U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

JUN 18 2008

08-TOD-060

Dr. J. G. Hwang, Project Manager
Advanced Technologies
and Laboratories International, Inc.
P.O. Box 250
Richland, Washington 99352

Dear Dr. Hwang:

CONTRACT NO. DE-AC27-05RV14548- U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION (ORP) ASSESSMENT OF TANK FARM PROJECT OPERATIONS, MAY 2008 (A-08-AMTF-TANKFARM-015)

The ORP Tank Farm Project Facility Representatives and technical staff conducted evaluations of the Tank Farm and 222-S Laboratory operations and activities during May 2008. The attached report documents the results of the evaluations.

If you have any questions, please contact me, or your staff may contact Mark C. Brown, Director of Tank Farm Operations Division, (509) 373-9150.

Sincerely,

Stacy Charboneau, Assistant Manager
for Tank Farms Project

TOD:MCB

Attachment

cc w/attach:
K. J. Kuhl-Klinger, ATL
R. R. Loeffler, ATL
K. T. Juroff, EM-22
ATL Correspondence

Attachment
08-TOD-060

# Tank Farm Project Monthly Report for May 2008 A-08-AMTF-TANKFARM-015

## ACRONYMS

| | |
|---|---|
| CAP | Corrective Action Plan |
| CH2M HILL | CH2M HILL Hanford Group, Inc. |
| DOE | Department of Energy |
| FR | Facility Representative |
| HMI | Human Machine Interfaces |
| IH | Industrial Hygiene |
| JRG | Joint Review Group |
| LOTO | Lockout/Tagout |
| OE | Operations Engineer |
| ORP | Office of River Protection |
| PISA | Potential Inadequacy in the Safety Analysis |
| RWDD | Raw Water Distribution Device |
| TFC | Tank Farm Contractor |
| TOD | Tank Farm Operations Division |

