



U.S. Department of Energy
Office of River Protection

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

0078853

08-TPD-071

OCT 08 2008

RECEIVED
OCT 09 2008
EDMC

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99352

Dear Ms. Hedges:

TRANSMITTAL OF TANK 241-S-102 CORRECTIVE ACTION PLAN (CAP) FOR
WASHINGTON STATE DEPARTMENT OF ECOLOGY (ECOLOGY) RESOLUTION OF
DISPUTE, RPP-37951

Reference: ORP letter from S. J. Olinger to P. Zehm, Ecology, "Notice of Penalty Incurred
and Due No. 5218." 08-ESQ-077, dated April 14, 2008. 0076870

Attached is the Tank 241-S-102 CAP for Ecology Resolution of Dispute, RPP-37951. The
Settlement Agreement Resolution of Dispute, Stipulated Penalty Item Number 1, requires the
U.S. Department of Energy to provide certification of completion for 38 corrective actions to
Ecology by October 15, 2008. The contents of this report and certification have been discussed
with Mr. E. J. Van Mason, of your staff.

If you have any questions, you may contact me, or your staff may contact Stacy Charboneau,
Assistant Manager for Tank Farms Project, (509) 373-9112.

Sincerely,

Shirley J. Olinger, Manager
Office of River Protection

TPD:CJK

Attachment

cc: See Page 2

Ms. Jane A. Hedges
08-TPD-071

-2-

cc w/attach:

Administrative Record

Environmental Portal, LMSI
WRPS Correspondence

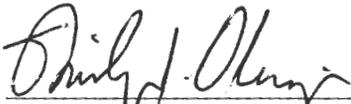
cc w/o attach:

S. Harris, CTUIR
J. J. Lyon, Ecology
C. L. Whalen, Ecology
P. Zehm, Ecology
N. Ceto, EPA
S. L. Leckband, HAB
G. Bohnee, NPT
K. Niles, Oregon Energy
R. A. Dodd, WCH
P. T. Day, WRPS
W. T. Dixon, WRPS
J. A. Voogd, WRPS
R. Jim, YN

Attachment 1

Certification Statement

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, and accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.



Shirley J. Olinger, Manager
Department of Energy
Office of River Protection

Dated: 10/8/08

RPP-37951

CH2M HILL DOCUMENT RELEASE FORM

(1) Document Number: RPP-37951		(2) Revision Number: 0	(3) Effective Date: 09-22-08
(4) Document Type: <input type="checkbox"/> Digital Image <input checked="" type="checkbox"/> Hard copy <input type="checkbox"/> Video		(a) Number of pages (including the DRF) or number of digital images: 257	
9/24 PDF			
(5) Release Type: <input checked="" type="checkbox"/> New <input type="checkbox"/> Cancel		<input type="checkbox"/> Page Change <input type="checkbox"/> Complete Revision	
(6) Document Title: Tank 241-S-102 Corrective Action Plan for Washington State Department of Ecology Resolution of Dispute			
(7) Change/Release Description: NA			
(8) Change Justification: NA			
(9) Associated Structure, System, and Component (SSC) and Building Number:	(a) Structure Location: NA		(c) Building Number: NA
	(b) System Designator: NA		(d) Equipment ID Number (EIN): NA
(10) Impacted Documents:	(a) Document Type	(b) Document Number	(c) Document Revision
	NA	NA	NA
(11) Approvals:			
(a) Author (Print/Sign): M. E. Cole <i>Mary E. Cole</i>		Date: 09-22-08	
(b) Responsible Manager (Print/Sign): L. J. Cusack <i>L. J. Cusack</i>		Date: 09-22-08	
(c) Reviewer (Optional, Print/Sign):		Date:	
(d) Reviewer (Optional, Print/Sign):		Date:	
(12) Distribution:			
(a) Name	(b) MSIN	(a) Name	(b) MSIN
C. Phillipps	S7-75	J. Voogd	H6-03
L. Cusack	H6-03	S. Bensussen	H6-18
M. Jaraysi	H6-03	M. Cole	H6-03
Release Stamp			
<div style="border: 2px solid black; padding: 5px; display: inline-block;"> <p style="font-size: 1.2em; margin: 0;">SEP 24 2008</p> <p style="margin: 0;">DATE: _____</p> <p style="margin: 0;">STA: 15</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px;"> <p style="text-align: center; margin: 0;">HANFORD RELEASE</p> </div> <p style="margin: 0;">ID: 20</p> </div>			
(13) Clearance	(a) Cleared for Public Release <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(b) Restricted Information? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(c) Restriction type:
(14) Clearance Review (Print/Sign): J. P. Aardal / Janis Aardal			Date: 09/24/2008

Tank 241-S-102 Corrective Action Plan for Washington State Department of Ecology Resolution of Dispute

M. E. Cole
CH2M HILL Hanford Group, Inc.
Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-99RL14047

EDT/ECN: NA UC: NA
Cost Center: NA Charge Code: NA
B&R Code: NA Total Pages: 257

Key Words: Retrieval, Corrective Action, Spill, Recovery, 241-S-102, Penalty, Notice, Settlement Agreement

Abstract: This report is a summary of the Corrective Action Plan for the 241-S-102 Settlement Agreement

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: Document Control Services, P.O. Box 950, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

Janis Aardal 09/24/08

Release Approval Date



Release Stamp

Approved For Public Release

TANK 241-S-102 CORRECTIVE ACTION PLAN FOR WASHINGTON STATE DEPARTMENT OF ECOLOGY RESOLUTION OF DISPUTE

M. E. Cole
L. J. Cusack
CH2M HILL Hanford Group, Inc.

Date Published
September 2008



CH2MHILL
Hanford Group, Inc.

P. O. Box 1500
Richland, Washington

Contractor for the U. S. Department of Energy
Office of River Protection under Contract DE-AC27-99RL14047

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact Document Control Services, P. O. Box 950, Mailstop H6-08, Richland, WA 99352, Phone (509) 372-2420; Fax (509) 376-4989

TABLE OF CONTENTS

1. Introduction.....	1
2. Corrective Actions	2
2.1 CH2M-PER-2007-1738:.....	2
2.2 CH2M-PER-2007-1745.....	3
2.3 CH2M-PER-2007-1746.....	5
2.4 CH2M-PER-2007-1747.....	5
2.5 CH2M-PER-2007-1750.....	6
2.6 CH2M-PER-2007-1327.....	7
2.7 CH2M-PER-2007-1493.....	8
2.8 CH2M-PER-2007-1496.....	8
2.9 CH2M-PER-2007-1370.....	9
2.10 CH2M-PER-2007-1596.....	11
2.11 CH2M-PER-2007-1605.....	12
2.12 CH2M-PER-2007-2042.....	12
3. References.....	13
4. Certification Statement	14

List of Appendixes

Appendix A Corrective Action Matrix	A-i
Appendix B Documentation for Closeout of CH2M-PER-2007-1738.....	B-i
Appendix C Documentation for Closeout of CH2M-PER-2007-1745.....	C-i
Appendix D Documentation for Closeout of CH2M-PER-2007-1746.....	D-i
Appendix E Documentation for Closeout of CH2M-PER-2007-1747.....	E-i
Appendix F Documentation for Closeout of CH2M-PER-2007-1750.....	F-i
Appendix G Documentation for Closeout of CH2M-PER-2007-1327.....	G-i
Appendix H Documentation for Closeout of CH2M-PER-2007-1493.....	H-i
Appendix I Documentation for Closeout of CH2M-PER-2007-1496.....	I-i
Appendix J Documentation for Closeout of CH2M-PER-2007-1370.....	J-i
Appendix K Documentation for Closeout of CH2M-PER-2007-1596.....	K-i
Appendix L Documentation for Closeout of CH2M-PER-2007-1605.....	L-i
Appendix M Documentation for Closeout of CH2M-PER-2007-2042.....	M-i

Abbreviations and Acronyms

AOP	Abnormal Operating Procedure
C-110	tank 241-C-110
CH2M HILL	CH2M HILL Hanford Group, Inc.
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
Ecology	Washington State Department of Ecology
EIT	Event Investigation Team
ESRB	Executive Safety Review Board
ESTARS	Electronic Suspense Tracking and Routing System
FWS	Field Work Supervisor
HAZOP	Hazard and Operability Study
HAZWOPER	Hazardous Waste Operations and Emergency Response Regulations
HFFACO	<i>Hanford Federal Facility Agreement and Consent Order</i>
MOP	Management Observation Program
NOP 5218	Notice of Stipulated Penalty Incurred and Due No. 5218
ORP	U.S. Department of Energy, Office of River Protection
PER	Problem Evaluation Request
PHA	Process Hazard Analysis
PISA	potential inadequacy in the safety analysis
RARM	Remote Area Radiation Monitoring
S-102	tank 241-S-102
TFC	Tank Farm Contractor
TSR	Technical Safety Requirements
WHA	Worksite Hazards Analysis
WRRMCAM	Waste Retrieval Remote Monitoring Camera

1. INTRODUCTION

On December 4, 2007, the Washington State Department of Ecology (Ecology) issued Notice of Stipulated Penalty Incurred and Due No. 5218 (NOP 5218) regarding a release of radioactive and hazardous waste that occurred during retrieval operations at tank 241-S-102 (S-102) on or about July 27, 2007. In NOP 5218, Ecology assessed CH2M HILL Hanford Group, Inc. (CH2M HILL) stipulated penalties under the *Hanford Federal Facility Agreement and Consent Order* (HFFACO) (Ecology et al. 1989) in the amount of \$500,000. On December 7, 2007, the U.S. Department of Energy (DOE) filed its Initiation of Dispute Resolution for Notice of Stipulated Penalty Incurred and Due No. 5218 pursuant to Article VIII, Section 30, and Article IX, Section 31, of the HFFACO. By agreement, the Tri-Parties extended the dispute resolution process at the Project Managers' level and on April 17, 2008, signed a settlement agreement resolving the dispute.

The terms of the settlement agreement included completion of the specified corrective actions identified in Appendix A. This report is required by the settlement agreement and summarizes and documents the actions taken to close each corrective action. Documentation for closeout of corrective actions is contained in Appendix B through Appendix M.

Problem Evaluation Request Process for Closing Corrective Actions

CH2M HILL utilizes the Problem Evaluation Request (PER) system to aid in the timely identification and evaluation of conditions adverse to quality, safety, health, operability, and the environment. The PER process ensures that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective materials and equipment, abnormal occurrences, and nonconformances are promptly identified and corrected. The PER process also provides a means for requesting clarification of requirements, e.g., the safety basis, evaluating performance improvement suggestions, and lessons learned reports, including initiation and tracking of any actions taken. The PERs are initiated for conditions that require resolution, trending, cause determination, or identification and tracking of corrective actions.

The PER process also ensures the adequate documentation and tracking of the concern or problem and corrective actions via the Electronic Suspense Tracking and Routing System (E-STARS) web-based tool.

As a result of the S-102 event a series of PERs and E-STARS actions were initiated. Development and implementation of the required corrective actions require approvals from the responsible manager, the Quality Assurance Manager, and the Executive Safety Review Board (ESRB) prior to final closure.

The ESRB consists of the following members:

- President and Chief Executive Officer – Chair
- Chief Operating Officer - Vice Chair
- Vice President, Waste Feed Operations
- Vice President, Closure Operations
- Vice President, Project Delivery

- Vice President, Analytical Technical Services
- Vice President, Safety, Health and Quality Assurance – Sponsor
- Vice President, Environmental Programs
- Vice President, Engineering
- Vice President, Business Services and Chief Financial Officer
- General Counsel
- Director, Price-Anderson Amendments Act (PAAA)
- Director, Assessments and Corrective Action.

2. CORRECTIVE ACTIONS

- 2.1 **CH2M-PER-2007-1738:** CH2M HILL needs to revise its design review processes, procedures, and implementation to ensure approved designs are technically correct and satisfy the requirements of [RPP-13033] *Documented Safety Analysis (DSA)*.

CH2M-PER-2007-1738.1: Conduct an independent review of engineering design program issues and provide recommended corrective actions to strengthen the program and its implementation. Evaluate recommendations and implement corrective actions

Summary of Action Taken: An independent review of engineering design program issues was completed and provided recommended corrective actions to strengthen the program and its implementation as documented in the Final Engineering Design Team Report.

Date Closed: 06/28/08

CH2M-PER-2007-1738.2: Develop process hazards analysis (PHA) procedures and processes to ensure identification of hazards and controls for both [HNF-SD-WM-TSR-006] *Technical Safety Requirements (TSR)*, level hazards and higher frequency, lower consequence hazards that are of significance for emergency response and environmental compliance with emphasis on preventive controls over mitigative controls, including a process to train and assign designated personnel as lead PHA team leaders.

Summary of Action Taken: A new engineering procedure and a standard were developed. Procedure TFC-ENG-DESIGN-C-35, "Process Hazard Analysis," was effective 01/31/08. The procedure was issued in conjunction with the associated Engineering Standard, TFC-ENG-STD-28, "Process Hazard Analysis Standard."

Date Closed: 01/24/08

CH2M-PER-2007-1738.3: Revise design review procedures, using results of independent review as a guide. Clarify roles and responsibilities, and provide detailed guidance/criteria for review of in-house and subcontracted engineering design products. Define a graded approach for design review of engineering products, including requirements for intermediate design reviews and formal disposition of review comment resolutions.

Summary of Action Taken: Revised and issued TFC-ENG-DESIGN-P-17, Rev C-3, "Design Verification," and TCF-ENG-DESIGN-C-06, Rev G, "Engineering Change Control," to include requirements identified.

Date Closed: 12/17/07

- 2.2 **CH2M-PER-2007-1745:** CH2M HILL management needs to define and implement an effective method for identifying tank farm small quantity waste leaks.

CH2M-PER-2007-1745.1: Develop requirements, assess technology, and test selected system(s) to identify small quantity waste leaks.

Summary of Action Taken: Activities were initiated to develop equipment to provide indication of a waste leak that may result from tank farm waste retrieval operations. The system includes remote, wireless, stand-alone gamma detection units located at predetermined locations along the waste transfer route. These units are designed to detect the radiological conditions of the selected waste transfer locations and allow remote monitoring and data collection of the conditions that indicate if a small waste leak is present. In addition, remote wireless cameras are used to monitor specific detection locations in the event radiological detection limits are exceeded.

Requirements (engineering specifications and functional design criteria) were developed for each of these systems, and alternative systems were evaluated to establish the most viable system. The selected systems were then tested to ensure that the system would functionally satisfy the requirements. The testing for both systems was positive.

Date Closed: 05/15/08

CH2M-PER-2007-1745.2: Install enhanced system(s) to identify small quantity waste leaks.

Summary of Action Taken: The Remote Area Radiation Monitoring (RARM) system and the Waste Retrieval Remote Monitoring Camera (WRRMCAM) system were developed, tested and field deployed to identify small quantity waste leaks for the next planned C-Farm retrieval [tank 241-C-110 (C-110)].

The RARM system will be used to demonstrate a real-time radiation monitoring system for tank waste retrieval and transfer operations that detect anomalous (e.g., potential waste leaks) or transient radiological conditions during C-Farm tank waste retrievals.

The WRRMCAM system will reduce risk of personnel exposure to potentially hazardous environments by allowing remote viewing of the RARM locations and surrounding areas to verify anomalous conditions as indicated by the RARM system. In addition, the system will aid in understanding the extent of field conditions and in planning response actions.

The RARM and WRRMCAM systems were successfully developed, tested, and field deployed to allow detection of small radioactive tank waste leaks at selected locations along the C-110 retrieval transfer route. Utilization of this system will provide information to retrieval operations staff to remotely assess and support response actions to a small waste tank leak.

Implementation of the RARM and WRRMCAM systems will be validated as part of the C-110 retrieval readiness assessment.

Date Closed: 08/29/08

CH2M-PER-2007-1745.3: Publish an illumination/lighting standard that implements the Hazardous Waste Operations and Emergency Response Regulations (HAZWOPER) lighting requirements.

Summary of Action Taken: Through the PER process, the determination was made that revising TFC-PLN-34, *Industrial Hygiene Exposure Assessment Strategy*, was not the appropriate method for addressing the action. Standard TFC-ESHQ-IH-STD-13, "Illumination," was developed and issued for increased usability and retrievability by workers.

Date Closed: 01/04/08

CH2M-PER-2007-1745.4: Implement illumination/lighting standard developed in CHG-WC-1.3

Summary of Action Taken: TFC-ESHQ-IH-STD-13, "Illumination," was developed and issued. Personnel training records were updated to reflect training completion.

Date Closed: 04/01/08

CH2M-PER-2007-1745.5: Evaluate the expectations for use of remote cameras during waste transfers/retrievals.

Summary of Action Taken: This action was canceled as the corrective action for this item was addressed in CH2M-PER-2007-1745.1.

Date Closed: Canceled 12/10/07

- 2.3 CH2M-PER-2007-1746:** CH2M HILL management needs to clarify TSR with regard to radiological measurements as indicators of waste transfer leaks.

CH2M-PER-2007-1746.2: Revise and implement procedure TFC-ESHQ-RP_ADM-P-01, "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities," to clarify monitoring requirements associated with implementing TSR for leak detection. Revised procedure will include guidance for developing comprehensive monitoring requirements for TSR-level leak detection monitoring and radiological control monitoring that flow down into waste transfer monitoring technical work documents, as implemented by Action CHG-ENG-1.2.

Summary of Action Taken: The procedure was revised and training was conducted on 01/08/08.

Date Closed: 01/10/08

CH2M-PER-2007-1746.3: Train health physicists on revised TFC-ESHQ-RP_ADM-P-01, "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities," and associated TSR leak detection and radiological control monitoring requirements.

Summary of Action Taken: The action was withdrawn on 12/13/07. The completion of training described is documented in CH2M-PER-2007-1746.2.

Date Closed: Withdrawn 12/13/07

- 2.4 CH2M-PER-2007-1747:** CH2M HILL management needs to address radiological conduct of operations deficiencies that were evident during the S-102 response to abnormal operating conditions.

CH2M-PER-2007-1747.1: Combine Abnormal Operating Procedures (AOP) with similar initial actions including TF-AOP-006 and TF-AOP-011, utilizing an Enhanced Work Planning approach, including representatives from Operations, as well as Industrial Hygiene, Radiological Control, and Emergency Preparedness.

Summary of Action Taken: TF-AOP-006 was canceled and consolidated into revised TF-AOP-011, "Response to Chemical and/or Radiological Events." Deficiencies identified by this PER were addressed in the revision to TF-AOP-011.

Date Closed: 11/08/07

CH2M-PER-2007-1747.2: Review all Abnormal Operating Procedures utilizing an Enhanced Work Planning approach including representatives from Operations as well as Industrial Hygiene, Radiological Control, and Emergency Preparedness. Implement revisions with focus on effective flow between Alarm Response Procedures, AOPs, and Emergency Response Procedures.

Summary of Action Taken: The evaluation of all AOPs was completed. In addition to combining TF-AOP-006 with TF-AOP-011, changes related to lessons learned from the S-102 event were incorporated into TF-AOP-005, "Response to Unexpected Tank Temperature, Level, or Flammable Gas Increase"; TF-AOP-015, "Response to Reported Odors or Unexpected Changes to Vapor Conditions"; and TF-AOP-018, "Response to Electrical, Water, Air, or Pressurized Gas Cylinders High Energy Releases."

Date Closed: 01/31/08

CH2M-PER-2007-1747.3: Implement a process for safe AOP response such that planning time is minimized for event response and stabilization

Summary of Action Taken: Shift managers were briefed on immediate recovery work control requirements.

Date Closed: 02/28/08

CH2M-PER-2007-1747.4: Complete review of abnormal operating procedure changes utilizing table top drill format with all tank farm shifts.

Summary of Action Taken: Procedures TF-AOP-005, TF-AOP-015, and TF-AOP-018 were reviewed with all five shift crews when the procedure changes were issued. The procedures were also used for table top drills during February.

Date Closed: 02/28/08

2.5 CH2M-PER-2007-1750: CH2M HILL and the U.S. Department of Energy, Office of River Protection (ORP) need to improve S-102 waste retrieval oversight to ensure that nuclear safety and other safety requirements are met.

Summary of Action Taken: A barrier analysis was performed and documented within PER-2007-1750. ESTARS action CH2M-PER-2007-1750.1 was initiated to revise the Closure Operations Organization Annual Management Assessment Plan to include a strategy for improving oversight of waste retrievals and transfers. The plan was issued on 11/26/07 and the CH2M-PER-2007-1750.1 action was closed 12/17/07.

Date Closed: 04/15/08

- 2.6 **CH2M-PER-2007-1327:** While preparing to perform S-102 to SY-102 transfer shutdown surveys, a health physics technician identified unexpected radiation levels when approaching the S-102 transfer pump. Radiation levels of 200-250 mr/hr at 8 to 15 feet from the transfer pump were identified. Subsequent later investigations discovered that there had been a spill of S-102 waste around the S-102 pump.

CH2M-PER-2007-1327.3: Modify engineering procedures to ensure that senior engineers independent of the project are included as part of the design review, including, as appropriate, the Chief Engineer and discipline leads from the central engineering organization.

Summary of Action Taken: TFC-ENG-DESIGN-P-17, "Design Verification," Rev C-4, was issued, which incorporated the corrective actions. Rev C-5 was subsequently issued to change the title of Attachment C from "guidance" to "criteria" as recommended by the ESRB.

Date Closed: 12/21/07

CH2M-PER-2007-1327.16: Revise TFC-ENG-FACSUP-D02.2, "Waste Leak Path Evaluations," to require determination of potential waste transfer paths and evaluation to ensure all paths are analyzed against accident scenarios in the DSA, the waste channeling potential inadequacy in the safety analysis (PISA), and literal definition of physically connected.

Summary of Action Taken: TFC-ENG-FACSUP-C-26, "Waste Leak Path Evaluations," Rev A, was issued to include the changes.

Date Closed: 11/08/07

CH2M-PER-2007-1327.17: Establish a Waste Transfer Confinement Review Board to conduct independent reviews of waste leak path evaluations conducted by Projects in accordance with ENG-FACSUP-D-02.2.

Summary of Action Taken: The Waste Transfer Confinement Review Board was established via TFC-CHARTER-37.

Date Closed: 11/08/07

CH2M-PER-2007-1327.18: Turn Desk Instruction TFC-ENG-FAC SUP-D-02.2, "Waste Leak Path Evaluations," into an Engineering procedure to institutionalize the Waste Leak Path Evaluation process.

Summary of Action Taken: TFC-ENG-FAC SUP-C-26, "Waste Leak Path Evaluations," Rev A, was issued to implement the waste leak path evaluation process.

Date Closed: 11/29/07

CH2M-PER-2007-1327.19: Establish an Engineering Standard on confinement for all tank farm designs. Design reviews verify that the design meets the appropriate Engineering Standard. Likewise, Engineering performs walkdowns to verify visible portions of confinement systems are installed as designed.

Summary of Action Taken: TFC-ENG-STD-03, Rev A, "Waste Transfer Confinement Configuration," was issued. Training to the new standard was accomplished by Required Reading.

The S-102 End Point Assessment identified a weakness in closure of this corrective action. The action committed to issuing a Waste Confinement Standard. The commitment also included a statement, "Likewise, Engineering performs walk-downs to verify visible portions of confinement systems are installed as designed." Standard TFC-ENG-STD-03 was issued; however, it did not contain the explicit requirement to verify visible portions of systems. The ESRB concurred to reopen this corrective action to include the revised standard as adequate closure evidence. The revised standard was issued 09/08/08.

Date Closed: 09/11/08

- 2.7 **CH2M-PER-2007-1493:** TF-AOP-006 and TF-AOP-011 procedures lack guidance in responding to an unknown High Radiation Area.

Summary of Action Taken: 11/27/07

Date Closed: Several improvements related to the abnormal operating procedures were identified with focus on TF-AOP-006 and TF-AOP-011. TF-AOP-006 was canceled and incorporated into TF-AOP-011.

- 2.8 **CH2M-PER-2007-1496:** Timely response was delayed while necessary re-entry plans were developed and approved. Evaluate/develop pre-planned and approved reentry, investigative, and habitability surveys for and with both Industrial Hygiene and health physics technician involvement.

Summary of Action Taken: Procedures TF-AOP-011 and TF-OPS-MAINT-C-01 were revised to include written guidance for re-entry into an area following an event.

However, in an emergency situation where timely entry is required to protect human health or the environment, the Incident Commander will contact the Hanford Fire Department.

Date Closed: Problem Evaluation Request was closed at 04/21/08 ESRB meeting.

- 2.9 **CH2M-PER-2007-1370:** During reverse rotation of the positive displacement (progressive cavity) pump installed in S-102, a release of waste occurred outside of the designed transfer system confinement boundary. Visual observation of the leak site and review of radiological data indicate that the likely waste release point was from the dilution water supply hose. The hose ultimately leads to the suction of the pump. (The suction when the pump is running in forward, the discharge when running in reverse.) The mechanism proposed is plugging of the pump intake area while the pump is running in reverse causing pressurization of the dilution line sufficient to overcome the hydraulic lift to the top of the tank and rupture the dilution hose.

Backflow of waste into the dilution line of the S-102 progressive cavity pump was not considered in the safety basis. Dilution lines in the normal suction of a waste transfer pump that can be pressurized by running the pump in reverse (assuming plugged pump suction) have not been evaluated relative to the hazard of concern for backflow of waste into a non-waste transfer system. Thus the lines have not been considered to be physically connected to an active waste transfer pump not under administrative lock. This represents a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment, and therefore is a PISA.

Initially occurrence report EM-RP-CHG-TANKFARM-2007-0009 was issued on 7/27/07.

CH2M-PER-2007-1370.1: DC-01-01: Develop desk instruction providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected per the existing TSR definition and is not constrained by pressurization capability. Update desk instruction to match existing TSR definition of physically connected.

Summary of Action Taken: TFC-ENG-FAC SUP-C-26, "Waste Leak Path Evaluations," Rev A, was issued to address the corrective actions identified.

Date Closed: 10/18/07

CH2M-PER-2007-1370.6: CATPR-02: Develop training on lessons learned regarding mindset errors and the need to incorporate explicit TSR requirements into the design and design review processes.

Summary of Action Taken: Developed training on lessons learned regarding mindset errors and the need to incorporate explicit TSR requirements into the design and design review process. Training records attached to PER.

Date Closed: 11/08/07

CH2M-PER-2007-1370.9: MPA-01: Perform a Mid-Point effectiveness assessment. MPA-01 Criteria Includes: 1.) Review objective evidence from all completed corrective actions to ensure completeness and adequacy. 2.) Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected. 3.) Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review processes. 4.) Perform a search of the PER database (September 1, 2007 to February 15, 2008) to identify any further instances of incorrect application of TSR definitions.

Summary of Action Taken: Mid-point assessment, FY2008-CH2M-I-0003, was completed. Criterion 2 states "Conduct interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected." This criterion was satisfied during the interviews conducted with personnel as documented in the final report of the Independent Assessment of the S-102 CAP (FY2008-CH2M-I-0003), pages 32-33.

Date Closed: 05/29/08

CH2M-PER-2007-1370.10: EPA-01; Perform an End Point effectiveness assessment. EPA criteria includes: 1.) Review objective evidence from all corrective actions to ensure completeness and adequacy. 2.) Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected. 3.) Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review process. 4.) Perform a review of selected designs produced (after implementation of CATPR-01) evaluating how physically connected is being used, to demonstrate CATPR-01 effectiveness. 5.) Perform a search of the PER database (February 16, 2008 to August 31, 2008) to identify any further instances of incorrect application of TSR definitions.

Summary of Action Taken: The Corrective Action Plan Implementation for Tank S-102 Waste Spill End Point Assessment was issued 09/11/08. The assessment found that corrective actions identified in the resolution of the dispute were implemented.

Date Closed: 09/18/08

2.10 CH2M-PER-2007-1596: The S-102 Event Investigation Team (EIT) determined that the work to manually rotate the S-102 retrieval pump on 07/27/07 had not been released by the Shift Manager and was not performed in accordance with procedure TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control." The work was inappropriately classified as minor work as it did not meet the definition for minor work outlined in the work control procedure. Specifically, the work was a multicraft job requiring the use of special tools and specific training. Additionally, the procedure requires the Field Work Supervisor and workers to use a Worksite Hazards Analysis to walk down the work to identify the hazards and appropriate controls. Instead, the workers relied on the General Hazards Analysis, which, among other hazards, does not address electrical hazards. Additionally, the work control procedure requires that the activities performed be recorded on the work record. However, the activities that were performed to manually rotate the pump were not specifically documented in the work record. Furthermore, the work was documented in the Instrument Tech Minor Standing Work Order, rather than the Pipefitter Minor Standing Work Order.

CH2M-PER-2007-1596.1: EM-60-17.1; develop and present training to the Field Work Supervisors on the requirements for completing a new Worksite Hazards Analysis and when it is appropriate to utilize the General Hazards Analysis.

Summary of Action Taken: CH2M HILL has a total of 44 qualified Field Work Supervisors. To date, 40 of the 44 (90%) have received the training specified herein.

Date Closed: 01/31/08

CH2M-PER-2007-1596.2: EM-60-17.2; revise TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control," to clarify a.) When a troubleshooting plan is required, and b.) What type of work can be performed using a Standing Minor Work Package.

Summary of Action Taken: Procedure TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control," was revised to include indicated changes and subsequently issued.

Date Closed: 01/10/08

CH2M-PER-2007-1596.3: EM-60-17.3; develop and present training to the Field Work Supervisors on a.) The changes to TFC-OPS-MAINT-C-01 regarding when a troubleshooting plan is required and the type of work which can be performed using a Standing Minor Work Package, b.) The expectations for documenting proposed work scope on a Standing Minor Work Package, including use of the proper work package

with regards to the primary craft performing the work, c.) The expectations for documenting work release of a Standing Minor Work Package through the shift office, and d.) The expectations for documenting work completion of an item in a Standing Minor Work Package.

Summary of Action Taken: CH2M HILL has a total of 44 qualified Field Work Supervisors. Forty of the 44 (90%) have received the training specified in the assigned deliverable. In addition, the requirement for training to the Work Control Procedure was added to the biannual qualification process for all Field Work Supervisors.

Date Closed: 01/31/08

- 2.11 CH2M-PER-2007-1605:** The S-102 EIT determined that the delta Hazard and Operability Study (HAZOP) performed on the most recently installed S-102 retrieval pump did not include all system modifications, did not document conclusions, and results were not formally communicated. Although the "delta HAZOP" process is a good practice, it is not governed by procedure although the process should be consistent with CH2M HILL HAZOP process.

Summary of Action Taken: Action CH2M-PER-2007-1327.1 addressed this action. TFC-ENG-STD-28, "Process Hazards Analysis Standard," and TFC-ENG-DESIGN-C-35, "Process Hazards Analysis," were issued to establish a process for conducting process hazards analyses of single-shell tank retrievals and other TFC processes prior to restart. The process also provided a process for conducting Process Hazards Analyses of major changes to TFC processes as an interim step in establishing a management of change process.

Date Closed: 11/01/07

- 2.12 CH2M-PER-2007-2042:** REC-28, Change the focus of the engineering assessment program to one that is focused on quality and follow-through, rather than the current program that seems more focused on quantity and documentation. (Long-term.)

Summary of Action Taken: The Engineering Management Observation Program (MOP) Focus was issued in March 2008. The purpose was to issue guidance to change the focus of the engineering assessment program to one that is focused on quality and follow-through, rather than the current program that seems more focused on quantity and documentation. The Focus also addressed the requirement that some MOPs focus on the effectiveness of the engineering corrective actions from previous MOPs and assessments.

Date Closed: 02/21/08

3. REFERENCES

- Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order – Tri-Party Agreement*, 2 vols., as amended, State of Washington Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.
- EM-RP-CHG-TANKFARM-20070009, "Occurrence Report, Tank 241-S-102 Waste Spill," CH2M HILL Hanford Group, Inc., Richland, Washington.
<file://hanford/data/Sitedata/orreports/2007/CHG-0009.TXT>
- HNF-SD-WM-TSR-006, *Technical Safety Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.
- RPP-13033, *Documented Safety Analysis*, CH2M HILL Hanford Group, Inc., Richland, Washington.
- TF-AOP-005, "Response to Unexpected Tank Temperature, Level, or Flammable Gas Increase," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TF-AOP-011, "Response to Chemical and/or Radiological Events," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TF-AOP-015, "Response to Reported Odors or Unexpected Changes to Vapor Conditions," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TF-AOP-018, "Response to Electrical, Water, Air, or Pressurized Gas Cylinders High Energy Releases," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TFC-Charter-37, *Waste Transfer Confinement Review Board*, CH2M HILL Hanford Group, Inc., Richland, Washington.
- TFC-ENG-DESIGN-C-06, "Engineering Change Control," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TFC-ENG-DESIGN-C-35, "Process Hazard Analysis," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TFC-ENG-DESIGN-P-17, "Design Verification," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TFC-ENG-FAC SUP-C-26, "Waste Leak Path Evaluations," CH2M HILL Hanford Group, Inc., Richland, Washington.
- TFC-ENG-STD-03, "Waste Transfer Confinement Configuration," CH2M HILL Hanford Group, Inc., Richland, Washington.

TFC-ENG-STD-28, "Process Hazard Analysis Standard," CH2M HILL Hanford Group, Inc., Richland, Washington.

TFC-ESHQ-IH-STD-13, "Illumination," CH2M HILL Hanford Group, Inc., Richland, Washington.

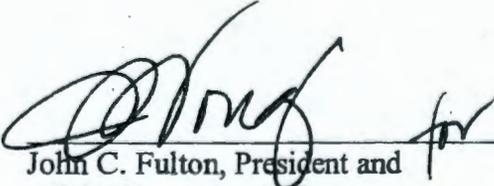
TFC-ESHQ-RP_ADM-P-01, "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities," CH2M HILL Hanford Group, Inc., Richland, Washington.

TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control," CH2M HILL Hanford Group, Inc., Richland, Washington.

TFC-PLN-34, *Industrial Hygiene Exposure Assessment Strategy*, CH2M HILL Hanford Group, Inc., Richland, Washington.

4. CERTIFICATION STATEMENT

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true and accurate.



John C. Fulton, President and
Chief Executive Officer
CH2M HILL Hanford Group, Inc.

Appendix A

Corrective Action Matrix

/E-STARS	ISSUE/ACTION STATEMENT	DELIVERABLE	ACTIONEE
TYPE A ACCIDENT INVESTIGATION REPORT			
ER-2007-1738	CH2M HILL needs to revise its design review processes, procedures and implementation to ensure approved designs are technically correct and satisfy the requirements of the DSA.		Walker, KD
ER-2007-1738.1	Conduct an independent review of engineering design program issues and provide recommended corrective actions to strengthen the program and its implementation. Evaluate recommendations and implement corrective actions	Engineering Design Program Review report and record of corrective action implementation.	Walker, KD
ER-2007-1738.2	Develop process hazards analysis (PHA) procedures and processes to ensure identification of hazards and controls for both Technical Safety Requirements (TSR) level hazards, and higher frequency, lower consequence hazards that are of significance for emergency response and environmental compliance with emphasis on preventive controls over mitigative controls, including process to train and assign designated personnel as lead PHA team leaders.	New engineering procedure/standards. Listing of trained personnel.	Knight, MA
ER-2007-1738.3	Revise design review procedures, using results of independent review as a guide. Clarify roles and responsibilities, and provide detailed guidance/criteria for review of in-house and subcontracted engineering design products. Define a graded approach for design review of engineering products, including requirements for intermediate design reviews and formal disposition of review comment resolutions.	Revised design review procedures including structure, roles, and responsibilities for design reviews.	Walker, KD
ER-2007-1745	CH2M HILL management needs to define and implement an effective method for identifying Tank Farm small quantity waste leaks.		Hissong, TL
ER-2007-1745.1	Develop requirements, assess technology and test selected system(s) to identify small quantity waste leaks.	Issued test report.	Calmus, RB
ER-2007-1745.2	Install enhanced system(s) to identify small quantity waste leaks.	Completed work package(s).	Calmus, RB
ER-2007-1745.3	Publish an illumination/lighting standard that implements the HAZWOPER lighting requirements.	Published lighting standard.	Jones, MW
ER-2007-1745.4	Implement illumination/lighting standard developed in CHG-WC-1.3.	Revise procedures implementing the published standards and completed training rosters.	Jones, MW
ER-2007-1745.5	Evaluate the expectations for use of remote cameras during waste transfers/retrievals.	Evaluation report.	Raymond, RJ

U/E-STARS	ISSUE/ACTION STATEMENT	DELIVERABLE	ACTIONEE
ER-2007-1746.2	Revise and implement procedure TFC-ESHQ-RP_ADM-P-01," Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities," to clarify monitoring requirements associated with implementing TSR requirements for leak detection. Revised procedure will include guidance for developing comprehensive monitoring requirements for TSR level leak detection monitoring and radiological control monitoring, which flow down into waste transfer monitoring technical work documents, as implemented by Action CHG-ENG-1.2.	Revised procedure ADM-P-01.	Bratvold, TE
ER-2007-1746.3	Train health physicists on revised TFC-ESHQ-RP_ADM-P-01, "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities," and associated TSR leak detection and radiological control monitoring requirements.	Training materials and attendance rosters indicating 90% completion.	Bratvold, TE
ER-2007-1747	CH2M HILL management needs to address radiological conduct of operations deficiencies that were evident during the S-102 response to abnormal operating conditions.		Jarecki, TD
ER-2007-1747.1	Combine Abnormal Operating Procedures (AOP) with similar initial actions including TF-AOP-006 and TF-AOP-011, utilizing an Enhanced Work Planning approach, including representatives from Operations, as well as Industrial Hygiene, Radiological Control, and Emergency Preparedness.	Revised Abnormal Operating Procedures.	Jarecki, TD
ER-2007-1747.2	Review all AOPs utilizing an Enhanced Work Planning approach including representatives from Operations as well as Industrial Hygiene, Radiological Control, and Emergency Preparedness. Implement revisions with focus on effective flow between Alarm Response Procedures, AOPs, and Emergency Response Procedures.	Revised Abnormal Operating Procedures.	Jarecki, TD
ER-2007-1747.3	Implement a process for safe AOP response such that planning time is minimized for event response and stabilization.	Implemented procedures for new process.	Jennings, TL
ER-2007-1747.4	Complete review of abnormal operating procedure changes utilizing table top drill format with all tank farm shifts.	Drill attendance indicating 90% completion.	Jarecki, TD
ER-2007-1750	CH2M HILL and ORP need to improve S-102 waste retrieval oversight to ensure that nuclear safety and other safety requirements are met.		Raymond, RJ

ROOT CAUSE ANALYSIS (RCA) REPORT - PER-2007-1327 (RPP-RPT-34831)

	Modify engineering procedures to ensure that senior engineers independent of the project are included as part of the design review, including, as appropriate, the Chief Engineer and discipline leads from the central engineering organization.	Modified procedures.	Walker, KD
6	Revise TFC-ENG-FACSUP-D02.2, "Waste Leak Path Evaluations," to require determination of potential waste transfer paths and evaluation to ensure all paths are analyzed against accident scenarios in the DSA, the waste channeling PISA, and literal definition of physically connected.	Revision of TFC-ENG-FACSUP-D02.2, "Waste Leak Path Evaluations," with a current or past effective date, requiring evaluation of potential waste transfer paths to the DSA, consideration of the waste channeling PISA, and the literal definition of physically	Walker, KD

R/E-STARS	ISSUE/ACTION STATEMENT	DELIVERABLE	ACTIONEE
17	Establish a Waste Transfer Confinement Review Board to conduct independent reviews of waste leak path evaluations conducted by Projects in accordance with ENG-FAC SUP-D-02.2.	Charter.	Walker, KD
18	Turn Desk Instruction TFC-ENG-FAC SUP-D-02.2, "Waste Leak Path Evaluations," into an engineering procedure to institutionalize the Waste Leak Path Evaluation process.	New procedure, Waste Leak Path Evaluations.	Walker, KD
19	Establish an engineering standard on confinement for all tank farm designs. Design reviews verify that the design meets the appropriate engineering standard. Likewise, Engineering performs walkdowns to verify visible portions of confinement systems are installed as designed.	New standard.	Walker, KD

EMERGENCY MANAGEMENT EVENT RESPONSE REVIEW REPORT (7L000-TAE-07-001)

PER-2007-1493	TF-AOP-006 and TF-AOP-011 procedures lack guidance in responding to an unknown High Radiation Area.	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12, "Apparent Cause Analysis and Corrective Action Planning."	Jarecki, TD
ER-2007-1496	Timely response was delayed while necessary re-entry plans were developed and approved. Evaluate/develop pre-planned and approved re-entry, investigative and habitability surveys for and with both Industrial Hygiene and health physics technician involvement.	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis and Corrective Action Planning.	Kembel, MR

EVENT ANALYSIS PER 2007-1370

R-2007-1370	<p>During reverse rotation of the positive displacement (progressive cavity) pump installed in S-102, a release of waste occurred outside of the designed transfer system confinement boundary. Visual observation of the leak site and review of radiological data indicate that the likely waste release point was from the dilution water supply hose. The hose ultimately leads to the suction of the pump. (The suction when the pump is running in forward, the discharge when running in reverse.) The mechanism proposed is plugging of the pump intake area while the pump is running in reverse causing pressurization of the dilution line sufficient to overcome the hydraulic lift to the top of the tank and rupture the dilution hose.</p> <p>Backflow of waste into the dilution line of the 241-S-102 progressive cavity pump was not considered in the safety basis. Dilution lines in the normal suction of a waste transfer pump that can be pressurized by running the pump in reverse (assuming a plugged pump suction) have not been evaluated relative to the hazard of concern for backflow of waste into a non-waste transfer system, and thus have not been considered to be physically connected to an active waste transfer pump not under administrative lock. This represents a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public,</p>		Koch, MR
-------------	---	--	----------

1/E-STARS	ISSUE/ACTION STATEMENT	DELIVERABLE	ACTIONEE
	<p>Initially occurrence report EM-RP-CHG-TANKFARM-2007-0009 was issued on 7/27/07.</p> <p>Background: The DSA identifies and evaluates the potential hazards from waste transfer leaks caused by the backflow of waste into non-waste transfer systems (e.g., service water, raw water, dilution systems). The control to prevent and/or mitigate the backflow of waste into non-waste transfer systems is to physically disconnect the non-waste transfer system from the waste transfer route. This can be accomplished with an air gap, a blind flange/process blank, an operable service water pressure detection system in accordance with LCO 3.1.2 ("Backflow Prevention Systems"), an operable backflow preventer in accordance with LCO 3.1.2, or two safety-significant or evaluated waste transfer system isolation valves independently verified to be in the closed position. Up to the point where the non-waste transfer system is physically disconnected, the non-waste transfer system is required to be within waste transfer-associated structures with covers and operable waste transfer leak detection systems.</p> <p>Evaluation</p> <p>Backflow of waste into the dilution line of the 241-S-102 progressive cavity pump was not considered in the safety basis. Waste transfer leaks resulting from operating a transfer pump (centrifugal) in reverse (e.g., due to mis-wiring) was evaluated in RPP-15188, <i>Hazard Evaluation Database Report</i>, and concluded to have an accident frequency of beyond extremely unlikely (not credible) because a centrifugal pump cannot pump in the reverse direction by rotating it backwards. Such a conclusion is not applicable to a progressive cavity pump that can pump in the reverse direction. Dilution lines in the normal suction of a waste transfer pump that can be pressurized by running the pump in reverse (assuming a plugged pump suction) have not been evaluated relative to the hazard of concern for backflow of waste into a non-waste transfer system, and thus have not been considered to be physically connected to an active waste transfer pump not under administrative lock. This represents a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment.</p>		
t-2007-1370.1	<p>DC-01-01: Develop desk instruction providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected as specified in the existing TSR definition, and is not constrained by pressurization capability. Update desk instruction to match existing TSR definition of physically connected.</p>	Desk Instruction TFC-ENG-FAC SUP-D-02.2.	Koch, MR
-2007-1370.6	<p>CATPR-02: Develop training on lessons learned regarding mindset errors and the need to incorporate explicit TSR requirements into the design and design review processes.</p>	Copy of training material.	Eberlein, SJ
2007-1370.9	<p>MPA-01: Perform a Mid-Point effectiveness assessment. MPA-01 Criteria Include (1) Review objective evidence from all completed corrective actions to ensure completeness and adequacy, (2) conduct interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected, (3) conduct interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and</p>	Completed Mid-Point Assessment that has been presented to and accepted by the Executive Safety Review Board.	Koch, MR

U/E-STARS	ISSUE/ACTION STATEMENT	DELIVERABLE	ACTIONEE
ER-2007-	<p>EPA-01: Perform an End Point effectiveness assessment. EPA criteria include (1) review objective evidence from all corrective actions to ensure completeness and adequacy, (2) conduct interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected, (3) conduct interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review process. 4.) Perform a review of selected designs produced (after implementation of CATPR-01) evaluating how physically connected is being used, to demonstrate CATPR-01 effectiveness. 5.) Perform a search of the PER database (February 16, 2008 to August 31, 2008) to identify any further instances of incorrect application of TSR definitions.</p>	<p>Completed End Point Assessment that has been presented to and accepted by the Executive Safety Review Board (ESRB).</p>	<p>Koch, MR</p>

EVENT INVESTIGATION TEAM

PER-2007-1596	<p>The S-102 EIT determined that the work to manually rotate the S-102 retrieval pump on 07/2707 had not been released by the Shift Manager and was not performed in accordance with procedure TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control." The work was inappropriately classified as minor work as it did not meet the definition for minor work outlined in the work control procedure. Specifically, the work was a multicraft job requiring the use of special tools, and specific training. Additionally, the procedure requires the Field Work Supervisor and workers to use a Worksite Hazards Analysis to walk down the work to identify the hazards and appropriate controls. Instead, the workers relied upon the General Hazards Analysis, which among other hazards does not address electrical hazards. Additionally, the work control procedure requires that the activities performed be recorded on the work record. However, the activities that were performed to manually rotate the pump were not specifically documented in the work record. Furthermore, the work was documented in the Instrument Tech Minor Standing Work Order rather than the Pipefitter Minor Standing Work Order.</p>	<p>Not identified.</p>	<p>Klos, JJ</p>
	<p>EM-60-17.1: Develop and present training to the Field Work Supervisors on the requirements for completing a new Worksite Hazards Analysis and when it is appropriate to utilize the General Hazards Analysis.</p>	<p>Training materials and attendance rosters indicating 90% attendance.</p>	<p>Klos, JJ</p>
	<p>EM-60-17.2: Revise TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control," to clarify (1) When a troubleshooting plan is required, and (b.) what type of work can be performed using a Standing Minor Work Package.</p>	<p>Issued procedure.</p>	<p>Ross, WE</p>
	<p>EM-60-17.3: Develop and present training to the Field Work Supervisors on (1) the changes to TFC-OPS-MAINT-C-01 regarding when a troubleshooting plan is required and the type of work which can be performed using a Standing Minor Work Package, (2) the expectations for documenting proposed work scope on a Standing Minor Work Package, including use of the proper work package with regards to the primary craft performing the work, (3) the expectations for documenting work release of a Standing Minor Work Package through the shift office, and (4) the expectations for documenting work completion of an item in a Standing Minor Work Package.</p>	<p>Detraining materials and attendance rosters indicating 90% attendance.</p>	<p>Klos, JJ</p>

R/E-STARS	ISSUE/ACTION STATEMENT	DELIVERABLE	ACTIONEE
PER-2007-1605	The delta HAZOP performed on the most recently installed S-102 retrieval pump did not include all system modifications, did not document conclusions, and results were not formally communicated. Although the "delta HAZOP" process is a good practice, it is not governed by procedure, and the process should be consistent with CH2M HILL HAZOP process.	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.	Eberlein, SJ

ENGINEERING DESIGN REVIEW REPORT

PER-2007-2042	REC-28, Change the focus of the engineering assessment program to one that is focused on quality and follow-through, rather than the current program that seems more focused on quantity and documentation (long term).	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.	Walker, KD
---------------	---	---	------------

to startup
 ie activity prior to startup
 losed by the ESRB for CH2M HILL actions
 : for the activity prior to startup—compensatory actions needed
 riew Report
 m
 w Board
 le to the activity
 uest

Appendix B

Documentation for Closeout of CH2M-PER-2007-1738

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1738

Closed 06/26/2008 11:15

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1738	10/03/2007	16:00	Engineering
Location			
Hill Tank Farms			
How Was Problem Discovered			
DOE			
Description of Concern or Problem			
DOE Type A Accident Report JUDGMENT OF NEED: ENG-2 CH2M HILL needs to revise its design review processes, procedures and implementation to ensure approved designs are technically correct and satisfy the requirements of the Documented Safety Analysis.			
Requirement Not Satisfied		Source Document Number	
Equipment Identification Number		System Identification	
Immediate Actions Taken or Planned			
None			
Recommended Corrective Actions			
Assign as PER w/ Res to Bob Popielarczyk Contact: Ken Walker			
Level of Participation			
Solo			
Originators Name	Originators ID	Originators Phone	Date Initiated
Higgins, Richard (Rich)	[REDACTED]	(509) 373-5305	10/03/2007
SHIFT OPERATIONS REVIEW			
Title			
102 Type A Accident Report: Revise design review processes, procedures and implementation			
How Discovered		Agency	
Self-ID result of event			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe Actions Taken or Recommended			
No additional actions taken or recommended by CO SO.			
DO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Malhan, Rakesh	[REDACTED]	(509) 372-2806	10/03/2007
SCREENING			
PER Significance Level			
R with Resolution			
Independent Assessment Review	Occurrence Report Number	Externally Identified	
Yes		No	
Signed Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Malmond, Richard E			
Screening Comments			
K Walker. nb			

Causal Code			
A1B4C01	Design/Engineering Problem Design/Installation Verification LTA Independent review of design/documentation		
A4B5C04	Management Problem Change Management LTA Risks/consequences associated with change not adequately reviewed/assessed		
MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Engineering	Event Investigation
ISMS	Consequence Code		
Define scope of work	Engineering Requirement		
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	10/04/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
PAAA, Non-NTS Reportable	10 CFR 830.122 (f)(2) 10 CFR 830.122 (f)(5) 10 CFR 830.202 (b)(2)	Document Control Other Management Program/Process Systems Review/Designs Review
NTS Report Number	NTS Report Date	
Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation
No	No	No

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date
Stenzel, Len C (inactive) (inactive)	10/04/2007
PAAA Approver Name	PAAA Approve Date
Stenzel, Len C (inactive) (inactive)	10/08/2007

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call
None. lg

Instructions for Responsible Manager
Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	H0054042	(509) 372-0533	10/08/2007

CAUSE ANALYSIS

Description of Occurrence
: approximately 1000 on Friday, July 27, 2007, CH2M HILL Hanford Group, Inc. (CH2M HILL) reported that a radioactive waste leak occurred in S-Farm in the vicinity of the S-102 retrieval pump discharge. The spill was discovered by a work crew investigating the use of high radiation readings noted at 0240 that morning after operating the positive displacement Seepex #2 pump in reverse, as signed, following a waste transfer from single shell tank (SST) S-102 to double shell tank (DST) SY-102. The quantity of waste spilled estimated to be 114 gallons and covers an area of approximately 200 ft2. Access to the tank farm was restricted and radiological rveys confirmed no spread of contamination outside the tank farm boundary.

