



U.S. Department of Energy  
**Office of River Protection**

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

JUN 13 2008

08-ESQ-097

Mr. John C. Fulton, President  
and Chief Executive Officer  
CH2M HILL Hanford Group, Inc.  
2440 Stevens Center Place  
Richland, Washington 99354

Dear Mr. Fulton:

CONTRACT NO. DE-AC27-99RL14047 – ASSESSMENT REPORT A-08-ESQ-TANKFARM-004 – CH2M HILL HANFORD GROUP, INC. (CH2M HILL) PROBLEM EVALUATION REQUEST (PER) SYSTEM IMPLEMENTATION – APRIL 15 THROUGH 17, 2008

This letter transmits the results of the U.S. Department of Energy (DOE), Office of River Protection (ORP) assessment of the CH2M HILL implementation of its PER program (attached). The assessment was performed from April 15 through 17, 2008. The purpose of the assessment was to evaluate the adequacy and effectiveness of the CH2M HILL PER program as implemented by procedure TFC-ESHQ-Q\_C-C-01, "Program Evaluation Request."

The Assessment Team determined the CH2M HILL PER program adequately captured DOE O 414.1C and the CH2M HILL Quality Assurance Program Description requirements, however, requires extensive improvement in the implementation of the PER process by the CH2M HILL in order to improve the effectiveness of the program. Based on the observations made during the assessment, ORP feels that the implementation of the PER system lacks adequate controls and monitoring to assure identified issues and deficiencies are properly addressed.

The Assessment Team identified two findings and one observation:

**A-08-ESQ-TANKFARM-004-F01:** Nineteen PERs had been misclassified based on the classification criteria provided in Table 2 of procedure TFC-ESHQ-Q\_C-C-01, "Problem Evaluation Request."

**A-08-ESQ-TANKFARM-004-F02:** Corrective action management associated with six PERs was less than adequate in the following areas, extent of condition, corrective actions, and causal analysis.

**A-08-ESQ-TANKFARM-004-O01:** Eleven PERs when compared to the listed "date of discovery" did not meet the expectations of the requirements in that they were untimely in the performance of required actions, (i.e., extent of condition analysis, safety significance, generic implications, remedial corrective actions, causal analysis, apparent cause and/or root cause analysis, and establishment of corrective actions).

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Within 30 days of receipt of this letter, CH2M HILL should respond to the assessment findings and the observation.

When responding to the observation, explain what actions CH2M HILL will take to improve the lag time between PER classification (for conditions adverse to quality) and completing the deficiency evaluation and the establishment of appropriate corrective actions. Also, explain the formal controls CH2M HILL will put in place to deal with conditions adverse to quality that do not get fully evaluated within 30 days after they are classified. For example, establishing a process within the PER procedure for documenting and approving an adequate justification for the delay, assuring risk for not promptly addressing the condition adverse to quality is understood and documented, assuring adequate remedial actions are put in place to control the deficient condition to prevent further deficiencies/instances and to mitigate risk; etc.

The response to the findings should include:

- The causes of the findings;
- The corrective actions taken to control or remove any adverse impact to identified non-compliance situations (remedial action) and the results achieved;
- The corrective actions that will be taken to identify the extent of condition, correct the cause(s), and prevent further findings; and
- The date when all corrective actions will be completed, verified, and compliance to applicable requirements achieved.

Further investigation by the Assessment Team discovered that similar conditions to those found during this assessment were documented in ORP Assessments A-06-ESQ-TANKFARM-006 and A-04-ESQ-TANKFARM-001. The conditions addressed by the two cited assessments pertained to less than adequate corrective actions implemented by CH2M HILL. Taking into account the results of this assessment and the previous two assessments mentioned, ORP has the following additional expectations to be performed by CH2M HILL:

- CH2M HILL management evaluate the PER system and establish improved controls to assure effective implementation; effective system monitoring and control, compliance to procedures, and improved documentation of conditions, corrective action, and other results.
- CH2M HILL enhance the role of the screening team to provide continuity and more real-time oversight of the PER system during their review of the PERs to determine significance.

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- CH2M HILL significantly improve the documentation associated with PERs to provide a stand alone record of the problem.