Office of River Protection

# Tank Farm Project Operations Monthly Report for May 2008

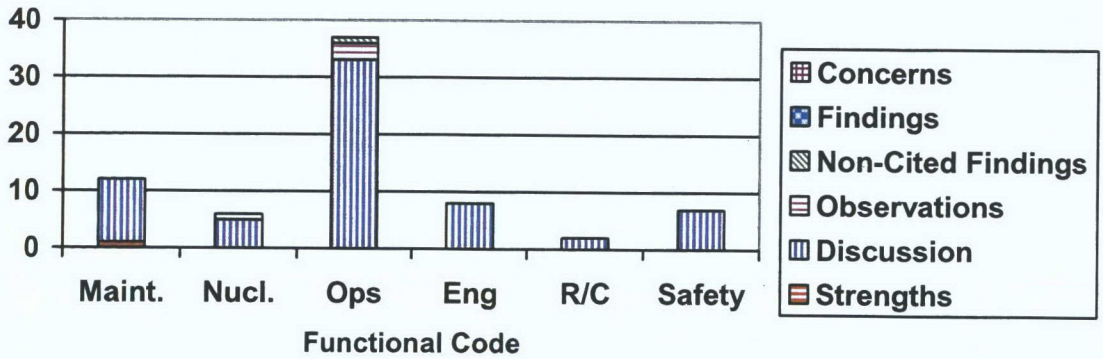
**A-08-AMTF-TANKFARM-015**

## I. Introduction/Summary

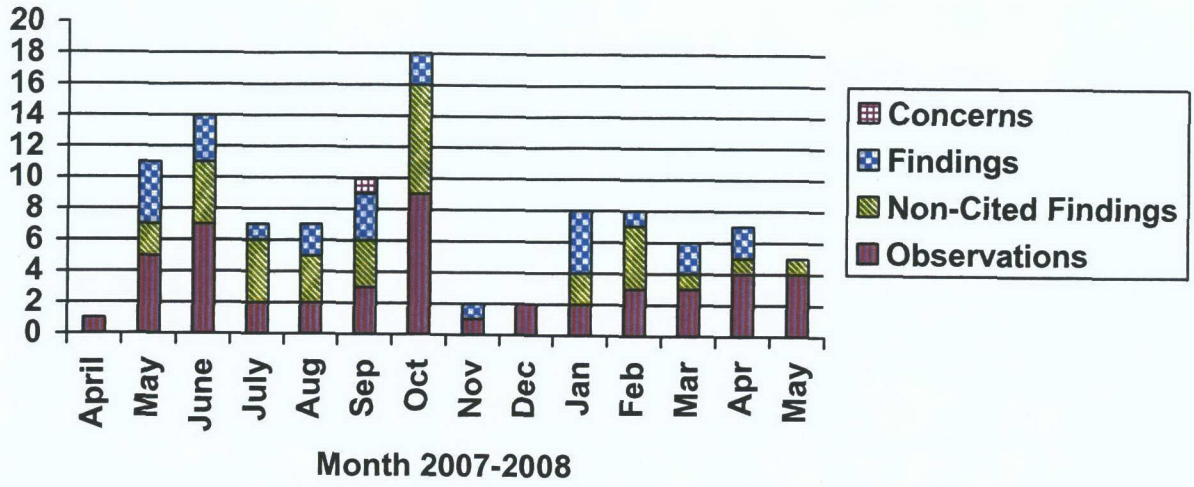
During the month of May 2008, the U.S. Department of Energy (DOE), Office of River Protection (ORP) Facility Representatives (FRs) reviewed maintenance and operations at the Tank Farms and 222-S Laboratory. For this reporting period, 84 entries were made in the Operational Awareness database by both FRs and ORP technical staff. Figure 1 groups the entries by functional area since some entries cover more than one functional area they may be represented in the graph more than once.

One strength, one non-cited finding, and four observations were reported by the FRs during the month. These strengths and issues are discussed in Section IV of this report and in Surveillance Report S-08-AMTF-TANKFARM-007, *C-109 Operating Procedure Review*.

**Figure 1 - Number of OA Entries by Category**



## Figure 2 - Number of Deficiencies by Type




## II. Analysis and Discussion

In May 2008, the ORP FRs performed 25 surveillances in areas that included conduct of operations, radiological control practices, industrial safety, integrated safety management, emergency response, configuration control, quality assurance, training and qualification, nuclear safety, and maintenance. In addition, FRs performed a verification review on S-102 Corrective Actions (S-08-AMTF-TANKFARM-014) and a C-109 Operating Procedure Review (S-08-AMTF-TANKFARM-007). These are documented as Surveillances and attached to this Report.

While this report does include data from S-102 recovery oversight and uses it in the overall assessment of contractor operations, it does not use that data to provide a detailed analysis of the S-102 recovery. This will be done in a separate document. During the month, ORP FRs were also involved in the oversight of the C-109 Waste Retrieval Resumption Readiness Assessment. This oversight was documented in A-08-AMTF-TANKFARM-014, *C-109 Retrieval Resumption and Deployment of Foldtrack Mobile Retrieval Tool Contractor Level 2 Readiness Assessment.*

All of the issues for the month are tied to conduct of operations. This indicates that conduct of operations still warrants continued Tank Farm Contractor (TFC) management attention.

Figure 2 does not show a significant change in the number of deficiencies from the previous months but the lack of findings is notable.

The oversight performed by the FRs during May 2008 included, but was not limited to:

- Conducted a Level 2 Readiness Assessment for C-109;
- Verification of S-102 Corrective Actions;
- Observed transfer from AW-106 to AP-105;

- Observed drilling operations at CR-151 Vadose Zone site;
- Attended pre-job briefing and observed breather filter replacement at S-102;
- Attended pre-job briefing and performed oversight for POR-008 exhauster startup;
- Attended pre-job briefing and conducted field oversight for the AZ-301 pump installation;
- Attended pre-job briefing and conducted field oversight of AN-102 corrosion probe installation;
- Observed AN-101 jumper installation;
- Attended pre-job briefing and conducted field oversight for placing the cover blocks on the AZ-102 central pump pit;
- Observed the Limit Alarm Module for AW-106 being replaced and the setting of the pump trip set points;
- Attended pre-job briefing and observed field work for CLO-WO-08-0402, UX-154 diversion box, perform in-pit video;
- Attended pre-job briefing and observed field work for CLO-WO-08-0729, 241-C-105 ENRAF calibration;
- Attended pre-job briefing and observed field work for foam removal from valve risers in UX-154 diversion box;
- Observed power-up of 242-A evaporator after the electrical outage from the pre-job briefing through panel activations;
- Observed the tie-in of the new primary exhausters in AN Farm;
- Observed fact finding for C Farm water distribution skid lock out issue;
- Attended pre-job briefing and conducted field oversight of the leak test for CLO-WO-08-0828 – *Replace Pressure Relief Valve and PDIS Indicator on POR132*;
- Attended pre-job briefing and observed field work for CLO-WO-08-0505, *POR132 Raw Water PDIS-003 Pressure Switch Calibration*;
- Attended pre-job briefing and conducted field oversight of CLO-WO-08-0614, *C-109 Perform Leak Check for MRT Water Lines;*
- Observed the Joint Review Group (JRG) meeting for installing new valve funnels on AN-101 jumpers;
- Attended JRG meeting for CLO-WO-05-000914, *C-108 Camera Installation*;
- Discussed raw water skid event corrective actions with contractor management;
- Observed a fact finding meeting and reviewed the draft report for the AN-01A valve funnel replacement event;
- Observed the fact finding meeting for the electrical event at the ATCO building;
- Observed the fact finding meeting for the C-109 raw water skid event; and
- Reviewed scene of contaminated water spill at AY-Farm and attended fact-finding meeting.