Extent of Condition
: extent of condition for ENG-2 includes any tank-connected system exposed to liquid waste where there is a force sufficient to develop a differential pressure between the waste and the environment. Any system or component connected between the waste and

the environment should be considered a potential leak path until the probability of such an event is proven to be beyond extremely unlikely.

Safety Significance

From a nuclear safety perspective, the leak path from the dilution water supply hose was clearly discussed in the DSA. However, the hazards analysis of the Seepex pump design and interconnected raw water supply lines failed to consider the leak scenario as a plausible accident, resulting in a LTA set of hazard controls.

The leak could potentially have resulted in the radiological and chemical contamination of personnel, including skin contamination, and external and internal radiation exposure, and external and internal chemical exposure in excess of regulatory limits. No employees were contaminated during the event, nor did any employees receive radiation exposure above established limits.

Although there is no hard technical evidence that employees were exposed to radiation, chemicals, or chemical vapors in excess of established limits, several personnel reported experiencing adverse health effects following this event.

Generic Implications

Remedial Corrective Action

None.

Causal Analysis, Apparent Cause and/or Root Cause Analysis

The Type A Accident Investigation Report found that the design process failed to verify proper implementation of DSA- and TSR-required Safety Significant design features for the retrieval pump system and the associated dilution and sparge lines.

The causal analysis of this JON was performed as part of the Root Cause Analysis for Significant PER-2007-1327 for the Radioactive Waste Spill at 241-S-102. Based on this root cause analysis, two Root Causes and Causal Factors were assigned:

RC-01 - Engineering Design Less Than Adequate (LTA) - The design review and hazards evaluation for the S-102 Waste Retrieval System (WRS) did not consider the raw water supply system as a potential waste transfer misroute path, despite the fact that the Tank Farms Documented Safety Analysis (DSA) specifically discusses such accidents in its accident analyses. The mindset of engineers who performed the analysis was that the S-102 raw water system (RWS) was not "physically connected" to the waste transfer system and therefore did not present a potential misroute path. Additionally, process hazards evaluations were not adequately performed for changes made to the S-102 WRS. Furthermore, change management was less than adequate in that the number of changes made as the design evolved were not collectively evaluated for the impact on changes in system performance

RC-02 - Management of Change LTA - The CH2M HILL configuration management process, which includes a formal change management process, does not include all of the elements of 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals. Modifications to the S-102 retrieval pump and associated control system software, changes in S-102 WRS component configuration, and differences between the S-102 Process Control Plan (PCP) and actual tank waste conditions, were not adequately evaluated. Unreviewed Safety Question (USQ) evaluations of changes to the S-102 WRS evaluated changes against the accident analyses documented in the DSA. However, such evaluations were generally focused on the off-site consequences of potential accidents and did not effectively evaluate more local impacts.

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	07/01/2008	CH2M-PER-2007-1738.1

Action

ENG-2.1 Conduct an independent review of engineering design program issues and provide recommended corrective actions to strengthen the program and its implementation. Evaluate recommendations and implement corrective actions

Deliverable: Engineering Design Program Review report and record of corrective action implementation.

Actionee	Action Due Date	E-STARS Number
Knight, Mark A	01/31/2008	CH2M-PER-2007-1738.2

Action

ENG-2.2 Develop process hazards analysis (PHA) procedures and processes to ensure identification of hazards and controls for both TSR level hazards, and higher frequency, lower consequence hazards that are of significance for emergency response and environmental compliance with emphasis on preventive controls over mitigative controls, including process to train and assign designated personnel as lead PHA team leaders.

Deliverable:
New Engineering procedure/standards listing of trained personnel.

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	12/10/2007	CH2M-PER-2007-1738.3

Action

ENG-2.3 Revise design review procedures, using results of independent review of Action CHG-ENG-2.1 as a guide. Clarify roles and responsibilities, and provide detailed guidance/criteria for review of in-house and subcontracted engineering design products. Define a graded approach for design review of engineering products, including requirements for intermediate design reviews and formal disposition of review comment resolutions.

Deliverable:

Revised design review procedures including structure, roles and responsibilities for design reviews.

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	11/30/2007	CH2M-PER-2007-1738.4

Action
 ENG-2.4 Establish and implement a process to perform a thorough extent of condition review for systems connected to waste storage tanks to determine potential waste transfer paths and ensure that such systems incorporate applicable TSR controls. This process will be applied to each transfer prior to operation.

Deliverable:
 Procedure for Waste Leak Path Evaluations and Charter for Waste Transfer Confinement Review Board.

Actionee	Action Due Date	E-STARS Number
Knight, Mark A	03/01/2008	CH2M-PER-2007-1738.5

Action
 ENG-2.5 Adopt and implement a Management of Change process similar to that described in Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals.

Deliverable:
 New/revised procedures including requirement to assess individual and multiple changes to a system for impact on process hazard analysis conclusions and evidence of briefings to affected personnel.

ATTACHMENTS

- CH2M-PER-2007-1738 2-Supplemental Closure Package.pdf
- CH2M-PER-2007-1738.5-Mgrmnt of Change Reqs Cross Walk from OSHA 29 CFR 1910 119.doc
- [Link to PER](#)

AUDIT HISTORY

Change Date	Auditor	Comments
10/03/2007 16:58	Higgins, Richard (Rich)	'Description of Concern or Problem' was changed.
10/03/2007 16:58	Higgins, Richard (Rich)	'Description of Concern or Problem' was changed.
10/04/2007 06:43	Higgins, Richard (Rich)	'Program/Project' was changed. 'Location' was changed.
10/08/2007 08:20	Owen, Annette	Responsible Manager Task Launched by Owen, Annette
10/24/2007 12:01	Hammack, Julie M	Change to Cause Analysis screen/Corrective Action plan.
10/25/2007 16:21	Owen, Annette	'Assigned Responsible Manager' was changed.
10/30/2007 16:05	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/05/2007 08:50	Glaman, Linda R	Corrective Actions Launched by Glaman, Linda R
11/08/2007 11:18	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 11:18	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed.
11/08/2007 11:20	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 11:20	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed.
11/08/2007 11:22	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 11:22	Owen, Annette	Corrective Action item - modification to

		synchronize with E-STARS. 'Action Due Date' was changed.
11/08/2007 14:50	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 14:51	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
11/26/2007 12:57	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 12:58	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 13:01	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 13:03	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 13:04	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 13:06	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 13:16	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 13:17	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Corrective Action Item - modification to synchronize with E-STARS. 'Action' was changed.

-- End of Report --
07/02/2008 03:15 PM

Task# CH2M-PER-2007-1738

E-STARS[®] Report
Task Detail Report
07/16/2008 1113

TASK INFORMATION

Task#	CH2M-PER-2007-1738		
Subject	RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation		
Parent Task#		Status	CLOSED 06/26/2008
Reference		Due	07/14/2008
Originator	^CH2M PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/03/2007 1656	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Actions Routing Lis	Inactive
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> ● ^CH2M PER CAs(Owen, Annette) - Assign - Completed - 06/26/2008 1059 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.	
	<ul style="list-style-type: none"> ● Popielarczyk, Bob - Assign - Withdrawn - 10/25/2007 1619 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review - Review - Withdrawn - 10/25/2007 1620 <i>Instructions:</i> Independent Assessor Review	
	<ul style="list-style-type: none"> ● Walker, Ken D - Assign - Completed with comments - 11/01/2007 1424 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/05/2007 0748 <i>Instructions:</i>	
3	Review Initial PER	Inactive
	Review new PER	
	<ul style="list-style-type: none"> ● ^CH2M WFO SO(Malhan, Rakesh) - Review - Concur - 10/03/2007 2304 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M PER Screening(Owen, Annette) - Review - Concur - 10/04/2007 1424 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M MGR Review(Owen, Annette) - Review - Concur - 10/08/2007 0820 <i>Instructions:</i>	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1738 2-Supplemental Closure Package.pdf 2. CH2M-PER-2007-1738.5-Mgmt of Change Reqs Cross Walk from OSHA 29 CFR 1910
--------------------	--

Task# CH2M-PER-2007-1738

119.doc
3. Link to PER

COLLABORATION**COMMENTS**

Poster	^CH2M PER Coordinator (Owen, Annette) - 10/25/2007 0410		
	Responsible manager change from B Popielarczyk to K Walker		
Poster	Walker, Ken D - 10/30/2007 0310		
	Assigned due date for this task does not match the due dates of the individual corrective actions in the PER. The PER contains 5 due dates, ranging from 10/31/07 till 1/27/08. The ESTARS due date should be no earlier than the last due date of corrective actions.		
Poster	Walker, Ken D - 11/01/2007 0211		
	Completed		
	PER Actions and Causes entered.		
	kdw		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/05/2007 0711		
	Concur		
	Concur - Launch CAs		
Poster	^CH2M PER Coordinator (Owen, Annette) - 06/26/2008 1106		
	CLOSED		
	All Corrective Actions closed.		

TASK DUE DATE HISTORY

Modified		New Due Date	
11/26/2007 1250	- ^CH2M PER Coordinator (Owen, Annette)	07/14/2008 0000	
11/05/2007 0850	- ^CH2M PER Coordinator	02/11/2008 0000	
10/08/2007 0820	- ^CH2M PER Coordinator	11/17/2007 1630	
10/08/2007 0820	- ^CH2M PER Coordinator	11/21/2007 1630	
10/03/2007 1656	- ^CH2M PER Coordinator	10/05/2007 1630	

SUB TASK HISTORY

Subtask#	CH2M-PER-2007-1738.1		
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1738.2		
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	

Task# CH2M-PER-2007-1738	
Subtask#	CH2M-PER-2007-1738.3
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1738.4
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1738.5
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>

-- end of report --

Task# CH2M-PER-2007-1738.1

E-STARS[®] Report
Task Detail Report
07/02/2008 0311

TASK INFORMATION

Task#	CH2M-PER-2007-1738.1		
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation		
Parent Task#	CH2M-PER-2007-1738	Status	CLOSED 06/26/2008
Reference	CH2M-PER-2007-1738	Due	07/01/2008
Originator	^CH2M PER CAS	Priority	None
Originator Phone		Category	None
Origination Date	11/05/2007 0850	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Route List	Inactive
<p>ENG-2.1 Conduct an independent review of engineering design program issues and provide recommended corrective actions to strengthen the program and its implementation. Evaluate recommendations and implement corrective actions</p> <p>Deliverable: Engineering Design Program Review report and record of corrective action implementation.</p> <ul style="list-style-type: none"> ● Raymond, Richard E - Assign - Completed with comments - 06/23/2008 1037 <i>Instructions:</i> ● Walker, Ken D - Assign - Reassigned - 05/20/2008 0939 <i>Instructions:</i> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 06/24/2008 0958 <i>Instructions:</i> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 06/26/2008 1033 <i>Instructions:</i> 		
2	Corrective Action	Inactive
<p>ENG-2.1 Conduct an independent review of engineering design program issues and provide recommended corrective actions to strengthen the program and its implementation.</p> <p>Deliverable:</p> <p>Engineering Design Program Review report and recommended corrective actions.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p> <ul style="list-style-type: none"> ● Walker, Ken D - Assign - Completed with comments - 11/05/2007 0942 <i>Instructions:</i> 		

Task# CH2M-PER-2007-1738.1

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/05/2007 0955

Instructions: Independent Assessor Review

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/08/2007 1352

Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-1738.1 CLOSURE.doc
2. CH2M-PER-2007-1738 2-Supplemental Closure Package.pdf
3. CH2M-PER-2007-1738.1 FINAL Engineering Design Team Report 10-09-2007.pdf
4. CH2M-PER-2007-1738.1 Rec-12 Closure(3) TFC-PRJ-CM-C-08.doc
5. CH2M-PER-2007-1738.1, Rec 26 Closure CH2M-0800784.pdf
6. CH2M-PER-2007-1738.1, Rec-12 Closure(1)TFC-ENG-DESIGN-D-13.2,.doc
7. CH2M-PER-2007-1738.1, Rec-12 Closure(2)TFC-ENG-DESIGN-P-17,.doc
8. CH2M-PER-2007-1738.1, Rec-19 Closure TFC-ENG-DESIGN-C-06.doc
9. CH2M-PER-2007-1738.1, Rec-32 Closure(1)TFC-ENG-DESIGN-P-17,.doc
10. CH2M-PER-2007-1738.1, Rec-32 Closure(2) TFC-OPS-MAINT-C-02,.doc
11. CH2M-PER-2007-1738.1S-102 ERT Recom Summary Matrix 6-26-08.doc
12. CH2M-PER-2007-1738.5-Mgmt of Change Reqs Cross Walk from OSHA 29 CFR 1910 119.doc
13. Link to PER

COLLABORATION

COMMENTS

Poster

Walker, Ken D (Faust, Gary L) - 11/05/2007 0911

Completed

An independent review of engineering design program issues has been completed, and provides recommended corrective actions to strengthen the program and its implementation. (Ref. Final Design Team Report, 10-9-07, attached) This completes the corrective action for this task, and this task can be closed.

Poster

^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/05/2007 0911

Concur

Concur

Poster

^CH2M PER ESRB (Parchen, Tracy L) - 11/08/2007 0111

Concur

This action was reviewed by the Executive Safety Review Board on November 8, 2007. The Board concurred with closure. tip 11/8/07

Poster

^CH2M PER CAs (Brown, Nancy L) - 11/12/2007 0211

CLOSED

Reviewed and closed

Poster

^CH2M PER CAs (Owen, Annette) - 11/26/2007 1211

Task Re-Open

Re-open to revise corrective action.

Poster

Raymond, Richard E - 06/23/2008 1006

Completed

I have reviewed the completion attachments provided by Gary Faust and concur that all items are completed with the expected concurrence from ESRB on the three items so noted.

Poster

^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 06/24/2008 0906

Concur

Task# CH2M-PER-2007-1738.1			
	Concur		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 06/26/2008 1006		
	Concur		
	This action was reviewed by the Executive Safety Review Board on June 26, 2008. The Board concurred with closure. tlp 6/26/08		
Poster	^CH2M PER CAs (Owen, Annette) - 06/26/2008 1006		
	CLOSED		
	All attachments verified, close.		
TASK DUE DATE HISTORY			
Modified	05/05/2008 0833 - ^CH2M PER CAs (Parchen, Tracy L)	New Due Date	07/01/2008 0000
Modified	11/26/2007 1255 - ^CH2M PER CAs (Owen, Annette)	New Due Date	07/07/2008 0000
Modified	11/05/2007 0850 - ^CH2M PER CAs	New Due Date	11/12/2007 0000
Modified	11/05/2007 0850 - ^CH2M PER CAs	New Due Date	02/11/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			

-- end of report --

Task# CH2M-PER-2007-1738.2

E-STARs[®] Report
 Task Detail Report
 07/02/2008 0317

TASK INFORMATION			
Task#	CH2M-PER-2007-1738.2		
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation		
Parent Task#	CH2M-PER-2007-1738	Status	CLOSED 01/24/2008
Reference	CH2M-PER-2007-1738	Due	02/08/2008
Originator	^CH2M PER CAS	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/05/2007 0850	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
<p>ENG-2.2 Develop process hazards analysis (PHA) procedures and processes to ensure identification of hazards and controls for both TSR level hazards, and higher frequency, lower consequence hazards that are of significance for emergency response and environmental compliance with emphasis on preventive controls over mitigative controls, including process to train and assign designated personnel as lead PHA team leaders.</p> <p>Deliverable: New Engineering procedure/standards listing of trained personnel.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARs and close the E-STARs subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>		
<ul style="list-style-type: none"> ● Knight, Mark A - Assign - Completed with comments - 01/23/2008 1256 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Walker, Ken D - Review - Concur with comments - 01/23/2008 1257 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 01/23/2008 1334 <i>Instructions:</i> Independent Assessor Review 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 01/24/2008 1023 <i>Instructions:</i> 		

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1738.2 - Training Course 357600 Completed Tests 2. CH2M-PER-2007-1738 2-Supplemental Closure Package.pdf 3. CH2M-PER-2007-1738.5-Mgmt of Change Reqs Cross Walk from OSHA 29 CFR 1910 119.doc 4. CH2M-PER-2007-1738.2 - Training Course 357600 Completion Roster 5. Link to PER 6. CH2M-PER-2007-1738.2 - PrHA Screening Form (A-6004-410) 7. CH2M-PER-2007-1738.2 - PrHA Screening Form (A-6004-410) Instructions 8. CH2M-PER-2007-1738.2 - New Procedure - TFC-ENG-DESIGN-C-35, Process Hazard
--------------------	--

Task# CH2M-PER-2007-1738.2

- Analysis
9. CH2M-PER-2007-1738.2 - New Standard - TFC-ENG-STD-28, Process Hazard Analysis Standard

COLLABORATION**COMMENTS****Poster**

Knight, Mark A - 01/23/2008 1201

Completed

This action is now complete.

Action ENG-2.2 requires "Develop process hazards analysis (PHA) procedures and processes to ensure identification of hazards and controls for both TSR level hazards, and higher frequency, lower consequence hazards that are of significance for emergency response and environmental compliance with emphasis on preventive controls over mitigative controls, including process to train and assign designated personnel as lead PHA team leaders."

The required deliverables are "New Engineering procedure/standards and a listing of trained personnel."

In response to the corrective action a new engineering procedure and standard have been developed. Procedure TFC-ENG-DESIGN-C-35, "Process Hazard Analysis," was issued January 23, 2009 with an effective date of January 31, 2008. This procedure is issued in conjunction with the associated Engineering Standard, TFC-ENG-STD-28, "Process Hazard Analysis Standard." A Process Hazard Analysis Screening Form (A-6004-410) and instructions have also been developed for use in conjunction with the new procedure. Changes have also been made to several interfacing and impacted procedures to provide an integrated process.

The procedure defines the process for establishing which projects and activities require a Process Hazard Analysis, defines the training requirements for Process Hazard Analysis Leaders, and requires that Process Hazard Analyses be conducted in accordance with the new Engineering Standard. Links are added into the procedure to interfacing engineering change control, technical document control, safety basis development, project management, startup and testing, operational readiness, and emergency management procedures to provide a fully integrate process.

The new engineering standard defines the acceptable methodologies for performing a Process Hazard Analysis to identify hazards and controls for both TSR level hazards, and higher frequency, lower consequence hazards that are of significance for emergency response and environmental compliance. The standard defines the personnel that are required to be present to conduct a Process Hazard Analysis and also provides discussion of the appropriate selection of controls with emphasis on preventive controls over mitigative controls.

A new training course, Course 356700, "Process Hazard Analysis Leader Training" has also been established and provided to 17 CH2M HILL and DOE-ORP personnel. The training course is provided by the leading risk management consulting firm in the United States specializing in providing consulting and training services in the field of Process Hazard Analysis to clients in the industrial, chemical, and federal government arenas. The lead trainer conducting the course was one of the primary authors of "Guidelines for Hazard Evaluation Procedures," Second Edition, 1992, American Institute of Chemical Engineers, New York, New York, which is the leading text on hazard evaluation techniques referenced in both DOE STD 3009 and OSHA 1910.119.

Copies of the new procedure, standard, process hazard analysis screening form and instructions, Training Course completion roster (providing the listing of trained personnel), and copies of the completed tests are attached as evidence of completion of this action.

Poster

Walker, Ken D (Littlejohn, Susan M) - 01/23/2008 1201

Concur

I concur, action complete.

Poster

^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/23/2008 0101

Concur

Closure documentation is sufficient to demonstrate completion of the task.

Task# CH2M-PER-2007-1738.2			
	Note: The procedure specifies that PrHA Team Leaders must complete the training. Evidence of training is attached and appears to represent a sufficient number of individuals have been trained to effectively implement the process.		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 01/24/2008 1001		
	Concur		
	This action was reviewed by the Executive Safety Review Board on January 24, 2008. The Board concurred with closure. ttp 1/24/08		
Poster	^CH2M PER CAs (Brown, Nancy L) - 01/24/2008 1101		
	CLOSED		
	Reviewed and closed CA		
TASK DUE DATE HISTORY			
Modified	11/08/2007 1450 - ^CH2M PER CAs (Owen, Annette)	New Due Date	02/08/2008 0000
Modified	11/08/2007 1450 - ^CH2M PER CAs (Owen, Annette)	New Due Date	02/06/2008 0000
Modified	11/05/2007 0850 - ^CH2M PER CAs	New Due Date	12/17/2007 0000
Modified	11/05/2007 0850 - ^CH2M PER CAs	New Due Date	02/11/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			

-- end of report --

Task# CH2M-PER-2007-1738.3

E-STARS^R Report
Task Detail Report
06/18/2008 0905

TASK INFORMATION

Task#	CH2M-PER-2007-1738.3		
Subject	CH2M-PER-2007-1738; RES; S-102 Type A Accident Report: Revise design review processes, procedures and implementation		
Parent Task#	CH2M-PER-2007-1738	Status	CLOSED 12/17/2007
Reference	CH2M-PER-2007-1738	Due	12/13/2007
Originator	^CH2M PER CAS	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/05/2007 0850	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
<p>ENG-2.3 Revise design review procedures, using results of independent review of Action CHG-ENG-2.1 as a guide. Clarify roles and responsibilities, and provide detailed guidance/criteria for review of in-house and subcontracted engineering design products. Define a graded approach for design review of engineering products, including requirements for intermediate design reviews and formal disposition of review comment resolutions.</p> <p>Deliverable:</p> <p>Revised design review procedures including structure, roles and responsibilities for design reviews.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>		
<ul style="list-style-type: none"> ● Walker, Ken D - Assign - Completed with comments - 12/12/2007 1444 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 12/12/2007 1513 <i>Instructions:</i> Independent Assessor Review 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 12/13/2007 1023 <i>Instructions:</i> 		

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1738 2-Supplemental Closure Package.pdf 2. CH2M-PER-2007-1738.3 Closure TFC-ENG-DESIGN-P-17,Rev C-3.doc 3. CH2M-PER-2007-1738.3 Closure,TFC-ENG-DESIGN-C-06 Rev G.doc 4. CH2M-PER-2007-1738.5-Mgmt of Change Reqs Cross Walk from OSHA 29 CFR 1910 119.doc 5. Link to PER
--------------------	--

COLLABORATION

Task# CH2M-PER-2007-1738.3			
COMMENTS			
Poster	Walker, Ken D - 12/12/2007 0212		
	Completed		
	<p>ENG-2.3 required revising design review procedures, using results of independent review as a guide. Clarify roles and responsibilities, and provide detailed guidance/criteria for review of in-house and subcontracted engineering design products. Define a graded approach for design review of engineering products, including requirements for intermediate design reviews and formal disposition of review comment resolutions. TFC-ENG-DESIGN-P-17, Rev C-3 (attached) and TFC-ENG-DESIGN-C-06, Rev G (attached) have been issued to include requirements that: Clarify roles and responsibilities, Provide detailed guidance/criteria for review of in-house and subcontracted engineering design products, Define a graded approach for design review of engineering products and Formal disposition of review comment resolutions. This completes the corrective action for this task, and this task can be closed.</p>		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 12/12/2007 0312		
	Concur		
	Concur		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 12/13/2007 1012		
	Concur		
	This action was reviewed by the Executive Safety Review Board on December 13, 2007. The Board concurred with closure. tlp 12/13/07		
Poster	^CH2M PER CAs (Brown, Nancy L) - 12/17/2007 1012		
	CLOSED		
	Reviewed closure statement, attachments, and approvals -- closed CA		
TASK DUE DATE HISTORY			
Modified	11/05/2007 0850 - ^CH2M PER CAs	New Due Date	12/13/2007 0000
Modified	11/05/2007 0850 - ^CH2M PER CAs	New Due Date	02/11/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			

-- end of report --

Appendix C

Documentation for Closeout of CH2M-PER-2007-1745

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1745

Closed 09/02/2008 07:15

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1745	10/03/2007	16:00	Closure Operations
Location			
All Tank Farms			
How Was Problem Discovered			
DOE			
Description of Concern or Problem			
DOE Type A Accident Report JUDGMENT OF NEED: WC-1 CH2M HILL management needs to define and implement an effective method for identifying Tank Farm small quantity waste leaks.			
Requirement Not Satisfied		Source Document Number	
Equipment Identification Number		System Identification	
Immediate Actions Taken or Planned			
None			
Recommended Corrective Actions			
PER w/ Res T. L. Hissong cc: Ron Calmus			
Level of Participation			
No			
Originators Name	Originators ID	Originators Phone	Date Initiated
Higgins, Richard (Rich)	H6099519	(509) 373-5305	10/03/2007
SHIFT OPERATIONS REVIEW			
Title			
S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea			
How Discovered		Agency	
self-ID result of event			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe Actions Taken or Recommended			
No additional actions taken or recommended by CO SO.			
SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Malhan, Rakesh	H0046812	(509) 372-2806	10/03/2007
SCREENING			
PER Significance Level			
PER with Resolution			
Independent Assessment Review	Occurrence Report Number	Externally Identified	
Yes		No	
Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Hissong, Terry			
PER Screening Comments			
CC: Ron Calmus. nb			
Causal Code			

PER

A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced		
MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Operations	Event Investigation
ISMS	Consequence Code		
Identify and analyze hazards	Tank Monitoring		
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	10/04/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
PAAA, Non-NTS Reportable	10 CFR 851.21 (a)(5)	Existing Workplace Hazard Identification Work Practices, Procedures, and Administrative Controls
NTS Report Number	NTS Report Date	
Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation
No	No	No
PAAA Screening Comments		
PAAA Reviewer Name	PAAA Review Date	
Stenzel, Len C (inactive) (inactive)	10/04/2007	
PAAA Approver Name	PAAA Approve Date	
Stenzel, Len C (inactive) (inactive)	10/08/2007	

SENIOR MANAGEMENT REVIEW/CONCURRENCE**TF Operations Morning Leadership Call**

None. Ig

Instructions for Responsible Manager

Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	H0054042	(509) 372-0533	10/08/2007

CAUSE ANALYSIS**Description of Occurrence**

The S-102 positive displacement pump was operated in reverse to clear the suction-head of waste. However, the pump inlet was clogged with waste which routed the waste up through the pump dilution water supply line at pressures exceeding the dilution line's pressure rating. The dilution line ruptured resulting in a spill of about 100 gallons of tank waste in the vicinity of the S-102 retrieval pump discharge. The dilution line was clearly discussed in the DSA but the hazards analysis process failed to consider the leak scenario as a plausible accident. Though no workers were contaminated or received radiation exposure above established limits, the leak had the potential for both radiation and chemical exposure which could have exceeded these limits under certain conditions. Both identification of small tank waste leaks and the ability to assess the conditions following a leak were inadequate.

Extent of Condition

The extent of condition for this issue extends to all waste transfer routes.

Safety Significance

Detection of small leaks will allow tank farm workers to identify small tank waste leaks and allow for a more controlled and appropriate response. In addition, if adequate equipment is in place to support remote visual inspection of the leak site and/or general area. This information can be used to allow assessment of the leak, resulting spill area and support recovery planning activities. Implementation of the subject equipment will reduce worker exposure to both radiological and chemical hazards associated with a small waste tank leak.

Generic Implications

Remedial Corrective Action

None

Causal Analysis, Apparent Cause and/or Root Cause Analysis

A change analysis on this JON was performed and is documented in PER-2007-1745. Based on that change analysis, the following Causal Factor was assigned:

A4B1C01 - Management policy, guidance/expectations not well defined, understood, or enforced

The Type A Accident Investigation Report identified lack of adequate lighting as a contributing cause. The DSA relies upon effective implementation of the radiological controls program for the detection of small quantity waste leaks, which is addressed by JON WC-2. The principles behind this JON also include timely detection and As Low As Reasonably Achievable (ALARA) concepts. For example, the strategic placement of telemetric radiation detectors could alert personnel to a radioactive waste leak immediately following a spill without subjecting personnel to unexpected high radiation levels from the spill. This issue is addressed by actions WC-1.1 and WC-1.2.

Most of the consequences associated with this JON, as noted in the Type A Accident Investigation report, are Conduct of Operations/RadCon issues that are addressed in the responses to JONs WC-2 and WC-3. However, other consequence associated with this issue were the "...inadequate lighting conditions at the S Tank Farm and the inability to survey the waste spill with a remotely controlled video camera." These issues are addressed by actions WC-1.3 and WC-1.4.

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Calmus, Ron	05/16/2008	CH2M-PER-2007-1745.1

Action
 WC-1.1 Develop requirements, assess technology and test selected system(s) to identify small quantity waste leaks.
 Deliverable:
 Issued Test Report

Actionee	Action Due Date	E-STARS Number
Calmus, Ron	08/30/2008	CH2M-PER-2007-1745.2

Action
 WC-1.2 Install enhanced system(s) to identify small quantity waste leaks.
 Deliverable:
 Completed Work Package(s)

Actionee	Action Due Date	E-STARS Number
Jones, Mark W	01/04/2008	CH2M-PER-2007-1745.3

Action
 WC-1.3 Publish an illumination/lighting standard that implements the HAZWOPER lighting requirements.
 Deliverable: Published lighting standard

Actionee	Action Due Date	E-STARS Number
Jones, Mark W	04/01/2008	CH2M-PER-2007-1745.4

Action
 WC-1.4 Implement illumination/lighting standard developed in CHG-WC-1.3
 Deliverable: Revised procedures implementing the published standards and completed training rosters.

ATTACHMENTS

CH2M-PER-2007-1745 WC-1 Change analysis.doc

CH2M-PER-2007-1745 WC-1Barrier.jpg

IDMS Archive Link

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
10/08/2007 08:30	Owen, Annette	Responsible Manager Task Launched by Owen, Annette
11/05/2007 08:36	Glaman, Linda R	Corrective Actions Launched by Glaman, Linda R
11/08/2007 12:20	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 12:21	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
11/08/2007 12:22	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 12:22	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
11/08/2007 12:24	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 12:24	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
11/08/2007 12:25	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 12:26	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
11/26/2007 14:13	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:13	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 14:15	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:15	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 14:18	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:19	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed. Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 14:20	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. Inserting new Corrective Action.
11/26/2007 14:20	Owen, Annette	Corrective Actions Launched by Owen, Annette

PER

12/10/2007 14:39	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
12/10/2007 14:40	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action CH2M-PER-2007-1745.5.
04/21/2008 12:11	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
04/21/2008 12:11	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
07/30/2008 14:21	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
07/30/2008 14:23	Glaman, Linda R	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed. 1st extension to 8-15-08 per attached form a-6003-227. Additional time is required for hose in hose transfer for C-110. GL Rensink for TL Hissong per telecon 7-30-08 HQ approval V Harkins via attached email 7-29-08
08/14/2008 10:54	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
08/14/2008 10:54	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
08/21/2008 07:48	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
08/21/2008 07:48	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed.

-- End of Report --
09/02/2008 08:16 AM

Task# CH2M-PER-2007-1745

E-STARS^R Report
Task Detail Report
07/16/2008 1114

TASK INFORMATION

Task#	CH2M-PER-2007-1745		
Subject	RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Parent Task#		Status	Open
Reference		Due	08/11/2008
Originator	^CH2M PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/03/2007 1711	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Actions Routing Lis	Active
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> ● ^CH2M PER CAs - Assign - Awaiting Response - Due Date - 08/11/2008 0000 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.	
	<ul style="list-style-type: none"> ● Hissong, Terry - Assign - Completed with comments - 11/03/2007 1446 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/05/2007 0749 <i>Instructions: Independent Assessor Review</i>	
3	Review Initial PER	Inactive
	Review new PER	
	<ul style="list-style-type: none"> ● ^CH2M WFO SO(Malhan, Rakesh) - Review - Concur - 10/03/2007 2322 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M PER Screening(Owen, Annette) - Review - Concur - 10/04/2007 1429 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M MGR Review(Owen, Annette) - Review - Concur - 10/08/2007 0830 <i>Instructions:</i>	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1745 WC-1 Change analysis.doc 2. CH2M-PER-2007-1745 WC-1Barrier.jpg 3. Link to PER
--------------------	---

COLLABORATION

Task# CH2M-PER-2007-1745			
COMMENTS			
Poster	Hissong, Terry (Hammack, Julie M) - 11/03/2007 0211		
	Completed		
	Causal analysis complete. jmh 11/3/07		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/05/2007 0711		
	Concur		
	Concur - Launch CAs		
TASK DUE DATE HISTORY			
Modified	11/05/2007 0836 - ^CH2M PER Coordinator	New Due Date	08/11/2008 0000
Modified	10/08/2007 0830 - ^CH2M PER Coordinator	New Due Date	11/17/2007 1630
Modified	10/08/2007 0830 - ^CH2M PER Coordinator	New Due Date	11/21/2007 1630
Modified	10/03/2007 1711 - ^CH2M PER Coordinator	New Due Date	10/05/2007 1630
SUB TASK HISTORY			
Subtask#	CH2M-PER-2007-1745.1		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1745.2		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Originator	^CH2M PER CAs		
	Routing List	Corrective Action	
	Assignee	Calmus, Ron	Response
	Assignee	Hissong, Terry	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response
Subtask#	CH2M-PER-2007-1745.3		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1745.4		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1745.5		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an		

Task# CH2M-PER-2007-1745	
	effective method for identifying Tank Farm small quantity waste lea
Originator	^CH2M PER CAs
Routing List	<i>No Active Routing List</i>

-- end of report --

Task# CH2M-PER-2007-1745.1

E-STARS[®] Report
Task Detail Report
07/02/2008 0323

TASK INFORMATION

Task#	CH2M-PER-2007-1745.1		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Parent Task#	CH2M-PER-2007-1745	Status	CLOSED 05/15/2008
Reference	CH2M-PER-2007-1745	Due	05/16/2008
Originator	^CH2M PER CAs	Priority	None
Originator Phone		Category	None
Origination Date	11/05/2007 0836	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
	<p>WC-1.1 Develop requirements, assess technology and test selected system(s) to identify small quantity waste leaks.</p> <p>Deliverable: Issued Test Report</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> ● Calmus, Ron - Assign - Completed with comments - 05/13/2008 1315 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● Hissong, Terry - Review - Concur with comments - 05/13/2008 1551 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Fiasch, Michael P) - Review - Concur with comments - 05/14/2008 1249 <i>Instructions: Independent Assessor Review</i> 	
	<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 05/15/2008 0915 <i>Instructions:</i> 	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1745 WC-1 Change analysis.doc 2. CH2M-PER-2007-1745 WC-1Barrier.jpg 3. CH2M-PER-2007-1745.1 Closure Documentation.pdf 4. Link to PER
--------------------	--

COLLABORATION**COMMENTS**

Task# CH2M-PER-2007-1745.1

Poster	^CH2M PER CAs (Owen, Annette) - 04/21/2008 1204		
	1st extension to 5/16/08 per form A-6003-227.		
	Additional time is needed to issue the report and perform the ESRB review. TL Hissong		
Poster	Calmus, Ron (Jones, Terry) - 05/13/2008 0105		
	Completed		
	<p>In response to Corrective Action, CH2M-PER-2007-1745.1, activities were initiated to develop equipment to provide indication of a waste leak that may result from tank farm waste retrieval operations. The system includes remote, wireless, stand-alone gamma detection units located at predetermined locations along the waste transfer route. These units will detect the radiological conditions of the selected waste transfer locations and allow remote monitoring and data collection of the conditions that indicate if a small waste leak is present. In addition, remote wireless camera are used to monitor to specific detection locations in the event radiological detection limits are exceeded.</p> <p>Requirements (engineering specifications and functional design criteria) were developed for each of these systems and alternative systems were evaluated to establish the most viable system. The selected system were then tested to ensure that the system would functionally satisfy the requirements. The testing for both systems was positive and procurements of field units is underway. Attached file, CH2M-PER-2007-1745.1 Closure Documentation.pdf, is electronic documentation of completed action.</p>		
Poster	Hissong, Terry (Milliken, Nancy J) - 05/13/2008 0305		
	Concur		
	Concur. NJM for TLH		
Poster	^CH2M Independent Assessment Review (Flasch, Michael P) - 05/14/2008 1205		
	Concur		
	Concur (M Flasch for Rich Higgins).		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 05/15/2008 0905		
	Concur		
	This action was reviewed by the Executive Safety Review Board on May 15, 2008. The Board concurred with closure. tip 5/15/08		
Poster	^CH2M PER CAs (Brown, Nancy L) - 05/15/2008 0905		
	CLOSED		
	Reviewed IA and ESRB comments and closure documentation -- closed CA		
TASK DUE DATE HISTORY			
Modified	05/09/2008 1434 - ^CH2M PER CAs (Parchen, Tracy L)	New Due Date	05/16/2008 0000
Modified	04/21/2008 1210 - ^CH2M PER CAs (Owen, Annette)	New Due Date	05/28/2008 0000
Modified	11/05/2007 0836 - ^CH2M PER CAs	New Due Date	05/07/2008 0000
Modified	11/05/2007 0836 - ^CH2M PER CAs	New Due Date	08/11/2008 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# CH2M-PER-2007-1745.2

E-STARS^R Report
 Task Detail Report
 09/02/2008 0715

TASK INFORMATION

Task#	CH2M-PER-2007-1745.2		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Parent Task#	CH2M-PER-2007-1745	Status	CLOSED 08/29/2008
Reference	CH2M-PER-2007-1745	Due	09/11/2008
Originator	^CH2M PER CAs	Priority	None
Originator Phone		Category	None
Origination Date	11/05/2007 0836	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>WC-1.2 Install enhanced system(s) to identify small quantity waste leaks.</p> <p>Deliverable: Completed Work Package(s)</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> • Calmus, Ron - Assign - Completed with comments - 08/29/2008 1303 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • Hissong, Terry - Review - Concur with comments - 08/29/2008 1358 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Flasch, Michael P) - Review - Concur with comments - 08/29/2008 1520 <i>Instructions:</i> Independent Assessor Review 	
	<ul style="list-style-type: none"> • ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 08/29/2008 1524 	

Task# CH2M-PER-2007-1745.2

Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1745 2 Extension Request and DOE Approval.pdf
2. CH2M-PER-2007-1745 2 Extension.pdf
3. CH2M-PER-2007-1745 WC-1 Change analysis.doc
4. CH2M-PER-2007-1745 WC-1Barrier.jpg
5. CH2M-PER-2007-1745.2 RARM and CAMERA PTSD and Work Records.pdf
6. FW S-102 Corrective actions extension HQ approval.msg
7. Link to PER

COLLABORATION

COMMENTS

Poster

^CH2M PER CAs (Glaman, Linda R) - 07/30/2008 0207

1st extension to 8-15-08 per attached form a-6003-227. LBG 7-30-08

Additional time is required for hose in hose transfer for C-110.

GL Rensink for TL Hissong per telecon 7-30-08
 HQ approval V Harkins via attached email 7-29-08

Poster

^CH2M PER CAs (Owen, Annette) - 08/14/2008 1008

2nd extension to 8/21/08 per form A-6003-227.

Additional time is needed to complete hose in hose transfer line installation for C-110.
 Concurrence from ORP (BA Harkins) obtained. Mark Wright for Jerry Long

Poster

^CH2M PER CAs (Owen, Annette) - 08/21/2008 0708

3rd extension to 8/30/08 per form A-6003-227.

Additional time is required for hose-in-hose transfer line installation for C-110.
 Concurrence from BA Harkins, ORP was obtained. Jerry Long

Poster

Calmus, Ron (Jones, Terry) - 08/29/2008 0108

Completed

A remote radiation monitoring technology in conjunction with a tank farm remote camera monitoring system were developed in support of addressing two of the four corrective actions for the Judgment of Need (JON) WC-1, CH2M HILL management needs to define and implement an effective method for identifying Tank Farm small quantity waste leaks. These corrective actions are:

WC-1.1 Develop requirements, assess technology, and test selected system(s) to identify small quantity waste leaks.

WC-1.2 Install system(s) to identify small quantity waste leaks.

The Remote Area Radiation Monitoring (RARM) system and the Waste Retrieval Remote Monitoring Camera (WRRMCAM) system have been developed, tested and field deployed to identify small quantity waste leaks for the next planned C-Farm Retrieval (Tank C-110) and these actions effectively close both WC-1-1 and WC1.2 corrections actions.

Task# CH2M-PER-2007-1745.2

The RARM system will be used to demonstrate a real-time radiation monitoring system for tank retrieval and transfer operations that detect anomalous (e.g. potential waste leaks) or transient radiological conditions during C-Farm tank retrievals. The system is comprised of remote monitoring units (RMUs), to be strategically placed at critical positions along waste transfer lines, and a base control station (i.e. VP-SaT-Human Machine Interface) that will be monitored and controlled from a control trailer.

This system will provide the radiological status of the tank transfer conditions, provide early detection and response capabilities in anomalous or transient radiological conditions, and allow remote radiological observations to be made during abnormal operating conditions for Operations and Radiological Control personnel.

The WRRMCAM system will reduce risk of personnel exposure to potentially hazardous environments by allowing remote viewing of the RARM locations and surrounding areas to verify anomalous conditions as indicated by the RARM system. In addition, the system will aid in understanding the extent of field conditions and in planning response actions.

The RARM and WRRMCAM system have been successfully developed, tested and field deployed to allow detection of small radioactive tank waste leaks at selected locations along the C-110 Retrieval transfer route. Utilization of this system will provide information to Retrieval operations staff to remotely assess and support response actions to a small waste tank leak.

The attached file, CH2M-PER-2007-1745.2 RARM and CAMERA PTSD and Work Records.pdf, provides documentation that the RARM and WRRMCAM system are sufficiently developed, tested, and installed in the field to perform their intended function.

The project turnover document for the RARM (RARM-PTD-001) and the WRRMCAM (WRRMCAM-PTD-001) includes reference to the the documents necessary for successful turnover of the system to operations. These turnover documents include the approved systems/maintenance/project engineering documents (i.e., test plans, specifications, alarm setpoint documents, software V&V documentation, NEC inspections, vendor information, operation manuals, engineering task plans, design criteria, and spare parts) work management (i.e., field installation work packages), environmental , training, operations (i.e., procedures and alarm response), and quality assurance documents.

Implementation of the RARM and WRRMCAM system will be validated as part of the tank C-110 Retrieval readiness assessment.

These actions complete this task.