The above bullets should also be addressed in the assessment response.

If you have any questions, please contact me, or your staff may contact Sam A. Vega, Environmental Compliance Division, (509) 373-1240.

Sincerely,



William J. Taylor, Assistant Manager  
Office of Environmental Safety and Quality

ESQ:SAV

Attachment

cc w/attach:  
K. W. Daniels, CH2M HILL  
R. L. Higgins, CH2M HILL  
CH2M HILL Correspondence

U.S. DEPARTMENT OF ENERGY  
Office of River Protection  
Environmental Safety and Quality

ASSESSMENT: CH2M HILL Hanford Group, Inc. Problem Evaluation Request System Implementation

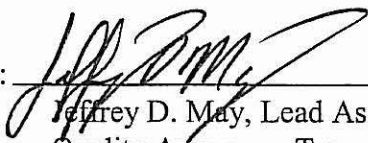
REPORT: A-08-ESQ-TANKFARM-004

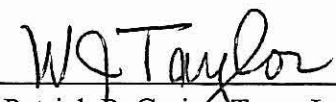

FACILITY: TANKFARM

LOCATION: Richland, Washington

DATES: April 15 through 17, 2008

ASSESSORS: Jeff May, Assessment Team Leader  
Sam Vega, Assessor

SUBMITTED BY:   
Jeffrey D. May, Lead Assessor  
Quality Assurance Team

APPROVED BY:   
 Patrick P. Carier, Team Lead  
Quality Assurance Team

## Executive Summary

The U.S. Department of Energy (DOE), Office of River Protection (ORP), conducted an assessment of the CH2M HILL Hanford Group, Inc. (CH2M HILL) Problem Evaluation Request (PER) System Implementation from April 15 through 17, 2008. The purpose of the assessment was to evaluate the adequacy and effectiveness of the CH2M HILL PERs program as implanted by procedure TFC-ESHQ-Q\_C-C-01, "Program Evaluation Request."

The scope of the assessment was to evaluate if CH2M HILL procedure TFC-ESHQ-Q\_C-C-01, "Program Evaluation Request" and therefore the PER program was adequate, effective, and satisfactorily implemented in a manner that meets the program requirements as established in the CH2M HILL Plan TFC-PLN-02, "Quality Assurance Program Description (QAPD)."

The Assessment Team determined the CH2M HILL procedure TFC-ESHQ-Q\_C-C-01 adequately captured the program requirements of the CH2M HILL QAPD and therefore the requirements of DOE O 414.1C and NQA-1. However, the CH2M HILL implementation and the effectiveness of the PER system was determined to require extensive improvement in the areas of PER significance determination, timeliness of corrective action, and adequate corrective action thereby requiring improvement in each of these areas. Similar conditions to those found during this assessment were documented in ORP Assessments A-06-ESQ-TANKFARM-006 and A-04-ESQ-TANKFARM-001. These two assessment reports documented findings and an observation that addressed instances of less than adequate implementation of the corrective action process. Taking into consideration the previous similar found conditions and the issues found during this assessment, the Assessment Team identified two findings and one observation:

**A-08-ESQ-TANKFARM-004-F01:** Nineteen PERs had been misclassified based on the classification criteria provided in Table 2 of the procedure.

**A-08-ESQ-TANKFARM-004-F02:** Corrective action management associated with six PERs was less than adequate in the following areas, Extent of Condition, Corrective Actions, and Causal Analysis.

**A-08-ESQ-TANKFARM-004-O01:** Eleven PERs when compared to the listed "date of discovery" did not meet the expectations of the requirements in that they were untimely in the performance of required actions, i.e., extent of condition analysis, safety significance, generic implications, remedial corrective actions, causal analysis, apparent cause and/or root cause analysis, and establishment of corrective actions.