## III. Injuries and Occurrences

During the month of May 2008, there were no lost work days or recordable cases.

There was one occurrence during May 2008:

On May 29, 2008, Tank Farm employees found two anchor shackles attached to Merrill Bros heavy duty bridge clamps used to pick up steel plates in the ATCO building that lack the proper markings and tagging as specified in Chapter 10, Rigging Hardware, Section 10.2.2, Marking and Tagging in the Hanford Hoisting and Rigging Manual as well as the American Society for Mechanical Engineers Code. These two items are considered suspect counterfeit items. Nonconformance Report CH-08-NCR-017 was generated to disposition the suspect/counterfeit anchor shackles and the shackles were red-tagged at the ATCO building.

## IV. Strengths and Deficiencies

### STRENGTHS

**Power restoration to the 242-A evaporator was done in a deliberate and controlled manner** (Brandon Williamson – May 27, 2008)

The restoration of electrical power to the 242-A evaporator on May 27, 2008 following an extended outage was performed in a manner that demonstrated the application of effective corrective actions from the lessons learned from the PB-1 inadvertent start event. Much effort went into the creation of the power restoration procedure and walkdown of engineering drawings to ensure positive configuration control. The crew was very methodical in following the procedure to ensure configuration was known and to confirm that only what was intended to be powered up was actually powered up. After each breaker was closed, operators ensured they got the expected response using three-way communications before the next breaker was closed. Throughout this process the crew also demonstrated a good self-assessing attitude, noting opportunities for process improvement. Overall this was a solid performance by the TFC demonstrating that they learned the importance of a deliberate and controlled restoration of power to protect the plant.

### FINDINGS

None.

### NON-CITED FINDINGS

**A-08-AMTF-TANKFARM-015-N01; Expectations of Tank Pressurization Watch were not Clear** (Ron Ciola – May 1, 2008)

Requirement: OSD-T-151-00007, Section 1.3.1, The high alarm primary tank vapor space set point ensures that for normal conditions of operation, the primary tank pressure shall be maintained negative with respect to the atmosphere and allows for evacuation of personnel present in the Tank Farm in case of a pressurization event.

Discussion: The AN Tank Farm pressurization watch was not clear on required actions to take during a loss of negative pressure in the farm. The watch was established to replace the

pressurization alarm which was out-of-service for maintenance. The watch was required to prevent exposure of personnel in the farm should a loss of negative pressure be detected. The watch stander did not take immediate action when a total loss of negative pressure was indicated in Tank AN-104 on the pressure recorder in 271-AN (the gauge read 0 inches of water). Rather than initiating protective actions for the personnel in the farm, the operator instead called the Shift Manager's office for further direction. Note that the operator then took local gauge readings throughout the farm which indicated that the tank headspace pressures were negative and exposures did not occur.

## OBSERVATIONS

**A-08-AMTF-TANKFARM-015-O02; Application of Lockout/Tagout may be Appropriate when Balancing Risk Posed by Potential Hazards** (Ron Frink – May 22, 2008)

On May 14, 2008, during the start-up of the C-109 Raw Water Distribution Device (RWDD), two relief valves were observed to have lifted releasing approximately 20 gallons of water to the ground outside of C Farm (CH2M-PER-2008-1088). A subsequent review of the system by the FR on May 21, 2008, revealed that no lockout/tagout (LOTO) was applied for the removal of one of the relief valves. A review of Attachment D of TFC-OPS-OPER-C-05, *Lockout/Tagout Program* states, "For fluid (liquid or gas) systems with maximum operating temperature of less than 200°F (93.3°C) and maximum operating pressure of less than 500 psig (35.2 kg/cm$^2$) which presents a hazard to the worker, the following methods shall be used:".

