



U.S. Department of Energy
Office of River Protection

0079026

P.O. Box 450, MSIN H6-60
Richland, Washington 99352

OCT 31 2008

08-ESQ-275

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

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EDMC

Dear Ms. Hedges:

AP TANK FARM ALTERNATE LEAK DETECTION (ALD)

The U.S. Department of Energy, Office of River Protection (ORP) is transmitting information requested by Mr. Eric Van Mason, of your staff, regarding missed Alternative Leak Detector readings at the AP Tank Farm during a recent electrical power outage. The requested Corrective Action Plans and a regulatory summary of the events are attached.

The Washington River Protection Solutions LLC (WRPS) and ORP staff met with the Washington State Department of Ecology (Ecology) on October 15, 2008, to discuss preliminary information regarding the timing of ALD readings for the AP Tank Farm on October 14, 2008. The ALD method was necessary due to an electrical outage required to resolve a potential electrical safety hazard to personnel. WRPS notified Ecology of a separate issue involving the timing of ALD readings on October 20, 2008.

The attachments to this letter provide a summary of the fact-finding efforts and the corrective action plan that includes steps to ensure that ALD readings in the future are conducted within the regulatory time limits. Attachment 1 addresses the October 14 and 20, 2008, late readings as requested by Mr. Eric Van Mason. Attachment 2 provides an evaluation of requirements for double-shell tank leak detection during the period and summary information regarding compliance with those requirements. This evaluation addresses the site and personnel conditions which prevented obtaining the leak detection readings within the 24-hour limit on October 14 and 20, 2008. During the ten days of the power outage in AP Tank Farm, all other readings were obtained within the successive 24-hour limits.

WRPS took interim corrective actions as a consequence of these events, including an additional daily reading on October 20, 2008, and an increased level of management attention to preclude further missed ALD checks during the AP electrical outage. The fact-finding and corrective action plan have identified further steps to improve our ability to meet Washington State regulatory requirements and the SY Settlement Agreement¹ provisions for the time-sensitive SY Settlement Agreement¹ environmental surveillances. Corrective Actions 1-3 below are specific to ALD readings. Corrective Actions 4-7 below have been identified to improve organizational

¹ Settlement Agreement and Stipulated Order of Dismissal, "United States Department of Energy, Fluor Daniel Hanford company and Lockheed Martin Hanford Co. vs. Ecology, PCHB Nos. 98-249, 98-250."

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cc w/attachs:

J. J. Lyon, Ecology

E. J. Van Mason, Ecology

C. L. Whalen, Ecology

F. Beranek, WRPS

M. N. Brosee, WRPS

P. T. Day, WRPS

W. T. Dixon, WRPS

S. D. Hyman, WRPS

J. A. Voogd, WRPS

Administrative Record

Environmental Portal, LMSI

WRPS Correspondence

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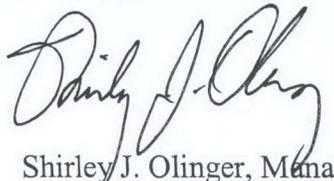
response to similar situations. Additional corrective actions have been identified in the attached Corrective Action Plan.

Corrective Actions:

1. Tank Farm daily reports, which are reviewed by senior tank farm Base Operations management, will provide greater emphasis to time-sensitive environmental surveillances.
2. Tank Farm work release sheets will use separate line items for time-sensitive environmental surveillances.
3. Shift management will be briefed to reinforce the corrective actions and required performance.
4. Radiation survey implementing documentation will be evaluated and revised for clear interface with operations procedures.
5. Operations procedures, corresponding to Item 4, will be evaluated and revised, as appropriate.
6. A Technical Response Team will be institutionalized to improve response to similar events.
7. An assessment will be conducted to determine the effectiveness of the proposed corrective actions.

If you have any questions, please contact me, or your staff may contact Gae M. Neath, Office of Environmental Safety and Quality, (509) 376-7828.

Sincerely,



Shirley J. Olinger, Manager
Office of River Protection

ESQ:GMN

Attachments: (2)

cc: See page 3

Attachment 1
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Corrective Action Plan

CORRECTIVE ACTION PLAN

**Alternate Leak Detection Readings for AP Tank Farm Exceeded
the 24-Hour Specified Time Period**

**Prepared by:
Washington River Protection Solutions, LLC
October 27, 2008**

1.0 Introduction

On October 14 and 20, 2008, Alternate Leak Detection (ALD) readings for AP Tank Farm exceeded the 24-hour specified time period by 45 minutes and 27 minutes, respectively. Causal analysis and planned corrective actions have been identified to correct the conditions and prevent recurrence.