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## List of Acronyms

CH2M HILL	CH2M HILL Hanford Group, Inc.
DOE	U.S. Department of Energy
ORP	Office of River Protection
PER	Problem Evaluation Request
PIE/CIM	Performance Improvement Evaluation/Continuous Improvement Management
QAPD	Quality Assurance Program Description
TUF	Track Until Fixed

**U.S. Department of Energy (DOE), Office of River Protection (ORP)  
Assessment of CH2M HILL Hanford Group, Inc. (CH2M HILL) Problem  
Evaluation Request (PER) System Implementation**

**1.0 Details**

This assessment evaluated CH2M HILL's implementation of the PER requirements of TFC-ESHQ-Q\_C-C-01, "Program Evaluation Request" with particular focus on the PER significance determination process. CH2M HILL's PER process provides for the identification and evaluation of conditions adverse to quality, safety, health, operability, and the environment. The assessment team reviewed a sampling of 128 PERs that were randomly selected out of a population of 1,034 PERs for proper significance determination and to determine if the implementation of the PER process was satisfactorily implemented and effective and conducted interviews with CH2M HILL personnel that were involved with the evaluation, classification, corrective actions, or other aspects associated with corrective action management, causal analysis, and trend analysis included within the PER process. This assessment specifically targeted the significance determination of PERs based upon input from other ORP organizations that indicated that this area may be of concern.

The assessment also evaluated procedure implementation and the effectiveness of the assessed work activities in meeting program requirements in 10 Code of Federal Regulations 830, Subpart A, "Quality Assurance," DOE O 414.1, "Quality Assurance," as established in the CH2M HILL Quality Assurance Program Description (QAPD).

Following is a brief discussion of the assessment results. For more details of the discussed findings, see the discussion in Section 3 of this report titled "Findings."

**1.1 Program Evaluation Request Process**

The CH2M HILL PER process was described and governed by the CH2M HILL implementing procedure TFC-ESHQ-Q\_C-C-01. The Assessment Team reviewed this procedure for adequacy against the requirements of the CH2M HILL QAPD and DOE O 414.1C, interviewed CH2M HILL management and personnel responsible for the PER program as well as the CH2M HILL PER Screening team members during the observation of a PER Screening team meeting by the Assessment Team. The observation was enhanced by the Assessment Team reviewing and independently classifying the 31 PERs that were on the agenda for the Screening Team to make a significance determination prior the observation taking place. The observation of the Screening Team revealed that the significance determinations made by the Screening Team were in alignment with the independent classification made by the Assessment Team. The Assessment Team also reviewed a sampling of 97 PERs that were randomly selected out of a population of 1,034 PERs (approximately nine percent) for proper significance determination and to determine if the implementation of the PER process was satisfactorily implemented and effective. The population was chosen from PERs generated during the period of January 1, 2008 through April 11, 2008.



The team determined that CH2M HILL had not adequately assigned the significance level to approximately 20% (19 out of 97) of the PERs reviewed by the Assessment Team, that the contractor was not timely in processing PERs in approximately 11% (11 out of 97) of the PERs reviewed by the Assessment Team, and that PERs were processed with less than adequate extent of condition analysis, corrective actions, and causal analysis in approximately six percent (6 out of 97) of the PERs reviewed by the Assessment Team.

Further investigation by the Assessment Team discovered that similar conditions to those found during this assessment were documented in ORP Assessments A-06-ESQ-TANKFARM-006 and A-04-ESQ-TANKFARM-001. The conditions addressed by the two cited assessments pertained to less than adequate corrective actions implemented by CH2M HILL.

Findings A-08-ESQ-TANKFARM-004-F01, A-08-ESQ-TANKFARM-004-F02, and A-08-ESQ-TANKFARM-004-F03 were issued to document the discrepancies noted during this assessment.

Based upon the factors outlined above, the Assessment Team determined that CH2M HILL's PER process has current conditions adverse to quality and conditions that are recurring indicating past corrective actions were not effective over the long term requiring extensive improvements to the program in implementation and effectiveness and requiring additional corrective actions to correct the noted deficiencies.

### **1.1.1 Results**

The Assessment Team determined CH2M HILL's PER program is adequate in the flowdown of requirements, however, requires extensive improvement in the programs implementation by the CH2M HILL staff in order to improve the effectiveness of the program.

## **2.0 Findings and Observations**

**Finding A-08-ESQ-TANKFARM-004-F01:** Nineteen PERs had been misclassified based on the classification criteria provided in Table 2 of procedure TFC-ESHQ-Q C-C-01.