The subjective part of this requirement involves an assessment of the hazard. The RWDD was labeled as "Potentially Internally Contaminated" and is ultimately connected to the C-109 waste retrieval system, both of which may be interpreted as potential hazards to the employee.

Although the lack of a LOTO in this case, does not represent a violation of the LOTO program, conservative judgment may lead one to conclude that the application of a LOTO in the face of balancing risk posed by potential hazards is appropriate.

**A-08-AMTF-TANKFARM-015-O03; The Conduct of a Functional Test for Safety Significant Leak Detectors was Poorly Controlled** (Chris Sorensen – May 27, 2008)

The FR observed the conduct of AW Farm leak detector functional testing utilizing the Monitoring and Control System Human Machine Interfaces (HMI) in 271-AZ. There were three electricians there as well as some in other locations. Only one of the electricians in 271-AW was knowledgeable of how expected alarms would appear and then clear on the HMIs. The electricians were only monitoring two HMI screens but they were supposed to be monitoring three different HMI screens and they were not aware of this until a fourth electrician, who was knowledgeable, appeared later and told them so. Another group of workers, not associated with the leak detector testing, had arrived earlier and were utilizing the third screen. The electricians decided to suspend conduct of the leak detector functional test until they could utilize all of the required screens. The FR spoke with the Field Work Supervisor about the lack of knowledge of his crew and the lack of control of the functional test.

**Observations from the C-109 Procedure Review (S-08-AMTF-TANKFARM-007)**

**Procedure TO-320-050, *Operate Mobile Retrieval Tool System,* contains steps that are not easily understood and contains actions that are not clearly stated** (Derek Wright – May 20, 2008)

See Observation S-08-AMTF-TANKFARM-007-O1 of Surveillance Report S-08-AMTF-TANKFARM-007; *C-109 Operating Procedure Review.*

**Procedure TO-320-049, *Operate 241-C-109 Sump Pumps C109-WT-P-102 and POR104-WT-P-102,* contains steps that misuse the action word "ENSURE"** (Derek Wright – May 20, 2008)

See Observation S-08-AMTF-TANKFARM-007-O2 of Surveillance Report S-08-AMTF-TANKFARM-007; *C-109 Operating Procedure Review.*

## V. Closed Findings

No findings were closed during May 2008.

# DOE-ORP Surveillance Report

**Division:** Tank Farms Operations Division (TOD)

**Surveillant:** Derek Wright, TOD

**Surveillance Number**: S-08-AMTF-TANKFARM-007

**Date:** May 20, 2008

**Contractor:** CH2M Hill Hanford Group, Inc. (CH2M HILL)

**Location/Facility:** 200 East Area Tank Farms

**Title:** C-109 Operating Procedure Review

**Subject/Scope of Surveillance:**

The objective of this surveillance was to assess the adequacy of selected C-109 operating procedures compared to the requirements identified in the guidance documents. This surveillance was conducted to assess the procedures after weaknesses were identified following a release of water from the C Farm raw water distribution skid.

**Documents Reviewed:**

- TFC-OPS-OPER-STD-01, *Technical Procedure Format and Preparation Standard*
- DOE Order 5480.19 Chg 2, *Conduct of Operations Requirements for DOE Facilities*
- TO-320-050, *Operate Mobile Retrieval Tool System*
- TO-320-049, *Operate 241-C-109 Sump Pumps C109-WT-P-102 and POR104-WT-P-102*

**Interviews:**

- DOE FRs
- C-109 Retrieval Director
- C Farm water skid release fact finding leader
- C-109 Operations Engineer (OE)

