



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

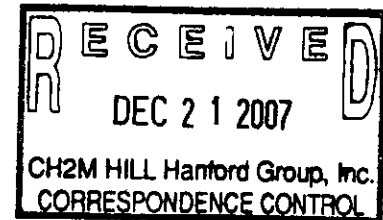
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

DEC 21 2007

07-ESQ-223

0702383

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 – RADIOLOGICAL CONTROL TRAINING  
ASSESSMENT A-07-ESQ-TANKFARM-007

This letter forwards the results of an assessment the U.S. Department of Energy, Office of River Protection conducted from November 5 through 9, 2007, to evaluate the CH2M HILL Hanford Group, Inc. (CH2M HILL) Radiation Safety Training Program. The assessors focused on Radiation Safety Training for the Radiological Control Technicians (RCT) and their Supervisors, and General Employee Radiation Training (GERT) for the Tank Farm Contractor (TFC). Details of the assessment are attached.

The assessment team determined CH2M HILL's Radiation Safety Training Program requires further review. The assessors identified three findings and one observation. Findings and observations indicated a disconnect between training material content and field performance. The findings and observations, in general, indicated weaknesses in conduct of operations and radiological control. Further assessment of training implementation, including observations of radiological work activities to validate training effectiveness in the field, are described in an Assessment Follow-Up Item (AFI) described below.

The findings addressed: 1) TFC RCTs did not perform adequate hand and foot surveys while exiting Radiological Buffer Areas for contamination control; 2) training and work control documentation did not ensure the Radiological Control Manager provided approval of actions taken to resume work after work was stopped because of inadequate radiological controls or planned radiological controls were not implemented; and 3) procedural requirements to perform Window Open and Window Closed radiation measurements, and instrument operating techniques to begin radiation measurements with the dose rate instrument's window open were not included in RCT training materials. The observation addressed: TFC personnel routinely donned and doffed respiratory equipment inside posted Contamination Areas though neither training nor work documentation addressed the practice. The AFI states: Further assessment of training implementation is warranted to determine training effectiveness, ensure the TFC reinforces training in the field, ensure management communicates Radiological Control expectations to the RCTs and Radiological Workers, and to ensure continuity of the activity after personnel changes.

Mr. John C. Fulton  
07-ESQ-223

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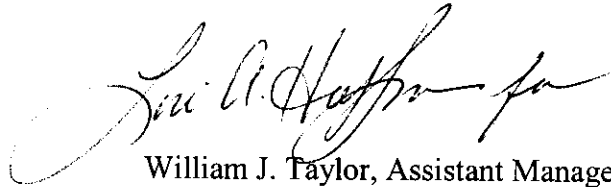
DEC 21 2007

Within 30 days of receipt of this letter CH2M HILL should respond to the assessment findings and observation. A response for the Non-Cited finding and the AFI is not necessary. For the findings, the response should include:

- The causes of the findings;
- The corrective actions that have been taken to control or remove any adverse impact from noncompliant conditions (remedial actions) 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.

If you have any questions, please contact me, or your staff may contact Jeanie L. Polehn, Office of Environmental Safety and Quality, (509) 372-0787.

Sincerely,



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

ESQ:JLP

Attachment

cc w/attach:

T. E. Bratvold, CH2M HILL  
F. M. Ito, CH2M HILL  
L. M. Livesey, CH2M HILL  
R. G. Quirk, DNFSB  
C. E. Hampton, PAC  
R. S. Jansons, PAC  
S. W. Sanders, PAC  
W. L. Smoot, PAC  
C. R. Ungerecht, PAC  
CH2M HILL Correspondence

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

ASSESSMENT: Radiation Safety Training

REPORT: A-07-ESQ-TANKFARM-007

FACILITY: CH2M HILL Hanford Group, Inc.