### **Requirements:**

TFC-ESHQ-Q C-C-01, "Problem Evaluation Request," is the CH2M HILL procedure that "established the requirements and responsibilities for the timely identification and evaluation of conditions adverse to quality, safety, health, operability, and the environment using the Problem Evaluation Request (PER) process." Table 1, "Problem Evaluation Request Significance Criteria Guidance" provides the following definitions for how to classify PERs:

- PER with Resolution: "An adverse condition which includes problems, such as failure to comply with the documented safety analysis, technical specifications, DOE orders, regulations, contract requirements, or administrative controls, procedures, instructions, non-compliances that adversely affect tank farm facility system hardware/software operability, reliability, or performance. The adverse condition,

deficiency, defect, or deviation or other nonconformance notably diminishes the original capability and/or intent of the program/procedure or installed item.”

- Performance Improvement Evaluation/Continuous Improvement Management (PIE/CIM): “a suggestion or industry report identifying process improvements, program enhancements, continued quality improvements or recommendations, or used for evaluation of external lessons learned and therefore cannot be applied when there is a condition adverse to quality (a violation of an requirement).”
- A Track Until Fixed (TUF): “an event or condition that requires an action to resolve (e.g., editorial procedure revisions, equipment repair, sign posting, etc.) but does not require a causal analysis, extent of condition review or additional corrective actions developed and therefore cannot be applied when there are programmatic aspects that pertain to the condition adverse to quality or a severity level exists that warrants causal analysis, extent of condition review or additional corrective actions developed.”

TFC-ESHQ-Q\_C-C-01 Section 4.3.7 states “At the screening meeting, discuss and concur on the following PER field choices:

- a. PAAA designation and comments
- b. Significance level
- c. Assigned responsible manager
- d. PER screening comments
- e. Functional Area, Work Process, ISMS, and consequence Code”

**Discussion:**

The Assessment Team reviewed 128 PERs against the requirements in Table 2 of TFC-ESHQ-Q\_C-C-01 and identified 19 (15%) that were misclassified by the screening process. Sixteen of the 19 misclassified PERs were classified as PIE/CIM or TUF instead of “PERs With Resolution” or “Significant” as required by the procedure. As a result, required corrective action management requirements were not performed (causal analysis, extent of condition, and remedial actions not implemented, and corrective actions to preclude recurrence were not established).

The misclassified PERs included:

These PERs should be Significant PER:

- 2008-0739 (Classified as PIE/CIM)
- 2008-0008 (Classified as PER With Resolution)

- 2008-0005 (Classified as PER With Resolution)
- 2008-0028 (Classified as PER With Resolution)

These PERs should be PER With Resolution:

- 2008-0012 (Classified as TUF)
- 2008-0015 (Classified as PIE/CIM)
- 2008-0007 (Classified as PIE/CIM)
- 2008-0020 (Classified as PIE/CIM)
- 2008-0022 (Classified as PIE/CIM)
- 2008-0023 (Classified as PIE/CIM)
- 2008-0025 (Classified as PIE/CIM)
- 2008-0026 (Classified as PIE/CIM)
- 2008-0024 (Classified as PIE/CIM)
- 2008-0031 (Classified as PIE/CIM)
- 2008-0032 (Classified as PIE/CIM)
- 2008-0033 (Classified as PIE/CIM)

These PERs should be TUF:

- 2008-0056 (Classified as a PIE/CIM)
- 2008-0051 (Classified as Trend Only)
- 2008-0001 (Classified as a PIE/CIM)

**Finding A-08-ESQ-TANKFARM-004-F02:** Corrective action management associated with six PERs was less than adequate in the following areas: Extent of Condition; Corrective Actions; and Causal Analysis.

**Requirements:**

TFC-PLN-02, Section 16.4 states, “The Corrective Action Management system shall:

- a. Establish and implement processes to detect and prevent quality problems;
- b. Identify, control, and correct items, services, and processes that do not meet established requirements;
- c. Identify the causes of problems and include prevention of recurrence as a part of corrective action planning. Review item characteristics, process implementation, and other quality-related information to identify items, services, and processes needing improvement.”