- C Farm Project Director

**Background:**

On May 14, 2008 during start up of the C Farm raw water distribution skid, a support system for the C-109 retrieval system, the pressure relief valves actuated releasing approximately 10 gallons of water to the ground outside of C Farm adjacent to the control trailer area. The water system was being returned to service from "STANDBY" condition. After discussions with maintenance a second attempt to start the water distribution skid also resulted in the pressure relief valves opening spilling approximately two more gallons of water. It was discovered that the valves that isolate the pressure transmitter was closed, thus the pressure transmitter did not send a signal to shut the pumps down. After conducting an inspection of the water skid, four valves were found to be out of the expected position. A review of previous maintenance activities revealed that the valves were not returned to the correct position after maintenance was conducted to the water skid. Procedure TO-320-028, *Operate POR132-RW-RWDD-001 Raw Water Distribution Skid*, allowed the OE to start up the water skid from a "STANDBY" condition. This allowed them to operate the water skid without conducting valve lineups. The incorrect valving caused the relief valves to lift releasing water to the ground. The "STANDBY" condition was not defined in the procedure leaving the determination up to the OE.

**Surveillance Approach:**

The surveillance consisted of a review of selected C-109 operating procedures and comparing them to the requirements identified in the guidance documents. Specifically addressed was the misuse of the word "ensure" in the contractor procedures and that procedures should be easily understood with actions clearly stated and conditions defined.

**Discussion:**

The retrieval activities associated with C-109 were suspended until corrective actions associated with the fact finding have been completed by the contractor. Several corrective actions were noted and one included reviewing and revising two of the operating procedures to remove the error traps. These procedures were TO-320-028, *Operate POR132-RW-RWDD-001 Raw Water Distribution Skid* and TO-060-006, *Operate POR-008 Exhauster*. As a precaution, the Closure FRs also started a review of the contractor's operating procedures comparing them to the requirements identified in both the contractor and DOE guidance documents. Specific to our review the FRs evaluated use of the action "ensure" as well as vague and poorly-defined steps. Two procedures were reviewed. The procedures were TO-320-050, *Operate Mobile Retrieval Tool System* and TO-320-049, *Operate 241-C-109 Sump Pumps C109-WT-P-102 and POR104-WT-P-102.*

The contractor has since begun their own review of the C-109 operating procedures. Once their review/revisions are complete, the FRs will review the revised procedures. The review of the procedures prior to the suspension of the surveillance identified two finding level issues. These

issues will be reported as observations since the contractor has begun its own review of their procedures. These observations will be shared with the contractor during their review.

**Observations:**

**Observation S-08-AMTF-TANKFARM-007-O1; Procedure TO-320-050, *Operate Mobile Retrieval Tool System* contains steps that are not easily understood and contains actions that are not clearly stated** (Derek Wright - May 20, 2008)

*Requirement:* DOE Order 5480.19 Chg 2, *Conduct of Operations Requirements for DOE Facilities,* Chapter XVI, Section C.2.e states, "Procedures should be easily understood and actions should be clearly stated." Also TFC-OPS-OPER-STD-01, *Technical Procedure Format and Preparation Standard,* Paragraph 3.7.d requires, "when using the verb ENSURE, it should be understood that we are assuming some level of risk when allowing for the manipulation of equipment or changing of a field condition without first obtaining specific permission to do so. Therefore when using this verb, the activity should constitute minimal risk to personnel, equipment, environment, or process."

*Discussion:* There are several instances in which "ensure" is used as an action for procedural steps attached to caution statements that could cause damage to the equipment or process. An example includes:

> **CAUTION**
>
> **Failure to operate POR103-WT-HC-106 and POR103-WT-HC-105 slowly and deliberately may cause loss of pressure control.**

**ENSURE** POR103-WT-HC-106 and POR103-WT-HC-105 are set to minimum position.

Also a note above step 5.5.3 (see below) states, "Pressing water skid E-Stop on Local will not close scarifier or cannon isolation valves." The procedure then states that "**IF** the Emergency Stop button POR172-WT-PB-107 is pressed, **CLOSE** any one of the following valves." The procedure then gives a list of four valves. This step is an error trap with an unclear outcome. Also one of the valve choices includes a valve from POR132. POR132, raw water distribution skid, is not part of the valve alignment checklist (Checklist 1- Startup Valve Line –Up) and could lead to a configuration management problem.

NOTE- Pressing water skid E-Stop on Local will not close scarifier or cannon isolation valves.