LOCATION: Hanford Site

DATES: November 5 through 9, 2007

ASSESSMENT TEAM: Jeanie L. Polehn, Lead Assessor  
Richard S. Jansons, Assessor  
Clifford E. Hampton, Assessor  
William L. Smoot, Assessor

APPROVED BY: Patrick P. Carrier, Team Lead  
Verification and Confirmation

## Executive Summary

The U.S. Department of Energy, Office of River Protection evaluated the CH2M HILL Hanford Group, Inc. Radiation Safety Training Program against established regulatory requirements and guidance. The assessment focused on the radiation safety training provided to Radiological Control Technicians (RCT) and their Supervisors for Tank Farms Contractor (TFC) activities, and General Employee Radiological Training (GERT). This report provides details of the evaluation.

The contractor's Radiation Safety Training Program requires further review. Findings and observations indicated a disconnect between training material content and field performance. The findings and observations, in general, indicated weaknesses in conduct of operations and radiological control. Further assessment of training implementation, including observations of radiological work activities to validate training effectiveness in the field, should be conducted in conjunction with Fiscal Year 2008 surveillances and assessments. The assessors concluded the GERT training program was satisfactory.

**Finding: A-07-ESQ-TANKFARM-007-F01**

Contrary to the Tank Farms Radiological Control Manual (TFRCM) Articles 123 and 221, TFC RCTs did not perform adequate hand and foot surveys prior to exiting Radiological Buffer Areas for contamination control.

**Finding: A-07-ESQ-TANKFARM-007-F02**

Contrary to TFRCM Article 345, the contractor's training and work control documentation did not ensure the Radiological Control Manager provided approval of actions taken to resume work after work was stopped because of inadequate radiological controls or planned radiological controls were not implemented.

**Non-Cited Finding: A-07-ESQ-TANKFARM-007-F03**

Procedural requirements to perform Window Open and Window Closed radiation measurements, and instrument operating techniques to begin radiation measurements with the dose rate instrument's window open were not included in RCT training materials.

**Observation: A-07-ESQ-TANKFARM-007-O01**

TFC personnel routinely donned and doffed respiratory equipment inside posted Contamination Areas during mockup training and for work activities though neither training nor work documentation addressed the practice.

**Assessment Follow-Up Item: A-07-ESQ-TANKFARM-007-A01**

Further assessment of training implementation is warranted to determine training effectiveness, ensure the TFC reinforces training in the field, ensure management communicates Radiological Control expectations to the RCTs and Radiological Workers, and to ensure continuity of the activity after personnel changes.

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## List of Acronyms

AOP	Abnormal Operating Procedures
CA	Contamination Area
CFR	Code of Federal Regulations
CH2M HILL	CH2M HILL Hanford Group, Inc.
CO	Closure Operations
DOE	U.S. Department of Energy
FLS	First Line Supervisor
FY	Fiscal Year
GERT	General Employee Radiological Training
OJT	On-The-Job Training
ORP	Office of River Protection
PER	Problem Evaluation Request
PPE	Personal Protective Equipment
RadCon	Radiological Control
RBA	Radiological Buffer Area
RCT	Radiological Control Technician
TF	Tank Farms
TFC	Tank Farms Contractor
TFRCM	Tank Farms Radiological Control Manual

## **Radiation Safety Training**

### **Scope:**

The U.S. Department of Energy (DOE), Office of River Protection (ORP) performed an assessment of the Tank Farm Contractor (TFC) Radiation Safety Training Program from November 5 through 9, 2007. The assessment focused on the Radiation Safety Training provided to Radiological Control Technicians (RCT) and their Supervisors, and General Employee Radiological Training (GERT) for TFC activities. This assessment included only limited observations of radiological work practice implementation. Further observations of radiological work activities to validate training effectiveness in the field will be conducted and reported in conjunction with Fiscal Year (FY) 2008 surveillances and assessments.

### **Details:**

The assessors reviewed documents, interviewed personnel, and observed field activities to determine the adequacy of the TFC Radiological Control (RadCon) training program. A list of personnel interviewed and documents reviewed are attached. Corrective actions are necessary to address the assessor identified findings and observations discussed below.