Poster	Hissong, Terry (Milliken, Nancy J) - 08/29/2008 0108
	Concur
	Action complete. Concur. NJM 08/29/08 for TLH
Poster	^CH2M Independent Assessment Review (Flasch, Michael P) - 08/29/2008 0308
	Concur
	Concur that installation of the system is complete, as documented on the closure evidence and related discussions. Additional followup with the Operational Readiness Senior Readiness Assistant confirmed that RARM and WRRMCAM operation are captured within the operational readiness scope for C-110 (e.g., discussed in the Activity Description, covered by the Training Plan, scoped within operations procedures, and addressed via the

Task# CH2M-PER-2007-1745.2

Project Turnover Document in the Operational Readiness Checklist); as a result, the operational readiness process will validate implementation prior to the C-1 10 readiness assessment. As noted in the closure evidence, field work was performed via the Electrician Standing Minor Work Order (CLO-WO-07-1611) rather than "completed Work Packages" as identified for the Deliverable - this substitution is acceptable and in accordance with standard work processes. MP Flasch 08-29-08

Poster ^CH2M PER ESRB (Parchen, Tracy L) - 08/29/2008 0308

Concur

The ESRB reviewed the closure documentation on August 28, 2008, and concurred with closure of this corrective action at that time. tlp 8/29/08

TASK DUE DATE HISTORY

Modified	08/21/2008 0747 - ^CH2M PER CAs (Owen, Annette)	New Due Date	09/11/2008 0000
Modified	08/14/2008 1237 - ^CH2M PER CAs (Parchen, Tracy L)	New Due Date	08/21/2008 0000
Modified	08/14/2008 1052 - ^CH2M PER CAs (Owen, Annette)	New Due Date	08/29/2008 0000
Modified	07/30/2008 1418 - ^CH2M PER CAs (Glaman, Linda R)	New Due Date	08/27/2008 0000
Modified	07/17/2008 0932 - ^CH2M PER CAs (Parchen, Tracy L)	New Due Date	07/31/2008 0000
Modified	11/05/2007 0836 - ^CH2M PER CAs	New Due Date	08/07/2008 0000
Modified	11/05/2007 0836 - ^CH2M PER CAs	New Due Date	08/11/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# CH2M-PER-2007-1745.3

E-STARS[®] Report
Task Detail Report
07/02/2008 0327

TASK INFORMATION

Task#	CH2M-PER-2007-1745.3		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Parent Task#	CH2M-PER-2007-1745	Status	CLOSED 01/04/2008
Reference	CH2M-PER-2007-1745	Due	01/11/2008
Originator	^CH2M PER CAs	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/05/2007 0836	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>WC-1.3 Publish an illumination/lighting standard that implements the HAZWOPER lighting requirements.</p> <p>Deliverable: Published lighting standard</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> ● Jones, Mark W - Assign - Completed with comments - 12/26/2007 1412 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● Hissong, Terry - Review - Concur - 01/02/2008 1104 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● Hissong, Terry - Review - Concur - 01/04/2008 1411 <i>Instructions:</i> Task returned for rework. <p>TFC-PLN-34 is not the appropriate document for a lighting standard. Someone who did not know the standard was in this document would not logically go this procedure to look for it, since it's title is related to exposure assessment. Secondly, Illumination is listed under Section 4.4 as a physical hazard or physical agent, implying that illumination is a hazard to be protected from.</p> <p>Recommend that a stand-alone illumination standard be published.</p>	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Parchen, Tracy L) - Review - Concur - 01/04/2008 1412 <i>Instructions:</i> Independent Assessor Review 	
	<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 01/04/2008 1413 <i>Instructions:</i> 	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1745 WC-1 Change analysis.doc 2. CH2M-PER-2007-1745 WC-1Barrier.jpg
--------------------	---

Task# CH2M-PER-2007-1745.3

- 3. CH2M-PER-2007-1745.3 Attendance Roster.pdf
- 4. Link to PER
- 5. TFC-ESHQ-IH-STD-13,_Illumination.doc
- 6. TFC-PLN-34,_Industrial_Hygiene_Exposure_Assessment_Strategy.doc

COLLABORATION

COMMENTS

Poster Jones, Mark W (Bowman, Tami A) - 12/26/2007 0212

Completed

The HAZWOPER lighting requirements have been incorporated into TFC-PLN-34; IH Exposure Assessment Strategy. This document along with an attendance roster showing compliance have been attached to Estars. The attendance roster shows a 90% completion based on the (10) industrial hygienists names listed below.

- Central Programs
- Mike Zabel
- Mark Jones
- Tom Van Morris
- Dave Farier
- Closure Operations
- Jim Jabara
- Mark Hughey
- WFO
- Kim Roueche
- Wendy Adams
- Darren Merrill
- ATS
- Robin Fogg

Poster ^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/02/2008 1201

Rework comments

Task returned for rework.

TFC-PLN-34 is not the appropriate document for a lighting standard. Someone who did not know the standard was in this document would not logically go this procedure to look for it, since it's title is related to exposure assessment. Secondly, Illumination is listed under Section 4.4 as a physical hazard or physical agent, implying that illumincation is a hazard to be protected from.

Recommend that a stand-alone illumination standard be published.

Poster ^CH2M PER ESRB (Parchen, Tracy L) - 01/04/2008 0201

Concur

This action was reviewed by the Executive Safety Review Board on January 4, 2008. The Board concurred with closure. tip 1/4/08

Poster ^CH2M PER CAs (Brown, Nancy L) - 01/04/2008 0201

CLOSED

Reviewed and closed CA

TASK DUE DATE HISTORY

Modified	11/05/2007 0836 - ^CH2M PER CAs	New Due Date	01/11/2008 0000
Modified	11/05/2007 0836 - ^CH2M PER CAs	New Due Date	08/11/2008 0000

SUB TASK HISTORY

No Subtasks

Task# CH2M-PER-2007-1745.4

E-STARS[®] Report
Task Detail Report
07/02/2008 0340

TASK INFORMATION

Task#	CH2M-PER-2007-1745.4		
Subject	CH2M-PER-2007-1745; RES; S-102 DOE Type A Accident Report: define and implement an effective method for identifying Tank Farm small quantity waste lea		
Parent Task#	CH2M-PER-2007-1745	Status	CLOSED 04/01/2008
Reference	CH2M-PER-2007-1745	Due	04/09/2008
Originator	^CH2M PER CAs	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/05/2007 0836	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
<p>WC-1.4 Implement illumination/lighting standard developed in CHG-WC-1.3</p> <p>Deliverable: Revised procedures implementing the published standards and completed training rosters.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>		
<ul style="list-style-type: none"> ● Raymond, Richard E - Assign - Withdrawn - 11/26/2007 1416 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Hissong, Terry - Review - Withdrawn - 11/26/2007 1416 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review - Review - Withdrawn - 11/26/2007 1416 <i>Instructions:</i> Independent Assessor Review 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB - Review - Withdrawn - 11/26/2007 1416 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Jones, Mark W - Assign - Completed with comments - 03/27/2008 1230 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Hissong, Terry - Review - Concur - 03/27/2008 1236 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Flasch, Michael P) - Review - Concur with comments - 03/27/2008 1427 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 04/01/2008 1302 <i>Instructions:</i> 		

ATTACHMENTS

Task# CH2M-PER-2007-1745.4

Attachments

1. CH2M-PER-2007-1745 WC-1 Change analysis.doc
2. CH2M-PER-2007-1745 WC-1Barrier.jpg
3. CH2M-PER-2007-1745.4 Final Closure Documents 080401.pdf
4. CH2M-PER-2007-1745.4 TFC-ESHQ-IH-STD-13,_Illumination.doc
5. Link to PER

COLLABORATION
COMMENTS
Poster

Jones, Mark W (Bowman, Tami A) - 03/27/2008 1203

Completed

Closure document file is attached containing training material, attendance rosters, list of trainees showing +90% trained.

Jones/Bowman 3/27/08

Poster

^CH2M Independent Assessment Review (Flasch, Michael P) - 03/27/2008 0203

Concur

Concur, with the following comments:

1. Though not stated in the E-STARS closure documentation, the revised standard is TFC-ESHQ-STD-13, Illumination, rev. A, issued 01/04/08, effective 04/01/08. This Standard should be attached to the E-STARS closure documentation.

2. Though not stated in the E-STARS closure documentation, personnel ITEM records were updated on 03/27/08 to reflect training completion. Verified with Training (S Davis) and confirmed via e-mail dated 03/27/08. An e-mail stating completing of this training record activity should be added to the E-STARS documentation.

3. Though not stated in the E-STARS closure documentation, the "procedure implementing the published standard" is the "Worksite Hazard Analysis" (reference Form A-6004-101, rev. 3). An item added to the form is consideration of "Lack of adequate lighting", with possible controls provided.

(MPF 03/27/08)

Poster

Jones, Mark W - 03/28/2008 0703

Flasch, Michael P -- Concur

TFC-ESHQ-S_SAF-C-02, Job Hazard Analysis, procedure implements the published standard through the use of the "Worksite Hazard Analysis" (reference Form A-6004-101, rev. 3). An item added to the form is consideration of "Lack of adequate lighting", with possible controls provided.

Mark Jones 3/28/08

Poster

^CH2M PER ESRB (Parchen, Tracy L) - 04/01/2008 0104

Concur

This action was reviewed by the Executive Safety Review Board on March 28, 2008. The Board concurred with closure. tlp 4/1/08

Poster

^CH2M PER CAs (Owen, Annette) - 04/01/2008 0104

CLOSED

Closure statement and attachments verified.

TASK DUE DATE HISTORY

Modified		New Due Date	
11/26/2007 1418	- ^CH2M PER CAs (Owen, Annette)	04/09/2008 0000	
11/05/2007 0836	- ^CH2M PER CAs	12/17/2007 0000	
11/05/2007 0836	- ^CH2M PER CAs	08/11/2008 0000	

Task# CH2M-PER-2007-1745.4

SUB TASK HISTORY

No Subtasks

-- end of report --

Appendix D

Documentation for Closeout of CH2M-PER-2007-1746

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1746

Closed 01/10/2008 12:45

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1746	10/03/2007	16:00	RadCon Programs
Location			
All Tank Farms			
How Was Problem Discovered			
DOE			
Description of Concern or Problem			
DOE Type A Accident Report JUDGMENT OF NEED: WC-2 CH2M HILL management needs to clarify technical safety requirements with regard to radiological measurements as indicators of waste transfer leaks.			
Requirement Not Satisfied		Source Document Number	
Equipment Identification Number		System Identification	
Immediate Actions Taken or Planned			
None			
Recommended Corrective Actions			
PER w/ Res T. E. Bratvold			
Level of Participation			
No			
Originators Name	Originators ID	Originators Phone	Date Initiated
Higgins, Richard (Rich)	H0003510	(509) 373-5305	10/03/2007
SHIFT OPERATIONS REVIEW			
Title			
Radiological measurements as indicators of waste transfer leaks.			
How Discovered		Agency	
self-ID prior to event			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe Actions Taken or Recommended			
No additional actions taken or recommended by WFO SO.			
SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Johnson, Brian A	H0003531	(509) 373-2696	10/03/2007
SCREENING			
PER Significance Level			
PER with Resolution			
Independent Assessment Review	Occurrence Report Number	Externally Identified	
Yes		No	
Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Bratvold, Tom			
PER Screening Comments			
None. nb			
Causal Code			

A3B3C06	Human Performance LTA Knowledge Based Error Individual underestimated the problem by using past events as basis
A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced
A5B2C08	Communications LTA Written Communications Content LTA Incomplete/situation not covered
A6B1C03	Training Deficiency No Training Provided Work incorrectly considered "skill of the craft"

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
-----------------------	--------------------------	-------------	------------------------

Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Radiation Protection	Event Investigation

ISMS	Consequence Code
Develop and implement hazard controls	Technical Safety Requirement (TSR)

PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	10/04/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
Not subject to PAAA		

NTS Report Number	NTS Report Date

Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation
No	No	No

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date
Stenzel, Len C (inactive) (inactive)	10/04/2007
PAAA Approver Name	PAAA Approve Date
Stenzel, Len C (inactive) (inactive)	10/08/2007

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call
None. Ig

Instructions for Responsible Manager
Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	XXXXXXXXXX	(509) 372-0533	10/08/2007

CAUSE ANALYSIS

Description of Occurrence
DOE Type A Accident Report
JUDGMENT OF NEED: WC-2
CH2M HILL management needs to clarify technical safety requirements with regard to radiological measurements as indicators of waste transfer leaks.

Extent of Condition
The extent of condition for this issue extends to all waste transfer routes.

Safety Significance

The significance of the radiation surveys as potential indicators of waste confinement barrier failure was not identified or incorporated into operating procedures, data collection sheets, or systems training. Criteria of 75 millirem per hour and 100 millirem per hour were incorporated as trigger levels for response actions; however, no mention is made of the derivation or significance of these levels as indicators of TSR controls or as potential indicators of waste leaks. Additionally, the assigned HPT did not operate his radiation survey instrument according to the instrument operating procedure or supplemental training provided during HPT continuing training (course HR2019A). Furthermore, radiological monitoring requirements were not included in system or other training.

Generic Implications**Remedial Corrective Action**

All waste transfer procedures were suspended by Operations and the Procedures Department on 9/28/07.

Causal Analysis, Apparent Cause and/or Root Cause Analysis

The analysis was applied to Judgment-of-Need WC-2 from the Type A Accident Investigation which states "CH2M HILL management needs to clarify TSR requirements with regards to radiological measurements as indicators of waste transfer leaks". Analysis was also extended to the S-102 Spill Root Cause Analysis Report, Judgment-of-Need 9. This judgment identifies that CH2M HILL should "Conduct training for HPTs, RadCon FLMS, and Radiological Engineers on the expectations for the conduct and recording of radiological surveys and on the conduct of RadCon deficiencies noted in Section 23 of the Root Cause analysis report. During the investigation, some RadCon error precursors, missed opportunities, and weaknesses were identified that would not have prevented the spill, but may have assisted in earlier spill recognition, prompted additional evaluation of system design, or ensured overt controls for maintaining worker exposures As Low as Reasonable Achievable (ALARA)."

Determination of causal codes is detailed below with results of the barrier analysis.

WC2 - CH2M HILL management needs to clarify TSR requirements with regards to radiological measurements as Indicators of waste transfer leaks

CAUSAL CODES

A5B2C08: Communications Less Than Adequate/Written Communication Content Less Than Adequate/Incomplete/situation not covered.

The significance of the radiation surveys in support of the S-102 retrieval system in implementing TSR requirements and potential indicators of waste confinement barrier failure was not identified or incorporated into operating procedures, data collection sheets, or systems training. Criteria of 75 milli rem per hour and 100 milli rem per hour were incorporated as trigger levels for response actions; however, no mention is made of the derivation or significance of these levels as indicators of TSR controls or as potential indicators of waste leaks.

A3B3C06: Human Performance Less Than Adequate/Work Organization & Planning Less Than Adequate/Planning not coordinated with inputs from walk downs/task analysis

The assigned HPT did not operate his radiation survey instrument according to the instrument operating procedure or supplemental training provided during HPT continuing training (course HR2019A).

A6B1C03: Training Deficiency/No Training Provided/Work incorrectly considered "skill of the craft"

Radiological monitoring requirements were not included in system or other training.

A4B1C01: Management policy/guidance/expectations not well defined, understood or enforced

The administrative procedure (TFC-ESHQ-RP-ADM-P-01) that instructs Project radiological control personnel to develop and flow down TSR and radiological monitoring requirements to waste transfer procedures was not followed for the S-102 retrieval procedure. Although Project radiological control personnel were involved in the issue and revision of the ADM-P-01 procedure, there is no evidence that project radiological control personnel followed it (ADP-P-01) during reviews of the S-102 retrieval procedure. Project management did not clearly articulate, understand, or enforce their expectations regarding flow-down of monitoring requirements from ADM-P-01 into project retrieval procedures, as evidenced by the S-102 retrieval procedure. As such, technically based dose rate action levels from ALARA reviews, and a conservative approach to exceeding dose-rate action levels, were not included in the S-102 transfer procedure.

BARRIER ANALYSIS

S-102 Transfer Procedure

Available: Yes

Effective No

Analysis: The operations procedure lacked a documented technical basis including data quality objectives associated with radiological criteria of 75 mrem and 100 mrem used as trigger levels for response actions. There is no formal mechanism to ensure Subject Matter Experts responsible for procedure reviews understand whether radiological surveys are to be used to implement TSR requirements for leak detection and if not, how any differences in objectives are to be addressed. Comparison of operations procedures for waste transfers where radiological monitoring was the primary TSR leak detection control showed no difference in the rigor, technical basis, quality or clarity of how radiological surveys are to be used as an indicator of waste leaks. This indicates an extent of condition concern with regard to radiological measurements and leak detection beyond S-102. Once the pump was able to perform an acceptable electrical reverse operation, the pump was shutdown per the Shut Down Waste Transfer instructions.

However, the shutdown instructions call for the Health Physics Technician to perform and record a final radiological survey but do not link to the action steps for high radiation.

TFC-ESHQ-RP-ADM-P-01 Procedure

Available: Yes

Effective: Not used

Analysis: Procedure not used during review of S-102 Transfer and subsequent identification of 75 mrem/hr action level or response to exceeding action level.

WO Rad Reading

Available: No

Effective: N/A

Analysis: HPT did not collect window open reading either during routine operations, nor in response to elevated background radiation levels.

WC Rad Reading

Available: Yes

Effective: No

Analysis: S-102 transfer procedure did not provide direction to operations personnel regarding specific actions, beyond notification of the OE/SOM, to take upon exceeding the 75 mrem/hr action level.

RadCon Management

Available: Yes

Effective: No

Analysis: Project management did not clearly articulate, understand, enforce, or evaluate the effectiveness of their expectations regarding flow-down of monitoring requirements from ADM-P-01 into project retrieval procedures, as evidenced by the S-102 retrieval procedure. As such, technically based dose rate action levels from ALARA reviews, and a conservative approach to exceeding dose-rate action levels, were not included in the S-102 transfer procedure.

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	11/05/2007	CH2M-PER-2007-1746.1

Action
WC-2.1 Establish Industrial Hygiene and RadCon approval designators for active Transfer Procedures

Deliverable:
Revised procedures

Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	01/15/2008	CH2M-PER-2007-1746.2

Action
WC-2.2 Revise and implement procedure TFC-ESHQ-RP_ADM-P-01, Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities, to clarify monitoring requirements associated with implementing TSR requirements for leak detection. Revised procedure will include guidance for developing comprehensive monitoring requirements for TSR level leak detection monitoring, and radiological control monitoring, that flow down into waste transfer monitoring technical work documents, as implemented by Action CHG-ENG-1.2.

Deliverable: Revised procedure ADM-P-01.

Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	01/15/2008	CH2M-PER-2007-1746.3

Action
WC-2.3 Train health physicists on revised TFC-ESHQ-RP_ADM-P-01, Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities, and associated TSR leak detection and radiological control monitoring requirements.

Deliverable: Training materials and attendance rosters indicating 90% completion.

ATTACHMENTS

Barrier and Causal Analysis for S-102 WC-2 and JON-9.doc

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
10/04/2007 14:30	Owen, Annette	'How Was Problem Discovered' was changed.
10/08/2007 08:30	Owen, Annette	Responsible Manager Task Launched by Owen, Annette
10/30/2007 08:40	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.

11/01/2007 10:37	Parchen, Tracy L	Corrective Actions Launched by Parchen, Tracy L
11/08/2007 12:29	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 12:30	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS. 'Action Due Date' was changed.
11/26/2007 14:28	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:28	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS. 'Actionee' was changed. Corrective Action Item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Corrective Action Item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 14:31	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:32	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS. 'Actionee' was changed. Corrective Action Item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS. 'Action' was changed.
11/26/2007 14:33	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:34	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS. Deleting Corrective Action CH2M-PER-2007-1746.5.

-- End of Report --
01/10/2008 12:45 PM

Task# CH2M-PER-2007-1746

E-STARS^R Report
Task Detail Report
01/10/2008 1245

TASK INFORMATION

Task#	CH2M-PER-2007-1746		
Subject	RES; Radiological measurements as indicators of waste transfer leaks.		
Parent Task#		Status	CLOSED 01/10/2008
Reference		Due	01/23/2008
Originator	^CH2M PER Coordinator (^CH2M PER Coordinator)	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/03/2007 1713	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Actions Routing Lis	Inactive
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs(Brown, Nancy L) - Assign - Completed - 01/10/2008 1230 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.	
	<ul style="list-style-type: none"> • Bratvold, Tom - Assign - Completed with comments - 10/25/2007 1420 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 10/30/2007 0850 <i>Instructions:</i> Independent Assessor Review	
	<ul style="list-style-type: none"> • ^CH2M PER ESRB - Assign - Cancelled - 11/01/2007 1037 <i>Instructions:</i>	
3	Review Initial PER	Inactive
	Review new PER	

Task# CH2M-PER-2007-1746

- ^CH2M WFO SO(Johnson, Brian A) - Review - Concur - 10/03/2007 2045

Instructions:

- ^CH2M PER Screening(Owen, Annette) - Review - Concur - 10/04/2007 1430

Instructions:

- ^CH2M MGR Review(Owen, Annette) - Review - Concur - 10/08/2007 0830

Instructions:

ATTACHMENTS

Attachments

1. Barrier and Causal Analysis for S-102 WC-2 and JON-9.doc
2. Link to PER

COLLABORATION

COMMENTS

Poster

Bratvold, Tom (Higbee, Cally) - 10/25/2007 0210

Completed

The analysis was applied to Judgment-of-Need WC-2 from the Type A Accident Investigation which states "CH2M HILL management needs to clarify TSR requirements with regards to radiological measurements as indicators of waste transfer leaks". Analysis was also extended to the S-102 Spill Root Cause Analysis Report, Judgment-of-Need 9. This judgment identifies that CH2M HILL should "Conduct training for HPTs, RadCon FLMs, and Radiological Engineers on the expectations for the conduct and recording of radiological surveys and on the conduct of RadCon deficiencies noted in Section 23 of the Root Cause analysis report. During the investigation, some RadCon error precursors, missed opportunities, and weaknesses were identified that would not have prevented the spill, but may have assisted in earlier spill recognition, prompted additional evaluation of system design, or ensured overt controls for maintaining worker exposures As Low as Reasonable Achievable (ALARA)."

Determination of causal codes is detailed below with results of the barrier analysis.
WC2 - CH2M HILL management needs to clarify TSR requirements with regards to radiological measurements as indicators of waste transfer leaks

CAUSAL CODES

A5B2C08: Communications Less Than Adequate/Written Communication Content Less Than Adequate/Incomplete/situation not covered.

The significance of the radiation surveys in support of the S-102 retrieval system in implementing TSR requirements and potential indicators of waste confinement barrier failure was not identified or incorporated into operating procedures, data collection sheets, or systems training. Criteria of 75 milli rem per hour and 100 milli rem per hour were incorporated as trigger levels for response actions; however, no mention is made of the derivation or significance of these levels as indicators of TSR controls or as potential indicators of waste leaks.

A3B3C06: Human Performance Less Than Adequate/Work Organization & Planning Less Than Adequate/Planning not coordinated with inputs from walk downs/task analysis

Task# CH2M-PER-2007-1746

The assigned HPT did not operate his radiation survey instrument according to the instrument operating procedure or supplemental training provided during HPT continuing training (course HR2019A).

A6B1C03: Training Deficiency/No Training Provided/Work incorrectly considered "skill of the craft"

Radiological monitoring requirements were not included in system or other training.

A4B1C01: Management policy/guidance/expectations not well defined, understood or enforced

The administrative procedure (TFC-ESHQ-RP-ADM-P-01) that instructs Project radiological control personnel to develop and flow down TSR and radiological monitoring requirements to waste transfer procedures was not followed for the S-102 retrieval procedure. Although Project radiological control personnel were involved in the issue and revision of the ADM-P-01 procedure, there is no evidence that project radiological control personnel followed it (ADP-P-01) during reviews of the S-102 retrieval procedure. Project management did not clearly articulate, understand, or enforce their expectations regarding flow-down of monitoring requirements from ADM-P-01 into project retrieval procedures, as evidenced by the S-102 retrieval procedure. As such, technically based dose rate action levels from ALARA reviews, and a conservative approach to exceeding dose-rate action levels, were not included in the S-102 transfer procedure.

BARRIER ANALYSIS

S-102 Transfer Procedure

Available: Yes

Effective No

Analysis: The operations procedure lacked a documented technical basis including data quality objectives associated with radiological criteria of 75 mrem and 100 mrem used as trigger levels for response actions. There is no formal mechanism to ensure Subject Matter Experts responsible for procedure reviews understand whether radiological surveys are to be used to implement TSR requirements for leak detection and if not, how any differences in objectives are to be addressed. Comparison of operations procedures for waste transfers where radiological monitoring was the primary TSR leak detection control showed no difference in the rigor, technical basis, quality or clarity of how radiological surveys are to be used as an indicator of waste leaks. This indicates an extent of condition concern with regard to radiological measurements and leak detection beyond S-102. Once the pump was able to perform an acceptable electrical reverse operation, the pump was shutdown per the Shut Down Waste Transfer instructions.

However, the shutdown instructions call for the Health Physics Technician to perform and record a final radiological survey but do not link to the action steps for high radiation.

TFC-ESHQ-RP-ADM-P-01 Procedure

Available: Yes

Effective: Not used

Analysis: Procedure not used during review of S-102 Transfer and subsequent identification of 75 mrem/hr action level or response to exceeding action level.

WO Rad Reading

Task# CH2M-PER-2007-1746

Available: No
 Effective: N/A
 Analysis: HPT did not collect window open reading either during routine operations, nor in response to elevated background radiation levels.

WC Rad Reading
 Available: Yes
 Effective: No
 Analysis: S-102 transfer procedure did not provide direction to operations personnel regarding specific actions, beyond notification of the OE/SOM, to take upon exceeding the 75 mrem/hr action level.

RadCon Management
 Available: Yes
 Effective: No
 Analysis: Project management did not clearly articulate, understand, enforce, or evaluate the effectiveness of their expectations regarding flow-down of monitoring requirements from ADM-P-01 into project retrieval procedures, as evidenced by the S-102 retrieval procedure. As such, technically based dose rate action levels from ALARA reviews, and a conservative approach to exceeding dose-rate action levels, were not included in the S-102 transfer procedure.

Corrective actions are listed on the PER.

Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 10/30/2007 0810
	Concur
	Concur - launch actions
Poster	^CH2M PER Coordinator (Brown, Nancy L) - 01/10/2008 1201
	CLOSED
	CA is complete -- closed parent task

TASK DUE DATE HISTORY

Modified		New Due Date	
Modified	10/03/2007 1713 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	10/05/2007 1630
Modified	10/08/2007 0830 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/21/2007 1630
Modified	10/08/2007 0830 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/17/2007 1630
Modified	11/01/2007 1037 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	12/18/2007 0000
Modified	11/26/2007 1422 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	01/23/2008 0000

SUB TASK HISTORY

Task# CH2M-PER-2007-1746

Subtask#	CH2M-PER-2007-1746.1
Subject	CH2M-PER-2007-1746; RES; Radiological measurements as indicators of waste transfer leaks.
Originator	^CH2M PER CAs

Routing List	<i>No Active Routing List</i>
--------------	-------------------------------

Subtask#	CH2M-PER-2007-1746.2
Subject	CH2M-PER-2007-1746; RES; Radiological measurements as indicators of waste transfer leaks.
Originator	^CH2M PER CAs

Routing List	<i>No Active Routing List</i>
--------------	-------------------------------

Subtask#	CH2M-PER-2007-1746.3
Subject	CH2M-PER-2007-1746; RES; Radiological measurements as indicators of waste transfer leaks.
Originator	^CH2M PER CAs

Routing List	<i>No Active Routing List</i>
--------------	-------------------------------

Subtask#	CH2M-PER-2007-1746.4
Subject	CH2M-PER-2007-1746; RES; Radiological measurements as indicators of waste transfer leaks.
Originator	^CH2M PER CAs

Routing List	<i>No Active Routing List</i>
--------------	-------------------------------

– end of report –

Task# CH2M-PER-2007-1746.2

E-STARS[®] Report
Task Detail Report
01/10/2008 1245

TASK INFORMATION

Task#	CH2M-PER-2007-1746.2		
Subject	CH2M-PER-2007-1746; RES; Radiological measurements as indicators of waste transfer leaks.		
Parent Task#	CH2M-PER-2007-1746	Status	CLOSED 01/10/2008
Reference	CH2M-PER-2007-1746	Due	01/23/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	None
Originator Phone		Category	None
Origination Date	11/01/2007 1037	Resp Org	None
Remote Task#		Subproject	None
Deliverable	None	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Route List	Inactive
	<p>Return for rework (per the ESRB on 11/29/07). The deliverable is the follow-on WC-2.3 (1746.3) action. Implementation is an issue. Leave this PER open and align closure with WC-2.3.</p> <p>WC-2.2 Revise and implement procedure TFC-ESHQ-RP_ADM-P-01, Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities, to clarify monitoring requirements associated with implementing TSR requirements for leak detection. Revised procedure will include guidance for developing comprehensive monitoring requirements for TSR level leak detection monitoring, and radiological control monitoring, that flow down into waste transfer monitoring technical work documents, as implemented by Action CHG-ENG-1.2.</p> <p>Deliverable: Revised procedure ADM-P-01.</p>	
	<ul style="list-style-type: none"> • Bratvold, Tom - Assign - Completed with comments - 11/28/2007 0924 <p><i>Instructions:</i></p>	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/28/2007 1313 <p><i>Instructions:</i></p>	
	<ul style="list-style-type: none"> • ^CH2M PER ESRB - Review - Withdrawn - 12/03/2007 1435 	

Task# CH2M-PER-2007-1746.2

Instructions:

- Bratvold, Tom - Assign - Completed with comments - 01/09/2008 0947

Instructions:

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 01/09/2008 1013

Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 01/10/2008 1111

Instructions:

2

Corrective Action

Inactive

WC-2.2 Revise procedure TFC-ESHQ-RP_ADM-P-01 "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities" to clarify monitoring requirements associated with implementing TSR requirements for leak detection

Deliverable: Revised procedure ADM-P-01 that includes guidance for developing comprehensive monitoring requirements for TSR level leak detection monitoring, radiological control monitoring, that flow down into waste transfer monitoring technical work documents.

RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.

QUALITY ASSURANCE: Review for adequate completion..

- Godfrey, Sheila R - Assign - Completed with comments - 11/07/2007 1302

Instructions:

- Bratvold, Tom - Review - Concur with comments - 11/07/2007 1303

Instructions:

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/08/2007 1551

Instructions: Independent Assessor Review

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/15/2007 1109

Instructions:

ATTACHMENTS

Attachments

1. 2007-1746.2 Closure Packet.pdf
2. 2007-1746.2 TFC-ESHQ-RP_ADM-P-01.doc
3. Barrier and Causal Analysis for S-102 WC-2 and JON-9.doc
4. Link to PER

COLLABORATION

Task# CH2M-PER-2007-1746.2	
COMMENTS	
Poster	Godfrey, Sheila R (Higbee, Cally) - 11/07/2007 0111
	Completed
	Revision to procedure TFC-ESHQ-RP_ADM-P-01 "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities" to clarify monitoring requirements associated with implementing TSR requirements for leak detection was completed and Procedures issued on November 6, 2007. Attached to this ESTARS is the revised procedure (2007-1746.2 TFC-ESHQ-RP_ADM-P-01).
Poster	Bratvold, Tom (Higbee, Cally) - 11/07/2007 0111
	Concur
	Concur with closure documentation.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/08/2007 0311
	Concur
	Concur
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 11/15/2007 1111
	Concur
	This action was reviewed by the Executive Safety Review Board on November 15, 2007. The Board concurred with closure. tlp 11/15/07
Poster	^CH2M PER CAs (Brown, Nancy L) - 11/15/2007 1211
	CLOSED
	Reviewed and closed CA
Poster	^CH2M PER CAs (Owen, Annette) - 11/26/2007 0211
	Task Re-Open
	Re-open to allow implementation.
Poster	Bratvold, Tom (Higbee, Cally) - 11/28/2007 0911
	Completed
	Attached to this action is the Revised Procedure which was effective 11/6/07. There is no implementation period associated with this revision. No further action is required.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/28/2007 0111
	Concur
	Concur
Poster	^CH2M PER CAs (Owen, Annette) - 12/13/2007 0812
	Returned due date to original of 1/15/08 per form A-6003-227.

Task# CH2M-PER-2007-1746.2			
	Date needs to align with the CAP submitted to ORP and due to excessive manipulation of this action, due date was lost.		
Poster	Bratvold, Tom (Higbee, Cally) - 01/09/2008 0901		
	Completed		
	<p>Attached (2007-1746.2 Closure Packet), is the documentation that TFC-ESHQ-RP_ADM-P-01 has been revised, implemented and training was conducted on 1/8/08. The closure packet includes the following:</p> <ol style="list-style-type: none"> 1. Revision of TFC-ESHQ-RP_ADM-P-01 (effective 11/6/07) 2. Lesson Plan (coversheet & plan) 3. Radiological Monitoring for Waste Transfers, Course # 351038 Rev 0801.0 4. Practical Exercise for Radiological Monitoring for Waste Transfers 5. Course Completion Roster (includes Project Organizational Charts and Email on Staff Member who is on Short Term Disability). 		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/09/2008 1001		
	Concur		
	Concur		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 01/10/2008 1101		
	Concur		
	This action was reviewed and approved for closure by the Executive Safety Review Board on January 10, 2008. tlp 1/10/08		
Poster	^CH2M PER CAs (Brown, Nancy L) - 01/10/2008 1201		
	CLOSED		
	Reviewed and closed CA		
TASK DUE DATE HISTORY			
Modified	11/01/2007 1037 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/18/2007 0000
Modified	11/01/2007 1037 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	11/26/2007 0000
Modified	11/26/2007 1425 - ^CH2M PER CAs (Owen, Annette)	New Due Date	01/23/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			
-- end of report --			

Task# CH2M-PER-2007-1746.3

E-STARS^R Report
Task Detail Report
01/10/2008 1245

TASK INFORMATION

Task#	CH2M-PER-2007-1746.3		
Subject	CH2M-PER-2007-1746; RES; Radiological measurements as indicators of waste transfer leaks.		
Parent Task#	CH2M-PER-2007-1746	Status	WITHDRAWN 12/13/2007
Reference	CH2M-PER-2007-1746	Due	01/19/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/01/2007 1037	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>WC-2.3 Train health physicists on revised TFC-ESHQ-RP_ADM-P-01, Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities, and associated TSR leak detection and radiological control monitoring requirements.</p> <p>Deliverable: Training materials and attendance rosters indicating 90% completion.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> Godfrey, Sheila R - Assign - Withdrawn - 11/26/2007 1429 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> Bratvold, Tom - Assign - Cancelled - 12/13/2007 0905 <i>Instructions:</i> 	

Task# CH2M-PER-2007-1746.3

- ^CH2M Independent Assessment Review - Review - Cancelled - 12/13/2007 0905
Instructions: Independent Assessor Review

- ^CH2M PER ESRB - Review - Cancelled - 12/13/2007 0905
Instructions:

ATTACHMENTS

Attachments

1. Barrier and Causal Analysis for S-102 WC-2 and JON-9.doc
2. Link to PER

COLLABORATION

COMMENTS

- Poster ^CH2M PER CAs (Owen, Annette) - 12/13/2007 0912
- Withdraw this task per form A-6003-227. T Bratvold
- Due to excessive manipulation of this PER, this action was reinstated when it should not have been. The PER needs to align with the CAP submitted to ORP.

TASK DUE DATE HISTORY

Modified	11/01/2007 1037 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/18/2007 0000
Modified	11/01/2007 1037 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/14/2007 0000
Modified	11/08/2007 1229 - ^CH2M PER CAs (Owen, Annette)	New Due Date	12/18/2007 0000
Modified	11/26/2007 1431 - ^CH2M PER CAs (Owen, Annette)	New Due Date	01/19/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Appendix E

Documentation for Closeout of CH2M-PER-2007-1747

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1747

Closed 02/28/2008 13:30

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1747	10/03/2007	16:00	WFO

Location

All Tank Farms

How Was Problem Discovered

DOE

Description of Concern or Problem

DOE Type A Accident Report
 JUDGMENT OF NEED: WC-3
 CH2M HILL management needs to address radiological conduct of operations deficiencies that are evident during the S-102 response to abnormal operating conditions.

Requirement Not Satisfied

Source Document Number

Equipment Identification Number

System Identification

Immediate Actions Taken or Planned

None

Recommended Corrective Actions

PER w/Res T. D. Jarecki

Level of Participation

No

Originators Name	Originators ID	Originators Phone	Date Initiated
Higgins, Richard (Rich)	XXXXXXXX	(509) 373-5305	10/03/2007

SHIFT OPERATIONS REVIEW

Title

Radiological conduct of operations deficiencies

How Discovered

Agency

self-ID prior to event

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe Actions Taken or Recommended

No additional actions taken or recommended by WFO SO.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Johnson, Brian A	XXXXXXXX	(509) 373-2696	10/03/2007

SCREENING

PER Significance Level

PER with Resolution

Independent Assessment Review	Occurrence Report Number	Externally Identified
Yes		No

Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep
Jarecki, Theodore D		

PER Screening Comments

None. nb

Causal Code

A3B1C03	Human Performance LTA Skill Based Error Incorrect performance due to mental lapse		
A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced		
A5B2C08	Communications LTA Written Communications Content LTA Incomplete/situation not covered		
MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Operations	Event Investigation
ISMS	Consequence Code		
Perform work within the controls	Procedure - Operational		
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	10/04/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes	
Not subject to PAAA			
NTS Report Number	NTS Report Date		
Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation	
No	No	No	

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date	
Stenzel, Len C (inactive) (inactive)	10/04/2007	
PAAA Approver Name	PAAA Approve Date	
Stenzel, Len C (inactive) (inactive)	10/08/2007	

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call
None. Ig

Instructions for Responsible Manager
Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	XXXXXXXXXX	(509) 372-0533	10/08/2007

CAUSE ANALYSIS

Description of Occurrence
CH2M HILL management needs to address radiological conduct of operations deficiencies that were evident during the S-102 response to abnormal operating conditions.

Extent of Condition
Adequate application of work control requirements including controls for hazards and compliance with conduct of operations requirements applies to all work in the field. Appropriate work documentation and related procedural compliance is necessary for all work in the field including routine activities as well as follow-up work related to abnormal and/or emergency situations.

Safety Significance
Failure to effectively respond to abnormal events could have significant safety impacts to facility personnel, the public, and/or the environment.

Generic Implications

Remedial Corrective Action

Review of preliminary Type A investigation results along with internal investigations including Emergency Management S-102 Event Response Review and CH2M HILL Root Cause Analysis resulted in identification of several improvements related to the abnormal operating procedures with focus on TFC-AOP-006 and TFC-AOP-011. Interim measures were taken to incorporate improvements including procedure revisions C-4 and C-5 for TFC-AOP-006 as well as revisions B-8 and B-9 for TFC-AOP-011 and standing orders CO-07-007 and WFO-07-005. These documents are attached to this PER.

Causal Analysis, Apparent Cause and/or Root Cause Analysis

A change analysis was performed per TFC-ESHQ-Q_ADM-C-12, Apparent Cause Analysis and Corrective Action Planning, including reviews of DOE Type A Accident Report and RPP-RPT-34831, Root Cause Analysis Report for Radioactive Waste Spill at Tank 241-S-102. The analysis included evaluation of the conclusions associated with JON WC-3 to determine the following apparent causes. The analysis is documented in and is documented in PER-2007-1747. Based on that change analysis, the following Causal Factors were assigned:

Causes:

- A3B1C03 - Incorrect performance due to mental lapse
- A4B1C01 - Management policy guidance/expectations not well-defined, understood or enforced
- A5B2C08 - Incomplete/situation not covered

The Type A Accident Report identified informal actions performed in the field under abnormal operating procedures although supervisors had been made aware of expectations to perform fieldwork utilizing work documentation consistent with the Tank Farm Contractor Work Control requirements demonstrating a mental lapse as well as a lack of understanding for the related requirements. The report also concluded that the abnormal operating procedures were incorrectly used as stand alone procedures and did not provide adequate reference to appropriate work documentation to address situations to support related field activities.

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Jarecki, Theodore D	11/09/2007	CH2M-PER-2007-1747.1

Action

WC-3.1 Combine Abnormal Operating Procedures (AOP) with similar initial actions including TF-AOP-006 and -011 utilizing an Enhanced Work Planning approach including representatives from operations as well as central IH, central RadCon and Emergency Preparedness.

Deliverable:

Revised Abnormal Operating Procedures

Actionee	Action Due Date	E-STARS Number
Jarecki, Theodore D	01/31/2008	CH2M-PER-2007-1747.2

Action

WC-3.2 Review all abnormal operating procedures utilizing an enhanced work planning approach including representatives from operations as well as industrial hygiene, radiological control, and emergency preparedness. Implement revisions with focus on effective flow between alarm response procedures, AOPs, and emergency response procedures.

Deliverable:

Revised Abnormal Operating Procedures

Actionee	Action Due Date	E-STARS Number
Jennings, Tony L	02/28/2008	CH2M-PER-2007-1747.3

Action

WC-3.3 Implement a process for safe AOP response such that planning time is minimized for event response and stabilization

Deliverable: Implemented procedure(s) for new process.

Actionee	Action Due Date	E-STARS Number
Jarecki, Theodore D	02/28/2008	CH2M-PER-2007-1747.4

Action

WC-3.4 Complete review of Abnormal Operating Procedure changes utilizing table top drill format with all Tank Farm shifts.

Deliverable: Drill attendance rosters indicating 90% completion.

ATTACHMENTS

- CH2M-PER-2007-1747 CO-07-007_Rev_0.doc
- CH2M-PER-2007-1747 TF-AOP-006_C4_Response_to_High_Radiation.doc
- CH2M-PER-2007-1747 TF-AOP-006_C5_Response_to_High_Radiation.doc

CH2M-PER-2007-1747 TF-AOP-011_B10_Response_to_Chemical_and_or_Radiological_Events.doc

CH2M-PER-2007-1747 TF-AOP-011_B8_Response_to_Chemical_and_or_Radiological_Events.doc

CH2M-PER-2007-1747 TF-AOP-011_B9_Response_to_Chemical_and_or_Radiological_Events.doc

CH2M-PER-2007-1747 WFO-07-005.doc

CH2M-PER-2007-1747.2 CH2M-0800374.pdf

Change Analysis PER-7-1747.doc

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
10/08/2007 08:30	Owen, Annette	Responsible Manager Task Launched by Owen, Annette
10/30/2007 08:52	Higgins, Richard (Rich)	Change to Cause Analysis screen/Corrective Action plan.
10/30/2007 11:34	Glaman, Linda R	Corrective Actions Launched by Glaman, Linda R
10/31/2007 13:42	Hammack, Julie M	'Causal Analysis' was changed.
11/08/2007 12:31	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 12:32	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed.
11/08/2007 12:37	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/08/2007 12:37	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed.
11/08/2007 12:37	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed.
11/08/2007 12:37	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed.
11/26/2007 14:42	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:43	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS. 'Actionee' was changed. Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action Item - modification to synchronize with E-STARS.'Action' was changed.
11/26/2007 14:45	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:46	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS.'Action' was changed.
11/26/2007 14:49	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 14:49	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action Item - modification to synchronize with E-STARS.'Action' was changed.

11/26/2007 14:50	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action CH2M-PER-2007-1747.5.
12/11/2007 16:14	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
12/11/2007 16:15	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed.
12/20/2007 13:12	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
12/20/2007 13:12	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed.