**5.5.3** **IF** the Emergency Stop button POR172-WT-PB-107 is pressed, **CLOSE** any one of the following valves:

——— • POR132-RW-V-021 at C Farm Water Skid

——— • POR122-RW-V-101 at In-Farm Manifold

——— • POR122-RW-V-102 at In-Farm Manifold

——— • POR172-RW-V-101 at MRT Water Skid

**Observation S-08-AMTF-TANKFARM-007-O2; Procedure TO-320-049, *Operate 241-C-109 Sump Pumps C109-WT-P-102 and POR104-WT-P-102* contains steps that misuse the action word "ensure"** (Derek Wright – May 20, 2008)

*Requirement:* TFC-OPS-OPER-STD-01, *Technical Procedure Format and Preparation Standard,* Paragraph 3.7.d states, "when using the verb ENSURE, it should be understood that we are assuming some level of risk when allowing for the manipulation of equipment or changing of a field condition without first obtaining specific permission to do so. Therefore when using this verb, the activity should constitute minimal risk to personnel, equipment, environment, or process."

*Discussion:* There are several instances in which "ensure" is used for technical safety requirement related actions and for actions that pose significant risk to personnel, equipment, environment, or process. Some examples include:

- **ENSURE** 241-C-109 slurry pump pit cover is installed. (AC 5.11)
- **ENSURE** Senior Shift Manager authorization has been obtained for removal of Tank Farm administrative lock for C109-WT-P-102.
- **PRIOR TO** starting transfer **AND DURING** transfer, **ENSURE** operators are stationed at Control Trailer POR103-WT-TRLR-001 and are capable of communicating with personnel monitoring transfer.
- **ENSURE** Admin condition is established for supernate pump for AN-106 and slurry pump for 241-C-109.

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**Management Debriefed:** **Date:**

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**Formal Response Required:** No

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**Author's Signature:** Derek Wright **Date:** 5/22/08

**DOE-ORP Surveillance Report**

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**Division:** Tank Farms Operations Division (TOD)

**Surveillants:** Courtney Blanchard, TOD

**Surveillance Number:** S-08-AMTF-TANKFARM-014

**Date:** May 9, 2008

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**Contractor:** CH2M Hill Hanford Group, Inc. (CH2M HILL)

**Location/Facility:** S-102 Corrective Actions

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**Title:** ORP Assessment of CH2M HILL S-102 Corrective Action

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**Subject/Scope of Surveillance:**

On July 27, 2007, a mixed radioactive and chemical waste leak occurred in the Hanford Site 200 West S-Complex Tank Farm in the vicinity of the S-102 tank retrieval pump discharge. The investigation of the cause, response, and potential health effects of workers in the vicinity of the spill resulted in several investigations including a DOE Type A Accident Investigation. The DOE Type A Accident Investigation identified Judgements of Needs and required corrective actions.

ORP verified that the actions committed in the approved Corrective Action Plan (CAP) were being addressed as required by CH2M HILL and DOE. The ORP Environmental Safety and Quality staff independently verified DOE line corrective actions. Out of a total of 47 corrective actions reviewed, 36 were determined to be adequate and the rest required additional attention by CH2M HILL.

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The following is a list of the initial review status for the CH2M HILL and DOE corrective actions:

**S-102 Corrective Action Verification Issues**

| | |
|---|---|
| ENG-1.1 | OK. |
| ENG-1.2 | Clarification - Minor changes were requested. After reviewing the procedure, two changes were suggested to Richard Raymond, CH2M HILL, and the changes were made: |

1. Add the action items generated in the process hazard analysis of the operation to the procedure checklist; and
2. Incorporate a review of a pump test report to determine if the testing identified specific control.