2.0 Corrective Action Methodology

A process based on Washington River Protection Solutions, LLC (WRPS) procedure TFC-ESHQ-Q_C-C-01, "Problem Evaluation Request," and TFC-ESHQ-Q_ADM-C-12, "Apparent Cause Analysis and Corrective Action Planning," was used to develop this Corrective Action Plan (CAP). Results of the analysis and planned corrective actions are documented in a Problem Evaluation Request (PER) in the WRPS issues management system. The causal analysis, extent of condition, remedial corrective actions, and planned corrective actions for this issue are documented in WRPS-PER-2008-0093. The causes summarized below are supported by an analysis using commonly accepted causal analysis methods.

3.0 Corrective Action Plan Structure

This CAP combines the discussion, causal analysis, and planned corrective actions for both sets of late ALD readings. The CAP structure is as follows:

Problem Statement: Description of problem.

Causal Analysis: The causal analysis method used.

Cause of Problem: Statement of the cause.

The Corrective Actions Taken to Control or Remove any Adverse Impact from the Adverse Condition and Results Achieved: The immediate actions taken and their results.

Corrective Actions Taken to Identify the Extent of Condition: A discussion describing the extent to which the identified issue affects similar or related programs or systems.

Corrective Actions to be Taken to Correct the Causes and Prevent Further Problems: A tabulation of all corrective actions taken or to be taken, deliverables, action owner, and planned completion date(s) is identified.

4.0 Review and Approval of WRPS Corrective Actions

This CAP was developed by the assigned responsible manager and was approved by the Base Operations Manager.

5.0 Corrective Action Plan Reporting and Closure

The corrective actions identified will be tracked and monitored using the PER system. To close an action, the responsible manager must provide objective evidence documenting completion of the action. Closure documentation will be attached electronically to the PER.

6.0 Corrective Action Plan

Problem Statement 1: On October 14, 2008, ALD readings for AP Tank Farm exceeded the 24-hour specified time period by 45 minutes.

Causal Analysis 1: The causal analysis method used is the "Why?" analysis and is documented in WRPS-PER-2008-0093.

Cause of Problem 1: Management Problem/Work Organization and Planning Less than Adequate (LTA)/Work not coordinated with all departments involved in task.

Based on discovery and review of a ground fault indication on the electrical distribution equipment in AP Tank Farm which posed potential electrical safety hazards to personnel accessing the tank farm and the surrounding buildings, action was taken to place the tank farm in a safe condition by isolating electrical power to the AP tank farm at the substation on October 13, 2008. The unusual nature of the electrical safety issue raised additional questions as to the proper boundary of the required lock-out/tag-out and the ability for workers to perform safe work checks. Therefore, the electrical isolation boundary was extended by removing power from the utility pole to the substation.

The immediate and timely actions taken to ensure the potential electrical safety hazards were eliminated for tank farm workers precluded normal entry and use of TO-270-720, "Perform Electrical Power Outage for 241-AP Tank Farm," which includes the pre-approved instructions for ALD. Two additional work packages were generated to allow for the remaining pre-requisites, performance of the ALD readings, and additional steps to perform the trouble-shooting to determine the cause of the unknown ground fault condition. The lock-out/tag-out was established and preparations were made for entry to the AP Tank Farm when additional questions were raised as to pre-entry radiological survey requirements. The changes in the work performance documents, energy isolation points, and radiological survey requirements collectively caused a delay in completion of the ALD readings and resulted in completing the readings 45 minutes past the specified time limit.

Problem Statement 2: On October 20, 2008, ALD readings for AP Tank Farm exceeded the 24-hour specified time period by 27 minutes.

Causal Analysis 2: The causal analysis method used is the "Why?" analysis and is documented in WRPS-PER-2008-0093.

Cause of Problem 2: Human Performance LTA/Rule Based Error/Previous success in use of rule reinforced continued use of rule. Management Problem/Supervisory Methods LTA/Progress/status of task not adequately tracked.

On Thursday, October 16, 2008, the last work day of the week, the ALD readings were obtained in the afternoon. During the weekend support, the Instrument Technicians reported to the Shift Manager and performed the daily readings. The readings were performed within the specified time limit on Friday, Saturday, and Sunday with the Monday readings due by 10:58 a.m. On Monday, October 20, 2008, at approximately 10:50 a.m., the Shift Manager contacted the Instrument Shop since he had not been notified that the readings had been completed. He was informed by the assigned Lead that they did not realize the readings were needed that morning. The Instrument Technicians immediately retrieved the work package and proceeded to take the readings which were completed at 11:25 a.m., 27 minutes late.