The assessment team reviewed RCT and RCT First Line Supervisor (FLS) training requirements contained in 10 Code of Federal Regulations (CFR) 835, the Tank Farms Radiological Control Manual (TFRCM) and TFC-specific training procedures. The assessment team also reviewed related DOE guidance documents. As noted in Non-Cited Finding A-07-ESQ-TANKFARM-007-F03, the RCT and RCT FLS training content was not fully consistent with the training requirements and other DOE guidance documents.

In addition, the finding related to RCTs failure to properly monitor upon exiting a Radiological Buffer Area (RBA) for contamination control, A-07-ESQ-TANKFARM-007-F01, and the observation of Radiological Workers donning and doffing Personal Protective Equipment (PPE) in the Contamination Area (CA) without procedural direction or training, A-07-ESQ-TANKFARM-007-001 indicated workplace performance may not reflect classroom and On-The-Job Training (OJT) instruction. An Assessment Follow-Up Item is warranted to determine training effectiveness, ensure the TFC reinforces training in the field, and ensure management communicates Radiological Control expectations (A-07-ESQ-TANKFARM-007-A01).

The assessment team reviewed the status of RCT and RCT Supervisor training. The assessors found through discussions with Radiological Control management and training records reviews, Radiological Control management closely monitored the training status of their employees. All RCTs were current in their training except for four individuals, who were either on short term disability or assigned to jobs that did not require entry into Radiological Areas.



The assessors reviewed the GERT training module content and found it consistent with the DOE Radiological Control Manual and other DOE Guidance Documents. Training records documented GERT was provided as required to personnel prior to entry into the Tank Farms (TF) Radiologically Controlled Areas.

**Finding: A-07-ESQ-TANKFARM-007-F01**

Contrary to the TFRCM Articles 123 and 221, TFC RCTs did not perform adequate hand and foot surveys prior to exiting RBAs for contamination control.

Requirements:

**TFRCM, Article 123, Figure 1.1, Worker Responsibilities:**

“Frisk or be frisked for contamination when entering an uncontaminated area after exiting posted Contamination, High Contamination or Airborne Radioactivity Areas and associated Radiological Buffer Areas and notify radiological control personnel when contamination is found.”

**TFRCM, Article 221, Personnel Contamination Control:**

“1. Individuals exiting Contamination Areas, High Contamination Areas, Airborne Radioactivity Areas or Radiological Buffer Areas established for contamination control shall [835.1102(d)] be monitored, as appropriate, for the presence of surface contamination as required by Article 338.”

Discussion:

During the Closure Operations (CO) Tank C-109 drill, the assessors observed two RCTs failed to survey their hands prior to exiting the MO-522 RBA. Additionally, on two separate occasions one RCT surveyed his feet, placed his surveyed feet back in the RBA and then stepped out of the RBA without re-survey of his feet. This issue was brought to the attention of the drill lead and the FLS. The FLS agreed with the issue and wrote a Problem Evaluation Request (PER) (CH2M-PER-2007-2011) to take corrective action. Prior to leaving MO-522, all personnel performed hand and foot surveys and found no contamination.

Portal monitoring setup was awkwardly arranged for use (i.e., it was set up so the user was required to step outside of the RBA boundary to survey themselves). The FLS indicated the setup was being re-arranged.

**Finding: A-07-ESQ-TANKFARM-007-F02**

Contrary to TFRCM Article 345, the contractor’s training and work control documentation did not ensure the RadCon Manager provided approval of actions taken to resume work after work was stopped because of inadequate radiological controls or planned radiological controls were not implemented.

Requirements:

**TFRCM Article 345 Stop Radiological Work Authority:**

“1. Radiological Control Technicians and their supervisors, line supervision, and any worker through their supervisor has the authority and responsibility to stop radiological work activities for any of the following reasons:

- a. Inadequate radiological controls;
- b. Radiological controls not being implemented; or
- c. Radiological Control Hold Point not being satisfied...

3. Once radiological work has been stopped, it shall [Stop Work Authority] not be resumed until proper radiological control has been reestablished (see Part 4 of this Chapter).