-- End of Report --
02/28/2008 01:45 PM

Task# CH2M-PER-2007-1747

E-STARS^R Report
Task Detail Report
02/28/2008 0145

TASK INFORMATION

Task#	CH2M-PER-2007-1747		
Subject	RES; Radiological conduct of operations deficiencies		
Parent Task#		Status	CLOSED 02/28/2008
Reference		Due	03/10/2008
Originator	^CH2M PER Coordinator (^CH2M PER Coordinator)	Priority	Medium
Originator Phone		Category	PER.
Origination Date	10/03/2007 1714	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Actions Routing Lis	Inactive
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs(Brown, Nancy L) - Assign - Completed - 02/28/2008 1325 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.	
	<ul style="list-style-type: none"> • Jarecki, Theodore D - Assign - Completed - 10/29/2007 0916 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 10/30/2007 0854 <i>Instructions:</i> Independent Assessor Review	
	<ul style="list-style-type: none"> • ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 10/30/2007 1011 <i>Instructions:</i>	
3	Review Initial PER	Inactive

Task# CH2M-PER-2007-1747

Review new PER

- ^CH2M WFO SO(Johnson, Brian A) - Review - Concur - 10/03/2007 2044
Instructions:

- ^CH2M PER Screening(Owen, Annette) - Review - Concur - 10/04/2007 1431
Instructions:

- ^CH2M MGR Review(Owen, Annette) - Review - Concur - 10/08/2007 0830
Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1747 CO-07-007_Rev_0.doc
2. CH2M-PER-2007-1747 TF-AOP-006_C4_Response_to_High_Radiation.doc
3. CH2M-PER-2007-1747 TF-AOP-006_C5_Response_to_High_Radiation.doc
4. CH2M-PER-2007-1747 TF-AOP-011_B10_Response_to_Chemical_and_or_Radiological_Events.doc
5. CH2M-PER-2007-1747 TF-AOP-011_B8_Response_to_Chemical_and_or_Radiological_Events.doc
6. CH2M-PER-2007-1747 TF-AOP-011_B9_Response_to_Chemical_and_or_Radiological_Events.doc
7. CH2M-PER-2007-1747 WFO-07-005.doc
8. CH2M-PER-2007-1747.2 CH2M-0800374.pdf
9. Change Analysis PER-7-1747.doc
10. Link to PER

COLLABORATION

COMMENTS

Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 10/30/2007 0810		
	Concur		
	Concur Launch Acions		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 10/30/2007 1010		
	Concur		
	OK to launch.		
Poster	^CH2M PER Coordinator (Brown, Nancy L) - 02/28/2008 0102		
	CLOSED		
	CAs are complete – parent task closed		

TASK DUE DATE HISTORY

Modified	10/03/2007 1714 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	10/05/2007 1630
Modified	10/08/2007 0830 - ^CH2M PER Coordinator	New Due Date	11/21/2007 1630

Task# CH2M-PER-2007-1747

	(^CH2M PER Coordinator)		
Modified	10/08/2007 0830 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/17/2007 1630
Modified	10/30/2007 1134 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	12/21/2007 0000
Modified	11/08/2007 1235 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	01/12/2008 0000
Modified	11/26/2007 1438 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	03/10/2008 0000

SUB TASK HISTORY

Subtask#	CH2M-PER-2007-1747.1		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Originator	^CH2M PER CAs		
	Routing List	<i>No Active Routing List</i>	
Subtask#	CH2M-PER-2007-1747.2		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Originator	^CH2M PER CAs		
	Routing List	<i>No Active Routing List</i>	
Subtask#	CH2M-PER-2007-1747.3		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Originator	^CH2M PER CAs		
	Routing List	<i>No Active Routing List</i>	
Subtask#	CH2M-PER-2007-1747.4		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Originator	^CH2M PER CAs		
	Routing List	<i>No Active Routing List</i>	
Subtask#	CH2M-PER-2007-1747.5		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Originator	^CH2M PER CAs		
	Routing List	<i>No Active Routing List</i>	

-- end of report --

Task# CH2M-PER-2007-1747.1

E-STARS^R Report
Task Detail Report
02/28/2008 0145

TASK INFORMATION

Task#	CH2M-PER-2007-1747.1		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Parent Task#	CH2M-PER-2007-1747	Status	CLOSED 11/12/2007
Reference	CH2M-PER-2007-1747	Due	11/16/2007
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/30/2007 1134	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>WC-3.1 Combine Abnormal Operating Procedures (AOP) with similar initial actions including TF-AOP-006 and -011 utilizing an Enhanced Work Planning approach including representatives from operations as well as central IH, central RadCon and Emergency Preparedness.</p> <p>Deliverable:</p> <p>Revised Abnormal Operating Procedures</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> Jarecki, Theodore D - Assign - Completed with comments - 11/05/2007 1339 <p><i>Instructions:</i></p>	
	<ul style="list-style-type: none"> ^CH2M Independent Assessment Review(Higgins. Richard (Rich)) - Review - Concur with comments - 11/07/2007 0749 	

Task# CH2M-PER-2007-1747.1

Instructions: Independent Assessor Review

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/08/2007 1353

Instructions:

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1747 CO-07-007_Rev_0.doc 2. CH2M-PER-2007-1747 TF-AOP-006_C4_Response_to_High_Radiation.doc 3. CH2M-PER-2007-1747 TF-AOP-006_C5_Response_to_High_Radiation.doc 4. CH2M-PER-2007-1747 TF-AOP-011_B10_Response_to_Chemical_and_or_Radiological_Events.doc 5. CH2M-PER-2007-1747 TF-AOP-011_B8_Response_to_Chemical_and_or_Radiological_Events.doc 6. CH2M-PER-2007-1747 TF-AOP-011_B9_Response_to_Chemical_and_or_Radiological_Events.doc 7. CH2M-PER-2007-1747 WFO-07-005.doc 8. CH2M-PER-2007-1747.2 CH2M-0800374.pdf 9. Change Analysis PER-7-1747.doc 10. Link to PER
-------------	---

COLLABORATION

COMMENTS

Poster	Jarecki, Theodore D (Samifua, Kristi) - 11/05/2007 0111
	Completed
	Procedures revised see attached TF-AOP-011 Rev 10 and AOP's.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/07/2007 0711
	Concur
	Concur
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 11/08/2007 0111
	Concur
	This action was reviewed by the Executive Safety Review Board on November 8, 2007. The Board concurred with closure. tlp 11/8/07
Poster	^CH2M PER CAs (Brown, Nancy L) - 11/12/2007 0211
	CLOSED
	Reviewed and closed

TASK DUE DATE HISTORY

Modified	10/30/2007 1134 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/21/2007 0000
----------	---	--------------	-----------------

Task# CH2M-PER-2007-1747.1

Modified

10/30/2007 1134 - ^CH2M PER CAs (^CH2M
PER CAs)

New Due Date

11/16/2007 0000

SUB TASK HISTORY

*No Subtasks**-- end of report --*

Task# CH2M-PER-2007-1747.2

E-STARS[®] Report
Task Detail Report
05/14/2008 0311

TASK INFORMATION			
Task#	CH2M-PER-2007-1747.2		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Parent Task#	CH2M-PER-2007-1747	Status	CLOSED 01/31/2008
Reference	CH2M-PER-2007-1747	Due	02/08/2008
Originator	^CH2M PER CAS	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/30/2007 1134	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
	<p>WC-3.2 Review all abnormal operating procedures utilizing an enhanced work planning approach including representatives from operations as well as industrial hygiene, radiological control, and emergency preparedness. Implement revisions with focus on effective flow between alarm response procedures, AOPs, and emergency response procedures.</p> <p>Deliverable: Revised Abnormal Operating Procedures</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> ● Jarecki, Theodore D - Assign - Completed with comments - 01/30/2008 1208 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 01/30/2008 1539 <i>Instructions:</i> Independent Assessor Review 	
	<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 01/31/2008 1125 <i>Instructions:</i> 	

ATTACHMENTS

Attachments
<ol style="list-style-type: none"> 1. CH2M-PER-2007-1747 4 WFO Tabletop Drills Additional Evidence Final.pdf 2. CH2M-PER-2007-1747 CO-07-007_Rev_0.doc 3. CH2M-PER-2007-1747 TF-AOP-005_B7_Response_to_Unexpected_Tank_Temperature_Level,_or_Flammable_Gas_Increase.doc 4. CH2M-PER-2007-1747 TF-AOP-006_C4_Response_to_High_Radiation.doc 5. CH2M-PER-2007-1747 TF-AOP-006_C5_Response_to_High_Radiation.doc 6. CH2M-PER-2007-1747 TF-AOP-011_B10_Response_to_Chemical_and_or_Radiological_Events.doc 7. CH2M-PER-2007-1747 TF-AOP-011_B8_Response_to_Chemical_and_or_Radiological_Events.doc 8. CH2M-PER-2007-1747 TF-AOP-011_B9_Response_to_Chemical_and_or_Radiological_Events.doc 9. CH2M-PER-2007-1747 TF-AOP-015_B14_Response_to_Reported_Odors_or_Unexpected_Changes_to_Vapor_Conditions.doc 10. CH2M-PER-2007-1747 TF-AOP-018_B1_Response_to_Electrical_Water_Air_or_Pressurized_Gas_Cylinders_High_Energy_Releases.doc

Task# CH2M-PER-2007-1747.2

11. CH2M-PER-2007-1747 WFO-07-005.doc
12. CH2M-PER-2007-1747.2 CH2M-0800374.pdf ✓
13. Change Analysis PER-7-1747.doc
14. IDMS Archive Link
15. IDMS Archive Link
16. IDMS Archive Link
17. IDMS Archive Link
18. IDMS Archive Link
19. IDMS Archive Link
20. IDMS Archive Link
21. IDMS Archive Link
22. IDMS Archive Link
23. IDMS Archive Link
24. IDMS Archive Link
25. Link to PER

COLLABORATION

COMMENTS

Poster	^CH2M PER CAs (Owen, Annette) - 12/11/2007 0412
	1st extension to 1/4/08 per form A-6003-227.
	Modification fo the due date is necessary to align dates between ESTARS and the CAP submitted to ORP. T Jarecki
Poster	^CH2M PER CAs (Owen, Annette) - 12/20/2007 0112
	2nd extension to 1/31/08 per form A-6003-227.
	The relview of abnormal operating procedures using the enhanced work planning team approach has taken longer than anticipated to resolve and incorporate comments on modifications. M Hasty Extension w/approval of R Goldsmith, Director of Operations Oversight Environmental Management
Poster	Jarecki, Theodore D (Samifua, Kristi) - 01/30/2008 1201
	Completed
	Evaluation of all AOP's has been completed. In addition to combining TF-OPS-AOP-006 with TF-OPS-AOP-011, changes related to lessons learned from the S-102 event have been incorporated into TF-OPS-AOP-005, TF-OPS-AOP-015 and TF-OPS-AOP-018; please see the attached files.
Poster	Jarecki, Theodore D (Samifua, Kristi) - 01/30/2008 1201
	Completed
	Evaluation of all AOP's has been completed. In addition to combining TF-AOP-006 with TF-AOP-011, changes related to lessons learned from the S-102 event have been incorporated into TF-AOP-005, TF-AOP-015 and TF-AOP-018; please see the attached files.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/30/2008 0301
	Concur
	No comment
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 01/31/2008 1101
	Concur
	This action was reviewed by the Executive Safety Review Board on January 31, 2008. The Board concurred with closure. ttp 1/31/08
Poster	^CH2M PER CAs (Brown, Nancy L) - 01/31/2008 0101
	CLOSED
	Reviewed closure statement, attached closure documentation and ESRB concurrence -- closed CA

TASK DUE DATE HISTORY

Task# CH2M-PER-2007-1747.2

Modified	12/20/2007 1310 - ^CH2M PER CAs (Owen, Annette)	New Due Date	02/08/2008 0000
Modified	12/11/2007 1613 - ^CH2M PER CAs (Owen, Annette)	New Due Date	01/12/2008 0000
Modified	11/08/2007 1231 - ^CH2M PER CAs (Owen, Annette)	New Due Date	12/14/2007 0000
Modified	10/30/2007 1134 - ^CH2M PER CAs	New Due Date	12/13/2007 0000
Modified	10/30/2007 1134 - ^CH2M PER CAs	New Due Date	12/21/2007 0000

SUB TASK HISTORY*No Subtasks*

-- end of report --

Task# CH2M-PER-2007-1747.3

E-STARS^R Report
Task Detail Report
02/28/2008 0146

TASK INFORMATION

Task#	CH2M-PER-2007-1747.3		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Parent Task#	CH2M-PER-2007-1747	Status	CLOSED 02/28/2008
Reference	CH2M-PER-2007-1747	Due	03/07/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/30/2007 1134	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>RETURN FOR REWORK: Add additional closure documentation and comments per ESRB instruction. LBG</p> <p>WC-3.3 Implement a process for safe AOP response such that planning time is minimized for event response and stabilization</p> <p>Deliverable: Implemented procedure(s) for new process.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> Raven, Rebecca P - Assign - Withdrawn - 11/26/2007 1440 <p><i>Instructions:</i></p>	

Task# CH2M-PER-2007-1747.3

	<ul style="list-style-type: none"> • Jarecki, Theodore D - Review - Withdrawn - 11/26/2007 1440 <i>Instructions:</i>
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review - Review - Withdrawn - 11/26/2007 1440 <i>Instructions:</i> Independent Assessor Review
	<ul style="list-style-type: none"> • ^CH2M PER ESRB - Review - Withdrawn - 11/26/2007 1440 <i>Instructions:</i>
	<ul style="list-style-type: none"> • Jennings, Tony L - Assign - Completed - 02/27/2008 1138 <i>Instructions:</i>
	<ul style="list-style-type: none"> • Jarecki, Theodore D - Review - Concur - 02/27/2008 1203 <i>Instructions:</i>
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 02/27/2008 1332 <i>Instructions:</i>
	<ul style="list-style-type: none"> • ^CH2M PER ESRB - Review - Withdrawn - 02/28/2008 1115 <i>Instructions:</i>
	<ul style="list-style-type: none"> • Jarecki, Theodore D - Assign - Completed with comments - 02/28/2008 1208 <i>Instructions:</i>
	<ul style="list-style-type: none"> • ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 02/28/2008 1215 <i>Instructions:</i>

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1747 CO-07-007_Rev_0.doc 2. CH2M-PER-2007-1747 TF-AOP-006_C4_Response_to_High_Radiation.doc 3. CH2M-PER-2007-1747 TF-AOP-006_C5_Response_to_High_Radiation.doc 4. CH2M-PER-2007-1747 TF-AOP-011_B10_Response_to_Chemical_and_or_Radiological_Events.doc 5. CH2M-PER-2007-1747 TF-AOP-011_B8_Response_to_Chemical_and_or_Radiological_Events.doc 6. CH2M-PER-2007-1747 TF-AOP-011_B9_Response_to_Chemical_and_or_Radiological_Events.doc 7. CH2M-PER-2007-1747 WFO-07-005.doc 8. CH2M-PER-2007-1747.2 CH2M-0800374.pdf 9. CH2M-PER-2007-1747.3 Evaluation of ESTARS Task 2007 1747[1].3.doc 10. CH2M-PER-2007-1747.3 Immediate Recovery Work Presentation[1].ppt 11. CH2M-PER-2007-1747.3 Org chart roster and briefing pkg.pdf 12. CH2M-PER-2007-1747.3 Work Control Procedure Changes.pdf 13. Change Analysis PER-7-1747.doc 14. Evaluation of ESTARS Task 2007 1747.3.doc 15. Link to PER 16. Immediate Recovery Work Presentation.ppt 17. TFC-OPS-MAINT-C-01,_N3.doc
-------------	--

COLLABORATION

Task# CH2M-PER-2007-1747.3

COMMENTS

Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 02/27/2008 0102		
	Concur		
	Per discussions with Tony Jennings and Ted Jarecki, briefings with affected employees will be completed on Friday 2/29/08. This action cannot be closed until the briefings are completed and documentation is attached to this task.		
Poster	Jarecki, Theodore D (Jarecki, Theodore D) - 02/28/2008 1202		
	Completed		
	Evidence is attached for the shift managers being briefed on immediate recovery work control requirements. Ten of eleven have completed the briefing yielding 91% and the 12th shift manager will be completed when he returns on 2/29/08.		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 02/28/2008 1202		
	Concur		
	This action was reviewed by the Executive Safety Review Board on February 28, 2008. The Board concurred with closure. tlp 2/28/08		
Poster	^CH2M PER CAs (Brown, Nancy L) - 02/28/2008 0102		
	CLOSED		
	ESRB approved closure of CA		

TASK DUE DATE HISTORY

Modified	10/30/2007 1134 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/21/2007 0000
Modified	10/30/2007 1134 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/17/2007 0000
Modified	11/08/2007 1236 - ^CH2M PER CAs (Owen, Annette)	New Due Date	01/10/2008 0000
Modified	11/08/2007 1236 - ^CH2M PER CAs (Owen, Annette)	New Due Date	01/12/2008 0000
Modified	11/26/2007 1442 - ^CH2M PER CAs (Owen, Annette)	New Due Date	03/07/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Evaluation of ESTARS Task 2007-1747.3

“WC-3.3 Implement a process for safe Abnormal Operating Procedure (AOP) response such that planning time is minimized for event response and stabilization.”

Starting in December the Shift Operations Directors for Waste Feed Operations and Closure Operations along with me (Work Planning) discussed the options that we have to improve the response time to planning for event response and stabilization.

In discussion with those that were directly involved with the mitigation plan used to “Fix” the spill associated with S-102 it was clear that they did not think about using the Emergency Work section that we currently have in the work control procedure. Their logic was that this was not a declared emergency so why would they ask to use this process for the planning of the work to re-enter and apply fixative to the spill.

In review of the AOPs and the work control procedure there was not a clear link between the two at the time of the event. Since that time AOP 11 has been revised (See ESTARS task 2007-1747.1) to point people to the work control procedure as part of the follow on actions.

While several options were explored it became clear that the simple solution was also the more appropriate path forward.

We have modified the work control procedure section on “Emergency work” to “Immediate Recovery Work” and clarified in the opening paragraph of the section that this work process may be used when it is needed to mitigate or eliminate hazards associate with events associated with AOPs or Emergency issues.

In discussion with the Shift Operations Directors they agreed that the process for what was emergency work and is Immediate Recovery Work is correct as it is and that no further modifications were needed.

Because this section of the work control procedure is not normally used, the briefing of the shift operations managers has been conducted in parallel with the issuing of the procedure change.

T.L. Jennings

Task# CH2M-PER-2007-1747.4

E-STARS^R Report
Task Detail Report
02/28/2008 0146

TASK INFORMATION

Task#	CH2M-PER-2007-1747.4		
Subject	CH2M-PER-2007-1747; RES; Radiological conduct of operations deficiencies		
Parent Task#	CH2M-PER-2007-1747	Status	CLOSED 02/28/2008
Reference	CH2M-PER-2007-1747	Due	03/04/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/30/2007 1134	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>RETURN FOR REWORK Add additional closure documentation and comments per ESRB instruction LBG</p> <p>WC-3.4 Complete review of Abnormal Operating Procedure changes utilizing table top drill format with all Tank Farm shifts.</p> <p>Deliverable: Drill attendance rosters indicating 90% completion.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> Jarecki, Theodore D - Assign - Completed with comments - 02/27/2008 0912 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 02/27/2008 1048 	

Task# CH2M-PER-2007-1747.4

Instructions: Independent Assessor Review

- ^CH2M PER ESRB - Review - Withdrawn - 02/28/2008 1117

Instructions:

- Jarecki, Theodore D - Assign - Completed with comments - 02/28/2008 1201

Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 02/28/2008 1215

Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1747 CO-07-007_Rev_0.doc
2. CH2M-PER-2007-1747 TF-AOP-006_C4_Response_to_High_Radiation.doc
3. CH2M-PER-2007-1747 TF-AOP-006_C5_Response_to_High_Radiation.doc
4. CH2M-PER-2007-1747 TF-AOP-011_B10_Response_to_Chemical_and_or_Radiological_Events.doc
5. CH2M-PER-2007-1747 TF-AOP-011_B8_Response_to_Chemical_and_or_Radiological_Events.doc
6. CH2M-PER-2007-1747 TF-AOP-011_B9_Response_to_Chemical_and_or_Radiological_Events.doc
7. CH2M-PER-2007-1747 WFO-07-005.doc
8. CH2M-PER-2007-1747.2 CH2M-0800374.pdf
9. CH2M-PER-2007-1747.4 Rosters.pdf
10. Change Analysis PER-7-1747.doc
11. CHM-PER-2007-1747.4 Shift instructions.pdf
12. Link to PER

COLLABORATION

COMMENTS

Poster	Jarecki, Theodore D (Samifua, Kristi) - 02/27/2008 0902
	Completed
	Each of the AOP updates from the 2007-1747.2 action have been reviewed using table top drill format with at least one shift; rosters are attached as objective evidence.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 02/27/2008 1002
	Concur
	Concur
Poster	Jarecki, Theodore D (Jarecki, Theodore D) - 02/28/2008 1202
	Completed
	TF-AO-005, TF-AOP-015 and TF-AOP-018 were reviewed with all five shift crews when the procedure changes were issued and related copies of the shift instructions are attached. These AOPs were also used for table top drills during the month of February, 2008, and rosters for

Task# CH2M-PER-2007-1747.4			
	these drills are attached.		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 02/28/2008 1202		
	Concur		
	This action was reviewed by the Executive Safety Review Board on February 28, 2008. The Board concurred with closure. tlp 2/28/08		
Poster	^CH2M PER CAs (Brown, Nancy L) - 02/28/2008 0102		
	CLOSED		
	ESRB approved closure of CA		
TASK DUE DATE HISTORY			
Modified	10/30/2007 1134 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/21/2007 0000
Modified	10/30/2007 1134 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	12/13/2007 0000
Modified	11/08/2007 1239 - ^CH2M PER CAs (Owen, Annette)	New Due Date	12/14/2007 0000
Modified	11/26/2007 1448 - ^CH2M PER CAs (Owen, Annette)	New Due Date	03/04/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			
<i>-- end of report --</i>			

Appendix F

Documentation for Closeout of CH2M-PER-2007-1750

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1750

Closed 04/15/2008 14:00

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1750	10/03/2007	16:00	Closure Operations
Location			
S Farm			
How Was Problem Discovered			
DOE			
Description of Concern or Problem			
DOE Type A Accident Report JUDGMENT OF NEED: MS-2 CH2M HILL and ORP need to improve S-102 waste retrieval oversight to ensure that nuclear safety and other safety requirements are met.			
Requirement Not Satisfied		Source Document Number	
Equipment Identification Number		System Identification	
Immediate Actions Taken or Planned			
None			
Recommended Corrective Actions			
PER w/ Res R. E. Raymond			
Level of Participation			
No			
Originators Name	Originators ID	Originators Phone	Date Initiated
Higgins, Richard (Rich)		(509) 373-5305	10/03/2007
SHIFT OPERATIONS REVIEW			
Title			
S-102 Type A Accident Report: Improve S-102 waste retrieval oversight			
How Discovered		Agency	
self-ID result of event			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe Actions Taken or Recommended			
No additional actions taken or recommended by CO SO.			
SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Malhan, Rakesh		(509) 372-2806	10/03/2007
SCREENING			
PER Significance Level			
PER with Resolution			
Independent Assessment Review	Occurrence Report Number	Externally Identified	
Yes		No	
Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Raymond, Richard E			
PER Screening Comments			
None. nb			

Causal Code			
A4B1C04	Management Problem Management Methods LTA Management follow-up or monitoring of activities did not identify problems		
A4B5C04	Management Problem Change Management LTA Risks/consequences associated with change not adequately reviewed/assessed		
MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Operations	Event Investigation
ISMS	Consequence Code		
Perform work within the controls	Safety Concerns		
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	10/04/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes	
PAAA, Non-NTS Reportable	10 CFR 830.122 (I)	Performance Assessment (including walk downs)	
NTS Report Number	NTS Report Date		
Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation	
No	No	No	

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date		
Stenzel, Len C (inactive) (inactive)	10/04/2007		
PAAA Approver Name	PAAA Approve Date		
Stenzel, Len C (inactive) (inactive)	10/08/2007		

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

None. Ig

Instructions for Responsible Manager

Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	██████████	(509) 372-0533	10/08/2007

CAUSE ANALYSIS

Description of Occurrence
CH2M HILL and ORP need to improve S-102 waste retrieval oversight to ensure that nuclear safety and other safety requirements are met.

Extent of Condition
Insufficient oversight of retrieval engineering and operations exist for both C-farm and S-farm retrievals. The Corrective Action Plan is designed to increase CH2M HILL oversight of retrievals to ensure that nuclear safety and other safety requirements are met.

Safety Significance

None

Generic Implications

Remedial Corrective Action

None

Causal Analysis, Apparent Cause and/or Root Cause Analysis

A barrier analysis was performed per TFC-ESHQ-Q_ADM-C-12, Apparent Cause Analysis and Corrective Action Planning; the analysis is documented in PER-2007-1750. The barrier analysis concluded that there was insufficient oversight of retrievals from CH2M HILL and oversight of retrieval Engineering and Operations was not an effective barrier. The Type A Accident Investigation Report includes findings that oversight reviews were inadequate to identify deficiencies in the pump system designs, including non-conformance with Technical Safety Requirements.

Causes:

A4B1C04 - Management follow ups or monitoring of activities did not identify problems
 A4B5C04 - Risks/Consequences associated with change not adequately reviewed/assessed

The Type A investigation identified that the testing of the Seepex pump in S-102 was inadequate. The corrective action for this issue is identified in ENG-1. The Type A investigation also identified the need for additional management oversight in engineering and operations. The corrective actions in ENG-2 address the management actions necessary to improve the rigor and attention to detail for adequate safety management in the engineering process. The corrective action plan is based on the need for additional management oversight for adequate safety management in the retrieval projects.

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Dodd, Ryan A	12/10/2007	CH2M-PER-2007-1750.1

Action

MS-2.1 Revise assessment plan to include a strategy for improving oversight of waste retrievals and transfers.

Deliverable: Revised management assessment plan approved by CH2M HILL Executive Safety Review Board.

ATTACHMENTS

CH2M-PER-2007-1750 barrier Analysis.doc

FW_ Request to add additional evidence to IDMS PER file.msg

IDMS Archive Link

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
10/08/2007 08:31	Owen, Annette	Responsible Manager Task Launched by Owen, Annette
11/15/2007 15:47	Glaman, Linda R	Corrective Actions Launched by Glaman, Linda R
11/26/2007 15:14	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
11/26/2007 15:14	Owen, Annette	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action Item - modification to synchronize with E-STARS.'Action' was changed.
04/03/2008 09:15	^CH2M PER Coordinator	PER was reopened by AutoClose because the E-Stars task was reopened

-- End of Report --
 04/15/2008 02:15 PM

Task# CH2M-PER-2007-1750

E-STARS^R Report
Task Detail Report
04/15/2008 0215

TASK INFORMATION

Task#	CH2M-PER-2007-1750		
Subject	RES; S-102 Type A Accident Report: Improve S-102 waste retrieval oversight		
Parent Task#		Status	CLOSED 04/15/2008
Reference		Due	12/18/2007
Originator	^CH2M PER Coordinator (^CH2M PER Coordinator)	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/03/2007 1718	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Actions Routing Lis	Inactive
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs(Brown, Nancy L) - Assign - Completed - 12/17/2007 1040 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q C-C-01, and TFC-ESHQ-Q ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.	
	<ul style="list-style-type: none"> • Raymond, Richard E - Assign - Completed with comments - 11/09/2007 1007 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Maciuca, Tino) - Review - Concur with comments - 11/15/2007 1429 <i>Instructions:</i> Independent Assessor Review	
	<ul style="list-style-type: none"> • ^CH2M PER ESRB(Parchen, Tracy L) - Assign - Completed with comments - 11/15/2007 1533 <i>Instructions:</i>	
3	Review Initial PER	Inactive

Task# CH2M-PER-2007-1750

Review new PER

- ^CH2M WFO SO(Malhan, Rakesh) - Review - Concur - 10/03/2007 2302
Instructions:

- ^CH2M PER Screening(Owen, Annette) - Review - Concur - 10/04/2007 1433
Instructions:

- ^CH2M MGR Review(Owen, Annette) - Review - Concur - 10/08/2007 0831
Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1750 barrier Analysis.doc
2. FW_Request to add additional evidence to IDMS PER file.msg
3. IDMS Archive Link
4. Link to PER

COLLABORATION

COMMENTS

Poster

Raymond, Richard E (Hammack, Julie M) - 11/09/2007 1011

Completed

PER analysis complete and barrier analysis attached.

jmh 11/9/07

Poster

^CH2M Independent Assessment Review (Maciuca, Tino) - 11/15/2007 0211

Concur

Tino Maciuca for Rich Higgins
11/15/07

Poster

^CH2M PER ESRB (Parchen, Tracy L) - 11/15/2007 0311

Completed

Per Tino Maciuca, proceed with launching the corrective actions. tlp 11/15/07

Poster

^CH2M PER Coordinator (Brown, Nancy L) - 12/17/2007 1012

CLOSED

CAs are complete -- closed parent task

Poster

^CH2M PER Coordinator (Owen, Annette) - 04/03/2008 0904

Task Re-Open

Re-open to add attachments. See attached e-mail request.

Poster

^CH2M PER Coordinator (Owen, Annette) - 04/15/2008 0104

Task# CH2M-PER-2007-1750

CLOSED

Attachments added to Parent per e-mail. Close.

TASK DUE DATE HISTORY

Modified	10/03/2007 1718 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	10/05/2007 1630
Modified	10/08/2007 0831 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/21/2007 1630
Modified	10/08/2007 0831 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/17/2007 1630
Modified	11/08/2007 1428 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	12/02/2007 1630
Modified	11/13/2007 0910 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	12/04/2007 1630
Modified	11/15/2007 1547 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	12/15/2007 0000
Modified	11/26/2007 1511 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	12/18/2007 0000

SUB TASK HISTORY

Subtask#	CH2M-PER-2007-1750.1		
Subject	CH2M-PER-2007-1750; RES; S-102 Type A Accident Report: Improve S-102 waste retrieval oversight		
Originator	^CH2M PER CAs		
	Routing List	<i>No Active Routing List</i>	

-- end of report --

Appendix G

Documentation for Closeout of CH2M-PER-2007-1327

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1327

In Process/Work

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1327	07/27/2007	10:38	CO S Farm
Location			
S Farm			
How Was Problem Discovered			
Radiological Surveys			
Description of Concern or Problem			
While preparing to perform S-102 to SY-102 transfer shutdown surveys, an HPT identified unexpected radiation levels when approaching the S-102 transfer pump. Radiation levels of 200-250 mr/hr at 8 to 15 feet from the transfer pump were identified. Subsequent later investigations discovered that there had been a spill of S-102 waste around the S-102 pump.			
Requirement Not Satisfied		Source Document Number	
Equipment Identification Number		System Identification	
		Waste Transfer	

Immediate Actions Taken or Planned
 Placed 200 West Area in take cover . Initiated ICP. Personal were evacuated from the farm, the Shift Manager was notified and actions of AOP-6 and AOP-11 were initiated.

Recommended Corrective Actions
 Develop and implement plan to clean up spill area. Evaluate cause of leak and take necessary corrective actions prior to restarting S-102 retrieval operations.

Level of Participation
 No

Originators Name	Originators ID	Originators Phone	Date Initiated
Anderson, Rick A	[REDACTED]	(509) 373-2689	07/27/2007

SHIFT OPERATIONS REVIEW

Title
 S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit

How Discovered
 self-ID result of event

Agency

Reportability	SSC Operability	Operability Review	Comp Measures Req
SC-2	N/A	N/A	Yes

Compensatory Actions Taken
 Notification were made, protective actions taken, personnel evacuated to a safe location, ICP activated. Mitigation plan developed and implemented.

Describe Actions Taken or Recommended
 Declared occurrence: Group 5 Environmental- Subgroup A releases (1) SC-2 Any release (onsite or offsite) of a hazardous substance, material, waste, or radionuclide from a DOE facility, that is above permitted levels and exceeds the reportable quantities specified in 40 CFR 302 or 40 CFR 355. Spill has been stabilized, 2 coats of fixative applied, high rad boundary established around the spill location. All appropriate notifications have been made and monitoring is ongoing.

Group 10, Management Concerns/Issues, (4)* SC(1): An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern to other facilities or activities in the DOE complex.

Team preparing to apply fixative to Spill area at S-102 Pump Pit. Additional compensatory actions and additional recovery actions to be determined.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Anderson, Rick A	[REDACTED]	(509) 373-2689	07/27/2007

SCREENING

PER Significance Level			
Significant			
Independent Assessment Review	Occurrence Report Number	Externally Identified	
No	RP-CHG-TANKFARM-2007-0009	No	
Assigned Responsible Manager	Facilities Rep / SSO		
Ito, Fran M			

PER Screening Comments

Also Occurrence Report Code:
 10(2) - An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern to other facilities or activities in the DOE complex. One of the four significance categories should be assigned to the occurrence, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 2 occurrence)

This PER is a Duplicate of PER 2007-1329 (Invalid). nb

Causal Code			
A1B4C01	Design/Engineering Problem Design/Installation Verification LTA Independent review of design/documentation		
A2B6C02	Equipment/Material Problem Defective, Failed or Contaminated Defective or failed material		
A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced		
A4B1C08	Management Problem Management Methods LTA Corrective action responses to a known or repetitive problem was untimely		
A4B2C08	Management Problem Resource Management LTA Means not provided for assuring adequate equipment quality, reliability, or operability		
A4B5C04	Management Problem Change Management LTA Risks/consequences associated with change not adequately reviewed/assessed		
A5B2C08	Communications LTA Written Communications Content LTA Incomplete/situation not covered		
A6B1C03	Training Deficiency No Training Provided Work incorrectly considered "skill of the craft"		
A6B2C04	Training Deficiency Training Methods LTA Inadequate presentation		

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	release above permit levels/exceeds reportable	Operations	Waste Transfer
ISMS	PAAA	Consequence Code	
Identify and analyze hazards	830.122(c)(4) Review item characteristics, process implementation...	Environmental Spill or Release	
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	[REDACTED]	(509) 372-0533	07/30/2007

PAAA REVIEW

PAAA Screening	NTS Report Number
Potential PAAA Reportable	NTS-ORP-CHG-TANKFARM-2007-0002

PAAA Screening Comments

None

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

None. nb

Instructions for Responsible Manager

Perform RCA & CAP with End Point Assessment Criteria in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11, Root & Common Cause Analysis & Corrective Action Planning. 'Save' Causal tab on PER. Ensure PER is on ESRB agenda.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	[REDACTED]	(509) 372-0533	07/31/2007

CAUSE ANALYSIS

Description of Occurrence

At approximately 1000 on Friday, July 27, 2007, CH2M HILL Hanford Group, Inc. (CH2M HILL) reported that a radioactive waste leak had occurred in S-Farm in the vicinity of the S-102 retrieval pump discharge. The spill was discovered by a work crew investigating the cause of high radiation readings noted at 0240 that morning after operating the positive displacement Seepex #2 pump in reverse, as designed, following a waste transfer from single shell tank (SST) S-102 to double shell tank (DST) SY-102. The quantity of waste spilled is estimated to be 114 gallons and covers an area of approximately 200 ft2. Access to the tank farm was restricted and radiological surveys confirmed no spread of contamination outside the tank farm boundary.

Extent of Condition

The extent of condition for this event includes any tank-connected system exposed to liquid waste where there is a force sufficient to develop a differential pressure between the waste and the environment. Any system or component connected between the waste and the environment should be considered a potential leak path until the probability of such an event is proven to be beyond extremely unlikely.

Safety Significance

From a nuclear safety perspective, the leak path from the dilution water supply hose was clearly discussed in the DSA. However, the hazards analysis of the Seepex pump design and interconnected raw water supply lines failed to consider the leak scenario as a plausible accident, resulting in a LTA set of hazard controls.

The leak could potentially have resulted in the radiological and chemical contamination of personnel, including skin contamination, and external and internal radiation exposure, and external and internal chemical exposure in excess of regulatory limits. No employees were contaminated during the event, nor did any employees receive radiation exposure above established limits.

Although there is no hard technical evidence that employees were exposed to radiation, chemicals, or chemical vapors in excess of established limits, several personnel reported experiencing adverse health effects following this event.

Generic Implications

The generic implications of this event extend to:

- Any hazards analysis or safety evaluation previously performed that failed to consider tank-connected systems as potential leak paths.
- Any Raw Water System downstream of a backflow preventer that is connected to a waste tank.
- Changes to hardware, software, processes, procedures, personnel, or organizations with the potential to impact the safety of personnel, the environment, or equipment.

Remedial Corrective Action

Issued the following Operations Standing Orders

Insert Rev 0 issue date - CO-07-003 R6 S-102 Spill Compensatory Controls - R. P. Raven

8/21/07 - CO-07-004 R0 Releasing Work Involving Potential Release of Radioactive Liquids - R. P. Raven

9/15/07 - CO-07-005 R0 Industrial Hygiene Sampling When Implementing TF-AOP-006 and TF-AOP-011 - R. P. Raven

9/15/07 - WFO-07-004 R0 Industrial Hygiene Sampling When Implementing TF-AOP-006 and TF-AOP-011 - Ted Jarecki

Causal Analysis, Apparent Cause and/or Root Cause Analysis

See attached Root Cause Analysis Report

See attached Matrix for related PERs

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Knight, Mark A	11/11/2007	CH2M-PER-2007-1327.1

Action

JON 1.1 Develop an interim process to perform a process hazards analysis (PHA), at the unit operations level, for retrieval systems and other process systems that have undergone recent changes, prior to restart. (NTS)

Deliverable:

Management Directive that defines near-term process for conducting PHAs.

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	05/15/2008	CH2M-PER-2007-1327.2

Action

JON 2.1: Evaluate the Engineering organizational structure and personnel availability/distribution to maximize independence and experience in design review and project support. Modify organizational structure as necessary.

Deliverable: Evaluation report and implementation plan.

Approved due date extension to 5/15/08. tlp 2/25/08

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	12/17/2007	CH2M-PER-2007-1327.3

Action

JON 2.2 Modify engineering procedures to ensure that senior engineers independent of the project are included as part of the design review, including, as appropriate, the Chief Engineer and discipline leads from the central engineering organization. (NTS)

Deliverable:

Modified procedures.

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	03/11/2008	CH2M-PER-2007-1327.4

Action

JON 2.3 Conduct a gap analysis of the current roles and responsibilities for the design authority function versus the time period when there were stand-alone design authorities. Evaluate the changes to ensure that no critical functions were lost.

Deliverable:

Analysis of design authority roles and responsibilities.

Actionee	Action Due Date	E-STARS Number
Koch, Michael R	03/04/2008	CH2M-PER-2007-1327.5

Action

JON 3.1 Conduct a detailed PHA, using the revised process (reference JON 1), prior to resumption of C-109 Retrieval.

Deliverable:

Approved meeting minutes, or report demonstrating the completed PHA for C-109 retrieval.

Actionee	Action Due Date	E-STARS Number
Koch, Michael R	06/02/2008	CH2M-PER-2007-1327.7

Action

JON 3.3: Conduct a detailed PHA, using the revised process (reference JON 1), prior to initiation of C-104 Retrieval.

Deliverable: Approved meeting minutes, or report demonstrating the completed PHA for C-104 retrieval.

Approved due date extension to 6/2/08. tlp 4/15/08

Actionee	Action Due Date	E-STARS Number
Koch, Michael R	08/14/2008	CH2M-PER-2007-1327.8

Action

JON 3.4: Conduct a detailed PHA, using the revised process (reference JON 1), prior to initiation of C-110 Retrieval.

Deliverable: Approved meeting minutes, or report demonstrating the completed PHA for C-110 retrieval.

Approved due date extension to 7/31/08. tlp 6/10/08

Approved due date extension to 8/14/08. tlp 7/29/08

Actionee	Action Due Date	E-STARS Number
Koch, Michael R	05/23/2008	CH2M-PER-2007-1327.11

Action

JON 3.7: Conduct a detailed PHA, using the revised process (reference JON 1), prior to initiation of S-302 Catch Tank Pumping.

Deliverable: Approved meeting minutes, or report demonstrating the completed PHA for S-302 Catch Tank pumping.

Approved due date extension to 5/9/08. tlp 4/24/08

Approved due date extension to 5/23/08. tlp 5/7/08

Actionee	Action Due Date	E-STARS Number
----------	-----------------	----------------

Parsons, Greg 03/30/2008 CH2M-PER-2007-1327.12

Action

JON 3.8 Conduct a detailed PHA, using the revised process (reference JON 1), prior to initiation of operation of ICP-MS.

Deliverable:
Approved meeting minutes, or report demonstrating the completed PHA for operation of ICP-MS.

Actionee	Action Due Date	E-STARs Number
Parsons, Greg	03/30/2008	CH2M-PER-2007-1327.13

Action

JON 3.9 Conduct a detailed PHA, using the revised process (reference JON 1), prior to initiation of operations for Laser LA/CP-AES.

Deliverable:
Approved meeting minutes, or report demonstrating the completed PHA for operation of Laser LA/CP-AES.

Actionee	Action Due Date	E-STARs Number
Oten, Timothy C	02/29/2008	CH2M-PER-2007-1327.14

Action

JON 3.10 Conduct a detailed PHA, using the revised process (reference JON 1), prior to initiation of operation of the AN-101 transfer pump.

Deliverable:
Approved meeting minutes, or report demonstrating the completed PHA for AN-101 transfer pump.

Actionee	Action Due Date	E-STARs Number
Oten, Timothy C	03/15/2008	CH2M-PER-2007-1327.15

Action

JON 3.11 Conduct a detailed PHA, using the revised process (reference JON 1), prior to initiation of operation of the new 242A HVAC system.

Deliverable:
Approved meeting minutes, or report demonstrating the completed PHA for 242A HVAC system.

Actionee	Action Due Date	E-STARs Number
Raymond, Richard E	10/30/2007	CH2M-PER-2007-1327.16

Action

JON 4.1 Revise TFC-ENG-FACSUP-D02.2 Waste Leak Path Evaluations to require determination of potential waste transfer paths and evaluation to ensure all paths are analyzed against accident scenarios in the DSA, the waste channeling PISA, and literal definition of physically connected.

Deliverable:
Revision of TFC-ENG-FACSUP-D02.2 Waste Leak Path Evaluations, with a current or past effective date, requiring evaluation of potential waste transfer paths to the DSA, consideration of the waste channeling PISA, and the literal definition of physically connected.

Actionee	Action Due Date	E-STARs Number
Raymond, Richard E	10/30/2007	CH2M-PER-2007-1327.17

Action

JON 4.2 Establish a Waste Transfer Confinement Review Board, to conduct independent reviews of waste leak path evaluations conducted by Projects in accordance with ENG-FACSUP-D-02.2.

Deliverable:
Charter

Actionee	Action Due Date	E-STARs Number
Raymond, Richard E	11/26/2007	CH2M-PER-2007-1327.18

Action

JON 4.3 Turn Desk Instruction TFC-ENG-FACSUP-D-02.2 Waste Leak Path Evaluations into an Engineering procedure to institutionalize the Waste Leak Path Evaluation process. (NTS)

Deliverable:
New procedure, Waste Leak Path Evaluations.

Actionee	Action Due Date	E-STARs Number
Raymond, Richard E	03/26/2008	CH2M-PER-2007-1327.19

Action

JON 4.4: Establish an Engineering Standard on confinement for all tank farm designs. Design reviews verify that the design meets the appropriate Engineering Standard. Likewise, Engineering performs walk-downs to verify visible portions of confinement systems are installed as designed. (NTS)

Deliverable: New Standard

Approved due date extension to 4/1/08 (for Responsible Manager). ttp 1/10/08

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	11/26/2007	CH2M-PER-2007-1327.20

Action

JON 4.5 Communicate lessons learned from the S-102 waste leak event and from the implementation of waste leak path evaluations to all engineers. (NTS)

Deliverable:

Copies of briefing materials and attendance rosters demonstrating at least 90% attendance

Actionee	Action Due Date	E-STARS Number
Quale, Ted	10/30/2007	CH2M-PER-2007-1327.21

Action

JON 5.1 Update the Startup Notification Report (SNR) to require Level 2 Readiness Assessments prior to commencing the first retrievals in S-Farm (S-102) and C-Farm (C-109) and a Level 3 Readiness Assessment for the C-104 retrieval. Obtain DOE ORP approval of the revised SNR.

Deliverable:

Copy of the DOE ORP approved SNR.

Actionee	Action Due Date	E-STARS Number
Quale, Ted	06/05/2008	CH2M-PER-2007-1327.23

Action

JON 5.3: Conduct Level 2 Readiness Assessments for tank 241-C-109 retrieval.

Deliverable: Final readiness assessment report.

Approved due date extension to 4/30/08. ttp 2/20/08

Approved due date extension to 6/5/08. ttp 4/24/08

Actionee	Action Due Date	E-STARS Number
McKennon, A c (Red)	10/30/2007	CH2M-PER-2007-1327.25

Action

JON 8.1.1 Inactivate all waste transfer procedures.

Deliverable:

Documentation demonstrating that waste transfer procedures have been inactivated.

Actionee	Action Due Date	E-STARS Number
Ross, William (Bill)	11/16/2007	CH2M-PER-2007-1327.26

Action

JON 8.1.2 Utilizing workers who perform transfers and at least two qualified HPI champions revise at least 3 transfer procedures to incorporate lessons learned from the S-102 leak event.

Deliverable:

At least 3 revised transfer procedures

Actionee	Action Due Date	E-STARS Number
Ross, William (Bill)	11/27/2007	CH2M-PER-2007-1327.27

Action

JON 8.1.3 Incorporate the lessons learned from completion of action JON 8.1.2, into procedure TFC-OPS-OPER-C-13 "Technical Procedure Control and Use" to enhance implementation of HPI philosophy.

Deliverable:

Revised TFC-OPS-OPER-C-13 "Technical Procedure Control and Use"

Actionee	Action Due Date	E-STARS Number
Ross, William (Bill)	01/10/2008	CH2M-PER-2007-1327.28

Action

JON 8.1.4: Brief procedure writers and support personnel who review waste transfer procedures on the revisions to TFC-OPS-OPER-C-13, Technical Procedure Control and Use.

Deliverable: Copies of briefing materials and attendance rosters demonstrating at least 90% attendance.

Approved due date extension to 1/16/08 (for R. Raymond review/approval). tlp 12/19/07

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	11/15/2007	CH2M-PER-2007-1327.29

Action

JON 9.1 Issue Lessons Learned regarding S-102 radiation monitoring deficiency pertaining to failure to perform both window open and window closed radiation measurements

Deliverable:
Just in Time/Lessons Learned 07-037, (Closed Window Radiation Readings May Be Only Half the Story).

Approved due date extension to 11/15/07. tlp 10/29/07

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	11/15/2007	CH2M-PER-2007-1327.30

Action

JON 9.2 Brief Health Physic Technicians & First Line Managers on Just in Time/Lessons Learned 07-037 and procedural requirements to perform Window Open and Window Closed radiation measurements when performing radiation monitoring

Deliverable:
Copies of briefing material and course completion rosters showing a minimum of 90% completion.

Approved due date extension to 11/15/07. tlp 10/29/07

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	01/27/2008	CH2M-PER-2007-1327.31

Action

JON 9.3 Revise RO-20 On the Job Training to include guidance from RO-3B On the Job Training regarding instrument operating technique to begin radiation measurements with the window open.

Deliverable:
Copy of revised RO-20 On the Job Training

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	02/25/2008	CH2M-PER-2007-1327.32

Action

JON 9.4 Brief Health Physics Technicians and Radiological Control First Line Managers on revised RO-20 On the Job Training

Deliverable:
Copies of briefing material and attendance rosters showing a minimum of 90% completion

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	05/27/2008	CH2M-PER-2007-1327.33

Action

JON 9.5 Revise Oral Board/Performance Demonstration scenarios to require Health Physics Technicians to monitor both window open and window closed radiation levels.

Deliverable:
Copies of revised oral board/performance demonstration scenarios

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	08/31/2008	CH2M-PER-2007-1327.34

Action

JON 9.6: Perform assessment within the Radiological Control Projects to verify radiation surveys include both window open and window closed readings including a review of 10% of radiological survey reports completed for the previous three months to verify window open and window closed readings were documented and Deep Dose Equivalent and Shallow Dose Equivalent readings were accurately calculated.

Deliverable: Assessment report

Approved due date extension to 8/15/08. tlp 7/24/08
Approved due date extension to 8/31/08. tlp 8/14/08

PER

Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	12/06/2007	CH2M-PER-2007-1327.35
Action		
JON 9.7 Incorporate process to evaluate and document radiation monitoring requirements (including evaluation of the need for Area Radiation Monitoring) into procedure TFC-ESHQ-RP_ADM-P-01, "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities".		
Deliverable: Revised TFC-ESHQ-RP_ADM-P-01, "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities" that requires evaluating radiation monitoring requirements (including evaluation of the need for Area Radiation Monitoring) that flow down into operations waste monitoring technical work documents.		
Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	02/25/2008	CH2M-PER-2007-1327.36
Action		
JON 9.7.1: Brief end users on revised TFC-ESHQ-RP_ADM-P-01, Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities procedure and associated TSR leak detection and Radiological Control monitoring requirements.		
Deliverable: Copies of briefing materials and attendance rosters showing a minimum of 90% completion. ***** Approved Corrective Action statement change. tlp 1/15/08		
Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	03/27/2008	CH2M-PER-2007-1327.37
Action		
JON 9.7.2 Review all active waste transfer procedures and revise, as necessary, according to revised version of TFC-ESHQ-RP_ADM-P-01 "Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities".		
Deliverable: Copies of revised waste transfer procedures		
Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	01/27/2008	CH2M-PER-2007-1327.38
Action		
JON 9.8 Identify new tank farms waste transfer or retrieval systems, or modifications to existing waste transfer or retrieval systems, deployed since 1999 and still in use or intended for future use.		
Deliverable: Listing of new tank farms waste transfer or retrieval systems, or modifications to existing waste transfer or retrieval systems, deployed since 1999 and still in use or intended for future use.		
Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	03/26/2008	CH2M-PER-2007-1327.39
Action		
JON 9.8.1 Assemble ALARA Design documentation for new tank farms waste transfer or retrieval systems, or modifications to existing waste transfer or retrieval systems, deployed since 1999 and still in use or intended for future use by March 30, 2008, or before use, whichever comes first.		
Deliverable: Copies of ALARA Design Review documents		
Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	05/27/2008	CH2M-PER-2007-1327.40
Action		
JON 9.8.2 Review and evaluate adequacy of ALARA Design Review documentation for new tank farms waste transfer or retrieval systems, or modifications to existing waste transfer or retrieval systems, deployed since 1999 and still in use or intended for future use May 31, 2008, or before use, whichever comes first.		
Deliverable: ALARA Design Review documentation evaluation		
Actionee	Action Due Date	E-STARS Number
Bratvold, Tom	05/27/2008	CH2M-PER-2007-1327.41
Action		
JON 9.8.3 For each deficient ALARA Design Review, document the deficiency in the corrective action management program.		

Deliverable:
Copy of PER initiated for each deficient ALARA Design Review.

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	01/27/2008	CH2M-PER-2007-1327.42

Action
JON 9.9 Evaluate ALARA Design Review process and associated procedures to ensure comprehensive ALARA Design Review and integration of ALARA Conclusions within the implementing procedures for new radiological facilities, or modifications to existing radiological facilities.

Deliverable:
Evaluation of ALARA Design Review process and procedures.

