contacting the annulus floor and refractory/concrete pedestal.

	Yes	No	NA	See Remarks
1. Comply with Procedures and QA/QC Specifications?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Field Test Being Accomplished?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Satisfactory Contractor Quality Control?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Inspection Documentation Satisfactory?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Site Condition				
a. Orderly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Control room interface adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Equipment set-up adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Monitoring bypassing satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Unsafe Conditions/Health Hazards Observed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Is Project on Schedule?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the Operations and Maintenance Documentation on Schedule?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Is the Maintenance Management System on Schedule?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Traffic control and traffic safety?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

REMARKS:

Photographs from this field monitoring event are attached.

Assessment Completed:

*Michael L. Anderson, CHMM, PE*  
 Project Engineer's Signature

*1/25/13*  
 Date



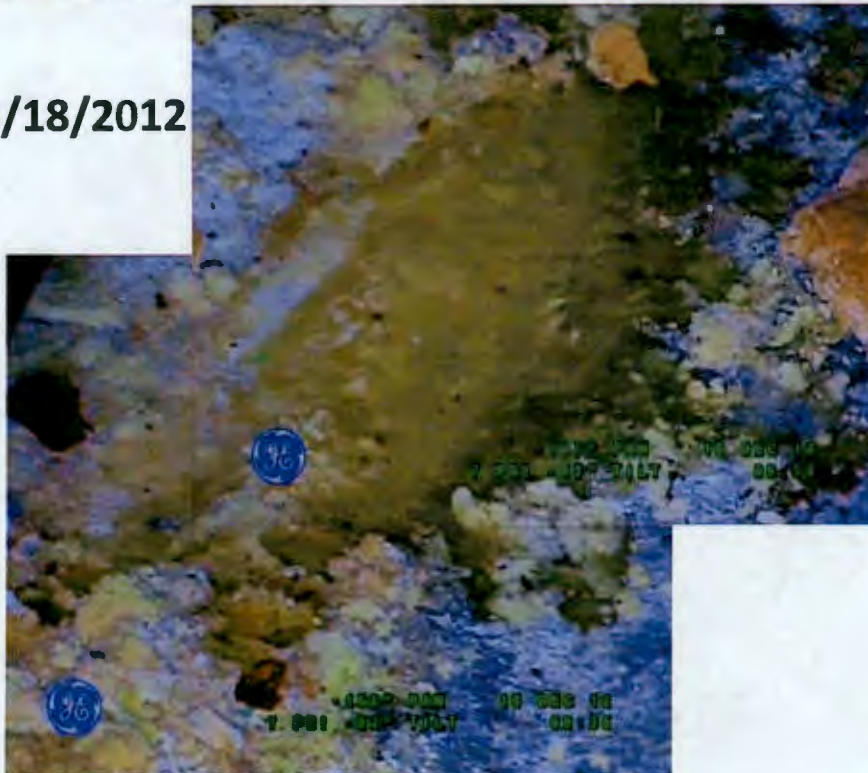
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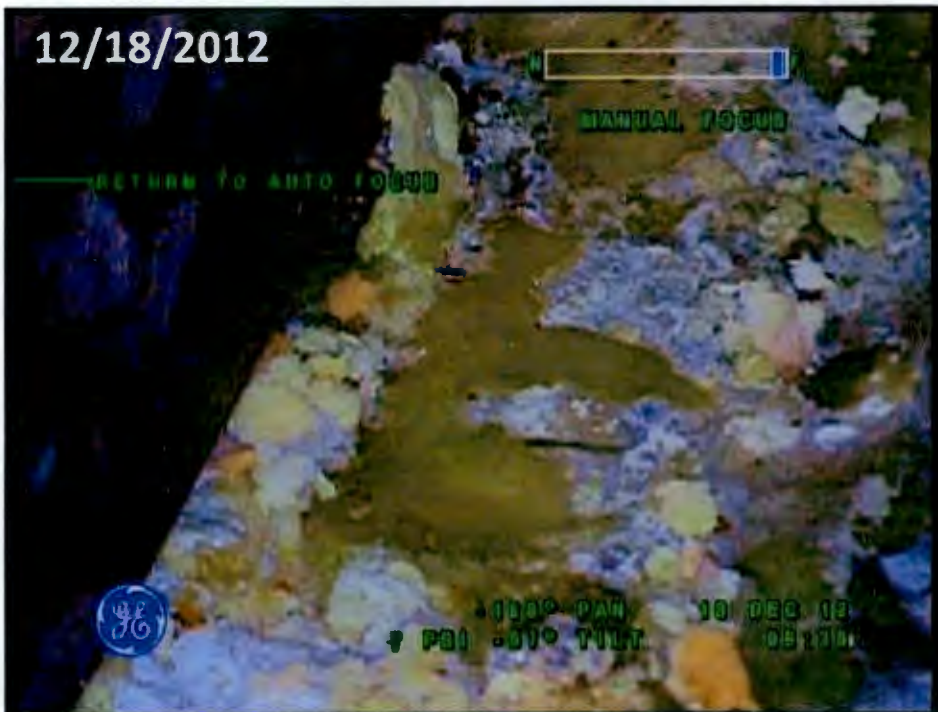
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12/27/2012



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