Although the specified time to perform the ALD readings was known by the Shift Manager the time due was neither readily visible nor tracked by all parties involved. The due date and time were tracked in the Shift Manager logbook with the use of a flag (also referred to as a "Red Arrow" entry) in accordance with TFC-OPS-OPER-C-17, "Operating Logbooks," and on the Shift Manager turnover sheet in accordance with TFC-OPS-OPER-C-07, "Turnover of Shift Responsibility." The requirement and instructions to obtain the ALD readings were incorporated in the work package for the troubleshooting of the breaker. This activity description did not include "alternate leak detector readings" and was used on the Daily Release sheet for identification of the work to be performed, allocation of resources, and assignment of the Field Work Supervisor. At the Plan of the Day meeting on the morning of October 20, 2008, the requirement to obtain the ALD readings was not discussed.

The Corrective Actions Taken to Control or Remove any Adverse Impact from the Adverse Condition and Results Achieved:

On October 14, 2008, at 6:25 p.m., Instrument Technicians performed AP Tank Farm ALD readings with no leaks detected. Timely readings continued for October 15, through 19, 2008, with no leaks detected.

Readings were 27 minutes late on October 20, 2008.

Following the fact-finding on October 20, 2008, the following compensatory measures were implemented:

- The Shift managers were directed to discuss each "Red Arrow" entry from the Daily Report during the morning Plan of the Day meetings, which included any readings on the "clock;"

- The task to perform the ALD readings was delineated as a separate line item on the daily work schedule, and the comment section noted the time the readings were taken the previous day. A person “by name” was identified to the Shift Manager at the morning meeting as the point-of-contact responsible to ensure the readings were taken prior to the required timeframe.
- The Base Operations Shift Operations manager was assigned the personal responsibility to ensure the readings were taken within the required timeframe until power was restored to AP Farm.

Timely readings were obtained on October 21, 2008.

Normal power to AP Tank Farm was restored on October 22, 2008, at approximately 1:00 p.m., and continuous leak detection capability for one annulus probe per tank was returned to service at this time. In-tank level indication capability was also restored. On October 23, 2008, functional testing of the remaining annulus probes was completed, thereby restoring continuous leak detection capability per the SY Settlement Agreement.

Corrective Actions Taken to Identify the Extent of Condition: The extent of condition review was performed for time-sensitive tank farm Technical Safety Requirements (TSR) and environmental requirements. A review was performed and no additional issues were identified. A review of the internal mechanisms to track this type of requirement was also performed. Primary Double-Shell Tank exhausters for AN and AP Tank Farms are currently tracked in the Daily Report, Shift Manager Turnover sheet, and the “Red Arrow” system. The AP annulus exhauster is tracked with a 30-day clock for restart per Administrative Control 5.16 and is tracked on the Shift Manager Turnover sheet. This item was subsequently added to the Daily Report and actions were initiated to track as a “Red Arrow.”

Corrective Actions to be Taken to Correct the Causes and Prevent Further Problems:

Corrective Action #	Action	Deliverable	Actionee	Due Date
CA1	Institutionalize the use of separate line items on the Work Release sheets for time-sensitive TSR and environmental surveillances for identification of the activity as well as the assigned responsible individual.	Issued memorandum	E. LaRock	10/27/2008

Corrective Action #	Action	Deliverable	Actionee	Due Date
CA2	Revise the Daily Report which is reviewed by senior Tank Farm Base Operations management in a daily turnover session to provide greater emphasis on time-sensitive surveillances and actions.	Revised Daily Report format	P. Owen	10/31/2008
CA3	Perform an initial review of the effectiveness of corrective actions CA1 and CA2.	MOP (Management Observation Program)	J. Badden	11/14/2008
CA4	Evaluate Base Operations Radiation Survey Task Descriptions for interface with operational procedures.	Documented evaluation	S. Hyman	11/14/2008
CA5	Revise TFC-OPS-OPER-C-17, "Operating Logbooks," to maintain tracking of environmental time-sensitive surveillances.	Revised procedure	P. Owen	11/21/2008
CA6	Provide briefing to Shift Managers to reinforce corrective actions and expected performance.	Briefing package, roster indicating 100% completion	P. Owen	11/21/2008
CA7	Perform an interim review of the effectiveness of corrective actions CA1 and CA2.	MOP	J. Badden	12/15/2008
CA8	In order to shorten the time required to plan effective approaches to performing work safely for unusual or unknown conditions, develop and institute a Technical Response Team approach to prioritize and supplement available operations, planning, and technical resources.	Plan or Charter documenting approach, purpose, etc.	E. LaRock	01/20/2009

Corrective Action #	Action	Deliverable	Actionee	Due Date
CA9	Perform a final review of the effectiveness of corrective actions CA1 and CA2.	MOP (Management Observation Program)	J. Badden	01/30/2009
CA10	Revise identified Base Operations Radiation Survey Task Descriptions for clarity and consistency with operational procedures.	Revised Radiation Survey Task Descriptions	S. Hyman	04/20/2009
CA11	Revise corresponding operational procedures as related to the Radiation Survey Task Descriptions, as required.	Revised operational procedures	P. Owen	04/20/2009
CA12	Perform an assessment (including the results of the assessments for CA1 and CA2) to determine the effectiveness of corrective actions stated in PER WRPS-2008-0093.	Management Assessment	P. Owen	06/30/2009

Attachment 2
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Regulatory Summary

Regulatory Summary

This section summarizes environmental requirements and Washington River Protection Solutions, LLC (WRPS) performance in meeting those requirements during the AP Tank Farm electrical outage between October 13 and 23, 2008.