Actionee	Action Due Date	E-STARs Number
Bratvold, Tom	05/05/2008	CH2M-PER-2007-1327.43

Action
JON 9.9.1: Develop ALARA Design Review process recommendations that ensure comprehensive ALARA Design Review and integration of ALARA Conclusions within the implementing procedures for new radiological facilities, or modifications to existing radiological facilities.

Deliverable: ALARA Design Review recommendations, path forward actions and implementation schedule.

Approved due date extension to 3/29/08. ttp 2/15/08
Approved due date extension to 4/4/08. ttp 3/24/08
Approved due date extension to 4/18/08. ttp 4/3/08
Approved due date extension to 5/5/08. ttp 4/15/08

Actionee	Action Due Date	E-STARs Number
Knight, Mark A	12/11/2007	CH2M-PER-2007-1327.44

Action
JON 12.1 Perform assessments of current PCPs using an independent team of subject matter experts and senior process engineers to evaluate procedure effectiveness, review PCP content and adequacy of controls, and assess adequacy of flow down of PCP controls into implementing operating procedures.

Deliverable: Assessment Report.

Approved due date extension to 12/11/07. ttp 11/15/07

Actionee	Action Due Date	E-STARs Number
Oten, Timothy C	01/23/2008	CH2M-PER-2007-1327.45

Action
JON 12.2 Based on the results of the assessment conducted in 12.1, modify/cancel PCPs and implementing operating procedures as appropriate, prior to restart.

Deliverable:
Revised WFO PCPs.

Actionee	Action Due Date	E-STARs Number
Koch, Michael R	12/31/2007	CH2M-PER-2007-1327.46

Action
JON 12.3 Based on the results of the assessment conducted in 12.1, modify/cancel PCPs and implementing operating procedures as appropriate, prior to restart.

Deliverable:
Revised CO PCPs.

Actionee	Action Due Date	E-STARs Number
Knight, Mark A	01/24/2008	CH2M-PER-2007-1327.47

Action
JON 12.4: Based on the results of the assessment conducted in 12.1, revise TFC-ENG-CHEM-C-11, Process Control Plans, as appropriate. Provide briefings to process engineers on procedure requirements.

Deliverable: Copy of briefing materials and attendance rosters demonstrating at least 90% attendance.

Approved due date extension to 1/24/08. ttp 12/17/07

PER

Actionee	Action Due Date	E-STARS Number
McKennon, A c (Red)	11/12/2007	CH2M-PER-2007-1327.48
Action		
JON 13.1 A training needs analysis for operations and support personnel involved in the operation, maintenance, and monitoring of waste transfer and retrieval process equipment, including but not limited to operating parameters and alarm response, expected radiological and toxicological indications during normal and upset conditions, system construction and operations is required. Revise training needs analysis process to ensure that operations and all affected support personnel are included in this process		
Deliverable: Revised training needs analysis procedure.		
Actionee	Action Due Date	E-STARS Number
Knight, Mark A	03/01/2008	CH2M-PER-2007-1327.49
Action		
JON 6: Adopt and implement a Management of Change process similar to that described in Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals.		
Deliverable(s): New/revised procedures including requirement to assess individual and multiple changes to a system for impact on process hazard analysis conclusions and attendance rosters of briefings to affected personnel. *****		
Approved action statement change and due date extension to 3/1/08. tlp 12/17/07		
Actionee	Action Due Date	E-STARS Number
Maciuca, Tino	09/30/2008	CH2M-PER-2007-1327.50
Action		
Through an Independent Assessment,		
1. Review objective evidence from corrective actions to ensure completeness and accuracy		
2. Conduct interviews with individuals after implementation of completed corrective actions to determine their understanding of expectations regarding corrective actions taken and implemented		
3. Through document review, review objective evidence of work activities performed after implementation of completed corrective actions for completeness and effectiveness to the extent possible given contract completion on September 30, 2008		
4. Identify corrective actions not completed due to CH2M HILL contract completion		
5. Identify those work controlling documents where changes were made in response to corrective action implementation		
Deliverable: Independent Assessment Report *****		
Approved to add this corrective action on 9/4/08. tlp 9/8/08		
ATTACHMENTS		
CH2M-PER-2007-1327 19 TFC-ENG-DESIGN-D-13 2Rev A-10.doc		
CH2M-PER-2007-1327 20 Remaining Roster.pdf		
CH2M-PER-2007-1327.16 TFC-ENG-FACSUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc		
CH2M-PER-2007-1327.17 TFC-CHARTER-37,_Waste_Transfer_Confinement_Review_Board.doc		
CH2M-PER-2007-1327.2 ATS Matrix.pdf		
CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf		
CH2M-PER-2007-1327[1].49 Closure Package.pdf		
CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf		
EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf		
EM-RP--CHG-TANKFARM-2007-0009.htm		
Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf		
FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg		
Link to PER		
PAAA Evaluation Summary Form		
Team Charter 70000-JWL-07-001.pdf		
UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 5.msg		
UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 6.msg		
UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 7.msg		

AUDIT HISTORY

Change Date	Auditor	Comments
07/31/2007 09:53	Brown, Nancy L	'PER Significance Level' was changed from 7 to 5. 'PAAA Screening' was changed. 'Assigned Responsible Manager' was changed. 'PER Screening Comments' was changed. 'PAAA Screening Comments' was changed. 'ORPS Code' was changed. 'Functional Area' was changed. 'Work Process' was changed. 'ISMS' was changed. 'PAAA' was changed. 'Consequence Code' was changed. 'Occurrence Report' was changed.
07/31/2007 09:54	Brown, Nancy L	'Reportability' was changed. 10(2) - An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern to other facilities or activities in the DOE complex. One of the four significance categories should be assigned to the occurrence, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 2 occurrence)
07/31/2007 14:51	Owen, Annette	'How Was Problem Discovered' was changed. 'Description of Concern or Problem' was changed. 'System Identification' was changed. 'Immediate Actions Taken' was changed. 'Recommended Corrective Actions' was changed.
07/31/2007 14:55	Owen, Annette	'PER Title' was changed. 'Compensatory Measures Required' was changed. 'Describe Additional Actions' was changed.
08/07/2007 13:13	Stenzel, Len C	'PAAA Screening' was changed. 'PAAA Screening Comments' was changed. 'PAAA' was changed.
08/15/2007 09:08	Stenzel, Len C	'NTS Report' was changed.
10/03/2007 07:51	Parchen, Tracy L	'Assigned Responsible Manager' was changed.
10/25/2007 13:48	Hammack, Julie M	'Causal Analysis' was changed.
10/25/2007 13:52	Parchen, Tracy L	Corrective Actions Launched by Parchen, Tracy L
10/29/2007 09:05	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
10/29/2007 09:06	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
10/29/2007 09:07	Parchen, Tracy L	Corrective Action item - modification to

		synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
11/15/2007 10:47	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
11/15/2007 10:48	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
12/17/2007 11:35	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
12/17/2007 11:38	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
12/17/2007 11:39	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
12/17/2007 11:39	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
12/17/2007 11:51	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
12/17/2007 11:52	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
12/19/2007 07:50	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
12/19/2007 07:52	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
12/21/2007 10:37	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
12/21/2007 10:38	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed.
12/21/2007 10:38	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed.
12/26/2007 15:16	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:17	Glaman, Linda R	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed. Approved extension per form 6003-543, Implementing the process hazards analysis defined by JON 1 is taking much longer than originally

		<p>anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated. R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg 12-26-07</p>
12/26/2007 15:18	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:19	Glaman, Linda R	<p>Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Approved extension per form A-6003-543: Implementing the process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated. R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg 12-26-07</p>
12/26/2007 15:24	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:24	Glaman, Linda R	<p>Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Approved extension per form A-6003-543. Implementing the process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated. R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg, 12-26-07</p>
12/26/2007 15:30	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:32	Glaman, Linda R	<p>Corrective Action item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Approved extension per form A-6003-543: Implementing the process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated. R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg, 12-26-07</p>
12/26/2007 15:36	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:37	Glaman, Linda R	<p>Corrective Action Item - modification to synchronize with E-STARS. 'Action Due Date' was changed. Approved extension per form A-6003-543: Implementing the</p>

		<p>process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated.</p> <p>R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg, 12-26-07</p>
12/26/2007 15:41	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:42	Glaman, Linda R	<p>Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Approved extension per form A-6003-543: Implementing the process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated.</p> <p>R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg, 12-26-07</p>
12/26/2007 15:46	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:47	Glaman, Linda R	<p>Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. approved extension per form A-6003-543: Implementing the process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated.</p> <p>R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg, 12-26-07</p>
12/26/2007 15:50	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:50	Glaman, Linda R	<p>Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Approved extension per form A-6003-543: Implementing the process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated.</p> <p>R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg, 12-26-07</p>
12/26/2007 15:53	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 15:54	Glaman, Linda R	Corrective Action item - modification to synchronize with E-STARS.'Action Due

		Date' was changed. Approved extension per form A-6003-543: Implementing the process hazards analysis defined by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated. R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07 lbg, 12-26-07
01/10/2008 14:13	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
01/10/2008 14:14	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
01/15/2008 09:28	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
01/15/2008 09:30	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
02/15/2008 08:58	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
02/15/2008 08:59	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
02/19/2008 11:07	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
02/20/2008 10:45	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
02/20/2008 10:46	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
02/25/2008 13:11	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
02/25/2008 13:12	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
03/24/2008 13:07	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
03/24/2008 13:08	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

04/03/2008 10:36	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
04/03/2008 10:37	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
04/15/2008 07:31	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
04/15/2008 07:31	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
04/15/2008 15:03	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
04/15/2008 15:04	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
04/24/2008 10:51	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
04/24/2008 10:52	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
04/24/2008 10:58	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
04/24/2008 10:59	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
04/24/2008 11:03	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
04/24/2008 11:04	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
05/07/2008 11:44	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
05/07/2008 11:45	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
05/15/2008 10:11	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
05/15/2008 10:11	Parchen, Tracy L	Corrective Action item - modification to

		synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
06/10/2008 13:48	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
06/10/2008 13:48	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
06/10/2008 13:49	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
06/10/2008 14:10	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
06/10/2008 14:44	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action.
06/10/2008 14:44	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action.
06/10/2008 14:44	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action.
06/10/2008 14:45	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action.
06/10/2008 14:45	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action.
07/17/2008 10:44	Higgins, Richard (Rich)	Change to Cause Analysis screen/Corrective Action plan.
07/24/2008 07:44	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
07/24/2008 07:44	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
07/29/2008 13:39	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
07/29/2008 13:39	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
08/14/2008 13:50	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
08/14/2008 13:51	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to

		synchronize with E-STARS. 'Action' was changed.
08/28/2008 13:13	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
09/08/2008 09:39	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
09/08/2008 09:41	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS. Inserting new Corrective Action.
09/08/2008 09:41	Parchen, Tracy L	Corrective Actions Launched by Parchen, Tracy L

-- End of Report --
09/22/2008 11:08 AM

Task# CH2M-PER-2007-1327

E-STARs[®] Report
Task Detail Report
07/16/2008 1115

TASK INFORMATION

Task#	CH2M-PER-2007-1327		
Subject	SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Parent Task#		Status	Open
Reference		Due	09/29/2008
Originator	^CH2M PER Coordinator	Priority	None
Originator Phone		Category	None
Origination Date	07/27/2007 1532	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Actions Routing Lis	Active
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs - Assign - Awaiting Response - Due Date - 09/29/2008 0000 <i>Instructions:</i> • Waters, Shaun F - Info - Withdrawn - 11/05/2007 1314 <i>Instructions:</i> 	
2	Responsible Manager	Inactive
	Perform RCA & CAP with End Point Assessment Criteria in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11, Root & Common Cause Analysis & Corrective Action Planning. 'Save' Causal tab on PER. Ensure PER is on ESRB agenda.	
	<ul style="list-style-type: none"> • Tucker, Ron - Assign - Withdrawn - 08/23/2007 1253 <i>Instructions:</i> • Raymond, Richard E - Assign - Completed with comments - 10/24/2007 1602 <i>Instructions:</i> 	
3	Review Initial PER	Inactive
	Review new PER	
	<ul style="list-style-type: none"> • ^CH2M WFO SO(Johnson, Brian A) - Review - Concur - 07/28/2007 0426 <i>Instructions:</i> • ^CH2M PER Screening(Owen, Annette) - Review - Concur - 07/30/2007 1517 <i>Instructions:</i> • ^CH2M MGR Review(Owen, Annette) - Review - Concur - 07/31/2007 1457 <i>Instructions:</i> 	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1327 20 Remaining Roster.pdf 2. CH2M-PER-2007-1327.16 TFC-ENG-FAC SUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc 3. CH2M-PER-2007-1327.17 TFC-CHARTER-37_Waste_Transfer_Confinement_Review_Board.doc 4. CH2M-PER-2007-1327.2 ATS Matrix.pdf 5. CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf
--------------------	---

Task# CH2M-PER-2007-1327

- 6. CH2M-PER-2007-1327[1].49 Closure Package.pdf
- 7. CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf
- 8. EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf
- 9. EM-RP--CHG-TANKFARM-2007-0009.htm
- 10. Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf
- 11. FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg
- 12. Link to PER
- 13. PAAA Evaluation Summary Form
- 14. Team Charter 70000-JWL-07-001.pdf
- 15. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 5.msg
- 16. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 6.msg
- 17. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 7.msg

COLLABORATION

COMMENTS

Poster

^CH2M PER Coordinator (Parchen, Tracy L) - 08/23/2007 1208

Approved due date extension and responsible manager change. tlp 8/23/07

Extension Justification: Resources required to address this issue have been diverted to event investigations and recovery activities, including response to DOE Type A Accident Investigation Team.

Responsible Manager changed from R. P. Tucker to R. E. Raymond.

Both changes approved by F. M. Ito, Vice President, Safety and Health and Quality Assurance on 8/22/07. tlp 8/23/07

Poster

^CH2M PER Coordinator (Parchen, Tracy L) - 09/27/2007 0809

Approved due date extension to 10/19/07. tlp 9/27/07

Extension Justification: The CH2M HILL root cause analysis on the S-102 event was approved by the ESRB on 9/17/07. The DOE Type A investigation report was received on 9/20/07. A CH2M HILL investigative report on the event response has been completed. Investigations that have not been completed include the CH2M HILL Health Effects Report, the Environmental Protection Agency investigation, and the Washington Department of Ecology investigation reports. This extension is requested in order to provide sufficient time to review all of the reports following completion (except for EPA and WDOE) and provide a comprehensive corrective action plan that will address all of the Root and Contributing causes, and other findings and observations from the various investigations.

NOTE: The extension due date was discussed and approved by the ESRB on 9/26/07. tlp 9/27/07

Poster

^CH2M PER Coordinator (Parchen, Tracy L) - 10/18/2007 0910

Approved due date extension to 10/26/07. tlp 10/18/07

Extension Justification: The CH2M HILL Root Cause Analysis (RCA) on the S-102 event was approved by the ESRB on 9/17/07. The DOE Type A Investigation Report was received on 9/20/07. A CH2M HILL investigative report on the event response has been completed. The corrective action plans for the accident report, health effects report, the EM-60 Trip Report, and the CH2M HILL RCA are not complete. This extension is requested in order to provide sufficient time to review all of the corrective action plans that will address all of the root and contributing causes, and other findings and observations from the various investigations.

The Extension was approved by F. M. Ito, Vice President, Safety and Health and Quality Assurance on 10/18/07. Mr. Ito also approved for PAAA per telecon with C. Anderson, PAAA Director on the same date. tlp 10/18/07

Poster

Raymond, Richard E (Hammack, Julie M) - 10/24/2007 0410

Completed

Actions have been added to PER and are ready for launch.

jmh 10/24/07

Poster

Rensink, Gail L - 11/14/2007 0111

Task# CH2M-PER-2007-1327	
	CH2M-PER-2007-1327.26 - Closure of action
	<p>(JON 8.1.1) Three transfer procedures were reviewed and revised (attached). TO-220-110 for transfer of waste from C-108 to ASN-106, TO-220-112 for the transfer of waste from C-109 to AN-106, and the DST to DST transfer template (TO-XXX-XXX). These procedures were reviewed from a Human Performance Improvement (HPI) perspective by M. Kembel (WFO, J Morris (ATS) and W Ross (CO) who are trained in HPI techniques and are HPI Champions for their Organizations. The HPI team used a modified HPI procedure review checklist with specific S-102 lessons learned included. Their comments were then reviewed by the procedure owners (WFO & CO Operations) including at least one Bargaining unit (Lead NCOs) for each group (see attached rosters for the meetings). The procedure owners dispositioned the comments and the procedure writers have incorporated the appropriate comments into the above procedures. It should be noted that do to other corrective actions from the S0102 event and state of construction for the new technology to be deployed into C-109/C-108 these procedures are not released for use. However, their review by the HPI team with acceptance by the operating organizations provides us with the information needed to upgrade the technical procedure process (JON 8.1.2) for future use.</p> <p>It should be noted that the lessons learned by reviewing these three procedures for HPI concepts was also provided to the draft transfer procedure guide TFC-OPS-OPER-C-49 "Development of Waste Retrieval Operating Procedures that is also part of the S-102 Event corrective action. (ENG 1.2 PER-2007-1737).</p>
Poster	Bragg, David A - 12/21/2007 0412
	CH2M-PER-2007-1327.14 Closure
	RPP-RPT-36113-R0, "Process Hazard Analysis Performed For Waste Transfer From The Tank 241-AN-101 Transfer Pump To The 241-AZ Valve Pit" was released on 12/21/07. The subject report is attached as objective evidence in ESTARS. Reference: JON 3.10, conduct a detailed PHA, using the revised process (JON 1) prior to initiation of operation of the AN-101 transfer pump.
Poster	^CH2M PER Coordinator (Glaman, Linda R) - 12/26/2007 0312
	extended to 8-12-07 accomodate approved subtask extension. lbg, 12-26-07
	<p>Implementing the process hazards analysis definded by JON 1 is taking much longer than originally anticipated. Although through repetitive application it is expected less time will be needed, this is a robust process that will continue to require a much larger amount of dedicated time than originally anticipated.</p> <p>R Dodd for RE Raymond 12-21-07 R Higgins for FM Ito 12-26-07</p>
Poster	Rensink, Gail L - 01/02/2008 0101
	CH2M-PER-2007-1327.28 - Closure of Action
	<p>JON 8.1.4: Brief procedure writers and support personnel who review waste transfer procedures on the revisions to TFC-OPS-OPER-C-13, Technical Procedure Control and Use.</p> <p>Response: A training course was developed from the lessons learned related to this Justification of need (course number 358820). The course also contained a knowledge test that the participants were required to pass before they were given credit for completing it. Working with the management of Waste Feed Operations (WFO), Technical Procedures and Closure Operations (CO) a list of personnel was developed to complete this training. The list consisted of all Operation Engineer (OE) qualified persons, lead NCOs on each shift, Lead dayshift assigned NCOs from CO and WFO, technical procedure writers, subject matter experts from Environmental, Safety, and Engineering who support transfer procedure development. This population resulted in 91 TFC personnel. As of 01/02/08, 85 persons had successfully completed this training for 93.4% completion. Attached are a copy of the training material and the list of personnel assigned to complete the training with annotation of those that completed the training.</p>
Poster	^CH2M PER Coordinator (Owen, Annette) - 02/01/2008 0902
	PER transfer from R Raymond to F Ito per form A-6003-543.
	Performed a global transfer of Parent and all open Corrective Actions resulting from re-organization. RE Raymond/FM Ito/KW Daniels/CE Anderson 2/4/08
Poster	^CH2M PER Coordinator (Parchen, Tracy L) - 05/15/2008 1005
	Approved due date extension to 9/29/08. tlp 5/15/08

Task# CH2M-PER-2007-1327

Parent task was extended to align with the approved extension of task 1327.24 to 9/29/08. ttp 5/15/08

TASK DUE DATE HISTORY

Modified	05/15/2008 1000 - ^CH2M PER Coordinator (Parchen, Tracy L)	New Due Date	09/29/2008 0000
Modified	12/26/2007 1504 - ^CH2M PER Coordinator (Glaman, Linda R)	New Due Date	08/12/2008 0000
Modified	10/25/2007 1351 - ^CH2M PER Coordinator	New Due Date	08/06/2008 0000
Modified	10/18/2007 0915 - ^CH2M PER Coordinator (Parchen, Tracy L)	New Due Date	10/26/2007 1630
Modified	09/27/2007 0824 - ^CH2M PER Coordinator (Parchen, Tracy L)	New Due Date	10/19/2007 1630
Modified	08/23/2007 1243 - ^CH2M PER Coordinator (Parchen, Tracy L)	New Due Date	10/03/2007 1630
Modified	07/31/2007 1457 - ^CH2M PER Coordinator	New Due Date	08/26/2007 1630
Modified	07/31/2007 1457 - ^CH2M PER Coordinator	New Due Date	08/26/2007 1630
Modified	07/27/2007 1532 - ^CH2M PER Coordinator	New Due Date	07/29/2007 1630

SUB TASK HISTORY

Subtask#	CH2M-PER-2007-1327.1		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.2		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.3		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.4		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.5		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	

Task# CH2M-PER-2007-1327

Subtask#	CH2M-PER-2007-1327.6		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.7		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.8		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	Corrective Action	
	Assignee	Koch, Michael R	Response
	Assignee	Raymond, Richard E	Response
	Assignee	Ito, Fran M	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response
Subtask#	CH2M-PER-2007-1327.9		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.10		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.11		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.12		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1327.13		

Task# CH2M-PER-2007-1327

Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.14	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.15	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.16	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.17	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.18	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.19	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.20	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.21	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	

Task# CH2M-PER-2007-1327

Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.22	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.23	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.24	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.25	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.26	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.27	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.28	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.29	
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit	
Originator	^CH2M PER CAs	
	Routing List	<i>No Active Routing List</i>

Task# CH2M-PER-2007-1327				
Subtask#	CH2M-PER-2007-1327.30			
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit			
Originator	^CH2M PER CAs			
	Routing List	No Active Routing List		
Subtask#	CH2M-PER-2007-1327.31			
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit			
Originator	^CH2M PER CAs			
	Routing List	No Active Routing List		
Subtask#	CH2M-PER-2007-1327.32			
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit			
Originator	^CH2M PER CAs			
	Routing List	No Active Routing List		
Subtask#	CH2M-PER-2007-1327.33			
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit			
Originator	^CH2M PER CAs			
	Routing List	No Active Routing List		
Subtask#	CH2M-PER-2007-1327.34			
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit			
Originator	^CH2M PER CAs			
	Routing List	Corrective Action		
		Assignee	Bratvold, Tom	Response
		Assignee	Raymond, Richard E	Response
		Assignee	Ito, Fran M	Response
		Assignee	^CH2M Independent Assessment Review	Response
		Assignee	^CH2M PER ESRB	Response
Subtask#	CH2M-PER-2007-1327.34.1			
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit			
Originator	Bratvold, Tom			
	Routing List	Route List		
		Assignee	Godfrey, Sheila R	Response
Subtask#	CH2M-PER-2007-1327.35			
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit			
Originator	^CH2M PER CAs			
	Routing List	No Active Routing List		

Task# CH2M-PER-2007-1327	
Subtask#	CH2M-PER-2007-1327.36
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.37
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.37.1
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	Bratvoid, Tom
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.38
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.38.1
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	Bratvoid, Tom
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.39
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.39.1
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	Bratvoid, Tom
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.40
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAs
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.40.1
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump

Task# CH2M-PER-2007-1327	
---------------------------------	--

	Pit
Originator	Bratvold, Tom
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.41
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.41.1
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	Bratvold, Tom
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.42
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.42.1
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	Bratvold, Tom
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.43
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.44
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.45
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.46
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS

Task# CH2M-PER-2007-1327	
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.46.1
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	Koch, Michael R
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.47
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.48
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>
Subtask#	CH2M-PER-2007-1327.49
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit
Originator	^CH2M PER CAS
	Routing List <i>No Active Routing List</i>

-- end of report --

Task# CH2M-PER-2007-1327.3

E-STARS[®] Report
Task Detail Report
06/18/2008 0920

TASK INFORMATION

Task#	CH2M-PER-2007-1327.3		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Parent Task#	CH2M-PER-2007-1327	Status	CLOSED 12/21/2007
Reference	CH2M-PER-2007-1327	Due	12/27/2007
Originator	^CH2M PER CAS	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/25/2007 1351	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
<p>JON 2.2 Modify engineering procedures to ensure that senior engineers independent of the project are included as part of the design review, including, as appropriate, the Chief Engineer and discipline leads from the central engineering organization. (NTS)</p> <p>Deliverable: Modified procedures.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p>		
<ul style="list-style-type: none"> ● Walker, Ken D - Assign - Completed with comments - 12/12/2007 1447 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Raymond, Richard E - Review - Concur with comments - 12/19/2007 0851 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 12/19/2007 1012 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 12/21/2007 0911 <i>Instructions:</i> 		

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-1327.3 Closure,TFC-ENG-DESIGN-P-17,Rev C-5.doc 2. CH2M-PER-2007-1327 20 Remaining Roster.pdf 3. CH2M-PER-2007-1327.16 TFC-ENG-FAC SUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc 4. CH2M-PER-2007-1327.17 TFC-CHARTER-37_Waste_Transfer_Confinement_Review_Board.doc 5. CH2M-PER-2007-1327.2 ATS Matrix.pdf 6. CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf 7. CH2M-PER-2007-1327.3 ClosureTFC-ENG-DESIGN-P-17, Rev. C-4.doc 8. CH2M-PER-2007-1327[1].49 Closure Package.pdf 9. CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf
--------------------	---

Task# CH2M-PER-2007-1327.3

- 10. EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf
- 11. EM-RP--CHG-TANKFARM-2007-0009.htm
- 12. Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf
- 13. FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg
- 14. Link to PER
- 15. PAAA Evaluation Summary Form
- 16. Team Charter 70000-JWL-07-001.pdf
- 17. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 5.msg
- 18. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 6.msg
- 19. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 7.msg

COLLABORATION

COMMENTS

Poster	Walker, Ken D (Faust, Gary L) - 12/12/2007 0212
	Walker, Ken D -- Completed
	JON 2.2 required modifying engineering procedures to ensure that senior engineers independent of the project are included as part of the design review, including, as appropriate, the Chief Engineer and discipline leads from the central engineering organization. TFC-ENG-DESIGN-P-17, Rev C-4 (attached) has been issued to include a requirement that senior engineers independent of the project are included as part of the design review, including, as appropriate, the Chief Engineer and discipline leads from the central engineering organization. This completes the corrective action for this task, and this task can be closed.
Poster	Raymond, Richard E - 12/19/2007 0812
	Concur
	I have reviewed the changes and implementation and concur that this action is complete.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 12/19/2007 1012
	Concur
	Concur
Poster	Faust, Gary L - 12/21/2007 0812
	TFC-ENG-DESIGN-P-17, Rev C-4 (attached) incorporated the corrective actions required to complete this Task. TFC-ENG-DESIGN-P-17, Rev C-5 (attached) was a subsequent revision to change the Title of Attachment C from "Guidance...." to "Criteria....", to preclude misinterpretation of the revision C-4 changes. This revision C-5 resolves an ESRB comment on the Title of TFC-ENG-DESIGN-P-17, Attachment C. This completes the required corrective actions for this task, and this task can be closed.
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 12/21/2007 0912
	Concur
	This action was reviewed by the Executive Safety Review Board on December 20, 2007. The Board concurred with closure. tip 12/21/07
Poster	^CH2M PER CAs (Parchen, Tracy L) - 12/21/2007 0912
	CLOSED
	Reviewed and closed. tip 12/21/07
TASK DUE DATE HISTORY	
Modified	11/12/2007 0826 - ^CH2M PER CAs (Owen, Annette)
New Due Date	12/27/2007 0000

Task# CH2M-PER-2007-1327.3

Modified	10/29/2007 1120 - ^CH2M PER CAs (Owen, Annette)	New Due Date	12/25/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	12/23/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	08/06/2008 0000

SUB TASK HISTORY*No Subtasks**-- end of report --*

Task# CH2M-PER-2007-1327.16

E-STARS[®] Report
Task Detail Report
06/18/2008 0925

TASK INFORMATION

Task#	CH2M-PER-2007-1327.16		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Parent Task#	CH2M-PER-2007-1327	Status	CLOSED 11/08/2007
Reference	CH2M-PER-2007-1327	Due	11/07/2007
Originator	^CH2M PER CAS	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/25/2007 1351	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
<p>JON 4.1 Revise TFC-ENG-FAC SUP-D02.2 Waste Leak Path Evaluations to require determination of potential waste transfer paths and evaluation to ensure all paths are analyzed against accident scenarios in the DSA, the waste channeling PISA, and literal definition of physically connected.</p> <p>Deliverable:</p> <p>Revision of TFC-ENG-FAC SUP-D02.2 Waste Leak Path Evaluations, with a current or past effective date, requiring evaluation of potential waste transfer paths to the DSA, consideration of the waste channeling PISA, and the literal definition of physically connected.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p>		
<ul style="list-style-type: none"> ● Walker, Ken D - Assign - Completed with comments - 10/30/2007 1159 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Raymond, Richard E - Review - Concur with comments - 10/31/2007 1055 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/05/2007 0725 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/08/2007 1314 <i>Instructions:</i> 		

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1327 20 Remaining Roster.pdf 2. CH2M-PER-2007-1327.16 TFC-ENG-FAC SUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc 3. CH2M-PER-2007-1327.17 TFC-CHARTER-37_Waste_Transfer_Confinement_Review_Board.doc 4. CH2M-PER-2007-1327.2 ATS Matrix.pdf 5. CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf 6. CH2M-PER-2007-1327[1].49 Closure Package.pdf 7. CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf
--------------------	---

Task# CH2M-PER-2007-1327.16

8. EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf
9. EM-RP--CHG-TANKFARM-2007-0009.htm
10. Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf
11. FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg
12. Link to PER
13. PAAA Evaluation Summary Form
14. Team Charter 70000-JWL-07-001.pdf
15. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 5.msg
16. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 6.msg
17. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 7.msg

COLLABORATION

COMMENTS

Poster	Walker, Ken D - 10/30/2007 1110
	Completed
	TFC-ENG-FACSUP-D-02.2 updated. See Rev B attached.
Poster	Raymond, Richard E - 10/31/2007 1010
	Concur
	I have reviewed and concur that this task is complete.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/05/2007 0711
	Concur
	Concur
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 11/08/2007 0111
	Concur
	This action was reviewed by the Executive Safety Review Board on November 8, 2007. The Board concurred with closure. ttp 11/8/07
Poster	^CH2M PER CAs (Parchen, Tracy L) - 11/08/2007 0211
	CLOSED
	Reviewed and closed. ttp 11/8/07

TASK DUE DATE HISTORY

Modified	10/29/2007 1136 - ^CH2M PER CAs (Owen, Annette)	New Due Date	11/07/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	11/05/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	08/06/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# CH2M-PER-2007-1327.17

E-STARS[®] Report
 Task Detail Report
 06/18/2008 0928

TASK INFORMATION			
Task#	CH2M-PER-2007-1327.17		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Parent Task#	CH2M-PER-2007-1327	Status	CLOSED 11/08/2007
Reference	CH2M-PER-2007-1327	Due	11/07/2007
Originator	^CH2M PER CAS	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/25/2007 1351	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
<p>JON 4.2 Establish a Waste Transfer Confinement Review Board, to conduct independent reviews of waste leak path evaluations conducted by Projects in accordance with ENG-FAC SUP-D-02.2.</p> <p>Deliverable:</p> <p>Charter</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p>		
<ul style="list-style-type: none"> ● Walker, Ken D - Assign - Completed with comments - 10/30/2007 1201 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Raymond, Richard E - Review - Concur with comments - 10/31/2007 1532 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/05/2007 0726 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/08/2007 1325 <i>Instructions:</i> 		

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1327 20 Remaining Roster.pdf 2. CH2M-PER-2007-1327.16 TFC-ENG-FAC SUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc 3. CH2M-PER-2007-1327.17 TFC-CHARTER-37,_Waste_Transfer_Confinement_Review_Board.doc 4. CH2M-PER-2007-1327.2 ATS Matrix.pdf 5. CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf 6. CH2M-PER-2007-1327[1].49 Closure Package.pdf 7. CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf 8. EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf 9. EM-RP--CHG-TANKFARM-2007-0009.htm 10. Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf
-------------	--

Task# CH2M-PER-2007-1327.17

- 11. FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg
- 12. Link to PER
- 13. PAAA Evaluation Summary Form
- 14. Team Charter 70000-JWL-07-001.pdf
- 15. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_ Update 5.msg
- 16. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_ Update 6.msg
- 17. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_ Update 7.msg

COLLABORATION

COMMENTS

Poster	Walker, Ken D - 10/30/2007 1210
	Completed
	Waste Transfer Confinement Review Board established via Charter. Charter attached.
Poster	Raymond, Richard E - 10/31/2007 0310
	Concur
	I have reviewed and concur with this action.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/05/2007 0711
	Concur
	Concur
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 11/08/2007 0111
	Concur
	This action was reviewed by the Executive Safety Review Board on November 8, 2007. The Board concurred with closure. tlp 11/8/07
Poster	^CH2M PER CAs (Parchen, Tracy L) - 11/08/2007 0211
	CLOSED
	Reviewed and closed. tlp 11/8/07

TASK DUE DATE HISTORY

Modified	10/29/2007 1137 - ^CH2M PER CAs (Owen, Annette)	New Due Date	11/07/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	11/05/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	08/06/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# CH2M-PER-2007-1327.18

E-STARs[®] Report
Task Detail Report
06/18/2008 0931

TASK INFORMATION

Task#	CH2M-PER-2007-1327.18		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Parent Task#	CH2M-PER-2007-1327	Status	CLOSED 11/29/2007
Reference	CH2M-PER-2007-1327	Due	12/08/2007
Originator	^CH2M PER CAS	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/25/2007 1351	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>JON 4.3 Turn Desk Instruction TFC-ENG-FACsUP-D-02.2 Waste Leak Path Evaluations into an Engineering procedure to institutionalize the Waste Leak Path Evaluation process. (NTS)</p> <p>Deliverable: New procedure, Waste Leak Path Evaluations.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARs and close the E-STARs subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p>	
	<ul style="list-style-type: none"> ● Walker, Ken D - Assign - Completed with comments - 11/28/2007 1444 <i>Instructions:</i> ↳ <i>Routing List:</i> Route List - Inactive <i>Instructions:</i> <ul style="list-style-type: none"> ● Faust, Gary L - Assign - Completed with comments - 11/28/2007 1443 	
	<ul style="list-style-type: none"> ● Raymond, Richard E - Review - Concur - 11/28/2007 1523 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/28/2007 1524 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/29/2007 1111 <i>Instructions:</i> 	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1327 20 Remaining Roster.pdf 2. CH2M-PER-2007-1327.16 TFC-ENG-FACsUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc 3. CH2M-PER-2007-1327.17 TFC-CHARTER-37,_Waste_Transfer_Confinement_Review_Board.doc 4. CH2M-PER-2007-1327.18 Closure TFC-ENG-FACsUP-C-26,_Waste_Leak_Path_Evaluations.doc 5. CH2M-PER-2007-1327.2 ATS Matrix.pdf
--------------------	---

Task# CH2M-PER-2007-1327.18

6. CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf
7. CH2M-PER-2007-1327[1].49 Closure Package.pdf
8. CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf
9. EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf
10. EM-RP--CHG-TANKFARM-2007-0009.htm
11. Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf
12. FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg
13. Link to PER
14. PAAA Evaluation Summary Form
15. Team Charter 70000-JWL-07-001.pdf
16. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 5.msg
17. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 6.msg
18. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 7.msg

COLLABORATION

COMMENTS

Poster Faust, Gary L - 11/28/2007 0211

Completed

CH2M-PER-2007-1327.18 (JON 4.3) required that Desk Instruction TFC-ENG-FAC SUP-D-02.2 Waste Leak Path Evaluations be turned into an Engineering procedure to institutionalize the Waste Leak Path Evaluation process. (NTS)
 Deliverable:
 New procedure, Waste Leak Path Evaluations.

Corrective Action:
 Engineering procedure TFC-ENG-FAC SUP-C-26, Waste Leak Path Evaluations, Rev A (attached) has been issued to institutionalize the Waste Leak Path Evaluation process. This completes the corrective action for this task, and this task can be closed.

Poster Walker, Ken D (Faust, Gary L) - 11/28/2007 0211

Completed

CH2M-PER-2007-1327.18 (JON 4.3) required that Desk Instruction TFC-ENG-FAC SUP-D-02.2 Waste Leak Path Evaluations be turned into an Engineering procedure to institutionalize the Waste Leak Path Evaluation process. (NTS) Deliverable: New procedure, Waste Leak Path Evaluations.

Corrective Action: Engineering procedure TFC-ENG-FAC SUP-C-26, Waste Leak Path Evaluations, Rev A (attached) has been issued to institutionalize the Waste Leak Path Evaluation process. This completes the corrective action for this task, and this task can be closed.

Poster ^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/28/2007 0311

Concur

Concur

Poster ^CH2M PER ESRB (Parchen, Tracy L) - 11/29/2007 1111

Concur

This action was reviewed by the Executive Safety Review Board on November 29, 2007. The Board concurred with closure. ttp 11/29/07

Poster ^CH2M PER CAS (Parchen, Tracy L) - 11/29/2007 1111

CLOSED

Reviewed and closed. ttp 11/29/07

TASK DUE DATE HISTORY

Modified 11/12/2007 0854 - ^CH2M PER CAS (Owen, Annette) **New Due Date** 12/08/2007 0000

Task# CH2M-PER-2007-1327.18

Modified	10/29/2007 1138 - ^CH2M PER CAs (Owen, Annette)	New Due Date	12/04/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	12/02/2007 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	08/06/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# CH2M-PER-2007-1327.19

E-STARS[®] Report
Task Detail Report
09/11/2008 0159

TASK INFORMATION

Task#	CH2M-PER-2007-1327.19		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Parent Task#	CH2M-PER-2007-1327	Status	CLOSED 09/11/2008
Reference	CH2M-PER-2007-1327	Due	09/12/2008
Originator	^CH2M PER CAs	Priority	None
Originator Phone		Category	None
Origination Date	10/25/2007 1351	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Reopen	Inactive
	<p>JON 4.4: Establish an Engineering Standard on confinement for all tank farm designs. Design reviews verify that the design meets the appropriate Engineering Standard. Likewise, Engineering performs walk-downs to verify visible portions of confinement systems are installed as designed. (NTS)</p> <p>The ESRB re-opened Task 1327.19 to ensure closure of this task, the schedule for issue of the revised Standard and closure of the Task Detail Report being September 12, 2008.</p> <p>Deliverable: New Standard ***** Approved due date extension to 4/1/08 (for Responsible Manager). ttp 1/10/08</p>	
	<ul style="list-style-type: none"> ● Walker, Ken D - Assign - Withdrawn - 08/28/2008 1318 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● Ito, Fran M - Review - Withdrawn - 08/28/2008 1319 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● Faust, Gary L - Assign - Completed with comments - 09/08/2008 1628 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● Ito, Fran M - Review - Concur with comments - 09/10/2008 1154 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Maciuca, Tino) - Review - Concur with comments - 09/10/2008 1245 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 09/11/2008 1301 <i>Instructions:</i> 	
2	Corrective Action	Inactive
	<p>JON 4.4 Establish an Engineering Standard on confinement for all tank farm designs. Design reviews verify that the design meets the appropriate Engineering Standard. Likewise, Engineering performs walk-downs to verify visible portions of confinement systems are installed as designed. (NTS)</p>	

Task# CH2M-PER-2007-1327.19

Deliverable:

New Standard

RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.

- Walker, Ken D - Assign - Completed with comments - 03/26/2008 0950

Instructions:↳ *Routing List:* Route List - Inactive*Instructions:*

- Schlosser, Richard L - Assign - Completed with comments - 03/14/2008 0928

- Raymond, Richard E - Review - Reassigned - 02/01/2008 0908

Instructions:

- Ito, Fran M - Review - Concur with comments - 03/26/2008 1334

Instructions:

- ^CH2M Independent Assessment Review(Flasch, Michael P) - Review - Concur with comments - 03/26/2008 1643

Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 03/31/2008 1059

*Instructions:***ATTACHMENTS**

Attachments

1. CH2M-PER-2007-1327 19 Closure - TFC-ENG-STD-03 Waste Transfer Confinement Configuration.pdf
2. CH2M-PER-2007-1327 20 Remaining Roster.pdf
3. CH2M-PER-2007-1327.16 TFC-ENG-FACSUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc
4. CH2M-PER-2007-1327.17 TFC-CHARTER-37_Waste_Transfer_Confinement_Review_Board.doc
5. CH2M-PER-2007-1327.19 TFC-ENG-DESIGN-C-06,_Engineering_Change_Control.doc
6. CH2M-PER-2007-1327.19 TFC-ENG-DESIGN-C-09,_Engineering_Drawings.doc
7. CH2M-PER-2007-1327.19 TFC-ENG-STD-03,_Waste_Transfer_Confinement_Configuration.doc
8. CH2M-PER-2007-1327.2 ATS Matrix.pdf
9. CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf
10. CH2M-PER-2007-1327[1].49 Closure Package.pdf
11. CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf
12. EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf
13. EM-RP--CHG-TANKFARM-2007-0009.htm
14. Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf
15. FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg
16. Link to PER
17. PAAA Evaluation Summary Form
18. Team Charter 70000-JWL-07-001.pdf
19. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 5.msg
20. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 6.msg
21. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_Update 7.msg

COLLABORATION**COMMENTS**

Poster

^CH2M PER CAs (Parchen, Tracy L) - 01/10/2008 0201

Approved due date extension to 4/1/08. ttp 1/10/08

At the January 10, 2008, ESRB meeting, Herb Berman requested an extension to April 1, 2008. He confirmed that no other actions/activities were affected by the extension. The Board approved the extension.

Justification: Information required to develop the Standard is being collected during on-going Hazops and Waste Leak Confinement evaluations. Additional time is needed to incorporate data. ttp 1/15/08

Task# CH2M-PER-2007-1327.19

Poster	Schlosser, Richard L (inactive) - 03/14/2008 0903
	Schlosser, Richard L -- Completed
	Standard TFC-ENG-STD-03 has been prepared for review and issuance under the Administrative Procedure control process. A copy of the drafted standard has been attached to the E-Stars Item.
Poster	Walker, Ken D - 03/26/2008 0903
	Completed
	New Waste Transfer Confinement Configuration Standard (TFC-ENG-STD-03, REV A) completed and published. Standard along with ADCA and USQ Screening attached to PER. Recommend closing at ESRB.
Poster	Ito, Fran M - 03/26/2008 0103
	Concur
	The submittal, TFC-ENG-STD-03, Waste Transfer Confinement Configuration, meets the "deliverable" in the Corrective Action Plan which is "New Standard." The ADCA method of training is: required reading with verification. The population of personnel to be trained is, Qualified Engineering Technical Managers, System Engineering Managers, Engineering Discipline Leads, System Engineers, Limited System Engineers, Component Engineers, Process Engineers, Project Engineers, Nuclear Safety & Licensing Engineers and Core Engineers. Evidence of this training was not included in the closure package. In discussions with the Chief Engineer, the program will ensure that this training is completed as indicated in the ADCA.
Poster	^CH2M Independent Assessment Review (Fiasch, Michael P) - 03/26/2008 0403
	Concur
	Concur, with comments. There are two follow-on actions that need to be considered to IMPLEMENT the standard: 1. The design process needs to be revised to invoke this new standard. Otherwise, we have no firm assurance that the standard will be implemented. 2. Training (preferably briefings rather than required reading) needs to be conducted as identified on the ADCA to ensure that the Standard contents are effectively understood. See the Comments discussion by Fran Ito dated 03/26/08.
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 03/31/2008 1003
	Concur
	This action was reviewed by the Executive Safety Review Board on March 28, 2008. The Board concurred with closure. tlp 3/31/08
Poster	^CH2M PER CAs (Owen, Annette) - 08/28/2008 0108
	Task Re-Open
	Reopen at the request of Craig Anderson, PAAA: The S-102 End Point Assessment identified a weakness in closure of Task Detail Report 1327.19. That action committed to issuing a Waste Confinement Standard. The commitment also included a statement, "Likewise, Engineering performs walk-downs to verify visible portions of confinement systems are installed as designed." Standard TFC-ENG-STD-03, Waste Transfer Confinement Configuration was issued, however, the explicit requirement to verify visible portions of systems was not contained. The ESRB re-opened Task 1327.19 to ensure closure of this task, the schedule for issue of the revised Standard and closure of the Task Detail Report being September 12, 2008.
Poster	Faust, Gary L - 09/08/2008 0409
	Completed
	To fully address the required corrective actions to this task, TFC-ENG-STD-03, Waste Transfer Confinement Configuration, has been revised (Rev A-1 attached) to add a requirement, as follows

Task# CH2M-PER-2007-1327.19

to : "5. For new designs or design changes, engineering shall perform walk-downs to verify visible portions of confinement systems are installed as designed." In addition, TFC-ENG-DESIGN-C-06, Engineering Change Control (Rev G-4 attached) and TFC-ENG-DESIGN-C-09, Engineering Drawings, (REV C-5 attached) have been revised to add requirements to implement this new TFC-ENG-STD.03 requirement. This completes this task, and this task can be closed.

Poster

Ito, Fran M - 09/10/2008 1109

Concur

This task was reopened by the ESRB to address the following issue:

- The S-102 End Point Assessment identified a weakness in closure of this corrective action. The action committed to issuing a Waste Confinement Standard. The commitment also included a statement, "Likewise, Engineering performs walk-downs to verify visible portions of confinement systems are installed as designed." Standard TFC-ENG-STD-03, Waste Transfer Confinement Configuration was issued; however, the explicit requirement to verify visible portions of systems was not contained. The ESRB concurred to re-open this corrective action in order to include the revised standard as adequate closure evidence. The schedule for issuance of the revised Standard and subsequent re-closure of this corrective action is September 12, 2008.

The submittal flows down the requirement to perform field walkdowns in the standard and subordinate procedures.

Poster

^CH2M Independent Assessment Review (Maciuca, Tino) - 09/10/2008 1209

Concur

Concur.

Tino Maciuca

Poster

^CH2M PER ESRB (Parchen, Tracy L) - 09/11/2008 0109

Concur

This action was reviewed by the Executive Safety Review Board on September 11, 2008. The Board concurred with closure. tip 9/11/08

TASK DUE DATE HISTORY

Modified	08/28/2008 1316 - ^CH2M PER CAs	New Due Date	09/12/2008 0000
Modified	01/10/2008 1410 - ^CH2M PER CAs (Parchen, Tracy L)	New Due Date	04/01/2008 0000
Modified	11/12/2007 0900 - ^CH2M PER CAs (Owen, Annette)	New Due Date	02/08/2008 0000
Modified	11/12/2007 0900 - ^CH2M PER CAs (Owen, Annette)	New Due Date	02/06/2008 0000
Modified	10/29/2007 1142 - ^CH2M PER CAs (Owen, Annette)	New Due Date	02/04/2008 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	02/02/2008 0000
Modified	10/25/2007 1351 - ^CH2M PER CAs	New Due Date	08/06/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Appendix H

Documentation for Closeout of CH2M-PER-2007-1493

Problem Evaluation Request (PER)

CH2M-PER-2007-1493

Closed 11/27/2007 11:00

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1493	08/26/2007	09:00	Emerg. Prep & Security

Location
2704HV

How Was Problem Discovered
Assessment

Description of Concern or Problem
As a result of the Emergency Management S-102 Event Response Review, TF-AOP-006 and TF-AOP-011 procedures lack guidance in responding to an unknown High Radiation Area.