4. Resumption of radiological work requires the approval of the line manager responsible for the work and the Radiological Control Manager...”

Discussion:

During discussions with the CH2M HILL Hanford Group, Inc. (CH2M HILL) RadCon Manager, the assessors and the RadCon Manager determined the Radiological Stop Work Authority discussed in the TFRCM (HNF-5183, Article 345) was not addressed or referenced in the CH2M HILL Stop Work Responsibility policy (TFC-POL-32). Except for Lead Radiological Worker Training, RadCon Manager authorization to resume work was not addressed in RCT training, Radiological Worker Training, or GERT training. The assessors’ review of selected work documents from the S-102 spill clean up and Abnormal Operating Procedures (AOP) did not find any requirements for obtaining the RadCon Manager’s concurrence that proper radiological controls had been established and that the RadCon Manager approved resuming work in the event that work was stopped due to inadequate radiological controls. This issue builds on the finding identified on September 24, 2007, during the S-102 recovery (A-07-TOD-TANKFARM-004-F05) where the assessors observed AOPs and work instructions did not specify RadCon Manager’s approval to restart work. Discussions with CO management in connection with an S-102 recovery Joint Review Group meeting and the CO RadCon Director, confirmed RadCon Manager’s approval was not necessary prior to work restart. In addition, review of PERs and documentation associated with work activities resulting from contamination events substantiated the RadCon Manager did not give approval to resume work activities. The contractor’s RadCon Program Manager agreed with the issue and issued a PER (CH2M-PER-2007-1996, November 5, 2007) to develop corrective actions.

**Non-Cited Finding: A-07-ESQ-TANKFARM-007-F03**

Procedure requirements to perform Window Open and Window Closed radiation measurements and instrument operating techniques to begin radiation measurements with the dose rate instrument’s window open when surveying for a radiation field were not included in RCT training materials.

The assessors compared a sample of RCT training material against 10 CFR 835, HNF-5183, TFRCM 5480.20A, and DOE Guidance documents to determine if RCT training program content was adequate. In at least one instance (Performing Radiation Surveys), procedural requirements to perform Window Open and Window Closed radiation measurements, and instrument operating techniques to begin radiation measurements with the dose rate instrument's window open were not included in RCT training materials.

The assessors' review of DOE guidance documents found DOE-HDBK-1122-99, RCT Training, Practical Training Phase II, Task 3-2, states, "Perform radiation surveys." The objective of the task is to perform an actual or simulated radiation survey.<sup>1</sup> A review of RCT Academic and Practical OJT materials found no specific knowledge or skill requirements on how to perform a radiation survey in the field, or the generally accepted protocol of beginning radiation measurements with the dose rate instrument's window open. Rather, the OJT for "Perform a Radiation Survey," (Course Number 022591) required the trainee to define terms such as radiation, Rad and Gray, but did not ask the trainee how a radiation survey is performed in the field, or ask the trainee to simulate or perform a radiation survey.

The DOE Type A Accident Investigation Report of the July 27, 2007, Tank 241-S-102 Waste Spill at the Hanford Tank Farms, September 2007 indicated "The Health Physics Technician did not follow the operating instructions for performing both open and closed window dose rate measurements, and open window readings might have detected the spill earlier." The investigation also stated tank farm radiological survey reports indicated a lack of open window readings was "a common practice and accepted by management." Corrective actions from that report included revising the OJT material to include requirements to monitor both window open and window closed radiation readings, beginning radiation measurements with the window open, and revising Oral Board/Performance Demonstration scenarios to verify both readings are taken. When completed, these corrective actions will address the content of this finding. Thus, this issue is deemed to be a non-cited finding requiring no written response from the contractor.

**Observation: A-07-ESQ-TANKFARM-007-O01**

TFC personnel routinely donned and doffed respiratory equipment inside posted CAs during mockup training and for work activities though neither training nor work documentation addressed the practice.

During the S-102 mockup training and cleanup operations, TFC personnel routinely donned and doffed respiratory equipment inside posted CAs. The work procedure did not provide instructions detailing the donning and doffing process to be used.