Requirements:

The base requirement for tank leak detection in Washington Administrative Code (WAC) 173-303-640(4)(c)(iii) requires that secondary containment systems for tanks storing dangerous waste be “provided with a leak-detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of dangerous waste or accumulated liquid in the secondary containment within twenty-four hours, or at the earliest practicable time if the owner or operator can demonstrate to the department that existing detection technologies or site conditions will not allow detection of a release within twenty-four hours.”

The “Settlement Agreement and Stipulated Order of Dismissal” before the Pollution Control Hearings Board (PCHB), PCHB No. 98-249 and PCHB 98-250, provided more definitive requirements for the design and continuous operation and maintenance of the Double-Shell Tank (DST) leak detection system. It also provided certain exceptions to the Settlement Agreement requirements:

1. Downtime for preventive maintenance and periodic functional testing shall not exceed 24 hours.
2. Downtime for repair of a leak detection system device discovered to be inoperable or requiring repair shall not normally exceed 90 days. The Washington State Department of Ecology (Ecology), must be notified of any leak detection device out of service for more than 90 days. This notification must include a schedule for repair and return to service of the device as soon as possible.
3. All maintenance, repair, and functional testing activities of the leak detection system shall be documented in Hanford’s operating record.

Facts and Observations:

Access to the AP Tank Farm was restricted on October 9, 2008, for investigation of an unknown ground fault condition. WRPS staff notified Mr. Van Mason, Ecology, via telephone and e-mail on October 10, 2008, that requirements of the Settlement Agreement and Stipulated Order of Dismissal might not be met due to necessary corrective maintenance in AP Tank Farm to address the potential electrical hazard. This included notification that an Alternate Leak Detection (ALD) method would be employed. On October 13, 2008, at 5:39 p.m. the electricity was secured to AP and the 24-hour clock started to obtain annulus leak detection readings. At approximately 8:30 a.m. on October 14, 2008, Ecology was notified that the electricity in AP Farm had been secured and ALD method would be continued until the issue was resolved and electricity was fully restored.

Events occurring between October 10 and 23, 2008, relevant to compliance with WAC 173-303-640 and the Settlement Agreement are summarized below:

1. WRPS staff notified Mr. Van Mason, via telephone and e-mail on October 10, 2008, that requirements of the Settlement Agreement and Stipulated Order of Dismissal might not be met due to necessary corrective maintenance in AP Tank Farm to address the potential electrical hazard. This included notification that an ALD method would be employed. Work instructions for the AP electrical outage, TFC-WO-08-1882 and TFC-WO-08-0003, contained the following steps to provide the required DST leak detection surveillance: "a continuity check of annulus leak detection probes will be obtained and logged per this work instruction on a daily basis (00:00 to 23:59 each day); at a minimum of eight hours and a maximum of once every 24 hours between successive readings." On the afternoon of October 14, 2008, the time between readings was exceeded by 45 minutes due to site field conditions, including the safety concerns about possible extent of the electrical ground fault to AP Tank Farm facilities and equipment, and the radiological procedural compliance for re-entry into AP Farm following removal of power. Resolution of these worker safety concerns delayed entry into the AP Tank Farm to perform the ALD method.
2. On the morning of October 20, 2008, the maximum time between readings was exceeded by 27 minutes due to a breakdown in communication between the Operations management and Instrument Technicians. The Instrument Technicians did not realize that the time of day the readings were due had moved to earlier in the day. Readings were taken immediately (earliest practical time) upon recognition of the error.
3. The periodic time between readings was met on all other days until the electrical outage was completed and power restored to AP Tank Farm on October 23, 2008.
4. The Settlement Agreement-compliant routine leak detection monitoring system was returned to normal operation on October 23, 2008. The total time that the routine system was out of service was ten days, which is well within the Settlement Agreement goal of no longer than 90 days.
5. Leak detection measurements have been recorded and maintained in the tank farm operating records.

Conclusion:

The leak detection requirements of the Settlement Agreement were met during the AP Tank Farm power outage. On two occasions, the 24-hour limit in WAC 173-303-640(4)(c)(iii) was missed, but leak detection readings were obtained at the earliest practicable time (within 45 and 27 minutes, respectively). These readings were not obtained within 24 hours due to site conditions and a communication breakdown, respectively. Corrective actions have been taken to prevent recurrence.

At no time during the power outage was a leak or accumulation of liquid detected in any of the tanks' annuli.