| | |
|---|---|
| ENG-1.3 | OK. |
| ENG-2.1 | Due date is July 22, 2008. |
| ENG-2.2 | Process Improvement - Initial submittal required revisions. Procedure TFC-ENG-DESIGN-C-35 contained a step which could have led to not identifying a potential inadequacy in the safety analysis (PISA). This was communicated to the Process Analysis Manager. Procedure TFC-ENG-DESIGN-C-35 was adequately revised (B-1) to correct the step and it now clearly directs the user to the correct procedures in cases of a PISA. |
| ENG-2.3 | Clarification - Difficult in finding the specific language changes in the revised procedure to implement specific actions. This information was there but difficult to find from the evidence package. |
| ENG-2.4 | Clarification – Clarification was required to be added to the closure documentation. The procedure, charter, and other paperwork reviewed was complete when CH2M HILL closed the action and didn't require rework; only the information in ESTARS required amplification. |
| ENG-2.5 | Clarification - Initial submittal inadequate; crosswalk requested to demonstrate compliance. |
| ENG-3.1 | OK. |
| ENG-3.2 | OK. |
| ENG-4.1 | OK. |
| EM-1.1 | Process Improvement - Initial submittal required revisions. The action for this corrective action required a documented process for the selection of high probability, low consequence events for consequence evaluation. The process in procedure, Hazard Assessment Consequence Calculation Process, TFC-ENG-DESIGN-C-36, Revision A, submitted in the corrective action package, PER 2007 1741.1 was initially discretionary in its approach. This procedure was revised. |
| EM-1.2 | OK. |
| EM-1.3 | OK. |
| EM-2.1 | OK. |
| HE-1.1 | OK. |
| HE-1.2 | OK. |
| HE-1.3 | OK. |
| HE-1.4 | OK. |
| HE-1.5 | OK. |
| HE-1.6 | Inadequate - Needed training and documentation to comply with corrective action. |
| HE-1.7 | OK. |
| HE-3.1 | OK. |
| HE-3.2 | OK. |
| HE-3.3 | Due date is August 17, 2008. |
| WC-1.1 | Due date is June 6, 2008. |

| | |
|---|---|
| WC-1.2 | Due date is August 21, 2008. |
| WC-1.3 | OK. |
| WC-1.4 | OK. |
| WC-2.1 | Process Improvement - Three procedures initially were not included in the contractor's review. TO-230-003, *Recirculate and Transfer from 241-AP-101 to 241-AW-102*, TO-230-005, *Recirculate and Transfer from 241-AP-105 to 241-AW-102*, and TO-270-430, *Transfer from 241-AP-105 to 241-AP-101*.<br><br>Two of these procedures required both radiological control and industrial hygiene (IH) review when any changes were made but TO-230-005 stated that "only a Radiological Control review is required." Procedure TO-230-005 was modified to include radcon as well as IH approval. Also the reason that these procedures were not included in the closure package is because they were inactive at the time and that they would be modified upon reactivation. |
| WC-2.2 | OK. |
| WC-3.1 | Inadequate - Required the contractor to perform a verification and validation for AOP-011 |
| WC-3.2 | OK. |
| WC-3.3 | OK. |
| WC-3.4 | OK. |
| WC-4.1 | OK. |
| WC-4.2 | OK. |
| WC-4.3 | OK. |
| WC-4.4 | OK. |
| WC-4.5 | Process Improvement - Instructor signatures or dates were not on all the attendance rosters which were corrected. Not in write-up. |
| WC-4.6 | OK. |
| WC-4.7 | Clarification - Instructor signatures or dates were not on all the attendance rosters. No answer key was provided for knowledge check (exam). Several exams were not graded, dated, signed by grader, or marked pass/fail. Three exams did not meet the passing criteria. Not in write-up. |
| MS-1.1 | OK. |
| MS-1.2 | Not a C-109 depended corrective action. Completed by contractor on December 27, 2007. |
| MS-2.1 | OK. |
| MS-1.3 | OK. |
| MS-1.4 | OK. |
| MS-2.2 | OK. |
| MS-2.3 | OK. |
| MS-2.4 | OK. |
| MS-2.5 | OK. |
| MS-2.6 | Not a C-109 depended corrective action. Completed by contractor on January 3, 2007. |

| | |
|---|---|
| MS-2.7 | OK. |
| MS-2.8 | Due date is June 6, 2008. |
| MS-2.9 | Due date is July 21, 2008. |
| MS-2.10 | Due date is July 21, 2008. |

**Conclusion:**

The list above represents the results of an ORP review of the S-102 Corrective Action per ORP S-102 Corrective Action Verification Plan, Revision 1, dated March 14, 2008. This review was to ensure the S-102 Type A Accident Investigation corrective actions were completed per the CAP. This verification was to ensure correction actions and deliverables committed to in the CAP have been completed and have been effectively implemented as described in the CAP. The results of this effort to date found 36 corrective actions to be adequate, five requiring clarification, four had suggested process improvements, and two found to be inadequate. When issues, needed clarifications, or process improvements were identified they were addressed by CH2M HILL in a timely manner.

**Management Debriefed:** Richard Higgins **Date:** 5/9/08

**Formal Response Required:** No

**Author's Signature:** Courtney Blanchard **Date:** 5/9/08