Radiological Worker Training required for access into TFs did not address donning and doffing respiratory equipment in a CA. Instead, personnel were instructed on the

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<sup>1</sup> Note: The DOE guidance document does not provide specific guidance on how to go about using an instrument to detect a mixed radiation field.

proper methods of donning anti-contamination clothing and respirators before entering a CA. During the work activities observed by ORP associated with the S-102 spill recovery, some workers were confused, concerned, and objected to direction to remove their respiratory equipment in the CA, while coworkers continued to wear respiratory equipment.

The TFC used a Survey Plan (2007-CO-005, Revision 0) to provide direction to RCTs on how to establish and maintain a lay-down area to temporarily store respiratory protection equipment inside of the S-102 CA. The Survey Plan did not address actions necessary to remove, don, or doff the equipment inside the CA. The CO RadCon Manager indicated the donning process (including contamination surveys) for the mockup training and subsequent field work was closely evaluated and supervised by Radiological Control personnel (including the RadCon Manager) in the field.

Without procedures or work instructions providing information and direction necessary to fill in training voids, it is not clear how the contractor consistently implements contamination control when performing non-routine radiological work.

The Radiological Control Director agreed this issue should be addressed and committed to amending PER-2007-1973 to include this issue. The TFC has agreed to develop and implement a procedure and appropriate training to control the activity of storing, donning, and doffing PPE, including respirators, in a CA.

**Assessment Follow-Up Item: A-07-ESQ-TANKFARM-007-A01**

Further assessment of training implementation is warranted to determine training effectiveness, ensure the TFC reinforces training in the field, ensure management communicates RadCon expectations to the RCTs and Radiological Workers, and to ensure continuity of the activity after personnel changes.

**Requirements:**

TFRCM Article 613.7 states: "Verification of the effectiveness of radiological control training should be accomplished by surveying a limited subset of former students in the workplace. This verification is in addition to performance evaluations routinely performed by training departments. This evaluation should include observation of practical applications, discussion of the course material, and may include written examinations. The survey should be performed by RadCon Managers and supervisors, quality assurance personnel or senior instructors after the former student has had the opportunity to perform work for several months. The results should be documented."

**Discussion:**

In-field radiological control training effectiveness needs further review based upon recent events involving RCT actions contrary to procedural requirements, Finding A-07-ESQ-TANKFARM-007-F01, and interviews with RadCon supervisors.

The DOE Type A Accident Investigation Report of the July 27, 2007, Tank 241-S-102 Waste Spill at the Hanford TFs, September 2007 indicated "The Health Physics Technician did not follow the operating instructions for performing both open and closed window dose rate measurements, and open window readings might have detected the spill earlier." Additionally, as noted in Finding A-07-ESQ-TANKFARM-007-F01, two RCTs failed to survey their hands prior to exiting a RBA for contamination control, and on two separate occasions an RCT surveyed his feet, placed his surveyed feet back in the RBA for contamination control, and then stepped out of the RBA without re-surveying his feet. These observations, when taken in aggregate, may indicate that workplace performance does not reflect classroom and OJT instruction.

When interviewed, RadCon FLS stated they periodically validated RCT level of knowledge in the field after initial training or re-training. However, this was performed on an ad hoc basis. The assessors observed that supervision's validation of RCT knowledge was not a formal process, and, with one exception in the last six years, the results of the evaluation were not documented.

As a result of the above, in-field RadCon training effectiveness requires further review.

## **Conclusions:**

The contractor's Radiation Safety Training Program warrants further review because the assessors' findings and observations indicated a disconnect between training material, content, and field performance. These findings and observations, in general, indicated weaknesses in Conduct of Operations and RadCon. Corrective actions are necessary to address the findings and observations identified in this assessment. Further assessment of training implementation, including additional observations of radiological work activities to validate training effectiveness in the field, should be conducted in conjunction with FY 2008 surveillances and assessments. The assessors found GERT content satisfactory.