TFC-ESHQ-Q C-C-01, “Problem Evaluation Request,” is the CH2M HILL procedure that “established the requirements and responsibilities for the timely identification and evaluation of conditions adverse to quality, safety, health, operability, and the environment using the Problem Evaluation Request (PER) process.” It defined PER with Resolution as:

“An adverse condition which includes problems, such as failure to comply with the documented safety analysis, technical specifications, DOE orders, regulations, contract requirements, or administrative controls, procedures, instructions, noncompliances that adversely affect tank farm facility system hardware/software operability, reliability, or performance. The adverse condition, deficiency, defect, or deviation or other nonconformance notably diminishes the original capability and/or intent of the program/procedure or installed item.”

The procedure also provided a process for addressing deficiencies classified as PER with Resolution which included performing apparent causal analysis, extent of condition, and corrective action planning.

**Discussion:**

Contrary to this requirement, CH2M HILL’s corrective action management activities associated with six PERs classified as PER With Resolution (Conditions Adverse to Quality) was determined to be less than adequate. The conditions noted consisted of the following:

PER 2008-0029

- Corrective actions to fix the identified problem were not established within the PER, however the PER was closed. The PER was closed referencing PER 2007-2228.

- PER 2008-0029 should have been rolled-up into PER 2007-2228, however, the roll-up process was not followed; the roll-up PER was not revised to assure it would address the conditions identified in PER 2008-0029; PER 2008-0029 was not reclassified as “Trend Only.”
- Extent of condition write-up was not adequate in both PERs; the extent of condition only acknowledges that this is one of several similar PERs. The extent of condition discussion does not indicate what was done to determine the extent of the problem or what the impact was.

#### PER 2008-0050

- Extent of condition write-up was not adequate in that it indicated that this was an isolated case, however, the documented condition related to a faulty temporary structure fabricated by a sub-contractor, but the extent of condition did not explain why this was an isolated event, and why the causes identified for the inadequate design and fabrication of temporary supports did not apply to other activities involving temporary support structures.
- Corrective actions were not established to address the determined causes. Actions taken only fixed the support structure but did not address the causes, to prevent recurrence, that lead to the condition adverse to quality that was identified in the PER.
- PER was closed because the Non-Conformance Report was written, yet the cause analysis indicated design drawings were not clear.

#### PER 2008-0014

- Corrective actions were remedial in nature and have no long term impact to prevent recurrence of the stated cause which stated that the apparent cause was that recurs were “out of sight and out of mind,” and therefore had low management priority.

#### PER 2008-0030

- Extent of condition is less than adequate; it’s a discussion of the event rather than a description of the analysis performed to determine the extent and the results of the analysis.
- Corrective actions do not address the cause to prevent recurrence.

#### PER 2008-0071

- Corrective actions did not address the results of the “Why” Analysis and the PER was closed without replacing the missing jumpers. A work package was generated to replace the missing jumpers at a future time and the PER was closed based upon the existence of the work package.

PER 2008-0054

- The cause was not adequately identified. What was indicated by the analysis performed stated “The tape being used to seal the guzzler hoses eventually came to the end of its life and therefore failed.” Corrective actions did not address preventing this type of failure to occur again (did not preclude recurrence).
- Rationale provided for not performing an extent of condition was not adequate. The rationale stated “Since this PER is the direct outcome of an assessment this issue is considered an isolated event.”

**Observation A-08-ESQ-TANKFARM-004-O01:** Eleven PERs when compared to the listed “date of discovery” did not meet the expectations of the requirements in that they were untimely in the performance of required actions, i.e., extent of condition analysis, safety significance, generic implications, remedial corrective actions, causal analysis, apparent cause and/or root cause analysis, and establishment of corrective actions.

**Requirements:**

- a. TFC-PLN-02, Section 16.2 states: “Conditions adverse to quality shall be identified promptly and corrected as soon as practicable.”
- b. TFC-PLN-02, Section 16.5 states: “Corrective action implementation and PER closure is normally completed within 180 days of the PER initiation or re-screen of significance level.”
- c. TFC-ESHQ-Q C-C-01, Section 4.3.8 states, “PERs with Resolution should be resolved within 45 days of the PER initiation, re-screen to PER with Resolution, or reassessment.”