The recommended corrective actions are provided.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification

Immediate Actions Taken or Planned
Performed event review and provided the below recommended corrective actions.

Recommended Corrective Actions
Review/revise TF-AOP-006 and TF-AOP-011 by OPS, RadCon, ESH&Q, EM and BU against the following recommendations:

- 1) Provide guidance on response to an unknown HRA source to include:
 - a) if unknown source evacuate personnel at least 100 meters UPWIND of the source
 - b) Change "Ensure" to "Call" 911 for assistance
 - c) initial indicators to aid in determining the source (Beta, Gamma)
 - d) immediate environmental on-call notification
 - e) immediate Industrial Hygiene involvement for unknown sources
 - f) medical surveillance for personnel that were in the vicinity
 - g) controlling access external to the immediate area for an unknown source
 - h) pre-planned and approved re-entry requirements
 - i) treat it as if a spill, go to TF-AOP-011
 - j) All initial steps in the procedure completed as soon as possible

Corrective Actions, when completed, are to be reviewed by the Executive Safety Review Board (ESRB) for acceptance prior to closure.

Level of Participation
I would like to help define the problem

Originators Name	Originators ID	Originators Phone	Date Initiated
Erickson, Todd (Ch2m)	██████████	(509) 373-2458	08/26/2007

SHIFT OPERATIONS REVIEW

Title
TF-AOP-006 and TF-AOP-011 procedures need improvement

How Discovered	Agency
self-ID result of event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe Actions Taken or Recommended
No additional actions taken or recommended by WFO SO

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date

Strasser, David W	H0075556	(509) 373-2689	08/26/2007
-------------------	----------	----------------	------------

SCREENING

PER Significance Level

PER with Resolution

Independent Assessment Review	Occurrence Report Number	Externally Identified
Yes		No
Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep
Jarecki, Theodore D		

PER Screening Comments

Corrective Actions, when completed, are to be reviewed by the Executive Safety Review Board (ESRB) for acceptance prior to closure. (nb)

Causal Code

A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced
A5B2C08	Communications LTA Written Communications Content LTA Incomplete/situation not covered

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Operations	Assessments
ISMS	Consequence Code		
Provide feedback and continuous improvement	Procedure - Operational		
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Brown, Nancy L	██████████	(509) 373-0992	08/28/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
PAAA, Non-NTS Reportable	10 CFR 830.122 (d)(1) 10 CFR 851.22 (a)(1)	Procedure Quality Hazard Prevention and Abatement Work Practices, Procedures, and Administrative Controls
NTS Report Number	NTS Report Date	
Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation
No	No	No

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date
Stenzel, Len C (inactive) (inactive)	08/29/2007
PAAA Approver Name	PAAA Approve Date
Stenzel, Len C (inactive) (inactive)	08/30/2007

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

No comments (nb)

Instructions for Responsible Manager

Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Brown, Nancy L	[REDACTED]	(509) 373-0992	08/30/2007

CAUSE ANALYSIS

Description of Occurrence
 As a result of the Emergency Management S-102 Event Response Review, TF-AOP-006 and TF-AOP-011 procedures lack guidance in responding to an unknown High Radiation Area.

Extent of Condition
 Effective work documentation and related procedural compliance is necessary for all work in the field including routine activities as well as response related to abnormal and/or emergency situations.

Safety Significance
 Failure to effectively respond to abnormal events could have significant safety impacts to facility personnel, the public, and/or the environment.

Generic Implications

Remedial Corrective Action
 Review of preliminary Type A investigation results along with internal investigations including Emergency Management S-102 Event Response Review and CH2M HILL Root Cause Analysis resulted in identification of several improvements related to the abnormal operating procedures with focus on TFC-AOP-006 and TFC-AOP-011. Interim measures were taken to incorporate improvements including procedure revisions C-4 and C-5 for TFC-AOP-006 as well as revisions B-8 and B-9 for TFC-AOP-011 and standing orders CO-07-007 and WFO-07-005. These actions are also in PER-2007-1747 and related documents are attached to PER-2007-1747. The action to implement procedure improvements along with combining TF-AOP-006 and TF-AOP-011 is also being tracked in PER-1007-1747 and no additional actions are necessary to address this PER. (TD Jarecki 11/08/07)

Causal Analysis, Apparent Cause and/or Root Cause Analysis
 A change analysis was performed per TFC-ESHQ-Q_ADM-C-12, Apparent Cause Analysis and Corrective Action Planning, including reviews of DOE Type A Accident Report and RPP-RPT-34831, Root Cause Analysis Report for Radioactive Waste Spill at Tank 241-S-102. The analysis included evaluation of the conclusions associated with JON WC-3 to determine the following apparent causes. The analysis is documented in and is documented in PER-2007-1747. Based on that change analysis, the following Causal Factors were assigned:

Causes:
 A4B1C01 - Management policy guidance/expectations not well-defined, understood or enforced
 A5B2C08 - Incomplete/situation not covered
 The Type A Accident Report identified informal actions performed in the field under abnormal operating procedures although supervisors had been made aware of expectations to perform fieldwork utilizing work documentation consistent with the Tank Farm Contractor Work Control requirements demonstrating a lack of understanding for the related requirements. The report also concluded that the abnormal operating procedures were incorrectly used as stand alone procedures and did not provide adequate reference to appropriate work documentation to address situations to support related field activities.

ATTACHMENTS

Change Analysis PER-7-1747.doc
 Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
08/29/2007 11:08	Brown, Nancy L	'Description of Concern or Problem' was changed. 'Immediate Actions Taken' was changed. 'Recommended Corrective Actions' was changed. 'Type of Feedback' was changed. Changed at the request of the PER originator.
08/29/2007 11:12	Brown, Nancy L	'PAAA Screening' was changed. 'PER Screening Comments' was changed. 'Consequence Code' was changed.
08/29/2007 11:29	Brown, Nancy L	'PAAA Screening' was changed. 'Independent Assessment Review' was changed.
08/29/2007 12:35	Brown, Nancy L	'Description of Concern or Problem' was

		changed. 'Immediate Actions Taken' was changed. (typos)
18/29/2007 12:36	Brown, Nancy L	'PER Significance Level' was changed from PIE/CIM to PER with Resolution. 'PAAA Screening' was changed.
18/29/2007 14:23	Stenzel, Len C	PAAA Codes Changed PAAA Function Codes Changed
18/30/2007 08:53	Brown, Nancy L	Responsible Manager Task Launched by Brown, Nancy L

-- End of Report --
11/27/2007 11:15 AM

Task# CH2M-PER-2007-1493

E-STARS^R Report
Task Detail Report
11/27/2007 1115

TASK INFORMATION

Task#	CH2M-PER-2007-1493		
Subject	RES; TF-AOP-006 and TF-AOP-011 procedures need improvement		
Parent Task#		Status	CLOSED 11/27/2007
Reference		Due	11/19/2007
Originator	^CH2M PER Coordinator (^CH2M PER Coordinator)	Priority	Medium
Originator Phone		Category	PER
Origination Date	08/26/2007 1000	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Responsible Manager	Inactive
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.	
	<ul style="list-style-type: none"> Jarecki, Theodore D - Assign - Completed - 11/08/2007 1308 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ^CH2M Independent Assessment Review(Higgins, Richard.(Rich)) - Review - Concur with comments - 11/08/2007 1547 <i>Instructions:</i> Independent Assessor Review	
	<ul style="list-style-type: none"> ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/15/2007 1209 <i>Instructions:</i>	
2	Review Initial PER	Inactive
	Review new PER	
	<ul style="list-style-type: none"> ^CH2M WFO SO(Strasser, David W) - Review - Concur - 08/26/2007 1623 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ^CH2M PER Screening(Brown, Nancy L) - Review - Concur - 08/28/2007 1442 <i>Instructions:</i>	

Task# CH2M-PER-2007-1493

- ^CH2M MGR Review - Review - Withdrawn - 08/28/2007 1524
Instructions:
- ^CH2M PER Screening(Brown, Nancy L) - Review - Concur - 08/29/2007 1427
Instructions:
- ^CH2M MGR Review - Review - Cancelled - 08/30/2007 0853
Instructions:

ATTACHMENTS

- Attachments
1. Change Analysis PER-7-1747.doc
 2. Link to PER

COLLABORATION

COMMENTS

Poster	^CH2M PER Coordinator (Owen, Annette) - 10/12/2007 1010		
	Extend to 11/12/07 per form A-6003-227. (NO CA's)		
	Requesting more time to write up the causal analysis of this Emergency Management S-102 Event Response Review issue. Extend 30 days. KA Samifua for T Jarecki per telcon		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/08/2007 0311		
	Concur		
	Concur		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 11/15/2007 1211		
	Concur		
	This action was reviewed by the Executive Safety Review Board on November 15, 2007. The Board concurred with closure. tlp 11/15/07		
Poster	^CH2M PER Coordinator (Glaman, Linda R) - 11/27/2007 1011		
	CLOSED		
	Closed as approved by the ESRB. LBG		

TASK DUE DATE HISTORY

Modified	08/26/2007 1000 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	08/28/2007 1630
Modified	08/30/2007 0853 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	10/14/2007 1630
Modified	08/30/2007 0853 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	10/10/2007 1630
Modified	10/12/2007 1045 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	11/19/2007 1630

Task# CH2M-PER-2007-1493

SUB TASK HISTORY

No Subtasks

-- end of report --

Appendix I

Documentation for Closeout of CH2M-PER-2007-1496

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1496

Closed 04/22/2008 12:00

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1496	08/26/2007	10:00	Emerg. Prep & Security
Location			
2704HV			
How Was Problem Discovered			
Assessment			
Description of Concern or Problem			
As a result of the Emergency Management S-102 Event Response Review, it was found that timely response was delayed while necessary re-entry plans were developed and approved. Evaluate/develop pre-planned and approved re-entry, investigative and habitability surveys for and with both IH and HPT involvement.			
Corrective Actions have been provided below.			
Requirement Not Satisfied		Source Document Number	
Equipment Identification Number		System Identification	
Immediate Actions Taken or Planned			
Performed event review and provided the below recommended corrective action.			
Recommended Corrective Actions			
Evaluate/develop pre-planned and approved re-entry, investigative and habitability surveys for and with both IH and HPT involvement.			
Corrective Actions, when completed, are to be reviewed by the Executive Safety Review Board (ESRB) for acceptance prior to closure.			
Level of Participation			
I would like to help define the problem			
Originators Name	Originators ID	Originators Phone	Date Initiated
Erickson, Todd (Ch2m)		(509) 373-2458	08/26/2007
SHIFT OPERATIONS REVIEW			
Title			
Evaluate/develop pre-planned and approved re-entry plans			
How Discovered		Agency	
self-ID result of event			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe Actions Taken or Recommended			
No additional actions taken or recommended by WFO SO			
SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Strasser, David W		(509) 373-2689	08/26/2007
SCREENING			
PER Significance Level			
PER with Resolution			
Independent Assessment Review	Occurrence Report Number	Externally Identified	

Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep
embel, Monica R		

ESRB Screening Comments
 Corrective Actions, when completed, are to be reviewed by the Executive Safety Review Board (ESRB) for acceptance prior to closure.
 (nb)

Causal Code
 45B3C01
 Communications LTA
 Written Communication Not Used
 Lack of written communication

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other

Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Emergency Management	Assessments

ISMS
 Provide feedback and continuous improvement
 Consequence Code
 Safety Concerns

PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Brown, Nancy L	H0088797	(509) 373-0992	08/28/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
PAAA, Non-NTS Reportable	10 CFR 830.122 (c)(1) 10 CFR 830.122 (d)(1)	Conduct of Operations (including Drills and Exercises) Other Management Program/Process Procedure Quality Records

NTS Report Number	NTS Report Date

Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation
No	No	No

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date
Stenzel, Len C (inactive) (inactive)	08/29/2007
PAAA Approver Name	PAAA Approve Date
Stenzel, Len C (inactive) (inactive)	08/30/2007

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call
 No comments (nb)

Instructions for Responsible Manager
 Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q-C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Brown, Nancy L		(509) 373-0992	08/30/2007

CAUSE ANALYSIS

Description of Occurrence

As a result of the Emergency Management S-102 Event Response Review, it was found that timely response was delayed while necessary re-entry plans were developed and approved. Evaluate/develop pre-planned and approved re-entry, investigative and habitability surveys

for and with both IH and HPT involvement.

Extent of Condition

Extent of condition applies to all tank farm emergency events.

Safety Significance

A delay in re-entry could result in unnecessary exposure for personnel and environment.

Generic Implications

Remedial Corrective Action

Abnormal Operating Procedure, AOP-011, "Response to Chemical and/or Radiological Events" has been revised to contact both the On-Call Safety and Health Professional and the On-Call Radiological Control Manager. Additionally it now includes turn back values for both radiological and chemical conditions for use in establishing event scene boundaries. (Verified by MR Kembel 4/19/2008).

Procedure, TFC-OPS-MAINT-C-01, "TANK FARM CONTRACTOR WORK CONTROL" has been revised to include a section on "Immediate Recovery Work" to ensure the a documented process and approach is in place for this work scope which includes involvement by both Safety and RadCon. (Verified complete by MR Kembel 4/19/2008).

Causal Analysis, Apparent Cause and/or Root Cause Analysis

The apparent cause of the concern was that there was no written approach for re-entry following an event. As documented under remedial corrective actions, 2 internal procedures have been revised to include written guidance for re-entry into an area following an event. AOP-011 to contact both the On-Call Safety and Health Professional and the On-Call Radiological Control Manager and to establish safe event scene boundaries through turn back values, and the work control procedure to provide a documented process for immediate recovery work.

However, the key when evaluating this concern, is to rely on the Hanford Fire Department through the Incident Commander for immediate need to re-enter the event scene boundary in order to protect people and/or the environment. The HFD is authorized and trained to enter into unknown hazards and should be relied upon for the initial recovery actions to protect personnel and/or the environment. Subsequent recovery actions can be planned accordingly via the work control procedure.

Based upon the evaluation provided above in conjunction with the remedial corrective actions, no additional corrective actions are required.

ATTACHMENTS

CH2M-PER-2007-1496 AOP-011.pdf

CH2M-PER-2007-1496 TFC-OPS-MAINT-C-01.pdf

CH2M-PER-2007-1496__Change_Analysis(2).xls

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
08/29/2007 11:35	Brown, Nancy L	'Description of Concern or Problem' was changed. 'Immediate Actions Taken' was changed. 'Recommended Corrective Actions' was changed. 'Type of Feedback' was changed at the request of the PER originator
08/29/2007 11:36	Brown, Nancy L	'PER Significance Level' was changed from PIE/CIM to PER with Resolution. 'PAAA Screening' was changed. 'Independent Assessment Review' was changed. 'PER Screening Comments' was changed.
08/29/2007 12:40	Brown, Nancy L	'Description of Concern or Problem' was changed. 'Immediate Actions Taken' was changed. (typos)

08/29/2007 14:29	Stenzel, Len C	PAAA Screening Changed PAAA Codes Changed PAAA Function Codes Changed
08/30/2007 08:57	Brown, Nancy L	Responsible Manager Task Launched by Brown, Nancy L
02/26/2008 10:21	Bowman, Tami A	Change to Cause Analysis screen/Corrective Action plan.
02/27/2008 08:47	Glaman, Linda R	Corrective Actions Launched by Glaman, Linda R
04/17/2008 13:36	Owen, Annette	'Assigned Responsible Manager' was changed.
04/17/2008 13:36	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
04/17/2008 13:37	Owen, Annette	Corrective Action item - modification to synchronize with E-STARS. Deleting Corrective Action CH2M-PER-2007-1496.2.
04/19/2008 14:21	Kembel, Monica R	'Description of Occurrence' was changed. 'Extent of Condition/ Safety Significance' was changed. 'Safety Significance' was changed. 'Extent of Condition' was changed. 'Remedial Corrective Action' was changed. 'Causal Analysis' was changed. 'No Corrective Actions Needed' was changed.
04/19/2008 14:40	Ross, William (Bill)	'Extent of Condition/ Safety Significance' was changed. 'Causal Analysis' was changed. 'No Corrective Actions Needed' was changed.
04/20/2008 11:00	Kembel, Monica R	'Extent of Condition/ Safety Significance' was changed. 'Remedial Corrective Action' was changed. Changes were made based on input from PER originator feedback. 'Causal Analysis' was changed. 'No Corrective Actions Needed' was changed.

-- End of Report --
04/22/2008 12:15 PM

Task# CH2M-PER-2007-1496

E-STARS^R Report
Task Detail Report
04/22/2008 1215

TASK INFORMATION

Task#	CH2M-PER-2007-1496		
Subject	RES; Evaluate/develop pre-planned and approved re-entry plans		
Parent Task#		Status	CLOSED 04/22/2008
Reference		Due	05/30/2008
Originator	^CH2M PER Coordinator (^CH2M PER Coordinator)	Priority	Medium
Originator Phone		Category	PER
Origination Date	08/26/2007 1043	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Actions Routing Lis	Inactive
	Perform Apparent Cause Analysis & Corrective Action Planning in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11, Causal Analysis & Corrective Action Planning.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs - Assign - Withdrawn - 04/17/2008 1316 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • Kembel, Monica R - Assign - Completed with comments - 04/19/2008 1459 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 04/21/2008 1212 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 04/22/2008 1121 <i>Instructions:</i> 	
2	Responsible Manager	Inactive
	Return for rework (per the ESRB on 1/3/08). Include RadCon response in the re-entry plan as documented in the PER originator's problem statement. In addition, the IOM provided as closure documentation (7M500-DFF-07-051) must be tied to the AOP.	

Task# CH2M-PER-2007-1496

Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

- Anderson, Thomas (Safety) J - Assign - Completed with comments - 12/30/2007 1218
Instructions:

- Anderson, Thomas (Safety) J - Assign - Withdrawn - 01/02/2008 1132
Instructions: 1. As discussed with Tom Anderson, the response to this PER is limited to IH re-entry plans and does not address RadCon response as documented in the Originator's problem statement.
2. The change analysis could be improved. A one row analysis does not indicate a very in depth analysis.

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 01/02/2008 1211
Instructions: Independent Assessor Review

- ^CH2M PER ESRB - Review - Withdrawn - 01/03/2008 1234
Instructions:

- Anderson, Thomas (Safety) J - Assign - Reassigned - 01/29/2008 0923
Instructions:

- Jones, Mark W - Assign - Completed with comments - 02/26/2008 1235
Instructions:

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 02/26/2008 1703
Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 02/27/2008 0735
Instructions:

3 Review Initial PER

Inactive

Review new PER

- ^CH2M WFO SO(Strasser, David W) - Review - Concur - 08/26/2007 1628
Instructions:

- ^CH2M PER Screening(Brown, Nancy L) - Review - Concur - 08/29/2007 1428
Instructions:

- ^CH2M MGR Review - Review - Cancelled - 08/30/2007 0857
Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1496 AOP-011.pdf
2. CH2M-PER-2007-1496 TFC-OPS-MAINT-C-01.pdf
3. CH2M-PER-2007-1496__Change_Analysis(2).xls
4. Link to PER

Task# CH2M-PER-2007-1496

COLLABORATION

COMMENTS

Poster	^CH2M PER Coordinator (Owen, Annette) - 10/08/2007 0910
	Extend to 1/7/08 per form A-6003-227 (NO CA's)
	Additional time is needed to coordinate with concerned groups. T Bowman for T Anderson
Poster	Anderson, Thomas (Safety) J (inactive) (Bowman, Tami A) - 12/30/2007 1212
	Completed
	A re-entry plan has been developed and is attached. Bowman 12/30/07
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 12/31/2007 0712
	Rework Instructions
	1. As discussed with Tom Anderson, the response to this PER is limited to IH re-entry plans and does not address RadCon response as documented in the Originator's problem statement. 2. The change analysis could be improved. A one row analysis does not indicate a very in depth analysis.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/02/2008 1201
	Concur
	Will need to explain how the issue associated with RadCon response was addressed.
Poster	^CH2M PER Coordinator (Glaman, Linda R) - 01/03/2008 1201
	Returned for Rework per ESRB instruction. LBG 1-3-08
	Return for rework (per the ESRB on 1/3/08). Include RadCon response in the re-entry plan as documented in the PER originator's problem statement. In addition, the IOM provided as closure documentation (7M500-DFE-07-051) must be tied to the AOP.
Poster	^CH2M PER Coordinator (Owen, Annette) - 01/10/2008 1201
	2nd extension to 2/25/08 per form jA-6003-227. (NO CAs)
	Additional time is requested for procedure revision. F Ito
Poster	Jones, Mark W (Bowman, Tami A) - 02/26/2008 1202
	Completed
	Corrective action ready to launch.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 02/26/2008 0502
	Concur
	Concur
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 02/27/2008 0702

Task# CH2M-PER-2007-1496

Concur

Approved to launch CA. tlp 2/27/08

Poster

^CH2M PER Coordinator (Owen, Annette) - 04/17/2008 0104

Extend to 5/22/08, Transfer from Anderson to Kembel per form A-6003-543.

Request to have the parent PER transferred to Monica Kembel and returned for re-work. Also request to rework the associated corrective action CH2M-PER-2007-1496.2, please delete current action. Although this is not a SPER, it is a Emergency Management S-102 Event Response PER requiring ESRB Approval.

Several related actions have occurred since the initial PER resolution was developed that should be included in this PER documentation. Additionally, the current PER resolution does not adequately capture the evaluation and completed actions to date.

AOP-011 was revised to include chemical turn back values. A re-entry plan has been issued by Industrial Hygiene (memo form). Transfer IH re-entry plans are being included in specific transfer and monitoring plans. The work control procedure has been revised to include section for immediate recovery.

MW Jones/MR Kembel/K Daniels

Poster

Kembel, Monica R (Kembel, Monica R) - 04/19/2008 0204

Completed

Description of Occurrence:

As a result of the Emergency Management S-102 Event Response Review, it was found that timely response was delayed while necessary re-entry plans were developed and approved. Evaluate/develop pre-planned and approved re-entry, investigative and habitability surveys for and with both IH and HPT involvement.

Extent of Condition:

Extent of condition applies to all tank farm emergency events.

Safety Significance:

A delay in re-entry could result in unnecessary exposure for personnel and environment.

Generic Implications

Remedial Corrective Action:

Abnormal Operating Procedure, AOP-011, "Response to Chemical and/or Radiological Events" has been revised to include turn back values for both radiological and chemical conditions for use in establishing event scene boundaries. (Verified by MR Kembel 4/19/2008).

Procedure, TFC-OPS-MAINT-C-01, "TANK FARM CONTRACTOR WORK CONTROL" has been revised to include a section on "Immediate Recovery Work" to ensure the a documented process and approach is in place for this work scope which includes involvement by both Safety and RadCon. (Verified complete by MR Kembel 4/19/2008).

Causal Analysis, Apparent Cause and/or Root Cause Analysis:

Task# CH2M-PER-2007-1496

The apparent cause of the concern was that there was no written approach for re-entry following an event. As documented under remedial corrective actions, 2 internal procedures have been revised to include written guidance for re-entry into an area following an event. AOP-011 to establish safe event scene boundaries through turn back values and the work control procedure to provide a documented process for immediate recovery work.

However, the key when evaluating this concern, is to rely on the Hanford Fire Department through the Incident Commander for immediate need to re-enter the event scene boundary in order to protect people and/or the environment. The HFD is authorized and trained to enter into unknown hazards and should be relied upon for the initial recovery actions to protect personnel and/or the environment. Subsequent recovery actions can be planned accordingly via the work control procedure.

Based upon the evaluation provided above in conjunction with the remedial corrective actions, no additional corrective actions are required.

Email feedback sent to originator on 4/19/2008.

Poster ^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 04/21/2008 1204

Concur

Concur

Poster ^CH2M PER ESRB (Parchen, Tracy L) - 04/22/2008 1104

Concur

This action was reviewed by the Executive Safety Review Board on April 21, 2008. The Board concurred with closure. tip 4/22/08

Poster ^CH2M PER Coordinator (Owen, Annette) - 04/22/2008 1104

CLOSED

All Corrective Actions closed, attachments verified, closure statement adequate.

TASK DUE DATE HISTORY

Modified	08/26/2007 1043 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	08/28/2007 1630
Modified	08/30/2007 0857 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	10/14/2007 1630
Modified	08/30/2007 0857 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	10/10/2007 1630
Modified	10/08/2007 0941 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	01/15/2008 1630
Modified	11/13/2007 0919 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	01/17/2008 1630

Task# CH2M-PER-2007-1496

Modified	01/10/2008 1242 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	02/08/2008 1630
Modified	01/16/2008 1050 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	02/29/2008 1630
Modified	02/27/2008 0847 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	04/29/2008 0000
Modified	04/21/2008 0747 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	05/22/2008 0000
Modified	04/21/2008 1202 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	05/30/2008 0000

SUB TASK HISTORY

Subtask#	CH2M-PER-2007-1496.1		
Subject	RES; Evaluate/develop pre-planned and approved re-entry plans		
Originator	Anderson, Thomas (Safety) J (inactive)		
	Routing List	<i>No Active Routing List</i>	
Subtask#	CH2M-PER-2007-1496.2		
Subject	CH2M-PER-2007-1496; RES; Evaluate/develop pre-planned and approved re-entry plans		
Originator	^CH2M PER CAs		
	Routing List	<i>No Active Routing List</i>	

-- end of report --

Appendix J

Documentation for Closeout of CH2M-PER-2007-1370

Problem Evaluation Request (PER)

CH2M-PER-2007-1370

In Process/Work

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1370	07/31/2007	08:52	Closure Operations

Location

S Farm

How Was Problem Discovered

Engineering Review or Evaluation

Description of Concern or Problem

Description/Conclusion:

During reverse rotation of the positive displacement (progressive cavity) pump installed in S-102, a release of waste occurred outside of the designed transfer system confinement boundary. Visual observation of the leak site and review of radiological data, indicate that the likely waste release point was from the dilution water supply hose. The hose ultimately leads to the suction of the pump. (The suction when the pump is running in forward, the discharge when running in reverse). The mechanism proposed is plugging of the pump intake area while the pump is running in reverse causing pressurization of the dilution line sufficient to overcome the hydraulic lift to the top of the tank and rupture the dilution hose.

Backflow of waste into the dilution line of the 241-S-102 progressive cavity pump was not considered in the safety basis. Dilution lines in the normal suction of a waste transfer pump that can be pressurized by running the pump in reverse (assuming a plugged pump suction) have not been evaluated relative to the hazard of concern for backflow of waste into a non-waste transfer system, and thus have not been considered to be physically connected to an active waste transfer pump not under administrative lock. This represents a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment, and thus is a potential inadequacy in the safety analysis (PISA).

Initially occurrence report EM-RP--CHG-TANKFARM-2007-0009 was issued on 7/27/07

Background:

The DSA identifies and evaluates the potential hazards from waste transfer leaks caused by the backflow of waste into non-waste transfer systems (e.g., service water, raw water, dilution systems). The control to prevent and/or mitigate the backflow of waste into non-waste transfer systems is to physically disconnect the non-waste transfer system from the waste transfer route. This can be accomplished with an air gap, a blind flange/process blank, an operable service water pressure detection system per LCO 3.1.2 ("Backflow Prevention Systems"), an operable backflow preventer per LCO 3.1.2, or two safety-significant or evaluated waste transfer system isolation valves, independently verified to be in the closed position. Up to the point where the non-waste transfer system is physically disconnected, the non-waste transfer system is required to be within waste transfer-associated structures with covers and operable waste transfer leak detection systems.

Evaluation

Backflow of waste into the dilution line of the 241-S-102 progressive cavity pump was not considered in the safety basis. Waste transfer leaks resulting from operating a transfer pump (centrifugal) in reverse (e.g., due to mis-wiring) was evaluated in RPP-15188, Hazard Evaluation Database Report, and concluded to have an accident frequency of beyond extremely unlikely (not credible) because a centrifugal pump can not pump in the reverse direction by rotating it backwards. Such a conclusion is not applicable to a progressive cavity pump that can pump in the reverse direction. Dilution lines in the normal suction of a waste transfer pump that can be pressurized by running the pump in reverse (assuming a plugged pump suction) have not been evaluated relative to the hazard of concern for backflow of waste into a non-waste transfer system, and thus have not been considered to be physically connected to an active waste transfer pump not under administrative lock. This represents a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment.

PISA Worksheet is attached

Requirement Not Satisfied

Source Document Number

Equipment Identification Number

System Identification

Waste Transfer

Immediate Actions Taken or Planned

This PER is to input the PISA conclusion into the PER system. The event and immediate actions are addressed in occurrence report EM-RP--CHG-TANKFARM-2007-0009 that was issued on 7/27/07

Recommended Corrective Actions

1. Complete the extent of condition review. This will be accomplished as part of satisfying the red arrow entry:

"Prior to removing Transfer Pump Administrative Lock Condition ensure a documented engineering review has been performed on the transfer system to validate that all potential paths that waste may enter from the pumping system have been reviewed to comply with OSA requirements."

2. Based on the results of the extent of condition, complete a USQD.

3. Based on the results of the USQD:

a. If USQD is negative - notify ORP of the results of the USQD and provide them with an evaluation of the safety of the situation (via Occurrence Report update) prior to removing any restrictions imposed when the PISA was declared - Operations

b. If USQD is positive:

- * Notify ORP of the positive USQD via occurrence report update - operations
- * Hold control decision meeting(s) to identify proposed safety basis controls - NS&L, engineering, operations, safety management programs
- * Draft SB amendment to address these configurations/situations (ORP may accept a JCO for a specific operation such as S-102 retrieval until the SB amendment is processed)
- * ORP review and approve SB amendment
- * Implement SB amendment
- * Close the positive USQ
- * Resume operations

Level of Participation

No

Originators Name	Originators ID	Originators Phone	Date Initiated
Grigsby, J Mike	[REDACTED]	(509) 372-1907	08/01/2007

SHIFT OPERATIONS REVIEW

Title

S-102 TSR Violation for Dilution System Design

How Discovered

self-ID result of event

Agency

Reportability

SC-2

SSC Operability

N/A

Operability Review

N/A

Comp Measures Req

Describe Actions Taken or Recommended

An occurrence report was issued for PISA and a red arrow is placed in shift manager's log to not to transfer until system reviewed by engineering. No other action required by COSM at this time.

SO Reviewer Name

Malhan, Rajiv

SO Reviewer ID

[REDACTED]

SO Reviewer Phone

(509) 372-2806

SO Review Date

08/01/2007

SCREENING

PER Significance Level

Significant

Independent Assessment Review

No

Occurrence Report Number

RP-CHG-TANKFARM-2007-0010

Externally Identified

No

Assigned Responsible Manager

Koch, Michael R

Facilities Rep / SSO

PER Screening Comments

cc: Mike Grigsby. nb

RESCREEN REQUEST (Decline RES) Posted By: Eberlein, Susan J 08/27/2007:

This event has been recategorized from a PISA to a TSR violation. It should be classified as a Significant PER and reassigned to Closure Operations Engineering (Mike Koch).

RE-SCREEN COMMENTS: Change to Significant, re-assign to Mike Koch (nb)

Causal Code

A3B2C05

Human Performance LTA

Rule Based Error

Situation incorrectly identified or represented resulting in wrong rule used

A4B1C08	Management Problem Management Methods LTA Corrective action responses to a known or repetitive problem was untimely
A5B2C07	Communications LTA Written Communications Content LTA Facts wrong/requirement not correct

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
-----------------------	--------------------------	-------------	------------------------

Failed Barrier	ORPS Code	Functional Area	Work Process
	violation of LCO, AC or SR	Engineering	DSA/Documented Safety Analysis

ISMS	PAAA	Consequence Code	
Identify and analyze hazards	830.201 Performance of Work - Safety Basis	Unreviewed Safety Questions (USQs)	

PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	08/02/2007

PAAA REVIEW

PAAA Screening	NTS Report Number	
Previously Reported	NTS-ORP-CHG-TANKFARM-2007-0002	

PAAA Screening Comments

TSR violation also applies to PAAA noncompliances as stated in 830.202 (b)(2), 202 (c)(1), and 205 (a)(1).

SENIOR MANAGEMENT REVIEW/CONCURRENCE**TF Operations Morning Leadership Call**

None. nb

No comments (nb 08/29/07)

Instructions for Responsible Manager

Perform RCA & Corrective Action Planning with End Point Assessment Criteria in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11, Causal Analysis and Corrective Action Planning. 'Complete' Causal tab on PER. Ensure PER is on CARB agenda.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Brown, Nancy L	[REDACTED]	(509) 373-0992	08/29/2007

CAUSE ANALYSIS**Description of Occurrence**

The 241 S 102 transfer pump was designed and operated without fully complying with Limiting Condition of Operation (LCO) 3.1.2, "Backflow Prevention Systems," as written.

Extent of Condition

The direct cause of this TSR violation was that Engineering personnel responsible for establishing the 241 S 102 system configuration did not recognize the water dilution line met the definition of physically connected. Because the use of the functional definition of physically connected is widespread, other waste transfer systems may have water dilution lines on the non pressurized side of the waste transfer route. If these lines have no mechanism to become pressurized, they do not represent a safety hazard. However, until the TSR definition is changed, these dilution lines require backflow prevention controls.

Safety Significance

The safety significance of this TSR violation was failure to implement a control that would have prevented a waste leak to the environment. The safety significance of the root cause is that controls may not be implemented where they are required if the literal definition of the TSR requirements does not align with the functional definition.

Generic Implications

The root cause of this event was personnel responsible for the design of the system applied a functional definition of the term physically connected rather than the literal definition from the TSRs. Generic implications include the application of a definition that does not match the TSR definition for other TSR requirements.

Remedial Corrective Action

Immediate Action Taken: Occurrence Report issued on 07/27/2007 by S. Waters.

Immediate Action Taken: Red Arrow entry in Shift Managers logbook stating "Prior to removing Transfer Pump Administrative Lock

Condition ensure a documented engineering review has been performed on the transfer system to validate that all potential paths that waste may enter from the pumping system have been reviewed to comply with DSA requirements. The completion of this engineering verification will be documented in the Shift Manager's Logbook for each system prior to operation." Completed 7/31/2007 by Shift Manager. Attached file, CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf, is electronic documentation of completed action.

Remedial Corrective Action Taken Addressing Direct Cause: Desk Instruction developed providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected per the existing TSR definition, and is not constrained by pressurization capability. Completed by G. Faust on 8/23/2007. Attached file, CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FAC SUP-D-02.2.doc is electronic documentation of completed action.

Remedial Corrective Action Taken Addressing Contributing Cause: Discontinue use of the Safety Basis Clarification Process. Completed by S. Eberlein on 6/14/2006. Attached file, CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf, is electronic documentation of completed action.

Causal Analysis, Apparent Cause and/or Root Cause Analysis

The following Cause Codes address the Root Cause problem:

A3B2C05 Human Performance LTA

Rule Based Error

Situation incorrectly identified or represented resulting in wrong rule used

The direct cause and root cause for the event were determined by developing a timeline of the activities leading to the event, and using event and causal factors charting (Attachment A of attached electronic file CH2M-PER-2007-1370 Root Cause Analysis.doc).

Additionally, Barrier Analysis was used to identify and examine the effectiveness of physical, administrative, and cultural barriers (Attachment B of attached electronic file CH2M-PER-2007-1370 Root Cause Analysis.doc).

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Faust, Gary L	10/15/2007	CH2M-PER-2007-1370.1

Action

DC-01-01: Develop desk instruction providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected per the existing TSR definition, and is not constrained by pressurization capability. Update desk instruction to match existing TSR definition of physically connected.

Objective Evidence: Desk Instruction TFC-ENG-FAC SUP-D-02.2

Actionee	Action Due Date	E-STARS Number
Goetz, Tom	10/31/2007	CH2M-PER-2007-1370.2

Action

CC-01-01: Review existing Safety Basis Clarifications to verify that any interpretations have been incorporated into safety basis amendments.

Objective Evidence: Intergrated Document Management System (IDMS) Retrievable Report.

Actionee	Action Due Date	E-STARS Number
Goetz, Tom	01/12/2008	CH2M-PER-2007-1370.3

Action

CA-01-01: Systematically review other TSR requirements to identify potential areas where the literal requirements do not align with the functional requirements as derived from the accident analysis. Include a review of a sample of Unreviewed Safety Question determinations in this evaluation. If such cases are found, take immediate actions to prevent unsafe or non-compliant operations.

Objective Evidence: IDMS Retrievable Report

Actionee	Action Due Date	E-STARS Number
Goetz, Tom	07/31/2008	CH2M-PER-2007-1370.4

Action

CA-01-02: If cases are found where the TSR definitions do not align with the functional requirements, develop a safety basis amendment to align the requirements with those derived from the accident analysis.

Objective Evidence: Submittal of Revisions to RPP-13033 (DSA) and HNF-SD-WM-TSR-006 (TSR).

Approved due date extension to 5/31/08. tlp 2/6/08

Approved due date extension to 6/30/08. tlp 4/25/08

Approved due date extension to 7/31/08 and revised Deliverable verbiaoe. tln 5/23/08

Actionee	Action Due Date	E-STARs Number
Goetz, Tom	07/31/2008	CH2M-PER-2007-1370.5

Action

CATPR-01: Update definition of physically connected in DSA and TSR. In addition to addressing the specific issue with the definition identified in this report, this amendment will integrate changes required to address other leak paths that may not be covered in the current definition of physically connected, and any changes to waste transfer leak controls identified in corrective action ENG-4 of the U.S. Department of Energy Type A Accident Investigation Report for the 241-S-102 Waste Spill.

Objective Evidence: Submittal of Revisions to RPP-13033 (DSA) and HNF-SD-WM-TSR-006 (TSR).

Approved due date extension to 5/31/08. tlp 2/6/08

Approved due date extension and Deliverable verbiage change. tlp 5/23/08

Actionee	Action Due Date	E-STARs Number
Goetz, Tom	10/31/2007	CH2M-PER-2007-1370.6

Action

CATPR-02: Develop training on lessons learned regarding mindset errors and the need to incorporate explicit TSR requirements into the design and design review processes.

Objective Evidence: Copy of training material

Actionee	Action Due Date	E-STARs Number
Raymond, Richard E	12/31/2007	CH2M-PER-2007-1370.7

Action

CATPR-03: Provide training to engineers, Operations Engineers, and Shift Managers.

Objective Evidence: Attendance records indicating 90% trained.

Actionee	Action Due Date	E-STARs Number
Raymond, Richard E	01/31/2008	CH2M-PER-2007-1370.8

Action

CATPR-04: Integrate training material into initial Qualification Card for Engineers.

Objective Evidence: Updated Qualification Card for Engineers (350850)

Actionee	Action Due Date	E-STARs Number
Koch, Michael R	05/31/2008	CH2M-PER-2007-1370.9

Action

MPA-01: Perform a Mid-Point effectiveness assessment.

MPA-01 Criteria Includes:

1. Review objective evidence from all completed corrective actions to ensure completeness and adequacy.
2. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected.
3. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review processes.
4. Perform a search of the PER database (September 1, 2007 to February 15, 2008) to identify any further instances of incorrect application of TSR definitions.

Objective Evidence: Completed Mid-Point Assessment that has been presented to and accepted by the Executive Safety Review Board.

Approved due date extension to 5/31/08. tlp 3/5/08

Actionee	Action Due Date	E-STARs Number
Koch, Michael R	09/15/2008	CH2M-PER-2007-1370.10

Action

EPA-01: Perform an End Point effectiveness assessment.

EPA criteria includes:

1. Review objective evidence from all corrective actions to ensure completeness and adequacy.
2. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected.
3. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review process.
4. Perform a review of selected designs produced (after implementation of CATPR-01) evaluating how physically connected is being used, to demonstrate CATPR-01 effectiveness.
5. Perform a search of the PER database (February 16, 2008 to August 31, 2008) to identify any further instances of incorrect

application of TSR definitions.

Objective Evidence: Completed End Point Assessment that has been presented to and accepted by the Executive Safety Review Board.

ATTACHMENTS

CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FAC SUP-D-02.2.doc

CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf

CH2M-PER-2007-1370 OR-TF-07-0010nr.htm

CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf

CH2M-PER-2007-1370 Root Cause Report.pdf

CH2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf

EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm

EM-RP--CHG-TANKFARM-2007-0010 Update.htm

Link to PER

OR-TF-07-0010nr.htm

PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc

AUDIT HISTORY

Change Date	Auditor	Comments
08/23/2007 12:53	Brown, Nancy L	'Reportability' was changed due to change in categorization to a TSR violation.
08/27/2007 15:02	Glaman, Linda R	'PAAA Screening' was changed. 'PER Screening Comments' was changed.
08/27/2007 15:14	Brown, Nancy L	'PER Screening Comments' was changed.
08/28/2007 08:46	Stenzel, Len C	'PAAA Screening' was changed. 'PAAA Screening Comments' was changed. 'PAAA' was changed. 'NTS Report' was changed.
08/28/2007 14:23	Brown, Nancy L	'PER Significance Level' was changed from PER with Resolution to Significant. 'Assigned Responsible Manager' was changed. 'PER Screening Comments' was changed. 'ORPS Code' was changed.
08/28/2007 14:37	Brown, Nancy L	'ORPS Code' was changed.
08/29/2007 08:34	Brown, Nancy L	'TF Operations Morning Leadership Call' was changed.
08/29/2007 08:39	Brown, Nancy L	'Instructions for Responsible Manager' was changed.
09/28/2007 10:19	Parchen, Tracy L	Corrective Actions Launched by Parchen, Tracy L
09/28/2007 10:25	Parchen, Tracy L	'PER Title' was changed.
02/06/2008 14:10	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
02/06/2008 14:10	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
02/06/2008 14:16	Parchen, Tracy L	Change to Cause Analysis

		screen/Corrective Action plan.
02/06/2008 14:16	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
03/05/2008 11:14	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
03/05/2008 11:14	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
04/25/2008 12:49	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
04/25/2008 12:50	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
05/23/2008 08:41	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
05/23/2008 08:42	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
05/23/2008 08:50	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
05/23/2008 08:51	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

-- End of Report --
07/16/2008 09:45 AM

Task# CH2M-PER-2007-1370

E-STARS[®] Report
Task Detail Report
07/16/2008 0946

TASK INFORMATION

Task#	CH2M-PER-2007-1370		
Subject	SIG; S-102 TSR Violation for Dilution System Design		
Parent Task#		Status	Open
Reference		Due	09/21/2008
Originator	^CH2M PER Coordinator	Priority	None
Originator Phone		Category	None
Origination Date	08/01/2007 1432	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Actions Routing Lis	Active
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> ● ^CH2M PER CAs - Assign - Awaiting Response - Due Date - 09/21/2008 0000 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	Perform RCA & Corrective Action Planning with End Point Assessment Criteria in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11, Causal Analysis and Corrective Action Planning. 'Complete' Causal tab on PER. Ensure PER is on CARB agenda.	
	<ul style="list-style-type: none"> ● Eberlein, Susan J - Assign - Decline (Withdrawn) - 08/27/2007 1508 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M PER Screening(Brown, Nancy L) - Assign - Completed - 08/28/2007 1441 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M MGR Review(Brown, Nancy L) - Review - Concur - 08/29/2007 0836 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● Koch, Michael R - Assign - Completed with comments - 09/28/2007 0959 <i>Instructions:</i>	
3	Review Initial PER	Inactive
	Review new PER	
	<ul style="list-style-type: none"> ● ^CH2M WFO SO(Malhan, Rajiv) - Review - Concur - 08/01/2007 1710 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M PER Screening(Owen, Annette) - Review - Concur - 08/02/2007 1429 <i>Instructions:</i>	
	<ul style="list-style-type: none"> ● ^CH2M MGR Review(Owen, Annette) - Review - Concur - 08/03/2007 0835 <i>Instructions:</i>	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FACSup-D-02.2.doc 2. CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf 3. CH2M-PER-2007-1370 OR-TF-07-0010nr.htm 4. CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf
--------------------	--

Task# CH2M-PER-2007-1370

5. CH2M-PER-2007-1370 Root Cause Report.pdf
6. CH2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf
7. EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm
8. EM-RP--CHG-TANKFARM-2007-0010 Update.htm
9. Link to PER
10. OR-TF-07-0010nr.htm
11. PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc

COLLABORATION

COMMENTS

Poster	Eberlein, Susan J - 08/27/2007 0208
	Decline
	This event has been recategorized from a PISA to a TSR violation. It should be classified as a Significant PER and reassigned to Closure Operations Engineering (Mike Koch).
Poster	Koch, Michael R (Jones, Terry) - 09/28/2007 0909
	Completed
	Causal Analysis completed. Corrective Actions identified. These actions close this task. MRK

TASK DUE DATE HISTORY

Modified	09/28/2007 1019 - ^CH2M PER Coordinator	New Due Date	09/21/2008 0000
Modified	08/29/2007 0837 - ^CH2M PER Coordinator (Brown, Nancy L)	New Due Date	09/29/2007 1630
Modified	08/03/2007 0835 - ^CH2M PER Coordinator	New Due Date	09/15/2007 1630
Modified	08/03/2007 0835 - ^CH2M PER Coordinator	New Due Date	09/15/2007 1630
Modified	08/01/2007 1432 - ^CH2M PER Coordinator	New Due Date	08/03/2007 1630

SUB TASK HISTORY

Subtask#	CH2M-PER-2007-1370.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.2		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.3		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.4		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	Corrective Action	
	Assignee	Eberlein, Susan J	Response

Task# CH2M-PER-2007-1370

	Assignee	Goetz, Tom	Response
	Assignee	Koch, Michael R	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response

Subtask# CH2M-PER-2007-1370.5
Subject CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design
Originator ^CH2M PER CAS

Routing List	grigsby		
	Assignee	Grigsby, J Mike	Response
Routing List	Route List		
	Assignee	Kripps, Larry J	Response
Routing List	Corrective Action		
	Assignee	Eberlein, Susan J	Response
	Assignee	Goetz, Tom	Response
	Assignee	Koch, Michael R	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response

Subtask# CH2M-PER-2007-1370.6
Subject CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design
Originator ^CH2M PER CAS
Routing List *No Active Routing List*

Subtask# CH2M-PER-2007-1370.7
Subject CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design
Originator ^CH2M PER CAS
Routing List *No Active Routing List*

Subtask# CH2M-PER-2007-1370.8
Subject CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design
Originator ^CH2M PER CAS
Routing List *No Active Routing List*

Subtask# CH2M-PER-2007-1370.8.1
Subject CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design
Originator Walker, Ken D
Routing List *No Active Routing List*

Subtask# CH2M-PER-2007-1370.9
Subject CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design
Originator ^CH2M PER CAS
Routing List *No Active Routing List*

Task# CH2M-PER-2007-1370

Subtask#	CH2M-PER-2007-1370.9.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	Koch, Michael R		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.10		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	Corrective Action	
	Assignee	Koch, Michael R	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response
Subtask#	CH2M-PER-2007-1370.10.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	Koch, Michael R		
	Routing List	Route List	
	Assignee	Sutey, Mike	Response

-- end of report --

Problem Evaluation Request (PER)

CH2M-PER-2007-1370

In Process/Work

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1370	07/31/2007	08:52	Closure Operations

Location

Farm

How Was Problem Discovered

Engineering Review or Evaluation

Description of Concern or Problem

Description/Conclusion:

During reverse rotation of the positive displacement (progressive cavity) pump installed in S-102, a release of waste occurred outside of the designed transfer system confinement boundary. Visual observation of the leak site and review of radiological data, indicate that the likely waste release point was from the dilution water supply hose. The hose ultimately leads to the suction of the pump. (The suction when the pump is running in forward, the discharge when running in reverse). The mechanism proposed is plugging of the pump intake area while the pump is running in reverse causing pressurization of the dilution line sufficient to overcome the hydraulic lift to the top of the tank and rupture the dilution hose.