## Open Items

### **Finding: A-07-ESQ-TANKFARM-007-F01**

Contrary to the TFRCM Articles 123 and 221, TFC RCTs did not perform adequate hand and foot surveys prior to exiting RBAs for contamination control.

### **Finding: A-07-ESQ-TANKFARM-007-F02**

Contrary to TFRCM Article 345, the contractor's training and work control documentation did not ensure the RadCon Manager provided approval of actions taken to resume work after work was stopped because of inadequate RadCon or planned RadCons were not implemented.

### **Non-Cited Finding: A-07-ESQ-TANKFARM-007-F03**

Procedural requirements to perform Window Open and Window Closed radiation measurements, and instrument operating techniques to begin radiation measurements with the dose rate instrument's window open were not included in RCT training materials.

### **Observation: A-07-ESQ-TANKFARM-007-O01**

TFC personnel routinely donned and doffed respiratory equipment inside posted CA during mockup training and for work activities though neither training nor work documentation addressed the practice.

### **Assessment Follow-Up Item: A-07-ESQ-TANKFARM-007-A01**

Further assessment of training implementation is warranted to determine training effectiveness, ensure the TFC reinforces training in the field, ensure management communicates RadCon expectations to the RCTs and Radiological Workers, and to ensure continuity of the activity after personnel changes.


## Closed Items

None

## Discussed Items

None

## Signature(s)

  
\_\_\_\_\_  
Jeanie L. Polehn, Lead Assessor

12/20/07  
Date

**Enclosure**  
**List of Personnel Contacted and Documents Reviewed**

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**Personnel Contacted:**

Radiological Control (RadCon) Program Manager  
RadCon Company Technical Authority Training  
Closure Operations (CO) 1<sup>st</sup> Line Supervisor  
Training Manager  
Waste Feed Operations Radiological Control Technicians (RCT) (2)  
Analytical Technical Services (ATS) Sr. RCTs (2)  
CO RCTs (2)  
ATS Waste Sampling RCTs (2)  
ATS First Line Supervisor

**Documents Reviewed:**

- 1) CH2M HILL Hanford Group, Inc. (CH2M HILL) Hanford Tank Farms Contractor Training, Training Implementation Matrix per U.S. Department of Energy (DOE) Order 5480.20A, Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities, Revision 20A-3, 09/2005
- 2) CH2M HILL Training Priorities (e-mail) from Lee Livesey to Brian Killand, November 15, 2006
- 3) Analysis Hierarchy; Recognize Tank Farms Systems, Components, and Activities, November 8, 2007 (training analysis during the development of the Health Physics Technician (HPT) "Tank Farms Systems" course [number 351540])
- 4) 10 CFR 835, Occupational Radiation Protection, June 8, 2007
- 5) HNF-5183, Revision 2, Tank Farms Radiological Control Manual, June 8, 2007
- 6) TFC-BSM-TQ-IMP-C-01, Revision A-3, Conduct of Performance Demonstrations, March 21, 2005
- 7) TFC-BSM-TQ-IMP-C-02, Revision A-3, Conduct of Qualification Cards, April 14, 2006
- 8) TFC-BSM-TQ-STD-05, Revision D-4, Miscellaneous Professional Staff Qualification Requirements, August 22, 2006
- 9) TFC-ESQ-RP-TRN-P-01, Revision B, HPT/First Line Manager Training and Qualification, June 23, 2006
- 10) FY 2007, CH2M HILL Integrated Assessment Schedule, Revision 11, August 30, 2007