**Discussion:**

PERs were being initiated, screened, and put into the system with a responsible manager assigned. However, no actions were taken or documented such as extent of condition analysis, safety significance determination, generic implications, remedial corrective actions, causal analysis, apparent cause and/or root cause analysis, or the establishment of corrective actions with as much as four months time passing since the PERs were classified.

In reviewing the Electronic Suspense Tracking and Routing System, the assessors determined that the rationale for not completing these activities did not provide a sufficiently valid reason for not determining the cause, extent of condition, or establishing corrective actions.

The DOE requirements, the CH2M HILL QAPD, and implementing procedures clearly establish an expectation that identified conditions adverse to quality be addressed in a timely manner. This CH2M HILL practice of allowing conditions adverse to quality to exist for several months without any type of analysis to determine extent, cause, or risk, and without implementation of compensatory measures to assure the deficient condition does not continue does not meet the expectations of the corrective action program requirements.

The following examples led the assessment team to these conclusions:

2008-0008	2008-0063	2008-0059	2008-0028
2008-0055	2008-0064	2008-0058	2008-0084
2008-0060	2008-0061	2008-0062	

### **3.0 Conclusion**

The assessment team determined CH2M HILL's PER process is adequate in the flowdown of requirements, however, it requires extensive improvements in the its implementation by the CH2M HILL staff in order to improve the effectiveness of the process. It was noted by the assessment team that improvement and strengthening has been performed by CH2M HILL in the operation of the Screening Team but more improvement is needed over the entire range of the PER program.

## **Appendix A**

### **Personnel Contacted**

- Performance Assurance Manager
- Corrective Action Management Manager
- Operations Support Specialists
- Price-Anderson Amendments Act Evaluator
- Engineer
- Operations Support Manager
- 222-S Laboratory – Radiological Control



## Appendix B

### Documents Reviewed

#### Procedures

TFC-PLN-02, "Quality Assurance Program Description (QAPD)."

TFC-ESHQ-Q\_C-C-01, "Program Evaluation Request."

#### Problem Evaluation Requests

2008-0684	2008-0739	2008-0052	2008-0003	2008-0082
2008-0762	2008-0069	2008-0054	2008-0015	2008-0083
2008-0763	2008-0008	2008-0055	2008-0007	2008-0057
2008-0764	2008-0053	2008-0058	2008-0016	2008-0093
2008-0765	2008-0010	2008-0059	2008-0002	
2008-0766	2008-0017	2008-0060	2008-0020	
2008-0767	2008-0099	2008-0061	2008-0022	
2008-0768	2008-0080	2008-0005	2008-0021	
2008-0769	2008-0049	2008-0062	2008-0023	
2008-0770	2008-0044	2008-0077	2008-0025	
2008-0771	2008-0075	2008-0063	2008-0026	
2008-0772	2008-0100	2008-0064	2008-0024	
2008-0773	2008-0098	2008-0067	2008-0028	
2008-0774	2008-0012	2008-0071	2008-0031	
2008-0775	2008-0018	2008-0078	2008-0032	
2008-0776	2008-0004	2008-0084	2008-0033	
2008-0777	2008-0019	2008-0089	2008-0035	
2008-0778	2008-0042	2008-0086	2008-0056	
2008-0779	2008-0045	2008-0090	2008-0038	
2008-0780	2008-0029	2008-0091	2008-0037	
2008-0781	2008-0048	2008-0068	2008-0039	
2008-0782	2008-0030	2008-0066	2008-0040	
2008-0783	2008-0014	2008-0073	2008-0027	
2008-0784	2008-0006	2008-0079	2008-0076	
2008-0785	2008-0009	2008-0074	2008-0041	
2008-0786	2008-0013	2008-0094	2008-0043	
2008-0787	2008-0072	2008-0095	2008-0088	
2008-0788	2008-0070	2008-0096	2008-0087	
2008-0789	2008-0046	2008-0092	2008-0081	
2008-0790	2008-0097	2008-0001	2008-0051	
2008-0791	2008-0050	2008-0011	2008-0065	