Backflow of waste into the dilution line of the 241-S-102 progressive cavity pump was not considered in the safety basis. Dilution lines in the normal suction of a waste transfer pump that can be pressurized by running the pump in reverse (assuming a plugged pump suction) have not been evaluated relative to the hazard of concern for backflow of waste into a non-waste transfer system, and thus have not been considered to be physically connected to an active waste transfer pump not under administrative lock. This represents a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment, and thus is a potential inadequacy in the safety analysis (PISA).

Initially occurrence report EM-RP--CHG-TANKFARM-2007-0009 was issued on 7/27/07

Background:

The DSA identifies and evaluates the potential hazards from waste transfer leaks caused by the backflow of waste into non-waste transfer systems (e.g., service water, raw water, dilution systems). The control to prevent and/or mitigate the backflow of waste into non-waste transfer systems is to physically disconnect the non-waste transfer system from the waste transfer route. This can be accomplished with an air gap, a blind flange/process blank, an operable service water pressure detection system per LCO 3.1.2 ("Backflow Prevention Systems"), an operable backflow preventer per LCO 3.1.2, or two safety-significant or evaluated waste transfer system isolation valves, independently verified to be in the closed position. Up to the point where the non-waste transfer system is physically disconnected, the non-waste transfer system is required to be within waste transfer-associated structures with covers and operable waste transfer leak detection systems.

Evaluation

Backflow of waste into the dilution line of the 241-S-102 progressive cavity pump was not considered in the safety basis. Waste transfer leaks resulting from operating a transfer pump (centrifugal) in reverse (e.g., due to mis-wiring) was evaluated in RPP-15188, Hazard Evaluation Database Report, and concluded to have an accident frequency of beyond extremely unlikely (not credible) because a centrifugal pump can not pump in the reverse direction by rotating it backwards. Such a conclusion is not applicable to a progressive cavity pump that can pump in the reverse direction. Dilution lines in the normal suction of a waste transfer pump that can be pressurized by running the pump in reverse (assuming a plugged pump suction) have not been evaluated relative to the hazard of concern for backflow of waste into a non-waste transfer system, and thus have not been considered to be physically connected to an active waste transfer pump not under administrative lock. This represents a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment.

PISA Worksheet is attached

Requirement Not Satisfied

Source Document Number

Equipment Identification Number

System Identification

Waste Transfer

Immediate Actions Taken or Planned

This PER is to input the PISA conclusion into the PER system. The event and immediate actions are addressed in occurrence report EM-RP--CHG-TANKFARM-2007-0009 that was issued on 7/27/07

Recommended Corrective Actions

1. Complete the extent of condition review. This will be accomplished as part of satisfying the red arrow entry:

'Prior to removing Transfer Pump Administrative Lock Condition ensure a documented engineering review has been performed on the transfer system to validate that all potential paths that waste may enter from the pumping system have been reviewed to comply with JSA requirements.'

2. Based on the results of the extent of condition, complete a USQD.

3. Based on the results of the USQD:

a. If USQD is negative - notify ORP of the results of the USQD and provide them with an evaluation of the safety of the situation (via Occurrence Report update) prior to removing any restrictions imposed when the PISA was declared - Operations

b. If USQD is positive:

- * Notify ORP of the positive USQD via occurrence report update - operations
- * Hold control decision meeting(s) to identify proposed safety basis controls - NS&L, engineering, operations, safety management programs
- * Draft SB amendment to address these configurations/situations (ORP may accept a JCO for a specific operation such as S-102 retrieval until the SB amendment is processed)
- * ORP review and approve SB amendment
- * Implement SB amendment
- * Close the positive USQ
- * Resume operations

Level of Participation

No

Originators Name	Originators ID	Originators Phone	Date Initiated
Grigsby, J Mike	[REDACTED]	(509) 372-1907	08/01/2007

SHIFT OPERATIONS REVIEW

Title

S-102 TSR Violation for Dilution System Design

How Discovered	Agency
self-ID result of event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
SC-2	N/A	N/A	

Describe Actions Taken or Recommended

An occurrence report was issued for PISA and a red arrow is placed in shift manager's log to not to transfer until system reviewed by engineering. No other action required by COSM at this time.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Malhan, Rajiv	[REDACTED]	(509) 372-2806	08/01/2007

SCREENING

PER Significance Level
Significant

Independent Assessment Review	Occurrence Report Number	Externally Identified
No	RP-CHG-TANKFARM-2007-0010	No

Assigned Responsible Manager	Facilities Rep / SSO
Koch, Michael R	

PER Screening Comments

cc: Mike Grigsby. nb

RESCREEN REQUEST (Decline RES) Posted By: Eberlein, Susan J 08/27/2007:

This event has been recategorized from a PISA to a TSR violation. It should be classified as a Significant PER and reassigned to Closure Operations Engineering (Mike Koch).

RE-SCREEN COMMENTS: Change to Significant, re-assign to Mike Koch (nb)

Causal Code

A3B2C05	Human Performance LTA Rule Based Error Situation incorrectly identified or represented resulting in wrong rule used
---------	---

.4B1C08	Management Problem Management Methods LTA Corrective action responses to a known or repetitive problem was untimely		
.5B2C07	Communications LTA Written Communications Content LTA Facts wrong/requirement not correct		
IGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	violation of LCO, AC or SR	Engineering	DSA/Documented Safety Analysis
SMS	PAAA	Consequence Code	
Identify and analyze hazards	830.201 Performance of Work - Safety Basis	Unreviewed Safety Questions (USQs)	
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Dwen, Annette	H0054042	(509) 372-0533	08/02/2007

PAAA REVIEW

PAAA Screening	NTS Report Number	
Previously Reported	NTS-ORP-CHG-TANKFARM-2007-0002	

PAAA Screening Comments

TSR violation also applies to PAAA noncompliances as stated in 830.202 (b)(2), 202 (c)(1), and 205 (a)(1).

SENIOR MANAGEMENT REVIEW/CONCURRENCE**TFC Operations Morning Leadership Call**

None. nb

No comments (nb 08/29/07)

Instructions for Responsible Manager

Perform RCA & Corrective Action Planning with End Point Assessment Criteria in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11, Causal Analysis and Corrective Action Planning. 'Complete' Causal tab on PER. Ensure PER is on CARB agenda.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Brown, Nancy L	[REDACTED]	(509) 373-0992	08/29/2007

CAUSE ANALYSIS**Description of Occurrence**

The 241 S 102 transfer pump was designed and operated without fully complying with Limiting Condition of Operation (LCO) 3.1.2, "Backflow Prevention Systems," as written.

Extent of Condition

The direct cause of this TSR violation was that Engineering personnel responsible for establishing the 241 S 102 system configuration did not recognize the water dilution line met the definition of physically connected. Because the use of the functional definition of physically connected is widespread, other waste transfer systems may have water dilution lines on the non pressurized side of the waste transfer route. If these lines have no mechanism to become pressurized, they do not represent a safety hazard. However, until the TSR definition is changed, these dilution lines require backflow prevention controls.

Safety Significance

The safety significance of this TSR violation was failure to implement a control that would have prevented a waste leak to the environment. The safety significance of the root cause is that controls may not be implemented where they are required if the literal definition of the TSR requirements does not align with the functional definition.

Generic Implications

The root cause of this event was personnel responsible for the design of the system applied a functional definition of the term physically connected rather than the literal definition from the TSRs. Generic implications include the application of a definition that does not match the TSR definition for other TSR requirements.

Remedial Corrective Action

Immediate Action Taken: Occurrence Report issued on 07/27/2007 by S. Waters.

Immediate Action Taken: Red Arrow entry in Shift Managers logbook stating "Prior to removing Transfer Pump Administrative Lock

Condition ensure a documented engineering review has been performed on the transfer system to validate that all potential paths that waste may enter from the pumping system have been reviewed to comply with DSA requirements. The completion of this engineering verification will be documented in the Shift Manager's Logbook for each system prior to operation." Completed 7/31/2007 by Shift Manager. Attached file, CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf, is electronic documentation of completed action.

Remedial Corrective Action Taken Addressing Direct Cause: Desk Instruction developed providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected per the existing TSR definition, and is not constrained by pressurization capability. Completed by G. Faust on 8/23/2007. Attached file, CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FACSUP-D-02.2.doc is electronic documentation of completed action.

Remedial Corrective Action Taken Addressing Contributing Cause: Discontinue use of the Safety Basis Clarification Process. Completed by S. Eberlein on 6/14/2006. Attached file, CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf, is electronic documentation of completed action.

Causal Analysis, Apparent Cause and/or Root Cause Analysis

The following Cause Codes address the Root Cause problem:

3B2C05 Human Performance LTA

Rule Based Error

Situation incorrectly identified or represented resulting in wrong rule used

The direct cause and root cause for the event were determined by developing a timeline of the activities leading to the event, and using event and causal factors charting (Attachment A of attached electronic file CH2M-PER-2007-1370 Root Cause Analysis.doc).

Additionally, Barrier Analysis was used to identify and examine the effectiveness of physical, administrative, and cultural barriers (Attachment B of attached electronic file CH2M-PER-2007-1370 Root Cause Analysis.doc).

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Faust, Gary L	10/15/2007	CH2M-PER-2007-1370.1

Action

DC-01-01: Develop desk instruction providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected per the existing TSR definition, and is not constrained by pressurization capability. Update desk instruction to match existing TSR definition of physically connected.

Objective Evidence: Desk Instruction TFC-ENG-FACSUP-D-02.2

Actionee	Action Due Date	E-STARS Number
Goetz, Tom	10/31/2007	CH2M-PER-2007-1370.2

Action

CC-01-01: Review existing Safety Basis Clarifications to verify that any interpretations have been incorporated into safety basis amendments.

Objective Evidence: Intergrated Document Management System (IDMS) Retrievable Report.

Actionee	Action Due Date	E-STARS Number
Goetz, Tom	01/12/2008	CH2M-PER-2007-1370.3

Action

CA-01-01: Systematically review other TSR requirements to identify potential areas where the literal requirements do not align with the functional requirements as derived from the accident analysis. Include a review of a sample of Unreviewed Safety Question determinations in this evaluation. If such cases are found, take immediate actions to prevent unsafe or non-compliant operations.

Objective Evidence: IDMS Retrievable Report

Actionee	Action Due Date	E-STARS Number
Goetz, Tom	07/31/2008	CH2M-PER-2007-1370.4

Action

CA-01-02: If cases are found where the TSR definitions do not align with the functional requirements, develop a safety basis amendment to align the requirements with those derived from the accident analysis.

Objective Evidence: Submittal of Revisions to RPP-13033 (DSA) and HNF-SD-WM-TSR-006 (TSR).

Approved due date extension to 5/31/08. tlp 2/6/08

Approved due date extension to 6/30/08. tlp 4/25/08

Approved due date extension to 7/31/08 and revised Deliverable verbiage. tlp 5/23/08

Actionee	Action Due Date	E-STARS Number
Soetz, Tom	07/31/2008	CH2M-PER-2007-1370.5

Action

CATPR-01: Update definition of physically connected in DSA and TSR. In addition to addressing the specific issue with the definition identified in this report, this amendment will integrate changes required to address other leak paths that may not be covered in the current definition of physically connected, and any changes to waste transfer leak controls identified in corrective action ENG-4 of the U.S. Department of Energy Type A Accident Investigation Report for the 241-S-102 Waste Spill.

Objective Evidence: Submittal of Revisions to RPP-13033 (DSA) and HNF-SD-WM-TSR-006 (TSR).

Approved due date extension to 5/31/08. ttp 2/6/08

Approved due date extension and Deliverable verbiage change. ttp 5/23/08

Actionee	Action Due Date	E-STARS Number
Soetz, Tom	10/31/2007	CH2M-PER-2007-1370.6

Action

CATPR-02: Develop training on lessons learned regarding mindset errors and the need to incorporate explicit TSR requirements into the design and design review processes.

Objective Evidence: Copy of training material

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	12/31/2007	CH2M-PER-2007-1370.7

Action

CATPR-03: Provide training to engineers, Operations Engineers, and Shift Managers.

Objective Evidence: Attendance records indicating 90% trained.

Actionee	Action Due Date	E-STARS Number
Raymond, Richard E	01/31/2008	CH2M-PER-2007-1370.8

Action

CATPR-04: Integrate training material into initial Qualification Card for Engineers.

Objective Evidence: Updated Qualification Card for Engineers (350850)

Actionee	Action Due Date	E-STARS Number
Koch, Michael R	05/31/2008	CH2M-PER-2007-1370.9

Action

MPA-01: Perform a Mid-Point effectiveness assessment.

MPA-01 Criteria Includes:

1. Review objective evidence from all completed corrective actions to ensure completeness and adequacy.
2. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected.
3. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review processes.
4. Perform a search of the PER database (September 1, 2007 to February 15, 2008) to identify any further instances of incorrect application of TSR definitions.

Objective Evidence: Completed Mid-Point Assessment that has been presented to and accepted by the Executive Safety Review Board.

Approved due date extension to 5/31/08. ttp 3/5/08

Actionee	Action Due Date	E-STARS Number
Koch, Michael R	09/15/2008	CH2M-PER-2007-1370.10

Action

EPA-01: Perform an End Point effectiveness assessment.

EPA criteria includes:

1. Review objective evidence from all corrective actions to ensure completeness and adequacy.
2. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected.
3. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review process.
4. Perform a review of selected designs produced (after implementation of CATPR-01) evaluating how physically connected is being used, to demonstrate CATPR-01 effectiveness.
5. Perform a search of the PER database (February 16, 2008 to August 31, 2008) to identify any further instances of incorrect

Application of TSR definitions.

Objective Evidence: Completed End Point Assessment that has been presented to and accepted by the Executive Safety Review Board.

ATTACHMENTS

H2M-PER-2007-1370 Desk Instruction TFC-ENG-FAC SUP-D-02.2.doc
 H2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf
 H2M-PER-2007-1370 OR-TF-07-0010nr.htm
 H2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf
 H2M-PER-2007-1370 Root Cause Report.pdf
 H2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf
 EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm
 EM-RP--CHG-TANKFARM-2007-0010 Update.htm
 Link to PER
 OR-TF-07-0010nr.htm
 PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc

AUDIT HISTORY

Change Date	Auditor	Comments
08/23/2007 12:53	Brown, Nancy L	'Reportability' was changed due to change in categorization to a TSR violation.
08/27/2007 15:02	Glaman, Linda R	'PAAA Screening' was changed. 'PER Screening Comments' was changed.
08/27/2007 15:14	Brown, Nancy L	'PER Screening Comments' was changed.
08/28/2007 08:46	Stenzel, Len C	'PAAA Screening' was changed. 'PAAA Screening Comments' was changed. 'PAAA' was changed. 'NTS Report' was changed.
08/28/2007 14:23	Brown, Nancy L	'PER Significance Level' was changed from PER with Resolution to Significant. 'Assigned Responsible Manager' was changed. 'PER Screening Comments' was changed. 'ORPS Code' was changed.
08/28/2007 14:37	Brown, Nancy L	'ORPS Code' was changed.
08/29/2007 08:34	Brown, Nancy L	'TF Operations Morning Leadership Call' was changed.
08/29/2007 08:39	Brown, Nancy L	'Instructions for Responsible Manager' was changed.
09/28/2007 10:19	Parchen, Tracy L	Corrective Actions Launched by Parchen, Tracy L
09/28/2007 10:25	Parchen, Tracy L	'PER Title' was changed.
02/06/2008 14:10	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
02/06/2008 14:10	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
02/06/2008 14:16	Parchen, Tracy L	Change to Cause Analysis

		screen/Corrective Action plan.
2/06/2008 14:16	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
3/05/2008 11:14	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
3/05/2008 11:14	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
4/25/2008 12:49	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
4/25/2008 12:50	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
05/23/2008 08:41	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
05/23/2008 08:42	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
05/23/2008 08:50	Parchen, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
05/23/2008 08:51	Parchen, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

-- End of Report --
07/16/2008 09:45 AM

Task# CH2M-PER-2007-1370

E-STARS[®] Report
 Task Detail Report
 07/16/2008 0946

TASK INFORMATION

Task#	CH2M-PER-2007-1370		
Subject	SIG; S-102 TSR Violation for Dilution System Design		
Parent Task#		Status	Open
Reference		Due	09/21/2008
Originator	^CH2M PER Coordinator	Priority	None
Originator Phone		Category	None
Origination Date	08/01/2007 1432	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Actions Routing Lis	Active
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs - Assign - Awaiting Response - Due Date - 09/21/2008 0000 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	Perform RCA & Corrective Action Planning with End Point Assessment Criteria in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11,Causal Analysis and Corrective Action Planning. 'Complete' Causal tab on PER. Ensure PER is on CARB agenda.	
	<ul style="list-style-type: none"> • Eberlein, Susan J - Assign - Decline (Withdrawn) - 08/27/2007 1508 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • ^CH2M PER Screening(Brown, Nancy L) - Assign - Completed - 08/28/2007 1441 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • ^CH2M MGR Review(Brown, Nancy L) - Review - Concur - 08/29/2007 0836 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • Koch, Michael R - Assign - Completed with comments - 09/28/2007 0959 <i>Instructions:</i>	
3	Review Initial PER	Inactive
	Review new PER	
	<ul style="list-style-type: none"> • ^CH2M WFO SO(Malhan, Rajiv) - Review - Concur - 08/01/2007 1710 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • ^CH2M PER Screening(Owen, Annette) - Review - Concur - 08/02/2007 1429 <i>Instructions:</i>	
	<ul style="list-style-type: none"> • ^CH2M MGR Review(Owen, Annette) - Review - Concur - 08/03/2007 0835 <i>Instructions:</i>	

ATTACHMENTS

- Attachments**
1. CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FACSup-D-02.2.doc
 2. CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf
 3. CH2M-PER-2007-1370 OR-TF-07-0010nr.htm
 4. CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf

Task# CH2M-PER-2007-1370

5. CH2M-PER-2007-1370 Root Cause Report.pdf
6. CH2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf
7. EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm
8. EM-RP--CHG-TANKFARM-2007-0010 Update.htm
9. Link to PER
10. OR-TF-07-0010nr.htm
11. PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc

COLLABORATION

COMMENTS

Poster	Eberlein, Susan J - 08/27/2007 0208
	Decline
	This event has been recategorized from a PISA to a TSR violation. It should be classified as a Significant PER and reassigned to Closure Operations Engineering (Mike Koch).
Poster	Koch, Michael R (Jones, Terry) - 09/28/2007 0909
	Completed
	Causal Analysis completed. Corrective Actions identified. These actions close this task. MRK

TASK DUE DATE HISTORY

Modified	09/28/2007 1019 - ^CH2M PER Coordinator	New Due Date	09/21/2008 0000
Modified	08/29/2007 0837 - ^CH2M PER Coordinator (Brown, Nancy L)	New Due Date	09/29/2007 1630
Modified	08/03/2007 0835 - ^CH2M PER Coordinator	New Due Date	09/15/2007 1630
Modified	08/03/2007 0835 - ^CH2M PER Coordinator	New Due Date	09/15/2007 1630
Modified	08/01/2007 1432 - ^CH2M PER Coordinator	New Due Date	08/03/2007 1630

SUB TASK HISTORY

Subtask#	CH2M-PER-2007-1370.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAS		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.2		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAS		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.3		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAS		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.4		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAS		
	Routing List	Corrective Action	
	Assignee	Eberlein, Susan J	Response

Task# CH2M-PER-2007-1370

	Assignee	Goetz, Tom	Response
	Assignee	Koch, Michael R	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response
Subtask#	CH2M-PER-2007-1370.5		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	grigsby	
	Assignee	Grigsby, J Mike	Response
	Routing List	Route List	
	Assignee	Kripps, Larry J	Response
	Routing List	Corrective Action	
	Assignee	Eberlein, Susan J	Response
	Assignee	Goetz, Tom	Response
	Assignee	Koch, Michael R	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response
Subtask#	CH2M-PER-2007-1370.6		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.7		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.8		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.8.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	Walker, Ken D		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.9		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	

Task# CH2M-PER-2007-1370

Subtask#	CH2M-PER-2007-1370.9.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	Koch, Michael R		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1370.10		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	^CH2M PER CAS		
	Routing List	Corrective Action	
	Assignee	Koch, Michael R	Response
	Assignee	^CH2M Independent Assessment Review	Response
	Assignee	^CH2M PER ESRB	Response
Subtask#	CH2M-PER-2007-1370.10.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	Koch, Michael R		
	Routing List	Route List	
	Assignee	Sutey, Mike	Response

-- end of report --

Task# CH2M-PER-2007-1370.1

E-STARS[®] Report
 Task Detail Report
 06/18/2008 0943

TASK INFORMATION

Task#	CH2M-PER-2007-1370.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Parent Task#	CH2M-PER-2007-1370	Status	CLOSED 10/18/2007
Reference	CH2M-PER-2007-1370	Due	10/21/2007
Originator	^CH2M PER CAS	Priority	None
Originator Phone		Category	None
Origination Date	09/28/2007 1019	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
---	-------------------	----------

DC-01-01: Develop desk instruction providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected per the existing TSR definition, and is not constrained by pressurization capability. Update desk instruction to match existing TSR definition of physically connected.

Objective Evidence: Desk Instruction TFC-ENG-FACSUP-D-02.2 RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.

- Faust, Gary L - Assign - Completed with comments - 10/12/2007 1507
Instructions:
- Koch, Michael R - Review - Concur with comments - 10/18/2007 1007
Instructions:

ATTACHMENTS

- Attachments**
1. CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FACSUP-D-02.2.doc
 2. CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf
 3. CH2M-PER-2007-1370 OR-TF-07-0010nr.htm
 4. CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf
 5. CH2M-PER-2007-1370 Root Cause Report.pdf
 6. CH2M-PER-2007-1370.1 Desk Instruction TFC-ENG-FACSUP-D-02.2 Rev. B.doc
 7. CH2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf
 8. EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm
 9. EM-RP--CHG-TANKFARM-2007-0010 Update.htm
 10. Link to PER
 11. OR-TF-07-0010nr.htm
 12. PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc

COLLABORATION

COMMENTS

Poster Faust, Gary L - 10/12/2007 0310

Completed

Task# CH2M-PER-2007-1370.1

DC-01-01 required the development of a desk instruction providing detailed guidance to engineers on the future evaluation of all equipment that could be considered physically connected to a waste transfer route. The evaluation includes consideration of equipment that could be considered physically connected per the existing TSR definition, and is not constrained by pressurization capability. Update desk instruction to match existing TSR definition of physically connected.

TFC-ENG-FACSUP-D-02.2, Rev. B (attached) has been revised and issued to address the corrective action. This completes the corrective action for this task, and this task can be closed.

Poster Koch, Michael R - 10/18/2007 1010

Concur

I agree with the evidence supplied by the Engineering Standards organization. The Desk Instruction was issued, and subsequently revised to specifically address this PER. MRK 10/18/07

Poster ^CH2M PER CAs (Parchen, Tracy L) - 10/18/2007 1210

CLOSED

Reviewed and closed. tip 10/18/07

TASK DUE DATE HISTORY

Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	10/21/2007 0000
Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	09/21/2008 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# CH2M-PER-2007-1370.6

E-STARS[®] Report
Task Detail Report
06/18/2008 0945

TASK INFORMATION

Task#	CH2M-PER-2007-1370.6		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Parent Task#	CH2M-PER-2007-1370	Status	CLOSED 11/08/2007
Reference	CH2M-PER-2007-1370	Due	11/06/2007
Originator	^CH2M PER CAS	Priority	None
Originator Phone		Category	None
Origination Date	09/28/2007 1019	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
<p>CATPR-02: Develop training on lessons learned regarding mindset errors and the need to incorporate explicit TSR requirements into the design and design review processes.</p> <p>Objective Evidence: Copy of training material</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p>		
<ul style="list-style-type: none"> ● Eberlein, Susan J - Assign - Completed with comments - 10/31/2007 1233 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● Koch, Michael R - Review - Concur with comments - 11/01/2007 0825 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/05/2007 0730 <i>Instructions:</i> 		
<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/08/2007 1304 <i>Instructions:</i> 		

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. 7G500-SJE-07-010.pdf 2. CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FACSup-D-02.2.doc 3. CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf 4. CH2M-PER-2007-1370 OR-TF-07-0010nr.htm 5. CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf 6. CH2M-PER-2007-1370 Root Cause Report.pdf 7. CH2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf 8. CH2M-PER-2007-1370.6 TSR Training Material.pdf 9. EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm 10. EM-RP--CHG-TANKFARM-2007-0010 Update.htm 11. Link to PER 12. OR-TF-07-0010nr.htm 13. PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc 14. TSR training doc final.doc 15. TSR training slides final.ppt
--------------------	---

Task# CH2M-PER-2007-1370.6

COLLABORATION			
COMMENTS			
Poster	Eberlein, Susan J (Williams, Char) - 10/31/2007 1210		
	Completed		
	Developed training on lessons learned regarding mindset errors and the need to incorporate explicit TSR requirements into the design and design review processes. Training materials attached as closure evidence. Close ESTARs action/PER.		
Poster	Koch, Michael R - 11/01/2007 0811		
	Concur		
	Reviewed the training slides and background material. Provided comments to author. Comments were incorporated. Action is complete.		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/05/2007 0711		
	Concur		
	Concur		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 11/08/2007 0111		
	Concur		
	This action was reviewed by the Executive Safety Review Board on November 8, 2007. The Board concurred with closure. tip 11/8/07		
Poster	^CH2M PER CAs (Parchen, Tracy L) - 11/08/2007 0111		
	CLOSED		
	Reviewed and closed. tip 11/8/07		
TASK DUE DATE HISTORY			
Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	11/06/2007 0000
Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	09/21/2008 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# CH2M-PER-2007-1370.9

E-STARs[®] Report
Task Detail Report
06/18/2008 1002

TASK INFORMATION

Task#	CH2M-PER-2007-1370.9		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Parent Task#	CH2M-PER-2007-1370	Status	CLOSED 05/29/2008
Reference	CH2M-PER-2007-1370	Due	05/31/2008
Originator	^CH2M PER CAs	Priority	None
Originator Phone		Category	None
Origination Date	09/28/2007 1019	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Action	Inactive
---	-------------------	----------

MPA-01: Perform a Mid-Point effectiveness assessment.

MPA-01 Criteria Includes:

1. Review objective evidence from all completed corrective actions to ensure completeness and adequacy.
2. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected.
3. Conduct Interviews with individuals (project and system engineers) after implementation of CATPR-03 to determine their understanding of expectations regarding integration of explicit TSR requirements into design and design review processes.
4. Perform a search of the PER database (September 1, 2007 to February 15, 2008) to identify any further instances of incorrect application of TSR definitions.

Objective Evidence: Completed Mid-Point Assessment that has been presented to and accepted by the Executive Safety Review Board.

RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARs and close the E-STARs subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.

Approved due date extension to 5/31/08. tip 3/5/08

- Koch, Michael R - Assign - Completed with comments - 05/23/2008 1049
Instructions:

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 05/27/2008 0935
Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 05/29/2008 1604
Instructions:

ATTACHMENTS

- | | |
|--------------------|---|
| Attachments | <ol style="list-style-type: none"> 1. CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FACSUP-D-02.2.doc 2. CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf 3. CH2M-PER-2007-1370 OR-TF-07-0010nr.htm |
|--------------------|---|

Task# CH2M-PER-2007-1370.9

4. CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf
5. CH2M-PER-2007-1370 Root Cause Report.pdf
6. CH2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf
7. CH2M-PER-2007-1370.9.1 MPA and ESRB Minutes.pdf
8. EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm
9. EM-RP--CHG-TANKFARM-2007-0010 Update.htm
10. Link to PER
11. OR-TF-07-0010nr.htm
12. PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc

COLLABORATION

COMMENTS

Poster	^CH2M PER CAs (Parchen, Tracy L) - 03/05/2008 1103		
	Approved due date extension to 5/31/08. ttp 3/5/08		
	Extension Justification: S-102 Mid Point Assessment FY2008-CH2M-I-0003 will serve as objective evidence for Correction Action MPA-01 of PER 2007-1370. FY2008-CH2M-I-0003 will be presented to the ESRB in April 2008.		
	The extension was approved by K. Daniels, SH&QA Vice President, on 3/5/08. ttp 3/5/08		
Poster	Koch, Michael R (Jones, Terry) - 05/23/2008 1005		
	Completed		
	Mid-point assessment completed. Attached file, CH2M-PER-2007-1370.9.1 MPA and ESRB Minutes.pdf, is electronic documentation of completed action. This action completes this task. tej for MRK		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 05/27/2008 0905		
	Concur		
	Concur		
Poster	^CH2M PER ESRB (Higgins, Richard (Rich)) - 05/29/2008 0305		
	<p>Mid Point Assessment criteria 2 states "Conduct interviews with individuals (project and system engineers) after implementation of CATPR-01 to determine their level of understanding of physically connected." This criteria was satisfied during the interviews conducted with personnel as documented in the Final Report of the Independent Assessment of the S-102 CAP (FY2008-CH2M-I-0003), pages 32 and 33. Although the discussion in the assessment report does not specifically restate this criteria, the engineers demonstrated a very good understanding of the term "physically connected". The Lessons Learned Training for Engineers and Operating Engineers on the Importance of Literal Interpretations of TSRs (Training Activity 07038) includes a clear discussion of this issue on pages 9 and 10.</p> <p>This is sufficient to demonstrate that this criteria was satisfied.</p> <p>Rich Higgins</p>		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 05/29/2008 0405		
	Concur		
	This action was reviewed by the Executive Safety Review Board on May 29, 2008. The Board concurred with closure. ttp 5/29/08		

TASK DUE DATE HISTORY

Modified	03/05/2008 1109 - ^CH2M PER CAs (Parchen, Tracy L)	New Due Date	05/31/2008 0000
Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	04/02/2008 0000
Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	09/21/2008 0000

SUB TASK HISTORY

Task# CH2M-PER-2007-1370.9

Subtask#	CH2M-PER-2007-1370.9.1
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design
Originator	Koch, Michael R
Routing List	<i>No Active Routing List</i>

-- end of report --

Task# CH2M-PER-2007-1370.10

E-STARS^R Report
 Task Detail Report
 09/18/2008 0215

TASK INFORMATION

Task#	CH2M-PER-2007-1370.10		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Parent Task#	CH2M-PER-2007-1370	Status	CLOSED 09/18/2008
Reference	CH2M-PER-2007-1370	Due	09/30/2008
Originator	^CH2M PER CAs	Priority	None
Originator Phone		Category	None
Origination Date	09/28/2007 1019	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
<p>EPA-01: Perform an End Point effectiveness assessment.</p> <p>Revise the End Point Assessment of CH2M-PER-2007-1370 (Task 1370.10) to read,</p> <ol style="list-style-type: none"> 1. Review objective evidence from completed corrective actions to ensure completeness and accuracy. 2. Conduct interviews with individuals (project and system engineers) to determine their level of understanding of "physically connected" as stated in the DSA amendment submitted to ORP for approval on July 23, 2008. 3. Conduct interviews with individuals (project and system engineers) after training under CATPR-03 to the changes made to work processes impacted by the DSA amendment to determine their understanding of expectations regarding explicit TSR requirements into design and design review processes. 4. Perform a review of selected designs produced using the processes described in the draft DSA amendment to implement CATPR-01. 5. Perform a search of the PER database (February 16, 2008 to July 22, 2008) to identify any further instance of incorrect application of TSR violations. <p>Deliverable: Independent Assessment Report</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation</p>		

Task# CH2M-PER-2007-1370.10

Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.

The EPA Criteria, Deliverable, and Actionee was approved for change on 9/4/08. Signed change form on file. tlp 9/8/08

- Koch, Michael R - Assign - Withdrawn - 09/08/2008 0911

Instructions:

- ^CH2M Independent Assessment Review - Review - Withdrawn - 09/08/2008 0911

Instructions:

- Maciuca, Tino - Assign - Completed with comments - 09/17/2008 1230

Instructions:

- ^CH2M Independent Assessment Review(Maciuca, Tino) - Review - Concur - 09/18/2008 1255

Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur - 09/18/2008 1346

Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1370 Desk Instruction TFC-ENG-FAC SUP-D-02.2.doc
2. CH2M-PER-2007-1370 Letter CH2M-0601059 R1.pdf
3. CH2M-PER-2007-1370 OR-TF-07-0010nr.htm
4. CH2M-PER-2007-1370 Red Arrow Entry in Shift Managers Logbook.pdf
5. CH2M-PER-2007-1370 Root Cause Report.pdf
6. CH2M-PER-2007-1370.3-7G500-JMG-07-011 REISSUE (2).pdf
7. EM-RP--CHG-TANKFARM-2007-0010 Mgr Change.htm
8. EM-RP--CHG-TANKFARM-2007-0010 Update.htm
9. FY2008-CH2M-I-0007 - CAP Implementation for Tank 241-S-102 Waste Spill EPA - ocr.pdf
10. Link to PER
11. OR-TF-07-0010nr.htm
12. PISA Worksheet - S-102 Spill During Reverse Pump Operation (3).doc

COLLABORATION

COMMENTS

Poster

Maciuca, Tino - 09/17/2008 1209

Completed

S-102 CAP EPA was attached.

Tino Maciuca

Poster

^CH2M PER CAs (Parchen, Tracy L) - 09/18/2008 0109

CLOSED

Task# CH2M-PER-2007-1370.10			
Reviewed and closed. tlp 9/18/08			
TASK DUE DATE HISTORY			
Modified	09/08/2008 0911 - ^CH2M PER CAs (Parchen, Tracy L)	New Due Date	09/30/2008 0000
Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	09/17/2008 0000
Modified	09/28/2007 1019 - ^CH2M PER CAs	New Due Date	09/21/2008 0000
SUB TASK HISTORY			
Subtask#	CH2M-PER-2007-1370.10.1		
Subject	CH2M-PER-2007-1370; SIG; S-102 TSR Violation for Dilution System Design		
Originator	Koch, Michael R		
	Routing List	<i>No Active Routing List</i>	
-- end of report --			

Appendix K

Documentation for Closeout of CH2M-PER-2007-1596

PER

RPP-37951, Rev. 0

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1596

Closed 02/04/2008 09:40

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1596	09/16/2007	12:00	CO S Farm
Location			
S Farm			
How Was Problem Discovered			
Independent Assessment			
Description of Concern or Problem			
<p>The S-102 Event Investigation Team determined that the work to manually rotate the S-102 retrieval pump on July 27, 2007 had not been released by the Shift Manager, and was not performed in accordance with CH2M HILL procedure TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control. The work was inappropriately classified as minor work as it did not meet the definition for minor work outlined in the work control procedure. Specifically, the work was a multi-craft job requiring the use of special tools, and specific training. Additionally, the procedure requires the Field Work Supervisor and workers to use a Worksite Hazards Analysis to walk down the work to identify the hazards and appropriate controls. Instead, the workers relied upon the General Hazards Analysis, which, among other hazards, does not address electrical hazards. Additionally, the work control procedure requires that the activities performed be recorded on the work record. However, the activities that were performed to manually rotate the pump were not specifically documented in the work record. Furthermore, the work was documented in the Instrument Technician Minor Standing Work Order, rather than the Pipefitter Minor Standing Work Order.</p>			
Requirement Not Satisfied		Source Document Number	
TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control.			
Equipment Identification Number		System Identification	
Immediate Actions Taken or Planned			
None			
Recommended Corrective Actions			
<p>Implement compensatory measures to appropriately control minor work until such time that compliance with the procedure can be demonstrated. Brief and/or train maintenance personnel on the requirements and expectations for the conduct of minor work. Perform MOPs and Specialty Assessments as required to confirm expectations are being met.</p>			
Level of Participation			
I would like to review the the corrective actions at closure to ensure they were effective			
Originators Name	Originators ID	Originators Phone	Date Initiated
Higgins, Richard (Rich)		(509) 373-5305	09/16/2007
SHIFT OPERATIONS REVIEW			
Title			
S-102 lessons learned from spill event - Work release			
How Discovered		Agency	
self-ID result of event			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe Actions Taken or Recommended			
Corrective Action to be assigned by Closure Operation management. No other action required by COSM at this time.			
SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Malhan, Rajiv		(509) 372-2806	09/17/2007
SCREENING			
PER Significance Level			
PER with Resolution			
Independent Assessment Review	Occurrence Report Number	Externally Identified	

Yes		No	
Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Klos, James (Jim) J			
PER Screening Comments			
None. nb			
Causal Code			
A3B2C04	Human Performance LTA Rule Based Error Previous success in use of rule reinforced continued use of rule		
A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced		
MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Maintenance	Event Investigation
ISMS	Consequence Code		
Perform work within the controls	Work Planning		
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	09/18/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
PAAA, Non-NTS Reportable	10 CFR 830.122 (d)(1) 10 CFR 830.122 (e)(1)	Conduct of Operations (including Drills and Exercises) Hazard Identification Work Planning
NTS Report Number	NTS Report Date	
Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation
No	No	No

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date
Stenzel, Len C (inactive) (inactive)	09/18/2007
PAAA Approver Name	PAAA Approve Date
Stenzel, Len C (inactive) (inactive)	09/19/2007

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

No comments (nb)

Instructions for Responsible Manager

Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Brown, Nancy L	[REDACTED]	(509) 373-0992	09/19/2007

CAUSE ANALYSIS

Description of Occurrence

Improper maintenance work control. Actions outside procedures and without written work documents were taken to attempt to restore pump operation.

Extent of Condition

A review of this condition indicates that a repeat of this instance (performing troubleshooting without a plan when one should be developed) is likely to occur if no changes are made to the work control procedure. Adequate application of work control requirements, including controls for hazards and compliance with conduct of operations requirements, applies to all work in the field. Appropriate documentation and related procedural guidance is necessary for all work including routine activities, troubleshooting, and follow-up work related to abnormal and/or emergency situations.

Safety Significance

No personnel injuries or negative effect to the environment resulted from the this issue, however the potential for worker injury does increase when incomplete hazards analysis' are used.

Generic Implications**Remedial Corrective Action**

All Closure Operations Maintenance FWS were briefed on the requirements and expectations associated with Hazards Analysis. Verified by J.J. Klos August 2007

Causal Analysis, Apparent Cause and/or Root Cause Analysis

A change analysis was performed per TFC-ESHQ-Q-ADM-C-12, Apparent Cause Analysis and Corrective Action Planning. The analysis determined the following causes:

A4B1C01 Management policy guidance/expectations not well-defined, understood, or enforced.

This was determined to be the primary cause because this is the barrier to determine when a troubleshooting plan is required. The procedure governing troubleshooting, TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control, section 4.2 simply states "... determine the need for a troubleshooting plan. If it is determined that a troubleshooting plan is required, ..." There is no guidance when a troubleshooting plan is required. Interviews with the Work Control Manager, Operations Manager, Engineering, and Maintenance personnel indicate there is no consistent opinion on this topic. A review of previous troubleshooting plans indicate they are rarely developed.

Additionally, the FWS believed it was adequate to record the work in the work record after the completely the field activity. The FWS did not clearly understand the need to record the planned work, ensure it documented that the work was released through the shift office and then record the completed tasks on the work record. The FWS had also inappropriately performed similar work in the past without completing a new Worksite Hazards Analysis form. In fact, he had relied upon the General Hazards Analysis for previous Instrument Technician work and therefore believe it was appropriate for all of the related troubleshooting efforts on the Seepex Pump.

A3B1C04 Previous success in use of rule reinforced continued use of rule.

This was determined to be a contributing cause because when the previous Seepex pump would freeze the pump would be manually rotated. Because the pump has been rotated manually many times (greater than 20), this was determined to be the accepted method. A troubleshooting plan was not developed for any of these previous manual rotations, therefore it was assumed by Operations, Engineering, and Maintenance that one would not be needed in the future.

Additionally, because similar work to rotate the pump had been performed on the Gorman Rupp pump, the FWS inappropriately believed the work to rotate the Seepex pump could also be performed using a Standing Minor Work Package. In this instance special tools (i.e. Torque Wrench) were required and a specific torque value was needed. Therefore, this work was not inside the scope of a Standing Minor Work Package as defined my TFC-OPS-MAINT-C-01.

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Klos, James (Jim) J	01/31/2008	CH2M-PER-2007-1596.1

Action

Develop and present training to the Field Work Supervisors on the requirements for completing a new Worksite Hazards Analysis and when it is appropriate to utilize the General Hazards Analysis.

Deliverable:

Training materials and attendance rosters indicating 90% attendance.

Actionee	Action Due Date	E-STARS Number
Ross, William (Bill)	01/15/2008	CH2M-PER-2007-1596.2

Action

Revise TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control, to clarify:
When a troubleshooting plan is required
What type of work can be performed using a Standing Minor Work Package

Deliverable:
Issued Procedure

Actionee	Action Due Date	E-STARS Number
Klos, James (Jim) J	01/31/2008	CH2M-PER-2007-1596.3

Action

Develop and present training to the Field Work Supervisors on:

The changes to TFC-OPS-MAINT-C-01 regarding when a troubleshooting plan is required and the type of work which can be performed using a Standing Minor Work Package,

The expectations for documenting proposed work scope on a Standing Minor Work Package, including use of the proper work package with regards to the primary craft performing the work

The expectations for documenting work release of a Standing Minor Work Package through the shift office, and

The expectations for documenting work completion of an item in a Standing Minor Work Package.

Deliverable:

Training materials and attendance rosters indicating 90% attendance.

ATTACHMENTS

CH2M-PER-2007-1595 -1596 Roll Up Matrix Table.doc

CH2M-PER-2007-1596 3 Knowledge Test pass.pdf

CH2M-PER-2007-1596.doc

CH2M-PERs 2007-1595 -1596.msg

FW_ Additional information to added to PERs 2007-1748_9 and 2007-1596_3.msg

IDMS Archive Link

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
09/16/2007 22:27	Higgins, Richard (Rich)	'Description of Concern or Problem' was changed.
09/19/2007 09:32	Brown, Nancy L	Responsible Manager Task Launched by Brown, Nancy L
11/08/2007 14:16	Hammack, Julie M	'Safety Significance' was changed. 'Extent of Condition' was changed. 'Remedial Corrective Action' was changed. 'Causal Analysis' was changed.
11/28/2007 15:31	Hammack, Julie M	Change to Cause Analysis screen/Corrective Action plan.
12/05/2007 08:45	Glaman, Linda R	Corrective Actions Launched by Glaman, Linda R
12/26/2007 13:01	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/26/2007 13:03	Glaman, Linda R	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was changed. 1st extension to 1-31-07 per form A-6003-227, lbg, 12-26-07. Additional time is needed to complete the briefing. J Hammack per telecon for JJ Klos 12-26-07 Concur with extension. R Higgins for FM Ito (ESRB Chairman) 12-26-07
12/27/2007 09:26	Glaman, Linda R	Change to Cause Analysis screen/Corrective Action plan.
12/27/2007 09:26	Glaman, Linda R	Corrective Action Item - modification to synchronize with E-STARS.'Action Due Date' was

changed. Extend to 1-15-08 per ESRB for rework. lbg, 12-27-08. These two PERs are in the Independent Assessment box. Please adjust routing list as follows.

CH2M-PER-2007-1596.2 - Return for rework to Jim Klos with an extension to 01/15/08, with the following instructions: Revise MAINT-C-01 procedure section 4.2.1 bullet #5 to delete the words "... and parts disassembled or replaced ...".

CH2M-PER-2007-1743.6 - Return for rework to Mark Jones with the following instructions: ESRB disapproved closure due to LTA knowledge quiz. Revise and re-administer quiz.

Thanks,

Rich

-- End of Report --
06/05/2008 02:17 PM

Task# CH2M-PER-2007-1596

E-STARS[®] Report
Task Detail Report
07/16/2008 1110

TASK INFORMATION

Task#	CH2M-PER-2007-1596		
Subject	RES; S-102 lessons learned from spill event - Work release		
Parent Task#		Status	CLOSED 05/12/2008
Reference		Due	02/11/2008
Originator	^CH2M PER Coordinator	Priority	None
Originator Phone		Category	None
Origination Date	09/16/2007 2217	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	None	Generic 3	None
Class	None	View Permissions	Global

Instructions *No Instructions*

ROUTING LISTS

1	Corrective Actions Routing Lis	Inactive
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs(Brown, Nancy L) - Assign - Completed - 01/31/2008 1305 <i>Instructions:</i>	
2	Responsible Manager	Inactive
	<p>IA Reviewer concurs with roll-up. However, the previously identified issues (see below) still need to be addressed. T Maciuca for R Higgins.</p> <p>The PER and the following corrective action discusses troubleshooting. The work to free the pump with a torque wrench was not troubleshooting. Therefore, this CA does not address the issue.</p> <p>Actionee Ross, William (Bill) Action Due Date 12/01/2007 Action EM-60-17.1 Revise TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control, to clarify when a planned troubleshooting guide is required. Deliverable: Revised procedure TFC-OPS-MAINT-C-01.</p> <p>The following corrective action does not appear to address the issue or the causes:</p> <p>Actionee Klos, James (Jim) J Action Due Date 02/01/2008</p> <p>Action EM-60-17.3 Develop specific work package(s) for repeated maintenance work activities (related to CH2MHill RCA JON 13) Deliverable: Copy of approved work package(s)</p> <p>Since we already have several specific work packages for repetitive work activities, this action does not accomplish anything.</p> <p>Additionally, the resolution is silent on the issue regarding work release. I have heard several sides of this story. Need to document the facts. Either the work was not released by the shift manager, or it was released by the off-going COSM and not communicated to the on-coming WFOSM and was not documented in the Shift Log. In either case, or if there's another explanation, then there is a problem that needs to be addressed. Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.</p>	
	<ul style="list-style-type: none"> • Klos, James (Jim) J - Assign - Completed - 10/31/2007 1446 <i>Instructions:</i>	

Task# CH2M-PER-2007-1596

- Klos, James (Jim) J - Assign - Completed with comments - 11/08/2007 1422
Instructions: Please attach copy of barrier analysis referenced in cause analysis block. The discussion and corrective actions primarily address troubleshooting. The work to manually rotate the pump was not a troubleshooting effort. It is not clear that the actions address the stated problem.

- Klos, James (Jim) J - Assign - Completed with comments - 11/11/2007 1408
Instructions: The PER and the following corrective action discusses troubleshooting. The work to free the pump with a torque wrench was not troubleshooting. Therefore, this CA does not address the issue.