- 11) FY 2008, CH2M HILL Integrated Assessment Schedule, Revision 0, September 27, 2007
- 12) FY2007-SWE-M-0129, Management Assessment, Design and Development of Training Programs, May 17, 2007
- 13) 7M100-MJS-06-002, Specialty Assessment of Radiological Protection Programs, Internal Audits, Training and Procedures, FY2006-SH&Q-SO307, December 20, 2006
- 14) 358001 TFC-HGET (spread sheet listing HGET training delinquencies), November 7, 2007
- 15) Problem of the Day (e-mail from Lee Livesey to Curt Bean et al), January 19, 2006
- 16) HPT Task List Revalidated (e-mail from Gerald Eaton to Lee Livesey), June 22, 2005
- 17) Radiation Worker Training Lesson Learned (e-mail from Gerald Eaton to Brian Killand), May 12, 2005
- 18) Integrated Training Electronic Matrix reports for the following personnel:  
B. M. Auckland; R. D. Eubanks; R. D. Hudson; B. F. Davis, Jr.; W. A. Barnard;  
K. L. Rasmussen; and M. L. Hoodenpyle, November 7, 2007
- 19) HPT Task List (On-The-Job-Training [OJT] course listings), November 7, 2007
- 20) TFC-ESHQ-RP-TRN-P-02, Revision B-2, RCT Support and Key Positions Training Program Description, March 31, 2006
- 21) Table Top analysis of Course 351535, Exhauster Systems Training (e-mail from L. M. Livesey to J. L. Polehn), November 7, 2007
- 22) Analysis to Determine Training Needs for Radiological Survey Record Completion, letter from Kerry Adamson, Energx, to Brian Killand, et al, March 22, 2005
- 23) Lessons Learned, HR2018, RCT Continuing Training (no date provided on presentation)
- 24) HR2018D, Revision 0, HR2018 Lessons Learned Lesson Plan, April 18, 2005
- 25) HPT Comprehensive Exam Study Assistance, Problem of the Day, December 12, 2005
- 26) Problem O' the Day, (e-mail from L. M. Livesey to A. S. Abella et. al.), March 1, 2006
- 27) HR2018F, Completing a Radiological Survey Report, Study Guide, April 12, 2005



- 28) PER-2004-6324, Revisions to the following courses/qualification cards...,  
December 29, 2004
- 29) 022192, Revision 6, OJT Cards for Supernatant and Sludge Sampling, May 17, 2007
- 30) 354420, Revision 0, Gamma Spectroscopy Analysis Self Study Guide, July 24, 2006
- 31) RCT Continuing Training (by Fiscal Year), November 5, 2007
- 32) CH2-PER-2007-1996, Stop Work Authority..., November 5, 2007
- 33) 350160, CH2M HILL Field Work Supervisor, (a presentation; no date provided)
- 34) 350160, Revision 0, Qualification Card and Guide For Tank Farm Field Work  
Supervisor, March 2, 2006
- 35) 350160, Revision 1, Lesson Plan, Field Work Supervisor, (no date provided)
- 36) 350129, Revision 2b, Lead Radiological Worker Student Guide/Lesson Plan, June 3,  
2001
- 37) IB-04-38, Stop Work Lessons Learned, October 1, 2004
- 38) IB-04-07, Radiological Workers Must Pay Attention to Postings, January 28, 2004
- 39) IB-04-01, Application of As Low As Reasonably Achievable, January 9, 2004
- 40) IB-05-011, Worker Entered Two Tank Farms Without Current Facility Access  
Training, March 3, 2005
- 41) Job Task Analysis Hierarchy, Selective Conduct of Operations, November 6, 2007
- 42) TFC-OPS-OPER-C-12, Revision A-7, Observation and Evaluation of Field Work  
Supervisor Candidates, June 4 2006
- 43) ATL-MP-1030, Revision 2, Advanced Technologies Laboratories International, Inc.  
Stop Work Responsibility, March 22, 2007.
- 44) DOE G 441.1-1B, Radiation Protection Programs Guide for use with 10 CFR 835,  
March 1, 2007
- 45) DOE-HDBK-1110-97, ALARA Training for Technical Support Personnel, November  
2004
- 46) DOE-HDBK-1113-98, Radiological Safety Training for Uranium Facilities, April  
2005

47) DOE-HDBK-1122-99, Radiological Control Technician Training, November 2004

48) DOE-HDBK-1130-98, Radiological Worker Training, February 2005

49) DOE-HDBK-1131-98, General Employee Radiological Training, April 2004