Actionee Ross, William (Bill) Action Due Date 12/01/2007
 Action EM-60-17.1 Revise TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control, to clarify when a planned troubleshooting guide is required.
 Deliverable: Revised procedure TFC-OPS-MAINT-C-01.

The following corrective action does not appear to address the issue or the causes:

Actionee Klos, James (Jim) J Action Due Date 02/01/2008

Action EM-60-17.3 Develop specific work package(s) for repeated maintenance work activities (related to CH2MHill RCA JON 13)
 Deliverable: Copy of approved work package(s)

Since we already have several specific work packages for repetitive work activities, this action does not accomplish anything.

Additionally, the resolution is silent on the issue regarding work release. I have heard several sides of this story. Need to document the facts. Either the work was not released by the shift manager, or it was released by the off-going COSM and not communicated to the on-coming WFOSM and was not documented in the Shift Log. In either case, or if there's another explanation, then there is a problem that needs to be addressed.

- ^CH2M Independent Assessment Review(Maciuca, Tino) - Review - Concur with comments - 11/12/2007 1038
Instructions: Independent Assessor Review

- Klos, James (Jim) J - Assign - Completed with comments - 11/14/2007 1308
Instructions:

- ^CH2M Independent Assessment Review - Review - Withdrawn - 11/14/2007 1331
Instructions:

- ^CH2M PER ESRB - Review - Withdrawn - 11/14/2007 1331
Instructions:

- ^CH2M Independent Assessment Review - Review - Withdrawn - 11/21/2007 1013
Instructions:

- Klos, James (Jim) J - Assign - Completed with comments - 12/03/2007 1343
Instructions:

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 12/03/2007 1415
Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 12/03/2007 1547
Instructions:

3 Review Initial PER Inactive

Review new PER

- ^CH2M WFO SO(Malhan, Rajiv) - Review - Concur - 09/17/2007 1826
Instructions:

- ^CH2M PER Screening(Owen, Annette) - Review - Concur - 09/18/2007 1451
Instructions:

- ^CH2M MGR Review - Review - Cancelled - 09/19/2007 0932
Instructions:

ATTACHMENTS

Task# CH2M-PER-2007-1596**Attachments**

1. CH2M-PER-2007-1595 -1596 Roll Up Matrix Table.doc
2. CH2M-PER-2007-1596 3 Knowledge Test pass.pdf
3. CH2M-PER-2007-1596.doc
4. CH2M-PERs 2007-1595 -1596.msg
5. FW_ Additional information to added to PERs 2007-1748_9 and 2007-1596_3.msg
6. IDMS Archive Link
7. IDMS Archive Link
8. IDMS Archive Link
9. IDMS Archive Link
10. IDMS Archive Link
11. Link to PER

COLLABORATION**COMMENTS**

Poster	Klos, James (Jim) J (Hammack, Julie M) - 11/08/2007 0211
	Completed
	PER completed. Change analysis documentation attached. jmh 11/8/07
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/08/2007 0311
	Higgins, Rich - Comments on rework
	<p>The PER and the following corrective action discusses troubleshooting. The work to free the pump with a torque wrench was not troubleshooting. Therefore, this CA does not address the issue.</p> <p>Actionee Ross, William (Bill) Action Due Date 12/01/2007 Action EM-60-17.1 Revise TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control, to clarify when a planned troubleshooting guide is required. Deliverable: Revised procedure TFC-OPS-MAINT-C-01.</p> <p>The following corrective action does not appear to address the issue or the causes:</p> <p>Actionee Klos, James (Jim) J Action Due Date 02/01/2008</p> <p>Action EM-60-17.3 Develop specific work package(s) for repeated maintenance work activities (related to CH2MHill RCA JON 13) Deliverable: Copy of approved work package(s)</p> <p>Since we already have several specific work packages for repetitive work activities, this action does not accomplish anything.</p> <p>Additionally, the resolution is silent on the issue regarding work release. I have heard several sides of this story. Need to document the facts. Either the work was not released by the shift manager, or it was released by the off-going COSM and not communicated to the on-coming WFOSM and was not documented in the Shift Log. In either case, or if there's another explanation, then there is a problem that needs to be addressed.</p>
Poster	Klos, James (Jim) J (Hammack, Julie M) - 11/11/2007 0211
	Completed
	Roll-up matrix attached in support of trending out CH2M-PER-2007-1595. Actions in this PER need to be launched. jmh 11/11/07
Poster	^CH2M Independent Assessment Review (Maciuca, Tino) - 11/12/2007 1011
	Concur
	Tino Maciuca for Rich Higgins

Task# CH2M-PER-2007-1596	
---------------------------------	--

	11/12/2007
--	------------

Poster	^CH2M PER Coordinator (Glaman, Linda R) - 11/13/2007 0911
---------------	---

	Maciua, Tino -- Concur
--	------------------------

IA Reviewer concurs with roll-up. However, the previously identified issues (see below) still need to be addressed.

The PER and the following corrective action discusses troubleshooting. The work to free the pump with a torque wrench was not troubleshooting. Therefore, this CA does not address the issue.

Actionee Ross, William (Bill) Action Due Date 12/01/2007

Action EM-60-17.1 Revise TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control, to clarify when a planned troubleshooting guide is required.

Deliverable: Revised procedure TFC-OPS-MAINT-C-01.

The following corrective action does not appear to address the issue or the causes:

Actionee Klos, James (Jim) J Action Due Date 02/01/2008

Action EM-60-17.3 Develop specific work package(s) for repeated maintenance work activities (related to CH2MHill RCA JON 13)

Deliverable: Copy of approved work package(s)

Since we already have several specific work packages for repetitive work activities, this action does not accomplish anything.

Additionally, the resolution is silent on the issue regarding work release. I have heard several sides of this story. Need to document the facts. Either the work was not released by the shift manager, or it was released by the off-going COSM and not communicated to the on-coming WFOSM and was not documented in the Shift Log. In either case, or if there's another explanation, then there is a problem that needs to be addressed. Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Poster	Klos, James (Jim) J (Hammack, Julie M) - 11/14/2007 0111
---------------	--

	Completed
--	-----------

Both PERs deal with troubleshooting of the S-102 pump. -1595 deals with work on the VFD and -1596 deals with manual rotation of the pump. The reason I would like to combine them is because they are both truly related. The pump would not rotate and the VFD tripped. Upon resetting of the VFD the pump would still not rotate. Therefore, they continued the troubleshooting by attempting to manually rotate the pump. This is still considered troubleshooting because we still did not know why the pump would not rotate. Clearly it was suspected that it was stuck in the waste, but there are any number of issues that were still possibilities (seized rotor, locked coupling, etc...). Therefore, I do see them both relating to troubleshooting. The corrective action to clarify in TFC-OPS-MAINT-C-01 as to when to develop a troubleshooting plan is absolutely relevant to this issue.

The question regarding the development of specific work packages for repeated maintenance activities is also relevant. The intent here is to have engineering define the likely repairs needed for the most probable failures of the retrieval system (e.g. failed VFD, etc...) and have these corrective maintenance packages already approved and in the system. This would save planning time and have items ready in a much more timely fashion. I have used this method at other facilities and it has proven very effective in reducing overall downtime. So, the nuance here is these are intended to be specific repair packages already prepared and approved with parts on hand ready for release when a component fails. This would allow the troubleshooting efforts to be to define the problem and allow these corrective maintenance work packages to fix the problem.

Regarding the question of the resolution being silent on work release. The second action to "Perform conduct of operations training for the Maintenance Supervisors on the expectations for Troubleshooting, Work Release and Documentation" goes right to the heart of this. Perhaps more words are necessary to better define the portions on work release and documentation, but the intent is to cover the expectations for documenting work release and work completion with the work packages.

Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/21/2007 0911
---------------	---

	Return for Rework Comments
--	----------------------------

	This PER includes two work control issues, S-102 VFD Troubleshooting (rolled up from PER-2007-
--	--

Task# CH2M-PER-2007-1596

1595) and S-102 Retrieval Pump Reverse Rotation.

The problems noted in the PER are:

1. VFD Troubleshooting
 - a. WHA not used
 - b. Work performed not documented on work record (J-5)
 - c. Used Instrument Tech (IT) Standing Minor Work Order (SMWO) instead of Electrician SMWO
2. Manual Pump Reversal
 - a. Work performed using IT SMWO instead of Pipefitter SMWO
 - b. Work did not meet definition of Minor Work
 - c. WHA not used
 - d. Work performed not documented on work record (J-5)
 - e. The WFO SM had not released the work and/or was unaware that it was being performed

In your response when you returned the E-STARS task from Rework status, you state that "Both PERs deal with troubleshooting the S-102 pump". However, the pump reversal was not troubleshooting. It was well known that the pump could bind and might need to be manually reversed. Scaffolding had been installed, a special tool attachment had been procured, a not-to-exceed torque was specified, and the Pipefitters were briefed. That is not troubleshooting.

The first corrective action to revise MAINT-C-01 to specify when a troubleshooting guide is required addresses Item 1.b.

The second action to train Maintenance Supervisors on expectations for troubleshooting, work release and documentation is sufficient to cover most of the items listed above provided the action also includes WFO and ATS maintenance supervisors. However, it does not specifically address 1.a., 1.c., 2.a., 2.b., or 2.c. If the briefing is intended to address those items, then OK - no problem.

The third corrective action to "Develop specific work package(s) for repeated maintenance work activities" is not specific enough. The Deliverable is unclear. My comment when I returned this PER for rework was that Closure already has some repetitive work packages (such as the C-109 camera installation/removal/repair work package), so theoretically, this action could be closed without taking any additional actions. If the intent is for Engineering/Maintenance to develop a list of recommended new standing work packages and for Planning to develop them, then I recommend either that the action be revised to state that, or that a new action be generated for someone to generate the list, or that a "Deliverables" section be added to the action to clearly indicate the end result.

Poster	^CH2M PER Coordinator (Owen, Annette) - 11/21/2007 1011
	1st extension to 12/6/07 per form A-6003-227. (NO CAs)
	Additional time is necessary to reach an agreement on the path forward. T Hissong
Poster	Klos, James (Jim) J - 12/03/2007 0112
	Completed
	Submitted
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 12/03/2007 0212
	Concur
	Concur - Launch Actions.
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 12/03/2007 0312
	Concur
	OK to launch corrective actions. tlp 12/3/07
Poster	^CH2M PER Coordinator (Brown, Nancy L) - 02/04/2008 0902
	CLOSED
	CAs are closed -- closed parent task
Poster	^CH2M PER Coordinator (Owen, Annette) - 05/12/2008 0305

Task# CH2M-PER-2007-1596

Task Re-Open

Re-open in order to add futher information.

TASK DUE DATE HISTORY			
------------------------------	--	--	--

Modified	12/05/2007 0845 - ^CH2M PER Coordinator	New Due Date	02/11/2008 0000
Modified	11/21/2007 1012 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	12/10/2007 1630
Modified	11/13/2007 0932 - ^CH2M PER Coordinator (Owen, Annette)	New Due Date	11/06/2007 1630
Modified	09/19/2007 0932 - ^CH2M PER Coordinator	New Due Date	10/31/2007 1630
Modified	09/19/2007 0932 - ^CH2M PER Coordinator	New Due Date	11/04/2007 1630
Modified	09/16/2007 2217 - ^CH2M PER Coordinator	New Due Date	09/18/2007 1630

SUB TASK HISTORY	
-------------------------	--

Subtask#	CH2M-PER-2007-1596.1		
Subject	CH2M-PER-2007-1596; RES; S-102 lessons learned from spill event - Work release		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1596.2		
Subject	CH2M-PER-2007-1596; RES; S-102 lessons learned from spill event - Work release		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	
Subtask#	CH2M-PER-2007-1596.3		
Subject	CH2M-PER-2007-1596; RES; S-102 lessons learned from spill event - Work release		
Originator	^CH2M PER CAs		
	Routing List	No Active Routing List	

-- end of report --

Task# CH2M-PER-2007-1596.1

E-STARS^R Report
 Task Detail Report
 02/11/2008 1115

TASK INFORMATION

Task#	CH2M-PER-2007-1596.1		
Subject	CH2M-PER-2007-1596; RES; S-102 lessons learned from spill event - Work release		
Parent Task#	CH2M-PER-2007-1596	Status	CLOSED 01/31/2008
Reference	CH2M-PER-2007-1596	Due	02/08/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	None
Originator Phone		Category	None
Origination Date	12/05/2007 0845	Resp Org	None
Remote Task#		Subproject	None
Deliverable	None	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>Develop and present training to the Field Work Supervisors on the requirements for completing a new Worksite Hazards Analysis and when it is appropriate to utilize the General Hazards Analysis.</p> <p>Deliverable:</p> <p>Training materials and attendance rosters indicating 90% attendance.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> • Klos, James (Jim) J - Assign - Completed with comments - 01/29/2008 1528 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 01/30/2008 0908 <i>Instructions:</i> Independent Assessor Review 	

Task# CH2M-PER-2007-1596.1

- ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 01/31/2008 1125
Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1595 -1596 Roll Up Matrix Table.doc
2. CH2M-PER-2007-1596.1 Evidence Packet.pdf
3. CH2M-PER-2007-1596.doc
4. CH2M-PERs 2007-1595 -1596.msg
5. Link to PER

COLLABORATION

COMMENTS

Poster	^CH2M PER CAs (Glaman, Linda R) - 12/26/2007 0112		
	1st extension to 1-31-07 per form A-6003-227, lbg, 12-26-07		
	Additional time is needed to complete the briefing. J Hammack per telecon for JJ Klos 12-26-07 Concur with extension. R Higgins for FM Ito (ESRB Chairman) 12-26-07		
Poster	Klos, James (Jim) J (Hammack, Julie M) - 01/29/2008 0301 -		
	Completed		
	CH2M Hill has a total of 44 Qualified Field Work Supervisors. To date 40 of the 44 have received the training specified in this action, or 90% completion.		
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/30/2008 0901		
	Concur		
	No comments		
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 01/31/2008 1101		
	Concur		
	This action was reviewed by the Executive Safety Review Board on January 31, 2008. The Board concurred with closure. tlp 1/31/08		
Poster	^CH2M PER CAs (Brown, Nancy L) - 01/31/2008 0101		
	CLOSED		
	Reviewed closure statement, attached closure documentation and ESRB concurrence -- closed CA		

TASK DUE DATE HISTORY

Modified		New Due Date	
12/05/2007 0845 - ^CH2M PER CAs (^CH2M PER CAs)			02/11/2008 0000
12/05/2007 0845 - ^CH2M PER CAs (^CH2M			

Task# CH2M-PER-2007-1596.1			
Modified	PER CAs)	New Due Date	01/07/2008 0000
Modified	12/26/2007 1258 - ^CH2M PER CAs (Glaman, Linda R)	New Due Date	02/08/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			
-- end of report --			

Task# CH2M-PER-2007-1596.2

E-STARS^R Report
 Task Detail Report
 02/11/2008 1115

TASK INFORMATION

Task#	CH2M-PER-2007-1596.2		
Subject	CH2M-PER-2007-1596; RES; S-102 lessons learned from spill event - Work release		
Parent Task#	CH2M-PER-2007-1596	Status	CLOSED 01/10/2008
Reference	CH2M-PER-2007-1596	Due	01/27/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	None
Originator Phone		Category	None
Origination Date	12/05/2007 0845	Resp Org	None
Remote Task#		Subproject	None
Deliverable	None	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>RETURN FOR REWORK: Revise MAINT-C-01 procedure section 4.2.1 bullet #5 to delete the words "...and parts disassembled or replaced ...".</p> <p>Revise TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control, to clarify: When a troubleshooting plan is required What type of work can be performed using a Standing Minor Work Package</p> <p>Deliverable: Issued Procedure</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> • Ross, William (Bill) - Assign - Completed with comments - 12/12/2007 1508 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • Klos, James (Jim) J - Review - Concur with comments - 12/20/2007 1415 <i>Instructions:</i> 	

Task# CH2M-PER-2007-1596.2

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 12/21/2007 0709

Instructions: Independent Assessor Review

- ^CH2M Independent Assessment Review - Review - Withdrawn - 12/27/2007 0917

Instructions: Extend this action to 1/15/08. Revise MAINT-C-01 procedure section 4.2.1 bullet #5 to delete the words "... and parts disassembled or replaced ...".

- ^CH2M PER ESRB - Review - Withdrawn - 12/27/2007 0917

Instructions:

- Ross, William (Bill) - Assign - Completed with comments - 01/08/2008 1444

Instructions:

- Klos, James (Jim) J - Assign - Completed with comments - 01/08/2008 1513

Instructions:

- ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Assign - Completed with comments - 01/09/2008 0946

Instructions:

- ^CH2M PER ESRB(Parchen, Tracy L) - Assign - Completed with comments - 01/10/2008 1144

Instructions:

ATTACHMENTS

Attachments

1. CH2M-PER-2007-1595 -1596 Roll Up Matrix Table.doc
2. CH2M-PER-2007-1596.2 TFC-OPS-MAINT-C-01.doc
3. CH2M-PER-2007-1596.doc
4. CH2M-PERs 2007-1595 -1596.msg
5. Link to PER
6. S-102 PERs from ESRB.msg
7. TFC-OPS-MAINT-C-01,_Tank_Farm_Contractor_Work_Control.doc

COLLABORATION

COMMENTS

Poster

Ross, William (Bill) (Ross, William (Bill)) - 12/12/2007 0312

Completed

The Work Control procedure TFC-OPS-MAINT-C-01 Rev N was issued on December 6, 2007. Section 4.2 defines troubleshooting requirements which now requires a plan for all T/S. In addition section 4.4.1 defines when and what type of work can be done on a minor maintenance work package and how standing minor maintenance packages are managed.

Poster

Klos, James (Jim) J (Klos, James (Jim) J) - 12/20/2007 0212

Concur

Concur, action complete.

Poster

^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 12/21/2007 0712

Task# CH2M-PER-2007-1596.2	
	Concur
	Concur
Poster	^CH2M PER CAs (Glaman, Linda R) - 12/27/2007 0912
	Return for Rework and extend to 1-15-08 per ESRB. LBG 12-27-08
	<p>These two PERs are in the Independent Assessment box. Please adjust routing list as follows.</p> <p>CH2M-PER-2007-1596.2 - Return for rework to Jim Klos with an extension to 01/15/08, with the following instructions: Revise MAINT-C-01 procedure section 4.2.1 bullet #5 to delete the words "... and parts disassembled or replaced ...".</p> <p>CH2M-PER-2007-1743.6 - Return for rework to Mark Jones with the following instructions: ESRB disapproved closure due to LTA knowledge quiz. Revise and re-administer quiz.</p> <p>Thanks,</p> <p>Rich</p>
Poster	Ross, William (Bill) (Hammack, Julie M) - 01/08/2008 0201
	Completed
	<p>The work control procedure (TFC-OPS-MAINT-C-01) was originally modified on December 6, 2007 to define in Section 4.2 the troubleshooting requirements, which added the requirement to have a plan for all troubleshooting. Additionally, section 4.4.1 defined when and what type of work can be done on a minor maintenance work package and how standing minor maintenance work packages are managed.</p> <p>Based on feedback from the ESRB, on 1/8/2007 an additional change to TFC-OPS-MAINT-C-01 was completed which deleted the allowance for disassembly or replacement of parts under a minor maintenance package. (Section 4.2, bullet 5.)</p> <p>The completion of the above described actions completes the action(s) needed to address this issue.</p> <p>jmh 1/8/08</p>
Poster	Klos, James (Jim) J (Klos, James (Jim) J) - 01/08/2008 0301
	Completed
	Action was completed in December. Based upon ESRB review, a further change was made to TFC-OPS-MAINT-C-01. This change was approved on 1/8/08. Action complete.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/09/2008 0901
	Completed
	Action completed per ESRB direction

Task# CH2M-PER-2007-1596.2			
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 01/10/2008 1101		
	Completed		
	This action was reviewed and approved for closure by the Executive Safety Review Board on January 10, 2008. tlp 1/10/08		
Poster	^CH2M PER CAs (Brown, Nancy L) - 01/10/2008 1201		
	CLOSED		
	Reviewed and closed CA		
TASK DUE DATE HISTORY			
Modified	12/05/2007 0845 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	02/11/2008 0000
Modified	12/05/2007 0845 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	01/11/2008 0000
Modified	12/27/2007 0923 - ^CH2M PER CAs (Glaman, Linda R)	New Due Date	01/27/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			
-- end of report --			

Task# CH2M-PER-2007-1596.3

E-STARS^R Report
Task Detail Report
02/11/2008 1115

TASK INFORMATION

Task#	CH2M-PER-2007-1596.3		
Subject	CH2M-PER-2007-1596; RES; S-102 lessons learned from spill event - Work release		
Parent Task#	CH2M-PER-2007-1596	Status	CLOSED 01/31/2008
Reference	CH2M-PER-2007-1596	Due	02/07/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	Medium
Originator Phone		Category	PER
Origination Date	12/05/2007 0845	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>Develop and present training to the Field Work Supervisors on:</p> <p>The changes to TFC-OPS-MAINT-C-01 regarding when a troubleshooting plan is required and the type of work which can be performed using a Standing Minor Work Package,</p> <p>The expectations for documenting proposed work scope on a Standing Minor Work Package, including use of the proper work package with regards to the primary craft performing the work</p> <p>The expectations for documenting work release of a Standing Minor Work Package through the shift office, and</p> <p>The expectations for documenting work completion of an item in a Standing Minor Work Package.</p> <p>Deliverable:</p> <p>Training materials and attendance rosters indicating 90% attendance.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation</p>	

Task# CH2M-PER-2007-1596.3	
	Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements. QUALITY ASSURANCE: Review for adequate completion.
	<ul style="list-style-type: none"> • Klos, James (Jim) J - Assign - Completed with comments - 01/29/2008 1532 <i>Instructions:</i>
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 01/30/2008 0909 <i>Instructions:</i> Independent Assessor Review
	<ul style="list-style-type: none"> • ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 01/31/2008 1124 <i>Instructions:</i>
ATTACHMENTS	
Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1595 -1596 Roll Up Matrix Table.doc 2. CH2M-PER-2007-1596.3 Evidence Packet.pdf 3. CH2M-PER-2007-1596.doc 4. CH2M-PERs 2007-1595 -1596.msg 5. Link to PER
COLLABORATION	
COMMENTS	
Poster	Klos, James (Jim) J (Hammack, Julie M) - 01/29/2008 0301
	Completed
	CH2M Hill has a total of 44 Qualified Field Work Supervisors. To date 40 of the 44 have received the training specified in this action, or 90% completion.
Poster	^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/30/2008 0901
	Concur
	No comment
Poster	^CH2M PER ESRB (Parchen, Tracy L) - 01/31/2008 1101
	Concur
	This action was reviewed by the Executive Safety Review Board on January 31, 2008. The Board concurred with closure. tlp 1/31/08
Poster	^CH2M PER CAs (Brown, Nancy L) - 01/31/2008 0101
	CLOSED
	Reviewed closure statement, attached closure documentation and ESRB concurrence -- closed CA
TASK DUE DATE HISTORY	

Task# CH2M-PER-2007-1596.3			
Modified	12/05/2007 0845 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	02/11/2008 0000
Modified	12/05/2007 0845 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	02/07/2008 0000
SUB TASK HISTORY			
<i>No Subtasks</i>			
-- end of report --			

Appendix L

Documentation for Closeout of CH2M-PER-2007-1605

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-1605

Closed 11/01/2007 12:30

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-1605	09/16/2007	12:00	CO S Farm
Location			
OTHER			
How Was Problem Discovered			
Independent Assessment			
Description of Concern or Problem			
The S-102 EIT determined that the Delta HAZOP performed on the most recently installed S-102 retrieval pump did not include all system modifications, did not document conclusions, and results were not formally communicated. Although the "delta HAZOP" process is a good practice, it is not governed by procedure although the process should be consistent with CH2M HILL HAZOP process.			
Requirement Not Satisfied		Source Document Number	
Equipment Identification Number		System Identification	
Immediate Actions Taken or Planned			
None			
Recommended Corrective Actions			
Formalize the delta HAZOP process and require line management review and approval of completed HAZOP documentation.			
Level of Participation			
I would like to review the the corrective actions at closure to ensure they were effective			
Originators Name	Originators ID	Originators Phone	Date Initiated
Higgins, Richard (Rich)		(509) 373-5305	09/17/2007
SHIFT OPERATIONS REVIEW			
Title			
S-102 lessons learned from spill event - Delta HAZOP			
How Discovered		Agency	
self-ID result of event			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe Actions Taken or Recommended			
Corrective Action to be assigned by Closure Operation management. No other action required by COSM at this time.			
SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Malhan, Rajiv		(509) 372-2806	09/17/2007
SCREENING			
PER Significance Level			
PIE/CIM			
Independent Assessment Review	Occurrence Report Number	Externally Identified	
Yes		No	
Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Eberlein, Susan J			
PER Screening Comments			
None. nb			

Causal Code

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code Not Applicable	Functional Area Engineering	Work Process Event Investigation
ISMS Provide feedback and continuous improvement	Consequence Code Procedure - Administrative		
PER Screening Chair Owen, Annette	PER Screening Chair ID [REDACTED]	PER Screening Chair Phone (509) 372-0533	PER Screening Date 09/18/2007

PAAA REVIEW

PAAA Screening PAAA, Non-NTS Reportable	PAAA Codes 10 CFR 830.122 (d)(1) 10 CFR 830.122 (d)(2)	Function Codes Document Control Procedure Quality Records Systems Review/Designs Review	
NTS Report Number	NTS Report Date		
Repetitive / Recurrent No	Programatic No	Intentional Violation / Misrepresentation No	

PAAA Screening Comments

PAAA Reviewer Name Stenzel, Len C	PAAA Review Date 09/18/2007
PAAA Approver Name Stenzel, Len C	PAAA Approve Date 09/19/2007

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

No comments (nb)

Instructions for Responsible Manager

Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.

Senior Management Brown, Nancy L	Sr Mgmt ID [REDACTED]	Sr Mgmt Phone (509) 373-0992	Sr Mgmt Review Date 09/19/2007
--	---------------------------------	--	--

CAUSE ANALYSIS

Description of Occurrence
Extent of Condition
Safety Significance
Generic Implications
Remedial Corrective Action

Causal Analysis, Apparent Cause and/or Root Cause Analysis

PIE/CIM**Evaluation of PIE/CIM Initiative**

The S-102 EIT determined that the Delta HAZOP performed on the most recently installed S-102 retrieval pump did not include all system modifications, did not document conclusions, and results were not formally communicated. Although the "delta HAZOP" process is a good practice, it is not governed by procedure although the process should be consistent with CH2M HILL HAZOP process. This issue was documented in RPP-RPT-34831, Root Cause Analysis Report, CH2M HILL-PER-2007-1327 Radioactive Waste Spill at 241-S-102 on July 27, 2007.

This issue results directly from the root causes RC-01, Engineering Design Less than Adequate and RC-02, Management of Change Less Than Adequate, as discussed in RPP-RPT-34831. Corrective actions have been developed in response to these causes, and also address the ENG-2 Finding of the Type A Accident Investigation Report (documented in PER-2007-1738). The relevant corrective action is ENG-2.2, "Develop process hazards analysis (PHA) procedures and processes to ensure identification of hazards and controls for both TSR level hazards and higher frequency, lower consequence hazards that are of significance for emergency response and environmental compliance with emphasis on preventive controls over mitigative controls, including process to assign designated personnel as lead PHA team leaders."

It is recommended that the formal process for evaluating and documenting the hazard associated with changes be part of the integrated process described above rather than a separate process.

In addition, a near term corrective action for this issue will be addressed in the corrective action to PER-2007-1327, Action JON 1.1 "Develop an interim process to perform a process hazards analysis (PHA), at the unit operations level, for retrieval systems and other process systems that have undergone recent changes, prior to restart."

Since this issue is being addressed in separate PERs, no further actions are required in this PER.

ATTACHMENTS

[Link to PER](#)

AUDIT HISTORY

Change Date	Auditor	Comments
09/19/2007 09:38	Brown, Nancy L	Responsible Manager Task Launched by Brown, Nancy L

-- End of Report --
11/01/2007 12:45 PM

Task# CH2M-PER-2007-1605

E-STARS^R Report
Task Detail Report
11/01/2007 1245

TASK INFORMATION

Task#	CH2M-PER-2007-1605		
Subject	PIE; S-102 lessons learned from spill event - Delta HAZOP		
Parent Task#		Status	CLOSED 11/01/2007
Reference		Due	11/22/2007
Originator	^CH2M PER Coordinator (^CH2M PER Coordinator)	Priority	Medium
Originator Phone		Category	PER
Origination Date	09/17/2007 0009	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Responsible Manager	Inactive
	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.	
	<ul style="list-style-type: none"> Eberlein, Susan J - Assign - Completed with comments - 10/25/2007 1146 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 10/30/2007 0733 <i>Instructions:</i> Independent Assessor Review 	
	<ul style="list-style-type: none"> Eberlein, Susan J - Close - Closed with comments - 11/01/2007 1223 <i>Instructions:</i> 	
2	Review Initial PER	Inactive
	Review new PER	
	<ul style="list-style-type: none"> ^CH2M WFO SO(Malhan, Rajiv) - Review - Concur - 09/17/2007 1838 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ^CH2M PER Screening(Owen, Annette) - Review - Concur - 09/18/2007 1456 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ^CH2M MGR Review - Review - Cancelled - 09/19/2007 0938 <i>Instructions:</i> 	

Task# CH2M-PER-2007-1605

ATTACHMENTS

Attachments

1. Link to PER

COLLABORATION

COMMENTS

Poster

Eberlein, Susan J (Williams, Char) - 10/25/2007 1110

Completed

A near term corrective action for this issue will be addressed in the corrective action to PER-2007-1327, Action JON 1.1 "Develop an interim process to perform a process hazards analysis (PHA), at the unit operations level, for retrieval systems and other process systems that have undergone recent changes, prior to restart."

No corrective actions have been identified for this PER/ESTARs item. Close PER/ESTARs.

Poster

^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 10/30/2007 0710

Concur

Concur

Poster

Eberlein, Susan J (Williams, Char) - 11/01/2007 1211

CLOSED

A near term corrective action for this issue will be addressed in the corrective action to PER-2007-1327, Action JON 1.1 "Develop an interim process to perform a process hazards analysis (PHA), at the unit operations level, for retrieval systems and other process systems that have undergone recent changes, prior to restart."

Since this issue is being addressed in separate PERs, no further actions are required in this PER.

Close PER/ESTARs action.

TASK DUE DATE HISTORY

Modified	09/17/2007 0009 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	09/19/2007 1630
Modified	09/19/2007 0938 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/20/2007 1630
Modified	09/19/2007 0938 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/16/2007 1630
Modified	10/25/2007 0953 - ^CH2M PER Coordinator (^CH2M PER Coordinator)	New Due Date	11/22/2007 1630

SUB TASK HISTORY

Task# CH2M-PER-2007-1605

No Subtasks

-- end of report --

Task# CH2M-PER-2007-1327.1

E-STARS[®] Report
Task Detail Report
07/08/2008 0142

TASK INFORMATION

Task#	CH2M-PER-2007-1327.1		
Subject	CH2M-PER-2007-1327; SIG; S-102 Transfer Pump Leak Results in Waste Spill near S-102 Pump Pit		
Parent Task#	CH2M-PER-2007-1327	Status	CLOSED 11/15/2007
Reference	CH2M-PER-2007-1327	Due	11/19/2007
Originator	^CH2M PER CAs	Priority	Medium
Originator Phone		Category	PER
Origination Date	10/25/2007 1351	Generic 1	None
Remote Task#		Generic 2	None
Deliverable	PER Review	Generic 3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>JON 1.1 Develop an interim process to perform a process hazards analysis (PHA), at the unit operations level, for retrieval systems and other process systems that have undergone recent changes, prior to restart. (NTS)</p> <p>Deliverable:</p> <p>Management Directive that defines near-term process for conducting PHAs.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p>	
	<ul style="list-style-type: none"> ● Knight, Mark A - Assign - Completed with comments - 11/06/2007 1323 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● Raymond, Richard E - Review - Concur with comments - 11/08/2007 1507 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 11/08/2007 1544 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> ● ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 11/15/2007 1209 <i>Instructions:</i> 	

ATTACHMENTS

Attachments	<ol style="list-style-type: none"> 1. CH2M-PER-2007-1327 20 Remaining Roster.pdf 2. CH2M-PER-2007-1327.16 TFC-ENG-FAC SUP-D-02.2, Rev B_Waste_Leak_Path_Evaluations.doc 3. CH2M-PER-2007-1327.17 TFC-CHARTER-37,_Waste_Transfer_Confinement_Review_Board.doc 4. CH2M-PER-2007-1327.2 ATS Matrix.pdf 5. CH2M-PER-2007-1327.2 Project Delivery Matrix.pdf 6. CH2M-PER-2007-1327[1].49 Closure Package.pdf 7. CH2M-PER-2007-1327[1].5, 12, 13, 15-7G400-MAK-08-002 doc.pdf 8. EIR-2007-013 - Event Investigation Team - Radioactive Waste Leak at S-102.pdf 9. EM-RP--CHG-TANKFARM-2007-0009.htm 10. Final CH2MHILL_Root_Cause_Report_09-18_07_R1.pdf 11. FINAL for Occurrence Report EM-RP--CHG-TANKFARM-2007-0009.msg 12. Link to PER
--------------------	--

Task# CH2M-PER-2007-1327.1

13. PAAA Evaluation Summary Form
14. Team Charter 70000-JWL-07-001.pdf
15. CH2M-PER-2007-1327.1 TFC-ENG-STD-28, Rev.A_Process_Hazard_Analysis_Standard.doc
16. CH2M-PER-2007-1327.1 TFC-MD-054,Rev.A_Interim_Process_for_Performing_Process_Hazards_Analysis_of_Tank_Farm_Contractor_(TFC)_Proj
17. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_ Update 5.msg
18. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_ Update 6.msg
19. UPDATE to Occurrence Report EM-RP--CHG-TANKFARM-2007-0009_ Update 7.msg

COLLABORATION**COMMENTS**

Poster Knight, Mark A - 11/06/2007 0111

Completed

This action has been completed. A new Management Directive, TFC-MD-054, Rev.A, "INTERIM PROCESS FOR PERFORMING PROCESS HAZARDS ANALYSIS OF TANK FARM CONTRACTOR (TFC) PROJECTS, PROCESSES, AND EQUIPMENT" and an accompanying new Engineering Standard, TFC-ENG-STD-28, Rev.A, "PROCESS HAZARDS ANALYSIS STANDARD" were both issued on October 30, 2007. Together these documents establish an interim process for conducting Process Hazards Analyses of SST Retrievals and other TFC processes prior to restart. The process also provides an interim process for conducting Process Hazards Analyses of major changes to TFC processes as an interim step in establishing a management of change process.

Poster Raymond, Richard E - 11/08/2007 0311

Concur

I have reviewed TFC-MD-054, Rev A and concur that this part of the action is complete.

Poster ^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 11/08/2007 0311

Concur

Concur

Poster ^CH2M PER ESRB (Parchen, Tracy L) - 11/15/2007 1211

Concur

This action was reviewed by the Executive Safety Review Board on November 15, 2007. The Board concurred with closure. tlp 11/15/07

Poster ^CH2M PER CAs (Parchen, Tracy L) - 11/15/2007 1211

CLOSED

Reviewed and closed. tlp 11/15/07

TASK DUE DATE HISTORY

Modified		New Due Date	
10/29/2007 1118	- ^CH2M PER CAs (Owen, Annette)	11/19/2007 0000	
10/25/2007 1351	- ^CH2M PER CAs	11/17/2007 0000	
10/25/2007 1351	- ^CH2M PER CAs	08/06/2008 0000	

SUB TASK HISTORY

No Subtasks

-- end of report --

Appendix M

Documentation for Closeout of CH2M-PER-2007-2042

Save

Problem Evaluation Request (PER)

CH2M-PER-2007-2042

Closed 02/21/2008 15:45

PER No	Date of Discovery	Time of Discovery (24:00)	Program-Project
CH2M-PER-2007-2042	10/09/2007	12:00	Engineering

Location
All Tank Farms

How Was Problem Discovered
Independent Assessment

Description of Concern or Problem
The Independent Review of the Engineering Design Program conducted in response to the S-102 Leak Event (Engineering Design Review Report, dated 10/09/07, attached) identified the following recommendation:
"REC-28, Change the focus of the engineering assessment program to one that is focused on quality and follow-through, rather than the current program that seems more focused on quantity and documentation. (Long-term)"
This PER is being issued to document this recommendation for evaluation.

Requirement Not Satisfied	Source Document Number
N/A	Engineering Design Program Review Report. 10/09/07

Equipment Identification Number	System Identification
N/A	

Immediate Actions Taken or Planned
This PER is being issued to document this recommendation for evaluation.

Recommended Corrective Actions
Recommend this PER be assigned to the Director-Engineering Standards as a PIE/CIM.

Level of Participation
I would like to review the the corrective actions at closure to ensure they were effective

Originators Name	Originators ID	Originators Phone	Date Initiated
Faust, Gary L	[REDACTED]	(509) 373-0337	11/14/2007

SHIFT OPERATIONS REVIEW

Title
The Independent Review of the Engineering Design Program REC-28

How Discovered	Agency
self-ID result of event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe Actions Taken or Recommended
No immediate action required by COSM at this time. Assign this PER to Dan Baide.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Malhan, Rajiv	[REDACTED]	(509) 372-2806	11/15/2007

SCREENING

PER Significance Level
PIE/CIM

Independent Assessment Review	Occurrence Report Number	Externally Identified
Yes		No

Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep
Walker, Ken D		

ER Screening Comments

None. Ig

Causal Code

AGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other
Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Engineering	Assessments
ISMS	Consequence Code		
Provide feedback and continuous improvement	Qualification Requirements Not Met		
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	[REDACTED]	(509) 372-0533	11/19/2007

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes	
Not subject to PAAA			
NTS Report Number	NTS Report Date		
Repetitive / Recurrent	Programatic	Intentional Violation / Misrepresentation	
No	No	No	

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date	
Anderson, Craig E	11/19/2007	
PAAA Approver Name	PAAA Approve Date	
Anderson, Craig E	11/20/2007	

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

None. Ig

Instructions for Responsible Manager

Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	[REDACTED]	(509) 372-0533	11/20/2007

CAUSE ANALYSIS

Description of Occurrence
Extent of Condition
Safety Significance
Generic Implications
Remedial Corrective Action
Causal Analysis, Apparent Cause and/or Root Cause Analysis

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Walker, Ken D	02/28/2008	CH2M-PER-2007-2042.1

Action
 Provide Management direction to ensure the focus of the engineering assessment program includes a focus on quality and follow-through.
 Deliverable: Revised Engineering Assessment Program information.

PIE/CIM

Evaluation of PIE/CIM Initiative
 Recommendation is accepted. Management direction will be provided to ensure the focus of the engineering assessment program includes a focus on quality and follow-through.

ATTACHMENTS

FINAL Engineering Design Team Report 10-09-2007.pdf
 Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
11/20/2007 08:36	Owen, Annette	Responsible Manager Task Launched by Owen, Annette
01/10/2008 14:42	Glaman, Linda R	Corrective Actions Launched by Glaman, Linda R

-- End of Report --
 02/21/2008 03:45 PM

Task# CH2M-PER-2007-2042

E-STARS^R Report
 Task Detail Report
 02/21/2008 0345

TASK INFORMATION

Task#	CH2M-PER-2007-2042		
Subject	PIE; The Independent Review of the Engineering Design Program REC-28		
Parent Task#		Status	CLOSED 02/21/2008
Reference		Due	03/18/2008
Originator	^CH2M PER Coordinator (^CH2M PER Coordinator)	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/14/2007 1627	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Actions Routing Lis	Inactive
	To launch Corrective Actions.	
	<ul style="list-style-type: none"> • ^CH2M PER CAs(Brown, Nancy L) - Assign - Completed - 02/21/2008 1540 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • Walker, Ken D - Close - Withdrawn - 02/21/2008 1541 <i>Instructions:</i> 	
2	Responsible Manager	Inactive
	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.	
	<ul style="list-style-type: none"> • Walker, Ken D - Assign - Completed with comments - 01/09/2008 1443 <i>Instructions:</i> 	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 01/09/2008 1502 <i>Instructions:</i> Independent Assessor Review 	
	<ul style="list-style-type: none"> • ^CH2M PER ESRB(Parchen, Tracy L) - Review - Concur with comments - 01/10/2008 1117 <i>Instructions:</i> 	
3	Review Initial PER	Inactive

Task# CH2M-PER-2007-2042

Review new PER

- ^CH2M WFO SO(Malhan, Rajiv) - Review - Concur - 11/15/2007 1138
Instructions:

- ^CH2M PER Screening(Owen, Annette) - Review - Concur - 11/19/2007 1430
Instructions:

- ^CH2M MGR Review(Owen, Annette) - Review - Concur - 11/20/2007 0836
Instructions:

ATTACHMENTS

Attachments

1. FINAL Engineering Design Team Report 10-09-2007.pdf
2. Link to PER

COLLABORATION

COMMENTS

Poster

Walker, Ken D (Walker, Ken D) - 01/09/2008 0201

Completed

PIE/CIM evaluation completed and corrective action has been identified.

Poster

^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 01/09/2008 0301

Concur

Concur - Launch action upon ESRB concurrence.

Poster

^CH2M PER ESRB (Parchen, Tracy L) - 01/10/2008 1101

Concur

The Executive Safety Review Board reviewed this action on January 10, 2008, and approved launching of the corrective action(s). tlp 1/10/08

TASK DUE DATE HISTORY

Modified		New Due Date	
11/14/2007 1627	- ^CH2M PER Coordinator (^CH2M PER Coordinator)	11/16/2007 1630	
11/20/2007 0836	- ^CH2M PER Coordinator (^CH2M PER Coordinator)	01/17/2008 1630	
11/20/2007 0836	- ^CH2M PER Coordinator (^CH2M PER Coordinator)	01/13/2008 1630	
01/10/2008 1442	- ^CH2M PER Coordinator (^CH2M PER Coordinator)	03/18/2008 0000	

SUB TASK HISTORY

Subtask#

CH2M-PER-2007-2042.1

Task# CH2M-PER-2007-2042

Subject	CH2M-PER-2007-2042; PIE; The Independent Review of the Engineering Design Program REC-28
----------------	---

Originator	^CH2M PER CAs
-------------------	---------------

	Routing List <i>No Active Routing List</i>
--	---

— end of report —

Task# CH2M-PER-2007-2042.1

E-STARS^R Report
Task Detail Report
02/21/2008 0345

TASK INFORMATION

Task#	CH2M-PER-2007-2042.1		
Subject	CH2M-PER-2007-2042; PIE; The Independent Review of the Engineering Design Program REC-28		
Parent Task#	CH2M-PER-2007-2042	Status	CLOSED 02/21/2008
Reference	CH2M-PER-2007-2042	Due	03/10/2008
Originator	^CH2M PER CAs (^CH2M PER CAs)	Priority	Medium
Originator Phone		Category	PER
Origination Date	01/10/2008 1442	Resp Org	None
Remote Task#		Subproject	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	<i>No Instructions</i>		

ROUTING LISTS

1	Corrective Action	Inactive
	<p>Provide Management direction to ensure the focus of the engineering assessment program includes a focus on quality and follow-through.</p> <p>Deliverable: Revised Engineering Assessment Program information.</p> <p>RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements.</p> <p>QUALITY ASSURANCE: Review for adequate completion.</p>	
	<ul style="list-style-type: none"> • Walker, Ken D - Assign - Completed with comments - 02/20/2008 0919 <p><i>Instructions:</i></p> <p>↳ <i>Routing List:</i> Route List - Inactive</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> • Faust, Gary L - Assign - Completed with comments - 02/20/2008 0855 	
	<ul style="list-style-type: none"> • ^CH2M Independent Assessment Review(Higgins, Richard (Rich)) - Review - Concur with comments - 02/20/2008 1025 <p><i>Instructions:</i> Independent Assessor Review</p>	

Task# CH2M-PER-2007-2042.1	
	<ul style="list-style-type: none"> Walker, Ken D - Close - Withdrawn - 02/20/2008 1037 <i>Instructions:</i>
	<ul style="list-style-type: none"> ^CH2M PER ESRB(Higgins, Richard (Rich)) - Review - Concur with comments - 02/21/2008 1243 <i>Instructions:</i>
ATTACHMENTS	
Attachments	<ol style="list-style-type: none"> CH2M-PER-2007-2042 Engineering MOP Focus Mar08.doc FINAL Engineering Design Team Report 10-09-2007.pdf Link to PER
COLLABORATION	
COMMENTS	
Poster	Faust, Gary L (Faust, Gary L) - 02/20/2008 0802
	Completed
	<p>The required corrective action for this Task was to provide Management direction to ensure the focus of the engineering assessment program includes a focus on quality and follow-through.</p> <p>This change in philosophy and direction of the engineering MOP program is documented in the attached "Engineering Management Observation Program (MOP) Focus (Effective March 2008)" document. This document will be used by the engineering assessment coordinator for scheduling monthly engineering MOPs, and by all engineering directors, managers and discipline leads in performing engineering MOPs.</p> <p>This completes the required corrective action for this Task, and this Task can be closed.</p>
Poster	Walker, Ken D (Walker, Ken D) - 02/20/2008 0902
	Completed
	<p>Concur.</p> <p>The Engineering MOP Focus accompanies the MOP assignments and provides direction to MOP assignees on how to conduct their particular MOP. This also incorporates the required changes from R. Higgins deliverable to S-102 Type A Accident Investigation Report JON MS-1, which is related to evaluating the effectiveness of corrective actions taken in response to significant events. The following revised guidance is provided in response to this PER:</p> <p>In response to the S-102 Type A Accident Investigation Report JON MS-1, which is related to evaluating the effectiveness of corrective actions taken in response to significant events, CH2M HILL has committed engineering to conduct at least one MOP per month to evaluate the effectiveness of corrective actions taken in response to significant events in the following five (5) specific areas in engineering*:</p> <ul style="list-style-type: none"> Procedure compliance Document review /approval Hazards Analysis

Task# CH2M-PER-2007-2042.1

• Engineer training and qualification
 • Software QA, modification and testing
 (*The results of the assessments from these five (5) specific engineering areas will be summarized and formally reported to the ESRB at least quarterly, and the assessment approach may be revised at the direction of the ESRB at any time depending on the results.)

These MOPs must focus on quality and follow-through, as well as the current program that seems more focused on quantity and documentation.”

Poster ^CH2M Independent Assessment Review (Higgins, Richard (Rich)) - 02/20/2008 1002

Concur

Concur

Poster ^CH2M PER ESRB (Higgins, Richard (Rich)) - 02/21/2008 1202

Concur

Approved for closure by ESRB this date.
 Rich Higgins

Poster ^CH2M PER CAs (Brown, Nancy L) - 02/21/2008 0302

CLOSED

Reviewed closure statement, attachments, and ESRB approval -- closed CA

TASK DUE DATE HISTORY

Modified	01/10/2008 1442 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	03/18/2008 0000
----------	---	--------------	-----------------

Modified	01/10/2008 1442 - ^CH2M PER CAs (^CH2M PER CAs)	New Due Date	03/10/2008 0000
----------	---	--------------	-----------------

SUB TASK HISTORY

No Subtasks

-- end of report --